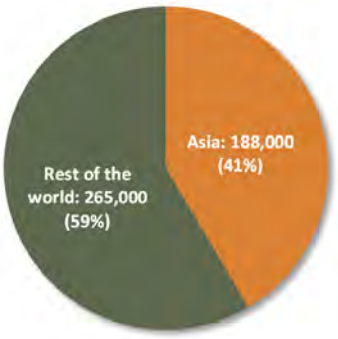
Rotavirus disease and vaccines in Asia

Diarrhea is a leading killer of children across Asia, causing approximately 11 percent of deaths in children under five years of age in Southeast Asia region and 5 percent in the Western Pacific region.[1] Rotavirus, the most common cause of severe and fatal diarrhea in young children worldwide, takes the lives of approximately 188,000 Asian children from these regions under five each year—more than 500 each day.[2] Studies in Asia have shown that rotavirus vaccines are safe and effective against severe rotavirus disease and are a cost-effective intervention.[2-5]

The high burden of rotavirus disease in Asian children, coupled with the power of rotavirus vaccines to prevent childhood deaths and hospitalizations, underscores the incredible potential for the introduction of rotavirus vaccines in Asian countries to save children's lives.

Global deaths from rotavirus disease [1]



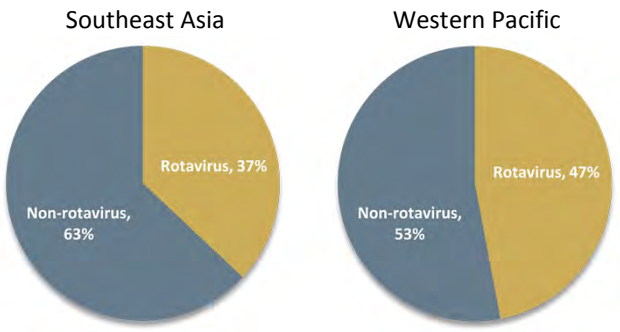
ROTAVIRUS IS THE LEADING CAUSE OF SEVERE AND FATAL DIARRHEA IN ASIAN CHILDREN <5 YEARS OLD

Rotavirus is a virus that causes gastroenteritis—an inflammation of the stomach and intestines. If left untreated, it can lead to severe dehydration and death. Children six months to two years of age are most vulnerable to infection.

Globally, rotavirus causes more than 450,000 deaths each year in children under five and is responsible for millions of hospitalizations and clinic visits.[2,7] Asian children account for more than 40 percent of the global total of children under five who die from the deadly, dehydrating diarrhea caused by rotavirus infection every year.[2,8]

The World Health Organization (WHO) estimates that 37% of children in the Southeast Asia region and 47% of children in the Western Pacific region hospitalized with acute diarrheal illness are infected with rotavirus.[9]

Diarrhea hospitalizations from rotavirus disease [8]



ROTAVIRUS TREATMENT AND PREVENTION STRATEGIES

Rotavirus is highly contagious and spreads easily from person-to-person through contaminated hands and objects. It cannot be treated with antibiotics or other drugs. Mild rotavirus infections can be treated effectively in the same manner as other forms of diarrhea, by providing fluids and salts (oral rehydration therapy). However, children with severe rotavirus diarrhea can become dehydrated and often need to intravenous fluids or they risk dying. In developing countries, this type of urgent health care is often inaccessible or unavailable making rotavirus prevention through vaccination critical to saving children's lives.

Vaccination offers the best hope for preventing severe rotavirus disease and the deadly dehydrating diarrhea that it causes. Improvements in water quality, hygiene, and sanitation stop bacteria and parasites that cause other forms of diarrhea but do not adequately prevent the transmission of rotavirus. Lifesaving rotavirus vaccines should be introduced as part of a comprehensive approach to control diarrheal disease, along with other interventions including oral rehydration therapy, breastfeeding, zinc treatment, and improvements in water and sanitation.

TWO SAFE AND EFFECTIVE ROTAVIRUS VACCINES ARE SAVING LIVES TODAY

There are two orally administered rotavirus vaccines available today: RotaTeq®, manufactured by Merck & Co. Inc., and Rotarix®, manufactured by GlaxoSmithKline. Both vaccines have been shown to be safe and effective in large-scale clinical trials in Africa, Asia, Europe, Latin America, and the US. Clinical trials in Asia (Bangladesh, Vietnam) found that rotavirus vaccines reduced severe rotavirus disease by more than 50 percent during the first year of life, when children are at greatest risk for severe rotavirus diarrhea.[3]

In June 2009, based in large part on the clinical trials in Asia and Africa that demonstrated vaccine efficacy in impoverished,

high-mortality settings, the WHO's Strategic Advisory Group of Experts recommended that all countries include rotavirus vaccines in their national immunization programs.[10]

Rotavirus vaccines are saving lives and improving health in countries where children have access to them. Swift and significant declines in hospitalization and deaths due to rotavirus and all-cause diarrhea have been observed in many of the countries that have introduced rotavirus vaccines into their national immunization programs.[11] Researchers also have found that use of rotavirus vaccines may protect unvaccinated children and adults by reducing transmission (an effect called herd immunity).[12]

ROTAVIRUS VACCINES IN ASIA

In July 2012, the Philippines became the first country on the continent of Asia to introduce rotavirus vaccines into its national immunization program. The Philippines will initially focus on immunizing children living in the poorest communities, which have the highest child morbidity and mortality rates from diarrheal disease. Some Asian countries offer rotavirus vaccines on the private market, however only the Philippines has introduced rotavirus vaccines through its national immunization program providing access to all children in need.

As of August 1, 2012, 38 countries have introduced rotavirus vaccines in their national immunization programs, including nine GAVI-eligible countries: Bolivia, Ghana, Guyana, Honduras, Moldova, Nicaragua, Rwanda, Sudan, and Yemen. One GAVI-eligible Asian country has applied for rotavirus vaccine support and others are considering future applications.

ROTAVIRUS VACCINES ARE COST-EFFECTIVE AND A WISE INVESTMENT

Rotavirus vaccines are cost-effective, and in GAVI-eligible countries, where 95 percent of deaths due to rotavirus occur, more than 2.4 million child deaths can be prevented by 2030 by accelerating access to lifesaving rotavirus vaccines.[6] If used in all GAVI-eligible countries, rotavirus vaccines could prevent an estimated 180,000 deaths and avert 6 million clinic and hospital visits each year, thereby saving US$68 million annually in treatment costs.[6]

Rotavirus vaccines are an essential and lifesaving intervention in comprehensive diarrhea-control strategies. Adding rotavirus vaccines to national immunization programs and integrating them with appropriate diarrheal disease control interventions as part of a package of strategies to prevent diarrheal disease-related deaths will facilitate achievement of Millennium Development Goal 4—reduction of child mortality.

Accelerating access to rotavirus vaccines by GAVI and its partners will not only save the lives of Asian children but also lessen the tremendous economic and health burden of rotavirus disease, thereby contributing to poverty reduction and a growing economy. GAVI plans to vaccinate more than 50 million children in at least 40 of the world's poorest countries by 2015.

For more information on rotavirus disease and vaccines please visit **http://rotavirusvaccine.org**.

[1]Liu L, Johnson HL, Cousens S, et al. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. *The Lancet*. 2012; 379(9832):2151–2161. [N.B. Not all countries on the Asian continent are represented in WHO's Southeast Asia and Western Pacific regions, including, for example, two countries with some of the highest death rates from rotavirus in the world, Afghanistan and Pakistan are included in the Eastern Mediterranean region. Please see the appendix to this article for a complete listing of all countries and regions.]

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[12]Lopman BA, Curns AT, Yen C, Parashar UD. Infant rotavirus vaccination may provide indirect protection to older children and adults in the United States. *Journal of Infectious Diseases*. 2011;204:980–986.

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