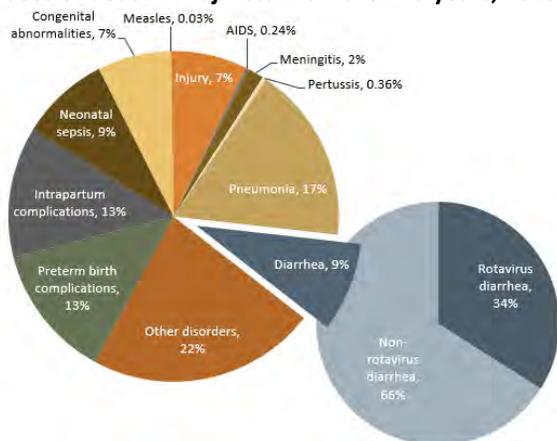


Rotavirus disease and vaccines in Tajikistan

Diarrhea is a leading killer of children in Tajikistan, causing approximately 8.7 percent of deaths in children less than five years of age.¹ Rotavirus, the most common cause of severe and fatal diarrhea in young children worldwide, took the lives of more than 860 Tajikistani children under five in 2008.^{2,3} It is estimated that 34 percent of all under-five diarrheal disease hospitalizations in Tajikistan are caused by rotavirus.⁴ Studies in Europe show that rotavirus vaccines are safe and effective against severe rotavirus disease and are cost-effective.⁵⁻⁶

In early 2015, Tajikistan will introduce rotavirus vaccines into its national immunization program with support from Gavi, the Vaccine Alliance. The burden of rotavirus disease in Tajikistani children, coupled with the power of rotavirus vaccines to prevent childhood deaths and hospitalizations, underscores the potential for Tajikistan's introduction of rotavirus vaccines to save children's lives.

Causes of death in Tajikistani children <5 years, 2013^{1,4}



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

Globally, nearly 600,000 young children die from severe, dehydrating diarrhea every year.¹ Rotavirus accounts for approximately one-third of these deaths and millions of hospitalizations.^{3,7} In 2006, more than 10,000 rotavirus deaths occurred in the World Health Organization's European (EURO) region.⁸ According to WHO/Europe, while low-income and lower middle-income EURO countries—including Tajikistan—are home to only

Tajikistan Facts

Total population (2013)⁹:	8,207,834
Population children <5 (2012)¹⁰:	1,150,400
Total live births (2012)¹⁰:	265,300
Mortality rate children <5 (2013)¹¹:	48/1,000 live births
Total number <5 deaths (2013)¹:	12,887
Number of <5 deaths due to diarrhea (2013)¹:	1,128
Number of <5 deaths due to diarrhea (2008)¹²:	2,304
Number of <5 deaths due to rotavirus (2008)²:	865

13 percent of all children under the age of five in the region, they account for 72 percent of estimated annual rotavirus deaths.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 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 is the best way to prevent severe rotavirus disease and the deadly, dehydrating diarrhea that it can cause. Improvements in water quality, hygiene, and sanitation stop bacteria and parasites that cause other forms of diarrhea but do not prevent the spread of rotavirus. Lifesaving rotavirus vaccines should be introduced as part of a comprehensive approach to control diarrhea, along with other interventions including oral rehydration therapy, exclusive breastfeeding, zinc treatment, and improvements in water and sanitation.

TWO SAFE AND EFFECTIVE ROTAVIRUS VACCINES ARE SAVING LIVES TODAY

There are currently two orally administered rotavirus vaccines available: Rotarix[®], manufactured by

GlaxoSmithKline, and RotaTeq[®], manufactured by Merck & Co., Inc. Both vaccines have been shown to be safe and effective in large-scale clinical trials in Africa, Asia, Europe, Latin America, and the United States. Clinical trials in Europe (Czech Republic, Finland, France, Germany, Italy, and Spain) found that rotavirus vaccines reduced severe rotavirus disease by more than 90 percent during the first two years of life, when children are at greatest risk of severe rotavirus disease.⁵

In June 2009, based in part on results from clinical trials in Africa demonstrating that rotavirus vaccines significantly reduced rotavirus disease in high-mortality settings, the WHO Strategic Advisory Group of Experts recommended that rotavirus vaccines be included in all countries' national immunization programs.¹³ As of January 1, 2015, more than 70 countries have introduced rotavirus vaccines in their national immunization programs. Over 30 of these countries have introduced with Gavi support, including four in the WHO EURO region: Armenia (2012), Moldova (2012), Georgia (2013), and Uzbekistan (2014).¹⁴ Four other Gavi-eligible countries in addition to Tajikistan have been approved for future rotavirus vaccine support.¹⁵

Rotavirus vaccines are saving lives and improving health in countries where children have access to them. Swift and significant declines in hospitalizations and deaths due to rotavirus and all-cause diarrhea have been observed in many countries with rotavirus vaccines in their national immunization programs.¹⁶ Rotavirus vaccines may protect unvaccinated children and adults by reducing spread of rotavirus (an effect called herd immunity).¹⁶

ROTA VIRUS VACCINES ARE COST-EFFECTIVE AND A WISE INVESTMENT FOR TAJIKISTAN

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

A 2009 study estimated that, if universal rotavirus vaccination were introduced in Tajikistan—along with Azerbaijan, Kazakhstan, Kyrgyzstan, Turkmenistan,

Uzbekistan, and Turkey—at very high coverage, over 80 percent of estimated rotavirus deaths at the time could be prevented.¹⁷

Rotavirus vaccines are an essential, lifesaving intervention in comprehensive diarrhea control. Accelerating access to rotavirus vaccines will not only save the lives of Tajikistan children but also lessen the heavy economic and health burden of rotavirus disease, contributing to poverty reduction and economic growth.

For more information on rotavirus disease and vaccines please visit <http://rotavirus.org>.

REFERENCES

¹Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *The Lancet*. 2014; e-pub ahead of print.

²World Health Organization. 2008 rotavirus deaths, under 5 years of age, as of 31 January 2012 [spreadsheet]. Available at: http://www.who.int/immunization/monitoring_surveillance/burden/estimates/rotavirus/en/index.html. Accessed November 10, 2014.

³Tate JE, Burton AH, Boschi-Pinto C, et al. 2008 estimate of worldwide rotavirus-associated mortality in children younger than 5 years before the introduction of universal rotavirus vaccination programmes: a systematic review and meta-analysis. *The Lancet Infectious Diseases*. 2012;12(2):136-141.

⁴World Health Organization. Global Rotavirus Information and Surveillance Bulletin, Volume 9: July 2014. Available at: http://www.who.int/immunization/monitoring_surveillance/resources/global_rv_surv_bulletin_july_2014_final.pdf?ua=1. Accessed November 21, 2014.

⁵Vesikari T, Karvonen A, Prymula R, et al. Efficacy of human rotavirus vaccine against rotavirus gastroenteritis during the first 2 years of life in European infants: randomised, double-blind controlled study. *The Lancet*. 2007;370(9601):1757-1763.

⁶Atherly DE, Lewis KDC, Tate J, Parashar UD, Rheingans, RD. Projected health and economic impact of rotavirus vaccination in GAVI-eligible countries: 2011-2030. *Vaccine*. 2012;30(15):A7-A14.

⁷Parashar UD, Hummelman EG, Bresee JS, Miller MA, Glass RI. Global illness and deaths caused by rotavirus disease in children. *Emerging Infectious Diseases*. 2003;9:565-572.

⁸Data and statistics, total page. World Health Organization Regional Office for Europe website. Available at: <http://www.euro.who.int/en/health-topics/communicable-diseases/rotavirus/data-and-statistics>. Accessed November 10, 2014.

⁹Population, total page. World Bank website. Available at: <http://data.worldbank.org/indicator/SP.POP.TOTL>. Accessed November 10, 2014.

¹⁰Mauritania Statistics page. UNICEF website. Available at: http://www.unicef.org/infobycountry/mauritania_statistics.html. Accessed November 10, 2014.

¹¹UNICEF. Levels and Trends in Child Mortality Report 2014: Estimates Developed by the UN Inter-agency Group for Child Mortality Estimation. Sept 16, 2014. Available at: <http://data.unicef.org/resources/childmortality2014>. Accessed November 10, 2014.

¹²Black RE, Cousens S, Johnson HL, et al. Global, regional, and national causes of child mortality in 2008: a systematic analysis. *The Lancet*. 2010;375:1969-1987.

¹³World Health Organization. Meeting of the immunization Strategic Advisory Group of Experts, April 2009—conclusions and recommendations. *Weekly Epidemiological Record*. 2009;84(23):220-236.

¹⁴Page on Country introductions of rotavirus vaccines. PATH website. Available at: <http://sites.path.org/rotavirusvaccine/country-introduction-maps-and-spreadsheet/>. Accessed November 10, 2014.

¹⁵Countries approved for support. Gavi website. Available at: <http://www.gavi.org/results/countries-approved-for-support>. Accessed November 10, 2014.

¹⁶Page on Rotavirus vaccine impact data. PATH website. Available at: <http://sites.path.org/rotavirusvaccine/rotavirus-vaccine-impact-tables/>. Accessed Nov 10, 2014.

¹⁷Williams CJ, Lobanov A, and Pebody RG. Estimated mortality and hospital admission due to rotavirus infection in the WHO European region. *Epidemiology and Infection*. 2009;137:607-616.



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