

## What is rotavirus infection?

Rotavirus is a bowel (gut) infection caused by a highly contagious virus. The infection causes a fever, vomiting and diarrhoea (gastroenteritis) in infants and young children.

Without immunisation almost all children get rotavirus infection before 5 years of age. Adults can also get rotavirus infection.

## How do you get rotavirus infection?

Rotavirus is mainly spread through close contact with someone who has the virus and by the faecal-oral route, for example incomplete hand washing after changing nappies or using the toilet or touching a contaminated surface and handling food or eating.

Large amounts of rotavirus are present in the stools of those with the infection, when they are sick and for about a week after they appear to be better. Rotavirus can survive on hands for at least four hours and on inanimate objects such as change tables, taps, door handles, toys, and utensils, for approximately two months.

## Who is most at risk from rotavirus infection?

Most symptomatic infections occur in babies and children between 3–24 months of age.

## How serious is it?

Feeling too sick to drink and loss of liquid from vomiting and diarrhoea can cause severe dehydration that needs medical treatment.

Before the introduction of a rotavirus vaccine in New Zealand in 2014, it is estimated that one child in five sought medical advice for rotavirus infection, and one child in 43 had been hospitalised by 5 years of age.

Since the introduction of a rotavirus vaccine in New Zealand, both rotavirus infections in the community and rotavirus hospitalisation rates have decreased markedly. In New Zealand death from rotavirus infection is rare.

Each time we are exposed to rotavirus we develop more protection against it. Healthy adults with rotavirus infection usually have mild symptoms.

## What are the symptoms of rotavirus infection?

The illness begins with the sudden onset of fever, vomiting, and diarrhoea. The fever usually lasts for 1–2 days, vomiting for around 3–6 days and diarrhoea for around 5–6 days.

## How do you prevent rotavirus infection?

The spread of rotavirus can be reduced by good hand washing using soap after changing nappies or cleaning up vomit, after using the toilet, before preparing food and before eating.

Children with diarrhoea or vomiting should not attend school or childcare centres until they have not had any vomiting or loose bowel motions for 48 hours.

Immunisation against rotavirus prevents most rotavirus infections and almost all serious rotavirus illness. The vaccine is free on the National Immunisation Schedule for babies.

## Which vaccine protects against rotavirus?

The rotavirus vaccine contains weakened live rotaviruses to protect against the most common strains of rotavirus. The vaccine is not designed to protect against gastroenteritis caused by other viruses or bacteria. The vaccine currently used in New Zealand is called Rotarix®.

In countries like New Zealand, a course of rotavirus vaccines will protect around 8 babies in 10 from severe infection and needing to be admitted to hospital.

## How safe is the rotavirus vaccine?

Rotarix has been used for many years and has a good safety record. One or two babies in 10 may have mild vomiting or diarrhoea during the 7 days after immunisation. However, studies suggest these symptoms may be unrelated to rotavirus vaccine because around the same number of babies who received a placebo liquid not containing rotavirus also developed these symptoms.

The weakened rotavirus from the vaccines may be found in faeces for up to 28 days after the first immunisation and up to 15 days after the second dose. After changing nappies caregivers only need to follow standard hygiene measures, i.e. wash their hands using soap and water and dry them well or use liquid hand gel.

A baby living in a house with someone who is pregnant or is immunosuppressed can be immunised. Babies in hospital, including those in neonatal units, can be immunised.

Intussusception is a type of bowel blockage usually seen in young children, with most cases occurring in the first year of life. The cause is usually unknown.

There is a small increase in the risk of a baby developing intussusception during the week following the first rotavirus vaccine dose and a smaller risk after the second dose.

Parents are recommended to seek medical advice if their baby develops intermittent crying/screaming episodes, pull their knees towards their chest and vomit, or develop pink or red coloured jelly-like stools.

## Who should get the rotavirus vaccine?

Only infants can have the rotavirus vaccine. It is given by drops into the mouth at the 6-weeks and 3-months immunisation visits.

Babies can have food or liquid, including breast milk, before or after immunisation. The dose does not have to be given again if they spit it out.

The vaccine can be administered to a baby who lives with someone who is immunocompromised or receiving immunosuppressive therapy. After changing nappies caregivers are recommended to follow standard hygiene measures, i.e. wash their hands using soap and water and dry them well or use liquid hand gel.

## Are both Rotarix vaccine doses needed?

Yes. Babies need two doses of Rotarix to develop maximum protection against rotavirus infection. However, it is possible that only one dose could provide some protection.

## Can a baby catch-up missed doses of rotavirus vaccine?

Yes, but only if the first dose of rotavirus vaccine is given before a baby is 15 weeks old. If a baby does not have their first dose before they are 15 weeks old, they cannot have any doses of rotavirus vaccine.

When a baby has their first rotavirus vaccine dose before 15 weeks old, catch-up doses of Rotarix can be given any time before baby is 25 weeks old providing there are at least 4 weeks between each of the doses. Once they are 25 weeks old, no Rotarix vaccine doses can be given.

Continued ...

## Who should seek more advice before having the rotavirus vaccine?

If a mother was on immunosuppressive therapy during pregnancy, it is important to seek advice before the infant is given Rotarix.

Further medical advice should be sought for any infant suspected or known to have a weakened immune system, for example due to HIV infection, treatment with long term steroids, or any baby who has cancer or who is undergoing treatment for cancer.

## Who should not have the rotavirus vaccine?

Any infant with a serious medical condition affecting the immune system called combined severe combined immunodeficiency (SCID), or who has previously had intussusception, or had anaphylaxis (a severe allergic reaction) to any component of the rotavirus vaccine or to a previous dose of the rotavirus vaccine should not be given the vaccine.

Rotavirus vaccine should be postponed for any baby with moderate to very high fever, vomiting or diarrhoea.

Disease	Possible complications of disease	Possible vaccine responses
A highly contagious virus causing a bowel (gut) infection with fever, vomiting and diarrhoea (gastroenteritis).	<ul style="list-style-type: none"> <li>» Abdominal pain.</li> <li>» Severe vomiting and diarrhoea.</li> <li>» Dehydration.</li> <li>» Death from untreated dehydration.</li> </ul>	<p><b>Common responses</b></p> <ul style="list-style-type: none"> <li>» Mild diarrhoea or vomiting.</li> <li>» Mild abdominal pain.</li> </ul> <p><b>Rare responses</b></p> <ul style="list-style-type: none"> <li>» Intussusception (bowel obstruction).</li> <li>» Severe allergic reaction (anaphylaxis).</li> </ul>

Vaccines are prescription medicines. Talk to your doctor or nurse about the benefits or any risks.

## References

- Anderson EJ, Weber SG. Rotavirus infection in adults. *Lancet Infect Dis*. 2004;4(2):91-9.
- Ansari SA, Sattar SA, Springthorpe VS, Wells GA, Tostowaryk W. Rotavirus survival on human hands and transfer of infectious virus to animate and nonporous inanimate surfaces. *J Clin Microbiol*. 1988;26(8):1513-8.
- Burnett E, Jonesteller CL, Tate JE, Yen C, Parashar UD. Global impact of rotavirus vaccination on childhood hospitalizations and mortality from diarrhea *J Infect Dis*. 2017;215(11):1666-72.
- Buysse H, Vinals C, Karkada N, Han HH. The human rotavirus vaccine Rotarix™ in infants. *Hum Vaccin Immunother*. 2014;10(1):19-24.
- Carlin JB, Macartney KK, Lee KJ, Quinn HE, Buttery J, Lopert R, et al. Intussusception risk and disease prevention associated with rotavirus vaccines in Australia's National Immunization Program. 2013;57(10):1427-34.
- Dennehy P. Treatment and prevention of rotavirus infection in children. *Curr Infect Dis Rep*. 2013;15(3):242-50.
- Gray J. Rotavirus vaccines: safety, efficacy and public health impact. *J Intern Med*. 2011;270(3):206-14.
- Grimwood K, Huang QS, Cohet C, Gosling IA, Hook SM, Teele DW, et al. Rotavirus hospitalisation in New Zealand children under 3 years of age. *J Paediatr Child Health*. 2006;42(4):196-203.
- Hsieh Y-C, Wu F-T, Hsiung CA, Wu H-S, Chang K-Y, Huang Y-C. Comparison of virus shedding after lived attenuated and pentavalent reassortant rotavirus vaccine. *Vaccine*. 2014;32(10):1199-204.
- Institute of Environmental Science and Research Ltd (ESR). Rotavirus in New Zealand, 2015. Porirua: ESR; 2016. Available from: [https://surv.esr.cri.nz/PDF\\_surveillance/Rotavirus/2015Rotavirus.pdf](https://surv.esr.cri.nz/PDF_surveillance/Rotavirus/2015Rotavirus.pdf)
- Kramer A, Schwebke I, Kampf G. How long do nosocomial pathogens persist on inanimate surfaces? A systematic review. *BMC Infect Dis*. 2006;6(1):130.
- Marshall GS. Rotavirus disease and prevention through vaccination. *Pediatr Infect Dis J*. 2009;28(4):351-64.
- Milne RJ, Grimwood K. Budget impact and cost-effectiveness of including a pentavalent rotavirus vaccine in the New Zealand Childhood Immunization Schedule. *Value Health*. 2009;12(6):888-98.
- Ministry of Health. Immunisation handbook [Internet]. Wellington: Ministry of Health; 2020 [updated 2020 September 25; cited 2020 September 30]. Available from: <https://www.health.govt.nz/publication/immunisation-handbook-2020>
- Rosillon D, Buysse H, Friedland LR, Ng S-P, Velazquez FR, Breuer T. Risk of intussusception after rotavirus vaccination: Meta-analysis of postlicensure studies. *Pediatr Infect Dis J*. 2015;34(7):763-8.
- Soares-Weiser K, Bergman H, Henschke N, Pitan F, Cunliffe N. Vaccines for preventing rotavirus diarrhoea: Vaccines in use (Review). *Cochrane Database Syst Rev*. 2019(3. Art. No.: CD008521).
- Stringer MD, Pablot SM, Brereton RJ. Paediatric intussusception. *Br J Surg*. 1992;79(9):867-76.
- World Health Organization. Rotavirus vaccine and intussusception: Report from an expert consultation. *Wkly Epidemiol Rec*. 2011;86(30):317-8.