Gavi-supported rotavirus vaccines profiles to support country decision making

Pneumococcal and Rotavirus Working Group

Gavi Secretariat and partners, July 2026

This resource is complementary to Gavi's **Detailed Product Profiles (DPPs) for WHO prequalified vaccines** https://www.gavi.org/our-alliance/market-shaping/product-information-vaccines-cold-chain-equipment

The primary objective of the Detailed Product Profiles (DPPs) is to provide countries with easy access to up-to-date and comprehensive information on Gavi-supported vaccines. Countries are encouraged to consider factors beyond procurement cost and impact on country co-financing requirements: the DPPs include information on vaccine presentations, pricing, indicative wastage rates, manufacturers, cold chain volume and handling. This information will help countries decide which vaccine presentation is the best 'fit' for inclusion in their immunisation programme. Selecting a vaccine that is the most programmatically favorable for a specific country's context contributes to the sustainability of an immunisation programme. The DPPs are referenced in the 2019 New Vaccine Support guidelines and available on the Gavi website.

The secondary objective of the DPPs is to provide an overview of all vaccine products that are either WHO prequalified (WHO PQ) or in review for WHO prequalification. The format of the DPPs was created specifically to allow countries to compare WHO PQ vaccine products, fully informing them of their options.

Information contained in the DPPs comes from a variety of sources including the Gavi Secretariat, WHO PQ vaccine webpages, WHO position papers and UNICEF's product menu for vaccines supplied by UNICEF for Gavi-supported programmes. The Gavi Secretariat will ensure the information in the DPPs is kept up-to-date as new products become WHO pre-qualified and are available to receive Gavi-support. The DPPs will be updated on a fixed schedule (approximately every 6 months) or with more frequency if required.

THE INFORMATION CONTAINED IN THESE SLIDES AND THE DPPs IS CURRENT AS OF JULY 2026.
Please send comments or questions dpp@gavi.org

Additional resources relevant for assessing vaccines and presentations:

- **Guidelines on Reporting and Renewal of Gavi support:** https://www.gavi.org/support/process/apply/report-renew/
- **WHO position paper** https://www.who.int/immunization/documents/positionpapers/en

Definitions

2026 price per dose (USD)	Price in USD per individual vaccine dose based on available data. This price is an **indicative** vaccine price prepared by the Gavi Secretariat to be used by countries for planning purposes. Price exclusively covers the vaccine dose and does not cover associated expenses including but not limited to freight, cold-chain costs, administrative costs and wastage. In cases in which there are multiple suppliers of the same presentation of the vaccine, or when there is a range of prices offered by the same supplier of the vaccine, a weighted average price (WAP) is utilised.
2026 price per fully immunised person (USD)	The price per dose (USD) is multiplied by the total number of doses required for a completed vaccine schedule, according to the WHO recommended vaccine schedules (WHO position papers)
2026 wastage adjusted price per fully immunised person (USD)	Price per fully immunized person (USD) adjusted to account for vaccine wastage. The price adjustment factors in the projected cost of wasted vaccine for each administered dose. The wastage rate utilized in the calculation is indicative, but it will be applied to the 1st year of shipment for rotavirus vaccines. It can be replaced by the country specific actual wastage rate or estimate in the following year. This value should not be used for planning purposes without considering the coverage rate, as this would overestimate needs.
Cold chain volume per fully immunised person (cm^3)	The cold chain volume is multiplied by the total number of doses required for a completed vaccine schedule, according to the WHO recommended vaccine schedules (WHO position papers)
Wastage adjusted cold chain volume per fully immunised person (cm^3)	The cold chain volume per fully immunized person is adjusted to account for vaccine wastage.

Select criteria to assess rotavirus vaccines
(relevance of criteria may vary by country)

1. **Availability**
    a. WHO prequalified rotavirus vaccines supported by Gavi
2. **Efficacy, safety, and interchangeability**
3. **Cost** (direct)
    a. Waste-adjusted price per dose / per fully immunised child
    b. Sustainability (long term agreements on price and availability)
    c. Vaccine Cost Calculator
    d. Cost-effectiveness
4. **Storage and transport**
    a. Cold chain requirements and implications
5. **Programmatic administration considerations**

Rotavirus vaccines supported by Gavi, either WHO prequalified, or expected to be prequalified

Type	Rotavirus (oral, live attenuated)							
Manufacturer	GSK		Bharat Biotech				Serum Institute of India Pvt Ltd	
Trade name	Rotarix[1]		Rotavac		Rotavac 5D		Rotasiil - Liquid	
NRA	Belgium		India				India	
Form	Liquid		Liquid (frozen)		Liquid		Liquid	
Presentation	Plastic tube	Strip of 5 single tubes	Vial	Vial	Vial	Vial	Strip of 5 single tubes	Vial
VVM Type	7	7	2	2	7	7	7	7
Doses in each presentation unit	1	1	5	10	1	5	1	2
WHO PQ decision	2009	2019	2018		2021		2021	2021

To be stopped for Gavi countries in 2026

[1]The presentations of Rotarix in plastic tube or in a strip of 5 single tubes are considered similar.
A switch from Rotarix in plastic tube to Rotarix in a strip of 5 single tubes and vice versa will not receive a switch grant.

Sources: https://extranet.who.int/pqweb/vaccines/prequalified-vaccines

Availability of rotavirus vaccines supported by Gavi

Trade name	Presentation*	Availability for Gavi countries
		2026
Rotarix[1]	RV1, 1 dose/plastic tube, liquid	Not available – Replaced by RV1, 1 dose/plastic tube, liquid (multi-monodose presentation with 5 single tubes connected by a bar)
	RV1, 1 dose/plastic tube, liquid (multi-monodose presentation with 5 single tubes connected by a bar)	Limited supply
Rotavac	RV1, 5 doses/vial, frozen	Limited supply
	RV1, 10 doses/vial, frozen	
Rotavac 5D	RV1, 1 dose/vial, liquid	Not available in 2026
	RV1, 5 doses/vial, liquid	Limited supply – The manufacturer does not have a production plan for this presentation at this stage
Rotasiil-Liquid	RV5, 1 dose/plastic tube, liquid (strip of 5 tubes)	Not available in 2026
	RV5, 2 doses/vial, liquid	Limited supply

[1]The presentations of Rotarix in plastic tube or in a strip of 5 single tubes are considered similar.
A switch from Rotarix in plastic tube to Rotarix in a strip of 5 single tubes and vice versa will not receive a switch grant.

*abbreviated description. For full description, please refer to the Detailed Product Profiles

WHO Prequalified Rotavirus vaccines supported by Gavi

As of July 2026

Trade name	**Rotarix**		**Rotavac**		**Rotavac 5D**		**Rotasiil-Liquid**	
Present-ation*	⚠ Plastic tube	⚠ Strip of 5 single tubes	Vial	Vial	⚠ Vial	⚠ Vial	⚠ Strip of 5 single tubes	Vial
Form	Liquid	Liquid	Liquid (frozen)	Liquid (frozen)	Liquid	Liquid	Liquid	Liquid
Doses in each unit	1	1	5	10	1	5	1	2
Picture								Picture not available for the time being

⚠

- Rotarix presentation in a strip of 5 single tubes will replace the plastic tube presentation which will be phased out for Gavi countries by 2026.
- Rotavac 5D in 5-dose vials is expected to be available in 2026; however, the manufacturer does not have a production plan at this stage. Rotavac 5D in 1-dose vials will not be available in 2026 and availability date thereafter to be confirmed by manufacturer.
- Rotasiil presentation in a strip of 5 single tubes: not available in 2026.

*abbreviated description. For full description, please refer to the Detailed Product Profiles
Source: https://extranet.who.int/gavi/PQ_Web/Default.aspx?nav=2

For size comparison

(the picture below shows 6 out of 12 presentations* and will be updated as more samples will be received by Gavi)

Rotavac 10-dose vials, with dropper

Rotavac 5-dose vials, with dropper

Rotarix plastic tube



Rotasiil liquid, plastic tube, in strip of single tubes (2 of 5 tubes shown)

Rotarix plastic tube in strip of single tubes (4 of 5 tubes shown)

Rotasiil lyophilised (two dose vial, after reconstitution, with oral syringe and adapter)

*abbreviated description. For full description, please refer to the Detailed Product Profiles

Vaccine efficacy, safety, and interchangeability

Summary of Key Characteristics of WHO Prequalified Rotavirus Vaccines*

Characteristics		*Rotarix™ (GSK)*	⚠ *Rotateq™ (Merck)*	*Rotavac™ (Bharat)*	*Rotasiil™ (Serum Institute)*
Efficacy for severe rotavirus gastroenteritis, at 2 years follow-up, ** by child mortality rate stratum of country of study site [1]	**Low Mortality**	**90%** (95% CI, 86-93%)	**94%** (95% CI, 61-99%)	No data available	No data available
	Medium Mortality	**78%** (95% CI, 70-83%)	**81%** (95% CI, 66-89%)	No data available	No data available
	High Mortality	**54%** (95% CI, 9-77%)	**44%** (95% CI, 23-59%)	**54%** (95% CI, 40-65%)	**44%** (95% CI, 26-58%)
	Study sites	Multiple countries at different income and mortality levels.		3 sites in India	6 sites in India; 1 center, multiple sites in Niger
Date of WHO prequalification		March 2009	October 2008	January 2018	September 2018
Safety		• WHO has concluded that the prequalified rotavirus vaccines (RVVs) are safe and should be among the vaccine options to prevent severe rotavirus gastroenteritis globally.[1,2,3,4] Continued monitoring of the risk for intussusception is recommended.[3,4]			
Mixed schedules & interchangeability of products[4]		• If the product used for a prior dose is unavailable or unknown, the series should be completed with any available licensed product. Restarting the vaccine series is not recommended. • For a mixed series or a series with any unknown vaccine products, a total of 3 doses of rotavirus vaccine should be administered for a complete vaccination series. • The published safety and efficacy/immunogenicity data on mixed schedules or interchangeability are reassuring for all products;[5, 6, 7]			

** One year follow-up efficacy estimates for severe rotavirus gastroenteritis diarrhea were reported in the 2020 Cochrane review and are similar to those for 2 year follow-up.

References:

[1] Systematic review and meta-analysis of the safety, effectiveness and efficacy of childhood schedules using Rotavirus Vaccines – Cochrane Response. October 2020 SAGE Meeting, Rotavirus Vaccines – Session 6. Background documents (https://www.who.int/immunization/sage/meetings/2020/october/SAGE_eYB_Oct2020final.pdf?ua=1; SAGE Meeting slide deck. Rotavirus Vaccines - Session 6. October 2020 (https://www.who.int/immunization/sage/meetings/2020/october/SAGE_Slidedeck_Oct2020-Web.pdf?ua=1).

[2] Report of the WHO Global Advisory Committee on Vaccine Safety, 6-7 December 2017. (http://apps.who.int/iris/bitstream/handle/10665/259874/WER9303.pdf?sequence=1).

[3] Report of the WHO Global Advisory Committee on Vaccine Safety, 4–5 December 2019. (https://apps.who.int/iris/bitstream/handle/10665/330607/WER9504-eng-fre.pdf?ua=1).

[4] Rotavirus vaccines: WHO position paper, July 2021 (https://www.who.int/publications/i/item/weekly-epidemiological-record-vol.-28-2021-96-301-320).

[5] Libster R, McNeal M, Walter EB, Shane AL, Winokur P, Cress G, et al. Safety and Immunogenicity of Sequential Rotavirus Vaccine Schedules. Pediatrics. 2016 Feb;137(2).

[6] Payne DC, Sulemana I, Parashar UD, for the New Vaccine Surveillance Network. Evaluation of Effectiveness of Mixed Rotavirus Vaccine Course for Rotavirus Gastroenteritis. *JAMA Pediatrics.* 2016;170(7):708–710.

[7] Kanungo S, Chatterjee P, Bavdekar A, Murhekar M, Babji S, Garg R, et al. Safety and immunogenicity of the Rotavac and Rotasiil rotavirus vaccines administered in an interchangeable dosing schedule among healthy Indian infants: a multicentre, open-label, randomised, controlled, phase 4, non-inferiority trial. Lancet Infect Dis. 2022 May 16:S1473-3099(22)00161-X.

* For the rotavirus vaccines discussed in this document, the following disclaimer applies: WHO does not approve or endorse the use of specific branded products over others; this publication may not be used for any commercial or promotional purposes.

⚠ RotaTeq™ (Merck) is not available to Gavi-supported countries anymore

Update on Rotavirus vaccines by Strategic Advisory Group of Experts (SAGE) on Immunization – October 2020

- SAGE recommended **all four live oral rotavirus vaccines** (Rotarix™, RotaTeq™, Rotavac™, and Rotasiil™) for use.

- SAGE re-affirmed 2013 recommendations that rotavirus vaccines should be **included in all national immunization programs and be considered a priority**, particularly in countries with high rotavirus gastroenteritis-associated fatality rates, that use of rotavirus vaccines should be part of a comprehensive strategy to control diarrheal diseases, and that **first dose of rotavirus vaccine should be administered as soon as possible after 6 weeks of age**.

- SAGE noted that the considerable rotavirus disease burden during the second year of life **supports catch-up vaccination for children not vaccinated on time**, particularly in high-mortality and crisis contexts, including recent disruptions to immunization services related to the COVID-19 pandemic. Because of the typical age distribution of rotavirus gastroenteritis, **rotavirus vaccination of children >24 months of age is not recommended**.

- Based on SAGE's recommendations, WHO updated its Rotavirus Position Paper in 2021. https://www.who.int/publications/i/item/weekly-epidemiological-record-vol.-28-2021-96-301-320

Vaccine cost (direct)

The cost estimated below includes the cost of devices. The cost of presentations not available in 2026 is not shown in this table.
The country specific waste-adjusted cost will vary depending on the country's own wastage rate for each presentation.
To estimate your country's wastage rate please use the new WHO Vaccines Wastage Rates Calculator

Trade name	**Rotarix**		**Rotavac**		**Rotavac 5D**		**Rotasiil-Liquid**	
Form	Liquid		Liquid (frozen)		Liquid		Liquid	Liquid
Presentation	Plastic tube	Strip of 5 single tubes	Vial		Vial		Strip of 5 single tubes	Vial
Doses in each unit	1		5	10	1	5	1	2
2026 price per dose (USD)	$2.46* €2.05	$2.04* €1.70	$0.70	$0.50	n/a	$1.15	n/a	$0.80
Doses per fully immunised person	2		3					
2026 price per fully immunised person (USD)	$4.92	$4.08	$2.10	$1.50	n/a	$3.45	n/a	$2.40
Indicative wastage rate	4%		5%	6%	4%	5%	4%	9%
2026 waste-adjusted price per fully immunized person (USD)[1]	$5.13	$4.25	$2.21	$1.60	n/a	$3.63	n/a	$2.64
Reference for WHO calculator WHO Vaccines Wastage Rates Calculator	*Rota_liq*		*Rota_liq_frozen*		*Rota_liq*		*Rota_liq*	*Rota_lyo*

To be stopped for Gavi countries in 2026

1 Countries will pay a share of the vaccine price based on their eligibility and transition status. Initial self-financing countries only pay their share for 2 Rota doses even if they use a 3-dose product
*The price in US dollars reflects conversion at a currency exchange rate of 1.20USD/EUR, source: Bloomberg projected foreign exchange rates.
The actual exchange rate that will be utilised to calculate the USD price at the moment of the transaction may vary.

Prices of awarded Rotavirus vaccines (per course)

		2022	2023	2024	2025	2026	2027	2028
Rotarix, 1-d, liquid*	GSK	5.08	4.10	4.72	4.26	*4.92*	n/a	n/a
Rotarix, 1-d, liquid (BFS)*	GSK			4.12	3.72	4.08	4.11	4.11
Rotavac, 5-d, frozen	Bharat	2.55	2.55	2.55	2.10	2.10	2.10	2.10
Rotavac, 10-d, frozen	Bharat	1.80	1.80	1.80	1.50	1.50	1.50	1.50
Rotavac 5D, 1-d, liquid	Bharat	*4.05*	*4.05*	*4.05*	*4.05*	*4.05*	*4.05*	*4.05*
Rotavac 5D, 5-d, liquid	Bharat	*3.45*	*3.45*	*3.45*	*3.45*	*3.45*	*3.45*	*3.45*
Rotasiil, 2-d, lyophilised	SII	2.85	2.85	2.85	2.85	n/a	n/a	n/a
Rotasiil, 2-d, liquid	SII	2.40	2.40	2.40	2.40	2.40	2.40	2.40

(*): Prices of awarded Rotarix are in EUR, the price in US dollars reflects conversion at a currency exchange rate of 1.21USD/EUR in 2027-28, 1.20USD/EUR in 2026, 1.04USD/EUR in 2025, 1.15USD/EUR in 2024, 1.00 USD/EUR in 2023 and 1.24 USD/EUR in 2022. The actual exchange rate that will be utilised to calculate the USD price at the moment of the transaction may vary.
Source: UNICEF SD Rotavirus vaccine price data https://www.unicef.org/supply/media/10276/file/Rota-vaccines-prices-18112021.pdf

Rota manufacturers' pricing commitments for transitioned countries

Manufacturer pricing commitments are 'public announcements' made during the 2015 Gavi replenishment, they are not legally binding.

This information is meant for the convenience and benefit of countries and should not give a false sense of assurance that Gavi is "guaranteeing" prices, and that prices are determined for every single product and country.

Vaccine	Manufacturer	Commitment Duration	Summary of commitment and conditions
Rotarix	GSK	10 years*	Country introduced with Gavi support** Country already using GSK product May procure through UNICEF/PAHO Price freeze (=price paid during last year of Gavi support)
Rotasiil	Serum Institute of India (SII)	-	No price commitment made in 2015, **however**, • Price offered in current UNICEF tender applies to currently Gavi eligible, transitioning and transitioned countries that have already introduced Rotavirus vaccine, provided procurement takes place through UNICEF SD. • *Excluded PAHO, fully self-financing countries that have not introduced RV, and three traditionally self-procuring countries - India, Vietnam & Indonesia*
Rotavac	Bharat Biotech	-	

* From date of transition to fully self-financing, where the country receives no Gavi support

** Gavi support = country and Gavi co-financing

⚠ Middle-Income Countries that were never-Gavi eligible should contact UNICEF or refer to UNICEF vaccine price sheet https://www.unicef.org/supply/media/21756/file/Rota-vaccines-prices-14052024.pdf.pdf for more information about prices.

Rotavirus vaccine prices for MICs in UNICEF tender

Former Gavi-eligible countries that have not introduced Rotavirus vaccine and Middle-Income Countries that were never-Gavi eligible should contact UNICEF or refer to UNICEF vaccine price sheet https://www.unicef.org/supply/media/21756/file/Rota-vaccines-prices-14052024.pdf.pdf for more information about prices.

Trade name *(manufacturer)*	Vaccine	2025	2026	2027	2028
Rotarix *(GSK)*	RV1, 1 dose/plastic tube, liquid	$9.00-18.00 [a] € 5.16 [b]	€ 5.16 [b]	€ 5.16 [b]	€ 5.16 [b]
	RV1, 1 dose/plastic tube, liquid (multi-monodose presentation with 5 single tubes connected by a bar)	€ 5.16[b]	€ 5.16[b]	€ 5.16[b]	€ 5.16[b]
Rotavac *(Bharat)*	RV1, 5 doses/vial, frozen	$ 2.00 [c]	$ 2.00 [c]	$ 2.00 [c]	$ 2.00 [c]
Rotavac 5D *(Bharat)*	RV1, 1 dose/vial, liquid	$ 4.50 [a]			
	RV1, 5 dose/vial, liquid	$ 3.75 [a]			
Rotasiil-Liquid *(SII)*	RV5, 2 doses/vial, liquid	$ 1.49 [a] $ 0.80 [d]	$ 0.80 [d]	$ 0.80 [d]	$ 0.80 [d]
	RV5, 1 dose/plastic tube, liquid (strip of 5 tubes)	$ 2.50 [a]			

(a): Upper Middle-Income countries (UMIC)
(b): Lower Middle-Income countries (LMIC) with GNI per capita above Gavi eligibility threshold
(c): Price applies to non-Gavi eligible Middle-Income countries (MICs)
(d): SII applies price parity to both Gavi-eligible countries and non-Gavi eligible LMICs
Prices in grey indicate unavailable supply

Source: UNICEF vaccine price sheet https://www.unicef.org/supply/media/21756/file/Rota-vaccines-prices-14052024.pdf.pdf

Vaccine Cost Calculators to inform decision-making

All immunization programs face the challenge of sustainability. Optimizing the costs of one vaccine program could potentially free up resources for another. Ensuring a careful comparison of costs before selecting the best vaccine option for introduction or switch is a critical factor in country decision-making.

PATH's Vaccine Cost Calculators are simple, Excel-based tools for assessing and comparing costs of certain vaccination programs over a period of five years with each vaccine product available in the Gavi market. Users input a limited set of local data to compare products and estimate vaccination program costs, exploring up to four vaccine options at once.

- Rotavirus Vaccine Cost Calculator in English, French, and Spanish https://www.path.org/resources/rotavirus-vaccine-cost-calculator/
- Pneumococcal Conjugate Vaccine Cost Calculator in English, French, and Spanish https://www.path.org/resources/pneumococcal-conjugate-vaccine-cost-calculator/
- Human Papillomavirus Vaccine Cost Calculator in English, French, and Spanish https://www.path.org/resources/hpv-vaccine-cost-calculator/

A user guide is included within each calculator with detailed instructions on how to use the tool and interpret the results.

For questions or support regarding the Vaccine Cost Calculators, contact PATH's Health Economics and Outcomes Research team: HEOR@path.org.

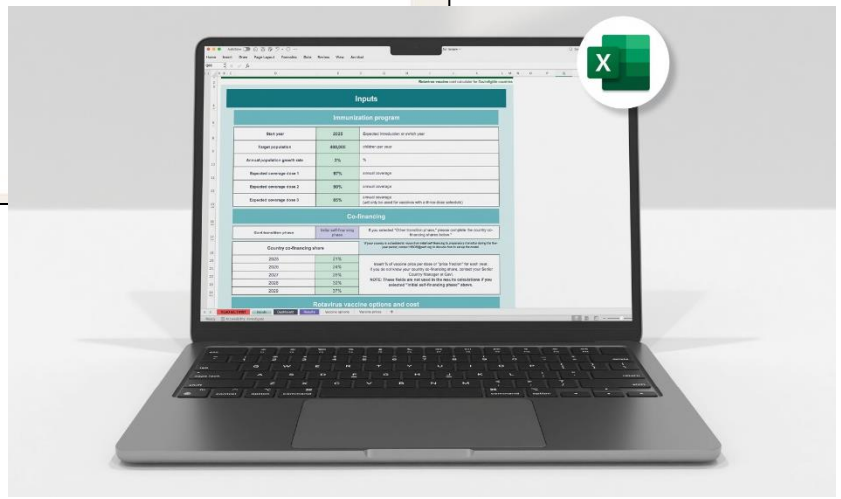


Rotavirus Vaccine Cost Calculator

A simple, Excel-based tool that generates cost information for rotavirus vaccine programs, comparing up to four different vaccine options at once. Available to download in English, French, and Spanish: https://www.path.org/resources/rotavirus-vaccine-cost-calculator/

- Country-specific tool that requires minimal data entry
- Can be used by any country currently receiving Gavi support, in any transition phase
- Provides results on cost to country only and cost to country and Gavi
- Allows direct cost comparison of products and helps with identifying the least costly option
- Leverages up-to-date Gavi detailed product profiles data (tool last updated September 2024)





Vaccine cost-effectiveness (1/2)

- "Irrespective of the vaccine used, vaccination against rotavirus disease was found to be cost effective." (WHO position paper on Rotavirus vaccines)
    - Background document on rotavirus epidemiology and rotavirus vaccines, including economic evidence for use and programmatic considerations for vaccine implementation. October 2020 SAGE Meeting, Rotavirus Vaccines – Session 6. Background documents; https://www.who.int/immunization/sage/meetings/2020/october/SAGE_eYB_Oct2020final.pdf?ua=1,
- A 2020 cost–benefit analysis done in eight sub–Saharan African countries not using Rota vaccines, found that the benefits of introducing the rotavirus vaccine outweighed the costs in all eight countries https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(21)00220-5/fulltext
- A 2019 reanalysis of the cost-effectiveness of rotavirus vaccination in 73 Gavi countries found that "rotavirus vaccination continues to represent good value for money across most Gavi countries despite lower rotavirus mortality estimates and more stringent willingness-to-pay thresholds." https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(19)30439-5/fulltext
    - Over the period 2018–2027, rotavirus vaccination has the potential to prevent nearly **600,000 deaths** in Gavi countries and save approximately **$484 million from the government perspective** and **$878 million from the societal perspective**.
- An analysis demonstrates that the use of **ROTARIX, ROTAVAC, *or* ROTASIIL** would be highly cost-effective relative to no rotavirus vaccination in Bangladesh, Ghana, and Malawi. https://www.sciencedirect.com/science/article/pii/S0264410X18314531?via%3Dihub
    - While ROTARIX was found to be the least costly and most cost-effective product in the three countries, differences were small and subject to change with minor adjustments to uncertain input variables (esp. *incremental health system cost per dose*).
    - A further analysis examining non-Gavi countries paying higher vaccine prices would likely highlight additional economic benefits of the new vaccines: https://www.sciencedirect.com/science/article/pii/S0264410X19316561
    - Links to the original analyses that this reanalysis is based on:
        - Bangladesh: https://www.ncbi.nlm.nih.gov/pubmed/28623028
        - Ghana: https://www.ncbi.nlm.nih.gov/pubmed/29223486
        - Malawi: https://www.ncbi.nlm.nih.gov/pubmed/27059360

Vaccine cost-effectiveness (2/2)

- Country-specific analyses:
  - Niger (ROTARIX/ROTAVAC/ROTASIIL): https://bmjopen.bmj.com/content/12/10/e061673.full
  - Mozambique (ROTARIX/ROTAVAC/ROTASIIL): https://www.sciencedirect.com/science/article/pii/S0264410X22009409
  - Nigeria (using "general vaccine" averaging ROTARIX, ROTASIIL, ROTAVAC, ROTAVAC 5D, and ROTASIIL LQ): https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0232941
  - Mongolia (ROTARIX/ROTAVAC/RotaTeq): https://www.sciencedirect.com/science/article/pii/S0264410X19300258
  - Palestine (switch from ROTARIX to ROTAVAC): https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0228506
  - Ghana (switch from ROTARIX to ROTAVAC): https://www.path.org/resources/switch-rotarix-rotavac-ghana-answers-four-key-questions/
  - India (ROTAVAC): https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0187446
  - Afghanistan (ROTARIX/RotaTeq): https://doi.org/10.1016/j.vaccine.2017.10.058
  - Pakistan (ROTARIX/RotaTeq): https://www.sciencedirect.com/science/article/pii/S0264410X18301725
  - Senegal (ROTARIX/RotaTeq): https://www.ncbi.nlm.nih.gov/pubmed/25919151
  - Kenya and Uganda (ROTARIX/RotaTeq): https://www.ncbi.nlm.nih.gov/pubmed/25919149
- Other relevant analyses
  - Multi dose vials cost-effectiveness (Thailand, measles): https://www.ncbi.nlm.nih.gov/pubmed/21439313
  - Multi dose vials cost-effectiveness (model across several antigens): https://www.ncbi.nlm.nih.gov/pubmed/20566395

Storage and transport

(shelf life, VVM, volume per fully immunised person)

To be stopped for Gavi countries in 2026

Trade name	Rotarix		Rotavac		Rotavac 5D		Rotasiil-Liquid	
Presentation	1 dose/plastic tube, liquid	1 dose/plastic tube, liquid in strip of tubes	5 doses/vial, frozen	10 doses/vial, frozen	1 dose/vial, liquid	5 doses/vial, liquid	1 dose/plastic tube, liquid (strip of 5 tubes)	2 dose/vial, liquid
Shelf-life[1]	24 months at 2 - 8 °C		24 months at -20 °C, 6 months at 2-8 °C post thaw		24 months at 2-8°C		24 months at 2-8 °C	24 months at 2-8 °C
Cold chain volume per fully immunised person (cm^3)[1]	In cartons of 50 doses: 34.2 cm^3	In cartons of 50 doses: 23.6 cm^3	12.6 cm^3	9.6 cm^3	43.35 cm^3	12.6 cm^3	60.2 cm^3	42.9 cm^3
Wastage adjusted cold chain volume per fully immunised person (cm^3)[1 2]	35.6 cm^3	24.6 cm^3	13.3 cm^3	10.2 cm^3	45.2 cm^3	13.3 cm^3	62.7 cm^3	47.1 cm^3
Vaccine vial monitor type[1]	Type 7	Type 7	Type 2	Type 2	Type 7	Type 7	Type 7	Type 7
Handling open vials[1]	n/a	n/a	Opened vials may be kept for use in subsequent immunization sessions (up to a maximum of 28 days) provided the conditions outlined in the WHO Policy Statement		n/a	Opened vials may be kept for use in subsequent immunization sessions (up to a maximum of 28 days) provided the conditions outlined in the WHO Policy Statement	n/a	TBD
Remarks WHO[1]	n/a	n/a	Can be stored at 2-8°C until discard point of VVM2. (at 5°C, VVM2 discard point is 225 days). For delivery to PAHO, without VVM, maximum storage of 6 months at 2-8°C		n/a	n/a	n/a	TBD
Notes	n/a	n/a	ROTAVAC® can be subjected to 6 freeze-thaw cycles		n/a	n/a	n/a	TBD

1 Source: WHO PQ webpage: WHO updates these webpages as new information on products becomes available. Please refer to these pages for the most up-to-date information. For presentations not yet WHO prequalified, data is based on discussions with manufacturers and partners in 2022.
2 Source: Review of WHO vaccine wastage rate tool, 2021

Cold Chain implications for Rotavac Frozen (Gavi Analysis)

	Central level	Sub-national level (region/ province/store)	District/ health zone/ LGA stores	Service delivery level
Storage	Store at negative temperatures (freezer or freezer room)	Store at negative temperatures (freezer or freezer room)	If frozen: store in freezers If liquid (thawed): store in refrigerators	Store in refrigerators
	If freezer capacity is insufficient: • countries could move lyophilized vaccines from the freezer rooms to the cold rooms (refrigerators) to make space • countries may procure a couple of freezers if the quantity is not superior to 5 (for which a small freezer room may be more efficient)	• All countries have freezers that are used for storing polio vaccines and/or ice packs • Countries may decide to procure a small freezer room which could be used for storing this vaccine and others	• Storing in refrigerators is fine if the district collects vaccines on a monthly basis	
Distribution to the next level	Transport in negative temperatures • Transport in cold boxes with fully frozen ice packs (same for refrigerated truck (2-8C) or normal truck)	Different options based upon country stock turnover rates: • Transport at negative temperatures (cold boxes with fully frozen ice packs) (encouraged) • Transport refrigerated as liquid (thawed), which will kick start the 6 months potency threshold	Transport refrigerated as liquid (thawed)	
Gavi support (as an example)*	• Cold boxes • Freezers	• Cold boxes • Small freezer room	• Freezers	• Refrigerators (optional)

*countries may request support to procure the items in the budget of either VIG / switch grant / CCEOP/ HSS flexibilities

Programmatic administration considerations

To be stopped for Gavi countries in 2026

	Rotarix (plastic tube)	**Rotarix (in strip of 5 single tubes)**	**Rotavac (in 5 or 10 dose vials)**	**Rotavac 5D (1 dose vials)**	**Rotavac 5D (5 dose vials)**	**Rotasiil-Liquid (in 2 dose vials)**	**Rotasiil-Liquid (in strip of 5 single tubes)**
Route	Oral	Oral	Oral	Oral	Oral	Oral	Oral
Form	Liquid	Liquid	Liquid (frozen)	Liquid	Liquid	Liquid	Liquid
Doses per fully immunised child	2	2	3	3	3	3	3
Dose quantity	1.5 ml	1.5 ml	0.5 ml (5 drops)	0.5ml (5 drops)	0.5ml (5 drops)	TBD	2 ml
Devices per unit	1	1 (multi-monodose presentation with 5 single tubes connected by a bar)	2 (vial and dropper)	2 (vial and dropper)	2 (vial and dropper)	4 (vaccine vial, adapter, 2 syringes for oral administration)	1 (5 single-dose tubes attached by a strip)
Preparation steps (see WHO training slides for details)	1	1	4	2	2	2	1
Need for dose measurement	No	No	Yes	No	Yes	TBD	No

Key references

WHO Prequalification information

WHO Rotavirus Position Paper (July 2021)

UNICEF rotavirus market note (June 2020)

Gavi Detailed Product Profiles

WHO training materials: https://www.who.int/teams/immunization-vaccines-and-biologicals/diseases/rotavirus

WHO Rotavirus Position Paper (2021) https://www.who.int/publications/i/item/weekly-epidemiological-record-vol.-28-2021-96-301-320

Key contacts for questions

Area of expertise	Agency	Person to contact
Vaccine clinical profile	WHO	• Your Country's officer • Alejandro Ramirez Gonzalez, ramirezgonzaleza@who.int • Maricel Castro, castroma@who.int
Country-led Assessment for Prioritization in Immunization (CAPACITI)	WHO	• Your Country's officer • Raymond Hutubessy, hutubessyr@who.int
Vaccine wastage rates	WHO	• Souleymane Kone, kones@who.int
Availability, Shipment, Prices	UNICEF SD	• Your Country's officer • Fahmida Omar, fomar@unicef.org • Oluwaseun Ayanniyi oayanniyi@unicef.org
Eligibility, Price commitments	Gavi Secretariat	• Your Country's Senior Country Manager • Micheal Besong, Programme Manager, PCV and Rotavirus vaccines, mbesong@gavi.org • Elie Akiki, Sr Manager Market Shaping eakiki@gavi.org