

The Impact of Rotavirus Vaccine Introduction in Nigeria

The rollout of rotavirus vaccine in Nigeria has the potential to significantly decrease global disease morbidity and mortality in children under 5.

Diarrheal diseases are one of the leading killers of children worldwide, **claiming the lives of an estimated 484,000 children under five each year** [1]. Though many bacteria and viruses can cause diarrhea, rotavirus may be responsible for up to 38% of diarrhea-related hospitalizations in children under five in countries where the rotavirus vaccine has not yet been introduced [2].



The burden of rotavirus is concentrated in low- and middle-income countries, with a 2013 study reporting that nearly half of all global rotavirus deaths occurred in just four countries: India, Nigeria, Pakistan, and Democratic Republic of Congo [3]. **Because rotavirus is so highly transmissible, preventing rotavirus infection with the use of rotavirus vaccines is more effective than treating symptoms after infection.**

In August 2022, Nigeria introduced the rotavirus vaccine into its national immunization program. This measure will protect millions of vulnerable children and lower the global burden of rotavirus disease.

"Nigeria's rotavirus vaccine introduction has been a long-awaited event, making the inaugural rollout a milestone moment for Nigeria as well as the rest of the world united in efforts to reduce the mortality and morbidity of diarrheal diseases caused by rotavirus."

– Mathu Santosham, ROTA Council Chair

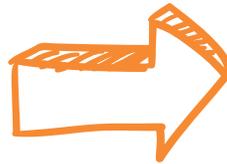
Due to the country's high disease burden, vaccine introduction in Nigeria has the potential to avert a significant number of rotavirus hospitalizations and deaths. The mortality rate for rotavirus in children under 5 in Nigeria is estimated to be 136 per 100,000, accounting for 30% of global rotavirus deaths in children under 5 [4]. **Introducing the rotavirus vaccine into Nigeria's national immunization program has the potential to protect 6.9 million children from this disease each year** [5], **and it could potentially save the lives of nearly 100,000 children over the next decade** [6].

Relieving Pressure on Health Systems

Rotavirus vaccine prevents severe illnesses that require children to be hospitalized. Reducing hospitalizations from preventable illnesses may be especially important for health system capacity at this time, as delivery of many health services in Nigeria has been disrupted by the COVID-19 pandemic [7].

- A 2018 study reported that 46% of children <5 in Nigeria hospitalized for acute gastroenteritis tested positive for rotavirus [8].
- One review found that hospitalizations due to rotavirus-related acute gastroenteritis (AGE) among children <5 fell by a median of 67% in the first 10 years after the rotavirus vaccine was licensed [9].
- In Rwanda, hospital admissions due to rotavirus among children <5 decreased up to 70% in the two years after the vaccine was introduced [10].
- In Botswana, gastroenteritis-related hospitalizations of children <5 decreased by 23% in the 2 years following rotavirus vaccine introduction, with a larger decline (43%) during the rotavirus season [11].
- A review of the vaccine's impact in the United States found that in the first 11 years of its use, rotavirus hospitalizations declined by an average of 80% among children <5 [12]. Rotavirus-related emergency visits declined by a median rate of 57%.

*Rotavirus vaccine
introduction*



*Reduced pressure on
health system*

Rotavirus Vaccine is Cost-Effective & Reduces Financial Burden

Like other immunizations, **the rotavirus vaccine is cost-effective and provides a positive return on investment for both governments and families.**

- In Nigeria, introduction of the rotavirus vaccine is estimated to save the government approximately US\$28.5M in healthcare costs over a 10-year period [13].
- Across 195 countries, rotavirus vaccination was found to be cost-effective, particularly in LMICs with the highest disease burden [14].
- Studies in the United States estimated that rotavirus vaccine introduction produced up to US\$231M in average annual savings in direct healthcare costs from rotavirus and acute gastroenteritis [12].
- An economic evaluation of rotavirus vaccination in Italy determined that the cost of introducing the vaccine would be more than offset by savings from prevention of disease cases and hospitalizations within as early as two years [15].

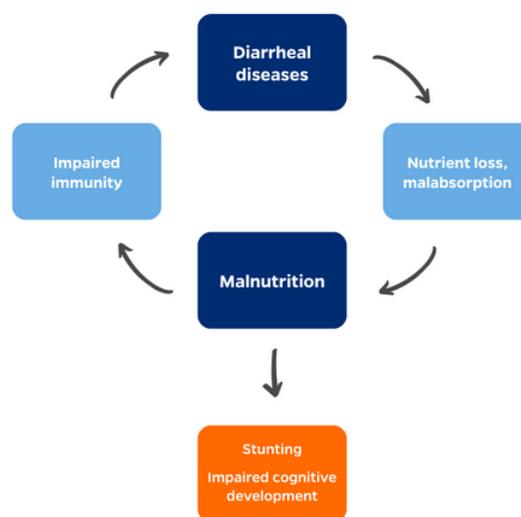
Families of those treated for diarrheal diseases face significant out-of-pocket expenditures. Many of these costs are considered catastrophic, meaning that they exceed 10% of the household's monthly income. In addition to out-of-pocket medical costs for rotavirus-related illnesses, families who miss work to care for a sick child also face indirect costs due to lost wages. **By reducing disease burden, the rotavirus vaccine protects vulnerable families from these catastrophic expenditures.**

- In Malaysia, families of those treated for AGE pay an average of US\$101 in out-of-pocket costs [16]. These expenses disproportionately affect families in the lowest income quartile.
- Poor families in Bangladesh pay an average of US\$105.2 in direct and indirect costs for rotavirus-related diseases [17]. This represents nearly 1/3 of total monthly household income.
- On average, families in Vietnam lost >9 working days to care for a child with rotavirus [18].

Reducing Rotavirus Infections Promotes Healthy Development

Enteric infections like rotavirus can have long-term effects on a child's development. Diarrheal illnesses often lead to malnutrition, which can cause stunting and impact cognitive development—and which also makes children more susceptible to subsequent infections.

Rotavirus vaccine can break this vicious cycle by preventing the malnutrition that accompanies diarrheal diseases to promote healthy growth and development. These vaccines are especially beneficial for children living in low-resource and marginalized communities.



- One analysis revealed that for every 5 episodes of diarrhea that a child experiences from 0–24 months, they are 13% more likely to be stunted at age 2 [19].
- A study of children in Jamaica found that at age 11 or 12, children who had been stunted by age 2 performed significantly worse than non-stunted children on reading, spelling, and arithmetic tests [20].
- An analysis of 8,000 children in five LMICs estimated that children who were stunted by age 2 completed an average of approximately one year less of schooling [21].
- A study of children in Ghana estimated that more than 1 in 4 cases of ALRI were attributable to recent diarrheal illnesses [22]. Preventing diarrheal illnesses can also prevent a large number of pneumonia cases.

Additional information and resources available at <https://immunizationevidence.org/>

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