



Nigeria Centre for Disease Control and Prevention  
Protecting the health of Nigerians

# Impact of Rotavirus Vaccine on Childhood Rotavirus Hospitalisations in Nigeria: Evidence from the First Two Years After Rotavirus Vaccine Introduction.

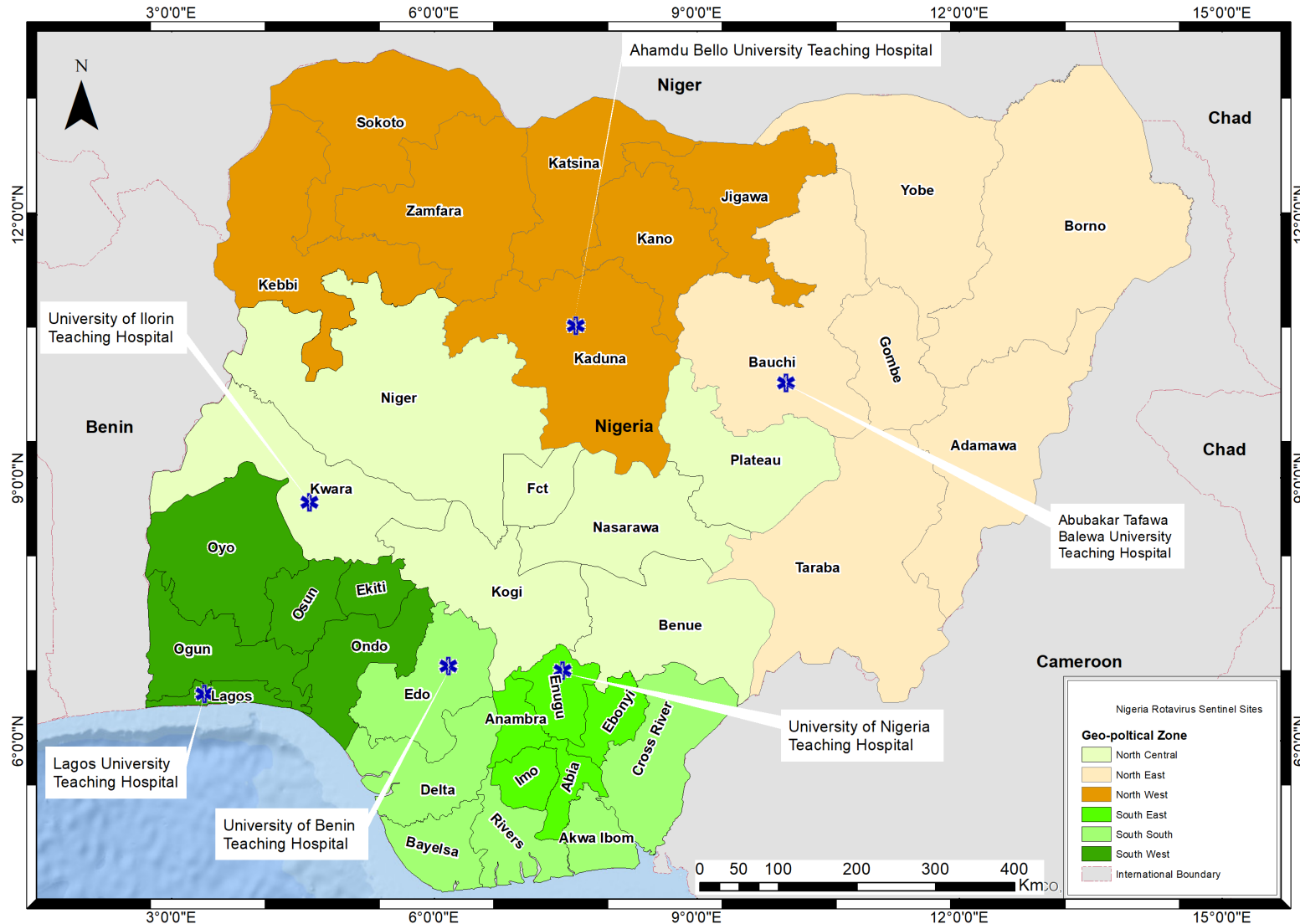
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# Background

- The sentinel surveillance sites were established in Nigeria in 2009 and 2011 for Pediatric Bacterial Meningitis (PBM) and Rotavirus (RV) Diarrhea, respectively, in line with WHO guidelines
- African Rotavirus Surveillance Network. In Nigeria, six sentinel sites were initiated for RV surveillance by the year 2011, headed by site Coordinators
- These sites, located in University Teaching Hospitals in six geopolitical zones, aim to reduce the burden of these diseases
- WHO AFRO/WCO, and NCDC support sentinel sites in conducting Rotavirus vaccine and intussusception impact monitoring.
- REDCap enables real-time, secure, streamlined data collection and management.
- In 2013, >30,000 rotavirus deaths occurred in Nigeria. 14% of all global rotavirus child deaths.
- The Rota vaccine (Rotavac) was introduced in Nigeria in August 2022 across all states
- Study assessed the early impact of Rotavac on childhood hospitalisations.

# Rotavirus Sentinel Sites In Nigeria



# Objectives

- Assess burden of rotavirus-associated hospitalisations in Nigeria.
- Compare prevalence before and after vaccine introduction.
- Evaluate effects by age-group and severity (severe dehydration, death).

# Methods

- Sentinel surveillance among children <5 years with acute gastroenteritis (AGE).
- Conducted in 6 hospitals across Nigeria (2012–2024).
- Data: demographics, clinical info, stool specimens.
- Rotavirus testing via enzyme immunoassays.
- Compared pre-vaccine (2012–2021) vs post-vaccine (2023–2024)...

## Rotavirus positivity among children aged <5 years visiting hospitals for acute watery diarrhea before (2012–2021) and after (2023–2025) rotavirus vaccine introduction, by **age group**, at **six sentinel sites** across Nigeria

Age group	% of diarrhea-related hospital visits that were rotavirus positive		Rate reduction % (95% CI)	P	Adjusted rate reduction % (95% CI) <sup>c</sup>	P
	Pre-vaccine (2012–2021) <sup>a</sup>	Post-vaccine (2023–2025) <sup>b</sup>				
0–59 mo	2499/6589 (38)	241/1321 (18)	52 (45–58)	<.0001	47 (39–53)	<.0001
0–11 mo	1635/3889 (42)	141/721 (20)	53 (45–61)	<.0001	50 (40–58)	<.0001
12–23 mo	697/2023 (34)	74/415 (18)	48 (34–59)	<.0001	43 (27–55)	<.0001
24–59 mo	167/677 (25)	26/185 (14)	43 (14–62)	0.0076	38 (7–59)	0.0221

# Rotavirus positivity among children aged <5 years visiting hospitals for acute watery diarrhea before (2012–2021) and after (2023–2025) rotavirus vaccine introduction, by **year** and **hospital**, at **six sentinel sites** across Nigeria

Year and Hospital	Rotavirus positive/total enrolled (%)	Rate reduction % (95% CI)	P	Adjusted rate reduction % (95% CI)	P
2012	137/315 (43)	-		-	
2013	204/484 (42)	-		-	
2014	233/591 (39)	-		-	
2015	290/605 (48)	-		-	
2016	234/593 (39)	-		-	
2017	225/608 (37)	-		-	
2018	346/892 (39)	-		-	
2019	245/912 (27)	-		-	
2020	360/929 (39)	-		-	
2021	225/660 (34)	-		-	
2012–2021	2499/6589 (38)	ref		ref	
2023	111/517 (21)	43 (32–53)	<.0001	39 (26–50)	<.0001
2024	85/546 (16)	59 (49–67)	<.0001	52 (41–62)	<.0001
2025	45/258 (17)	54 (38–66)	<.0001	50 (32–63)	<.0001
<b>ABUTH</b>					
2017–2021	213/751 (28)	ref		-	
2023–2025	62/283 (22)	23 (-2–42)	0.0736	-	
<b>ATBUTH</b>					
2017–2021	90/534 (17)	ref		-	
2023–2025	28/168 (17)	1 (-51–35)	0.9588	-	
<b>UITH</b>					
2012–2021	402/1305 (31)	ref		-	
2023–2025	35/341 (10)	67 (53–76)	<.0001	-	
<b>UNTH</b>					
2012–2021	1794/3999 (45)	ref		-	
2023–2025	109/450 (24)	46 (34–56)	<.0001	-	



## Rotavirus positivity among children aged <5 years admitted for acute watery diarrhea, who presented with severe dehydration or died, before (2012–2021) and after (2023–2025) rotavirus vaccine introduction, at **six sentinel sites** across Nigeria

% of diarrhea hospitalizations presenting with severe dehydration or resulting in death that were rotavirus positive		Rate reduction % (95% CI)	P	Adjusted rate reduction % (95% CI) <sup>c</sup>	P
Pre-vaccine (2012–2021) <sup>a</sup>	Post-vaccine (2023–2025) <sup>b</sup>				
457/1095 (42)	37/229 (16)	61 (46–72)	<.0001	65 (50–75)	<.0001

**Note:** *No rotavirus-positive diarrhea deaths have been identified post-vaccine introduction.*

# Rotavirus positivity among children aged <5 years visiting hospitals for acute watery diarrhea before (2017–2021) and after (2023–2025) rotavirus vaccine introduction, by age group, at **four sentinel sites**<sup>a</sup> with continuous surveillance pre- and post-vaccine in Nigeria

Age group	% of diarrhea-related hospital visits that were rotavirus positive		Rate reduction % (95% CI)	P	Adjusted rate reduction % (95% CI) <sup>c</sup>	P
	Pre-vaccine (2017–2021)	Post-vaccine (2023–2025) <sup>b</sup>				
0–59 mo	1401/4001 (35)	234/1242 (19)	46 (38–53)	<.0001	45 (37–52)	<.0001
0–11 mo	892/2265 (39)	139/688 (20)	49 (39–57)	<.0001	47 (37–56)	<.0001
12–23 mo	412/1260 (33)	70/391 (18)	45 (29–58)	<.0001	44 (28–57)	<.0001
24–59 mo	97/476 (20)	25/163 (15)	25 (-17–52)	0.2052	31 (-8–55)	0.1038



## Rotavirus positivity among children aged <5 years visiting hospitals for acute watery diarrhea before (2017–2021) and after (2023–2025) rotavirus vaccine introduction, by year, at **four sentinel sites**<sup>a</sup> with continuous surveillance pre- and post-vaccine in Nigeria

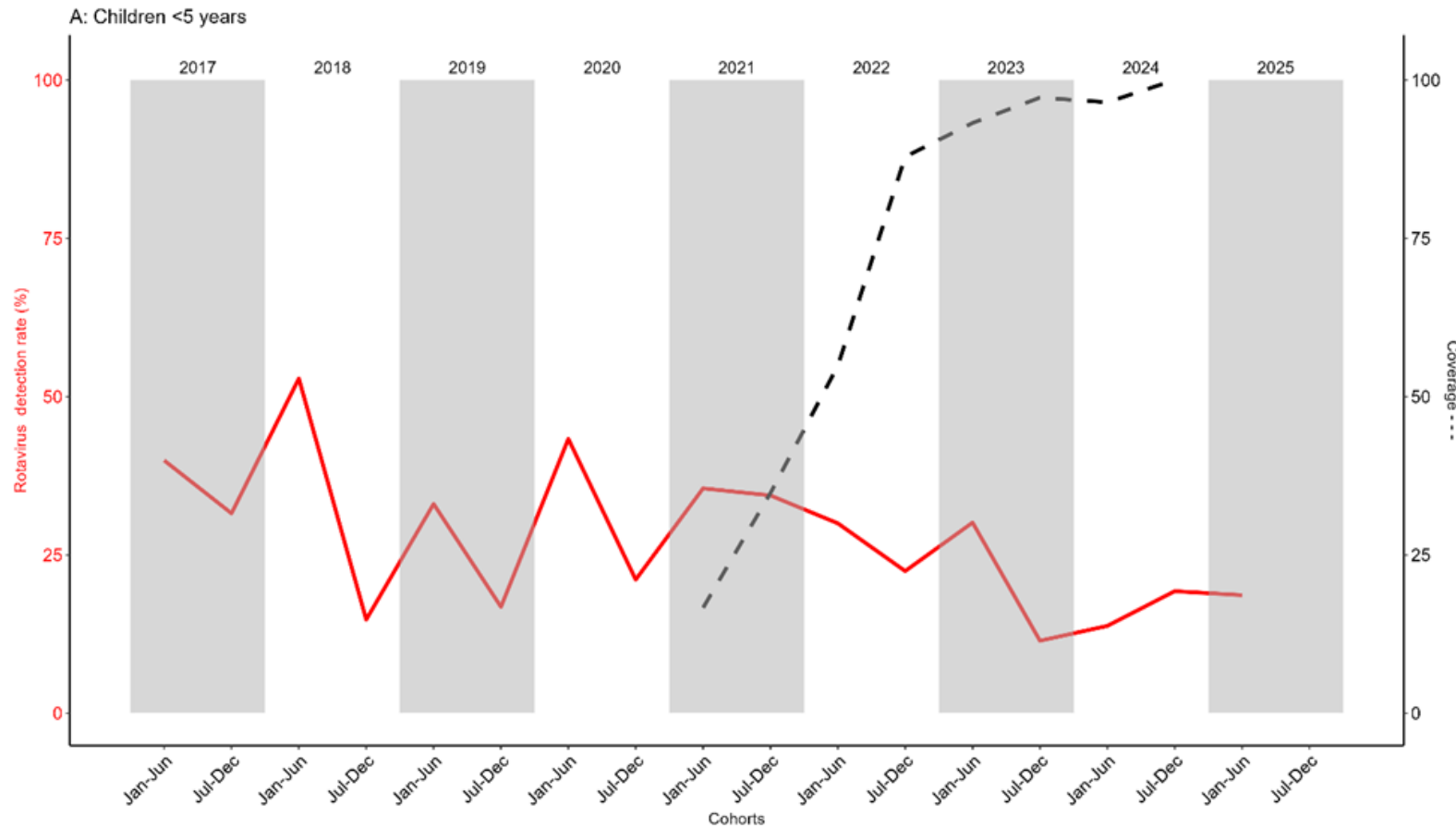
Year <sup>b</sup>	Rotavirus positive/total enrolled (%)	Rate reduction % (95% CI)	P	Adjusted rate reduction % (95% CI) <sup>c</sup>	P
2017	225/608 (37)	-		-	
2018	346/892 (39)	-		-	
2019	245/912 (27)	-		-	
2020	360/929 (39)	-		-	
2021	225/660 (34)	-		-	
2017–2021	1401/4001 (35)	ref		ref	
2023	107/493 (22)	38 (25–49)	<.0001	38 (24–49)	<.0001
2024	84/521 (16)	54 (43–63)	<.0001	51 (38–60)	<.0001
2025	43/228 (19)	46 (27–60)	<.0001	46 (27–60)	<.0001

Rotavirus positivity among children aged <5 years admitted for acute watery diarrhea, who presented with severe dehydration or died, before (2012–2021) and after (2023–2025) rotavirus vaccine introduction, at **four sentinel sites**<sup>a</sup> with continuous surveillance pre- and post-vaccine in Nigeria

% of diarrhea hospitalizations presenting with severe dehydration or resulting in death that were rotavirus positive		Rate reduction % (95% CI)	P	Adjusted rate reduction % (95% CI) <sup>c</sup>	P
Pre-vaccine (2012–2021) <sup>a</sup>	Post-vaccine (2023–2025) <sup>b</sup>				
229/543 (42)	37/204 (18)	57 (39–70)	<.0001	59 (42–71)	<.0001

**Note:** *No rotavirus-positive diarrhea deaths have been identified post-vaccine introduction.*

# Rotavirus Positivity and Vaccine Coverage Trends.



## Results – Yearly Trend

- 2023: 43% reduction in rotavirus positivity.
- 2024: 59% reduction.
- 2025: 54% reduction.
- Progressive improvements post-vaccine introduction.

## Results – Severe Outcomes

- Severe dehydration/death cases:
  - Pre-vaccine: 42% positivity (457/1,095).
  - Post-vaccine: 16% positivity (37/229).
  - Reduction: 61% (95% CI: 46%–72%,  $P < .0001$ ).
- Rotavirus deaths: 23 (pre-vaccine) vs 0 (post-vaccine).

# Conclusion

- Rotavac introduction led to >50% decline in severe outcomes.
- Substantial early public health benefits.
- No rotavirus deaths recorded post-introduction.
- Supports continued vaccine rollout and monitoring.

# Sentinel Sites Successes/Strengths

- Improved data quality in all sites.
- Multidisciplinary team membership & team Spirit
- Effective communication among sites
- Use of sub-sites in sentinel networks
- Supportive supervision in sites

# Acknowledgement



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**Thank You**

