

Assessing the Impact of Ghana's Rotavac® Vaccine Switch on Childhood Rotavirus Incidence and Hospitalizations

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**UNIVERSITY
OF GHANA**



NMIMR

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Memorial Institute for Medical Research

University of Ghana

Ghana's Leadership in Sustainable Rotavirus

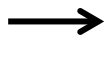
- 2009: WHO recommended universal rotavirus vaccination for infants in all countries
- 2012: Ghana introduces ROTARIX (2-dose) with GAVI support
- **Results:** Sustained high coverage (>90% since 2014)



Ghana has maintained one of Africa's most successful RV vaccination programs

Pioneering a Switch for Sustainability and Choice

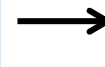
[2012 to
2020]



**Rotarix
(2-dose)**



[2020+]



**Rotavac[®]
(3-dose)**

Why Switch?

- Cost-effectiveness
- Supply diversification
- Better schedule alignment

Ghana: 2nd African country & 1st GAVI country to switch to Rotavac[®]

Evaluating the Impact of the Rotavac[®] Switch

Effectiveness:

- Assess impact on rotavirus diarrhea hospitalizations
- Evaluate all-cause diarrhea morbidity

Safety:

- Monitor safety in routine public health use
- Collaborative surveillance

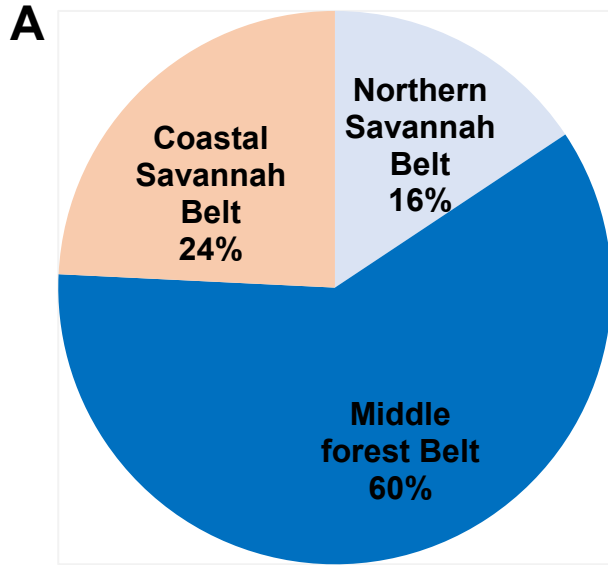
Collaborators: NMIMR, Ghana MoH, CDC, WHO

Study Method

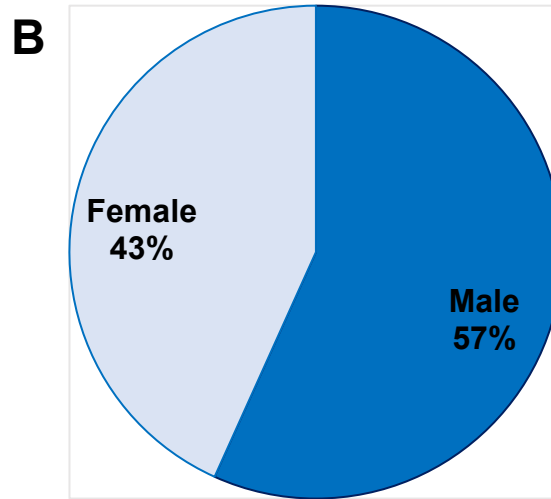
- Case – patients:
 - Children hospitalized with diarrhea, enrolled through the active surveillance platform
 - age - eligible to have received rotavirus vaccine
 - tested positive for rotavirus
- Control-patients:
 - children hospitalized with diarrhea, enrolled in the surveillance program
 - age - eligible to have received rotavirus vaccine
 - tested negative for rotavirus
- Data on immunization history and hospitalization details were extracted from patient immunization cards and hospital records.

Hospitalizations of Children <5 years with severe diarrhea : 2021 to 2024

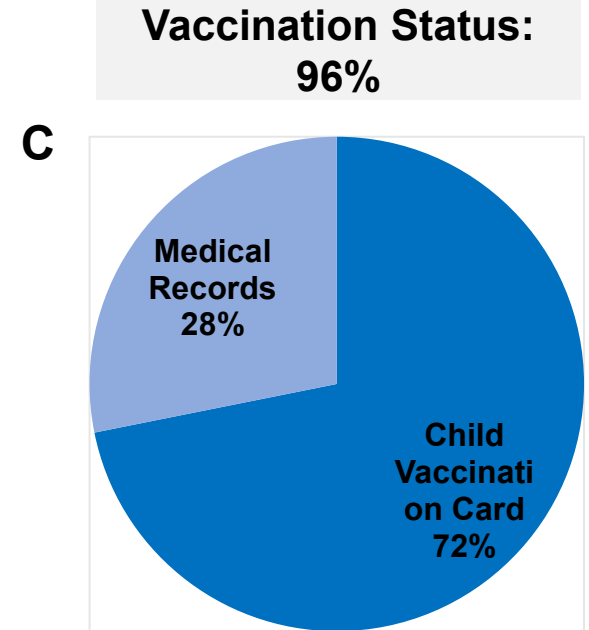
N=1301



Enrolled cases across the Ecological Belts



Gender distribution



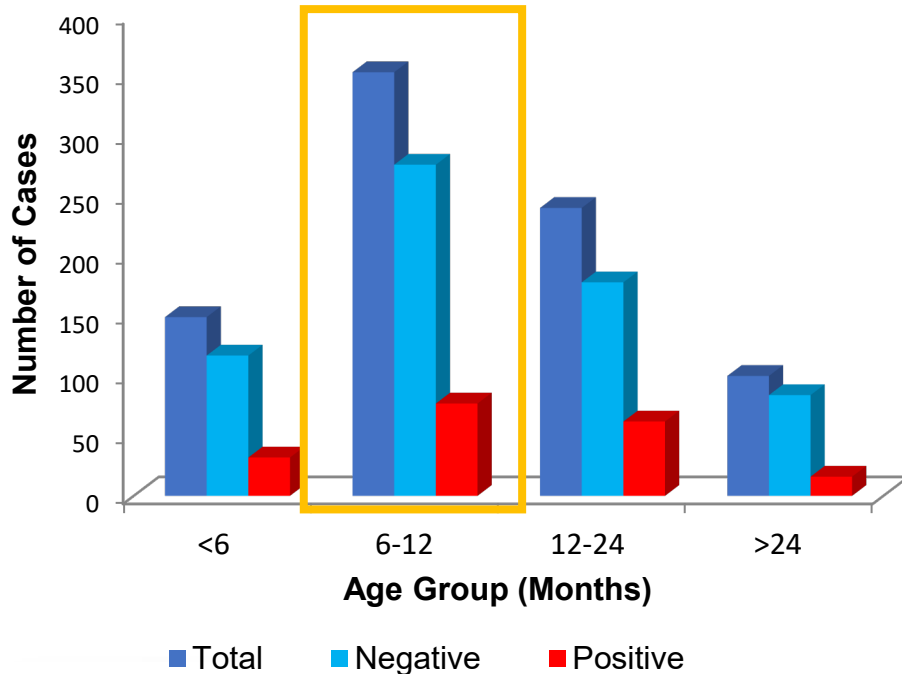
Verification source of vaccination

Significant Geographic Disparities in Rotavirus Risk

	Total Tested	RV Pos (%)	OR (95% CI)	P-Value
All samples	842	187 (22.2)	-	
Year				0.05
2021	33	5 (15.2)	Ref	
2022	222	56 (25.2)	1.89 (0.70-5.13)	0.21
2023	248	43 (17.3)	1.17 (0.43-3.21)	0.75
2024	295	68 (23.1)	1.68 (0.62-4.51)	0.31
2025	44	15 (34.1)	2.90 (0.93-9.03)	0.08
Study Site				
Southern Belt	284	31 (10.9)	Ref	
Middle Belt	364	99 (27.2)	3.05 (1.97-4.73)	<0.001*
Northern Belt	194	57 (29.4)	3.40 (2.09-5.51)	<0.001*

Children from the Middle and Northern belts had a significantly higher risk of a RV infection compared to children from the Southern belt

Highest Rotavirus burden in 12-24 months age group



$\chi^2(3) = 4.13, p = 0.247$

Vaccination Status and Rotavirus Infection

	Total Studied	Vaccinated		
All Children	840	808	96.2	
	Total	Neg	Pos	% Pos
Not Vaccinated	32	28	4	12.5
Vaccinated	808	626	182	22.5

$\chi^2 = 1.79, p = 0.180$

High vaccination coverage: 96.2% of children were vaccinated. Most cases were vaccinated because most children are vaccinated

Clinical Profile of Hospitalized Children

Clinical Profile	Total cases	RV Pos (%)	OR (95% CI)	P-Value
Level of dehydration				
Some dehydration	484	98 (19.2)	Ref	
Severe dehydration	318	87 (27.4)	1.5 (1.13-2.21)	0.007
Shock	40	7 (17.5)	0.9 (0.38-2.08)	0.791
Vomiting				
Absent	363	51 (14.1)	Ref	
Present	479	136 (28.4)	2.4 (1.70-3.46)	<0.001
Outcome				0.05
Discharged	736	161 (21.9)		
Died	2	0		
Others	97	25 (25.8)		

Key Conclusions & Recommendations

✓ **Rotavac® is Effective**

- Vaccine switch associated with reduced hospitalizations
- Successful program implementation

⚠ **Geographic Disparities Exist**

- Northern and Middle belts show higher burden
- Suggests uneven coverage

🎯 **Targeted Actions Needed**

- Enhanced surveillance in high-burden regions
- Formal vaccine effectiveness studies
- Equity-focused interventions

Acknowledgements

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- Study Participants



Staff of RRL, NMIMR



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