FOURTEENTH INTERNATIONAL

ROTAVIRUS SYMPOSIUM

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Head-to-head comparison of the immunogenicity of RotaTeq and Rotarix and factors associated with seroresponse in infants in Bangladesh

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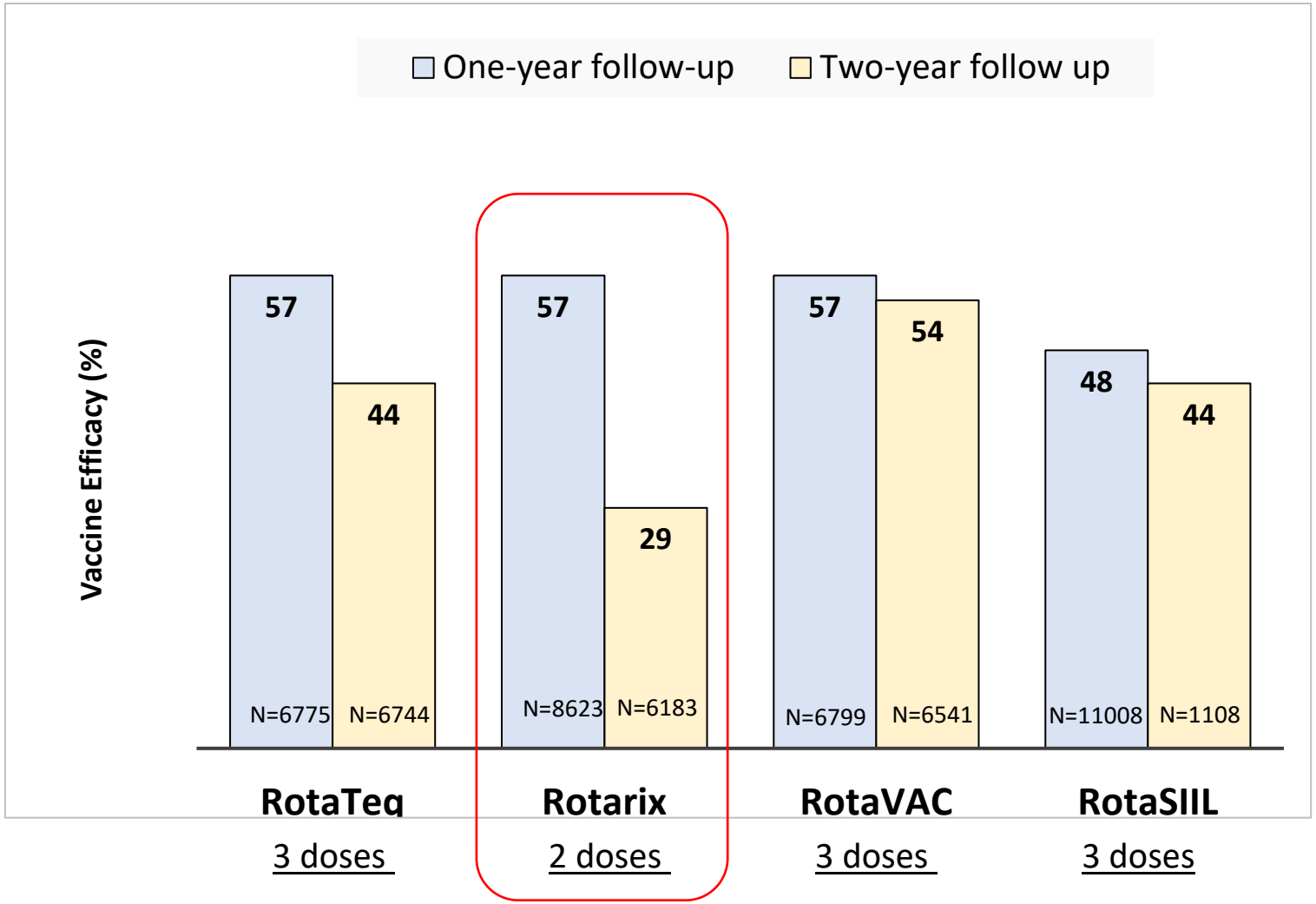
Rotavirus vaccines efficacy in high mortality countries in Africa and Asia



Rotarix
Has a higher waning in efficacy
Most used in low and middle-income countries

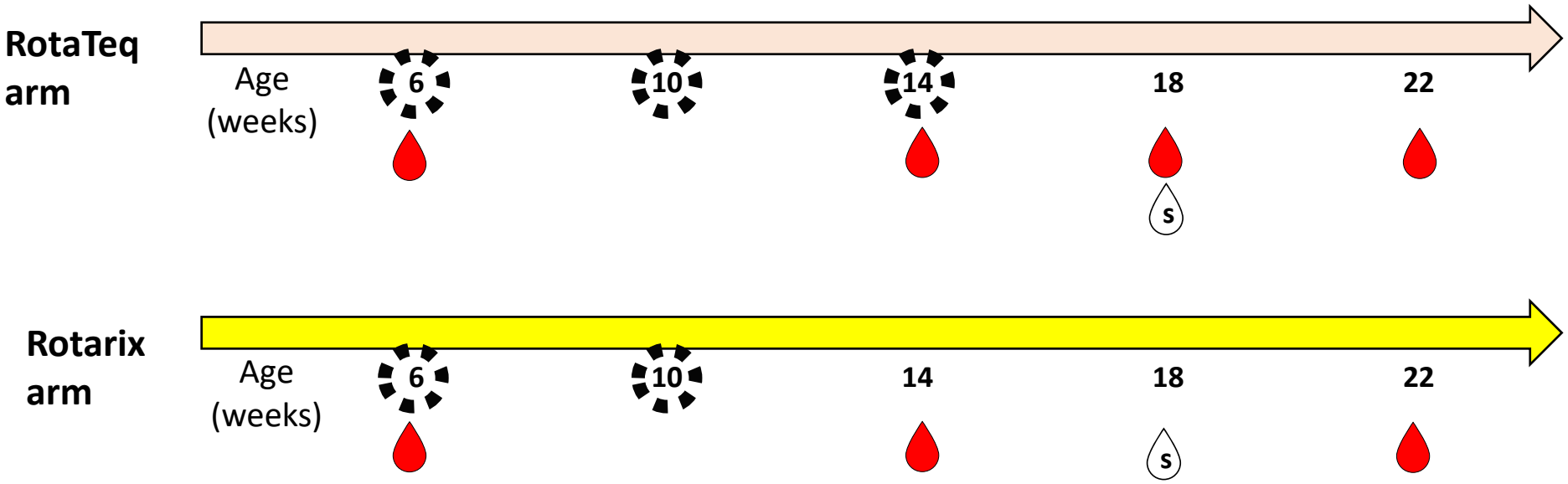
Adapted from Henschke, et al. Vaccine. 2022

Aims

1. Examine the comparative immunogenicity between Rotarix and RotaTeq when given concomitantly with IPV in absence of OPV.

2. Examine the contribution of different risk factors in determining the vaccine responses

Study design



Rotavirus vaccination

RV-Immunogenicity Blood sample

HBGA type Saliva sample

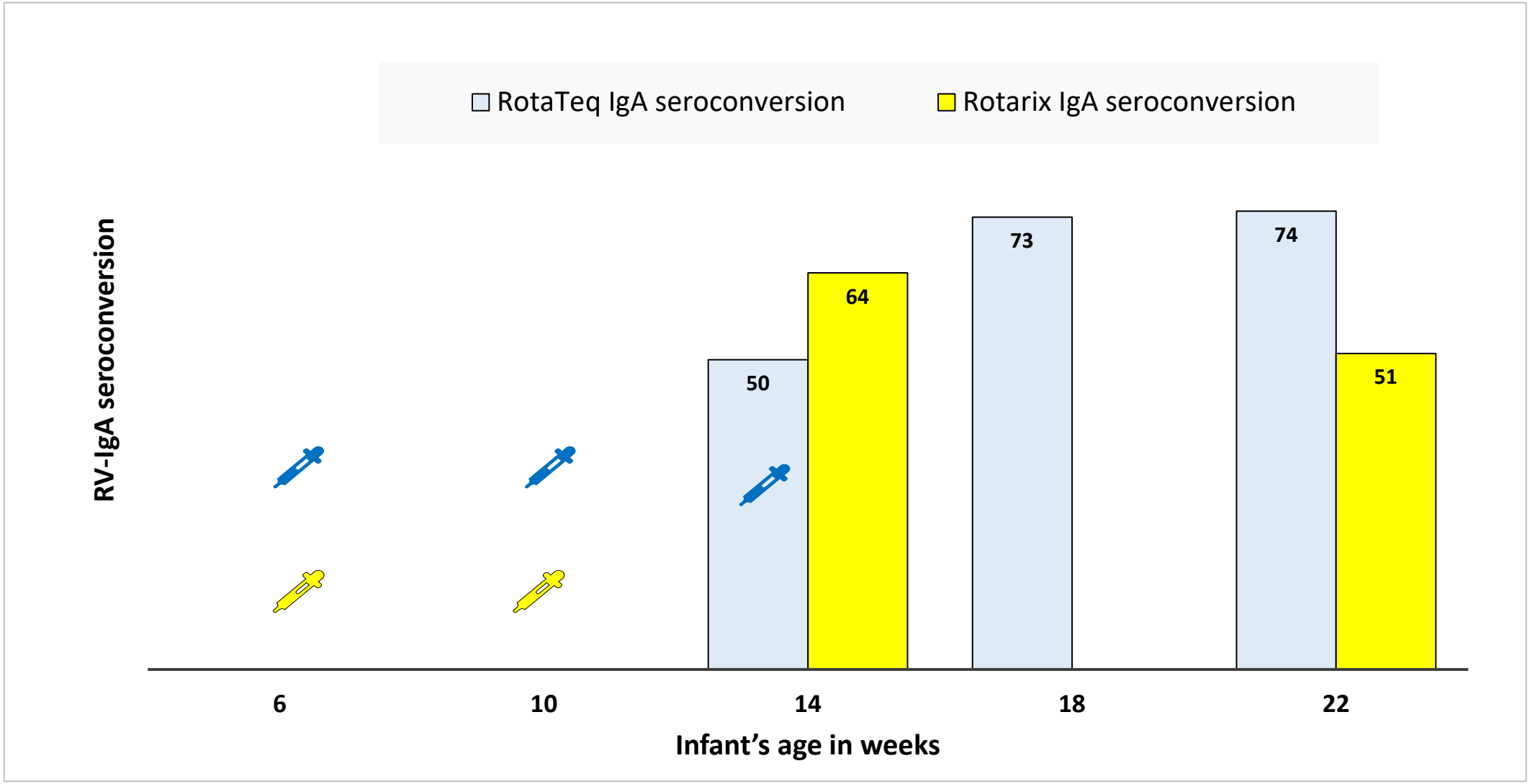
Baseline characteristics of the modified-intention-to-treat population

	RotaTeq	Rotarix
	[n=531]	[n=549]
Age at first dose (days)	44 [43-46]	44 [43-46]
Male sex	262 (49%)	284 (52%)
IPV group		
A + B *	265 (50%)	276 (50%)
C	134 (25%)	134 (25%)
D	132 (25%)	139 (25%)
Mother's education: highest level		
No formal school	85 (16%)	102 (19%)
Primary	201 (38%)	210 (38%)
Middle	132 (25%)	133 (24%)
High	90 (17%)	75 (14%)
University	23 (4%)	29 (5%)
Feeding practices at age six weeks		
Partial breastfeeding	393 (74%)	402 (73%)
Exclusive breastfeeding	138 (26%)	147 (27%)
Weight for length score (WLZ)	-0.3 (1.1)	-0.3 (1.1)
Length for age score (LAZ)	-0.8 (1.1)	-0.7 (1.1)

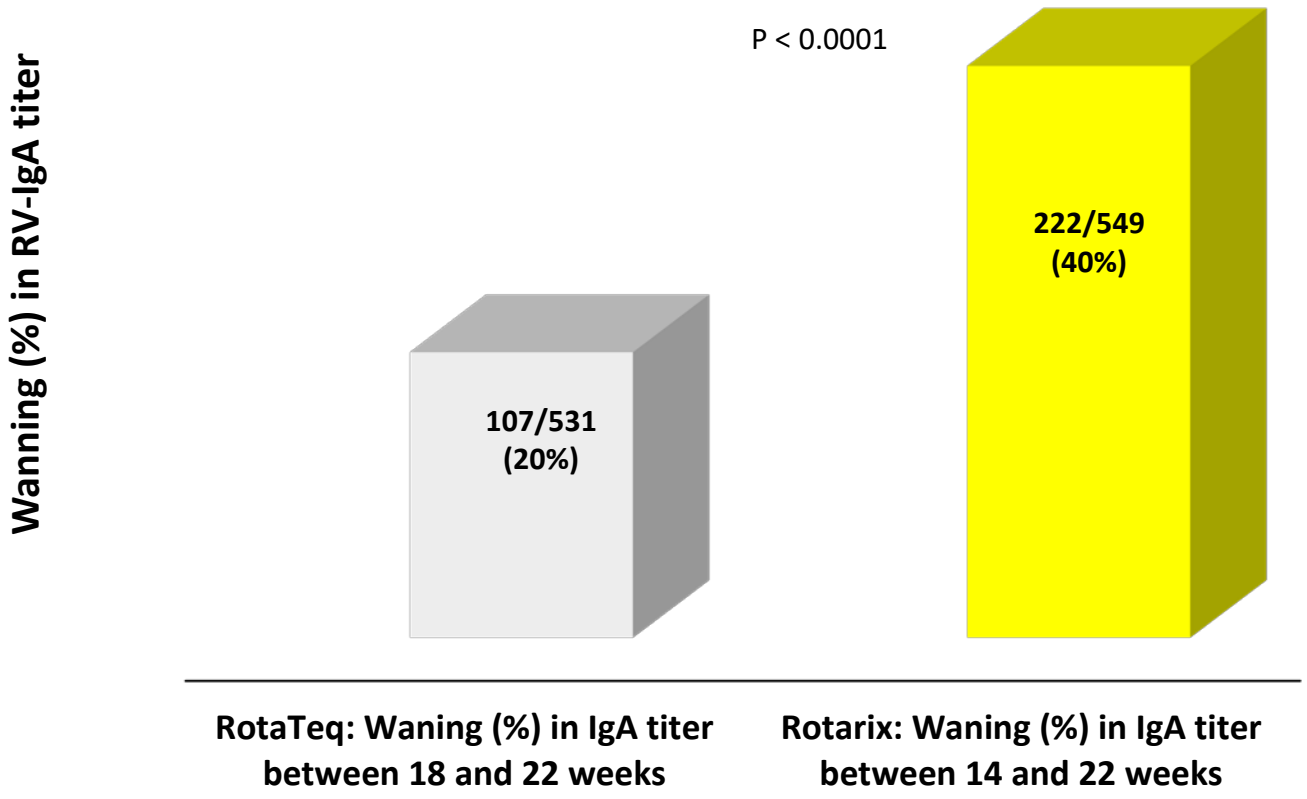
RotaTeq vs Rotarix:

Is there a difference in immunogenicity?

Higher IgA seroconversion in RotaTeq arm than Rotarix arm

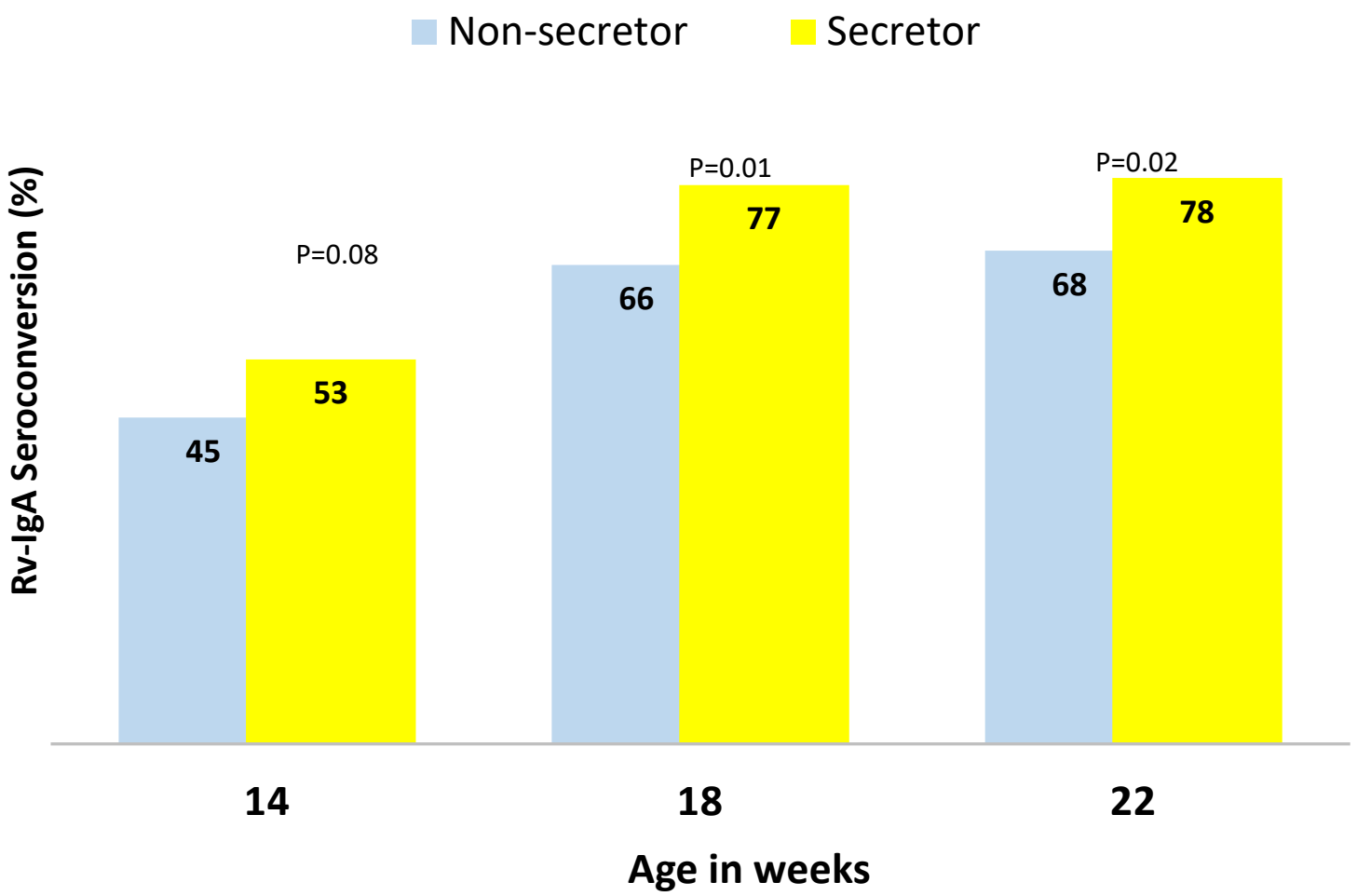


By week 22, the IgA response waned more in Rotarix than RotaTeq

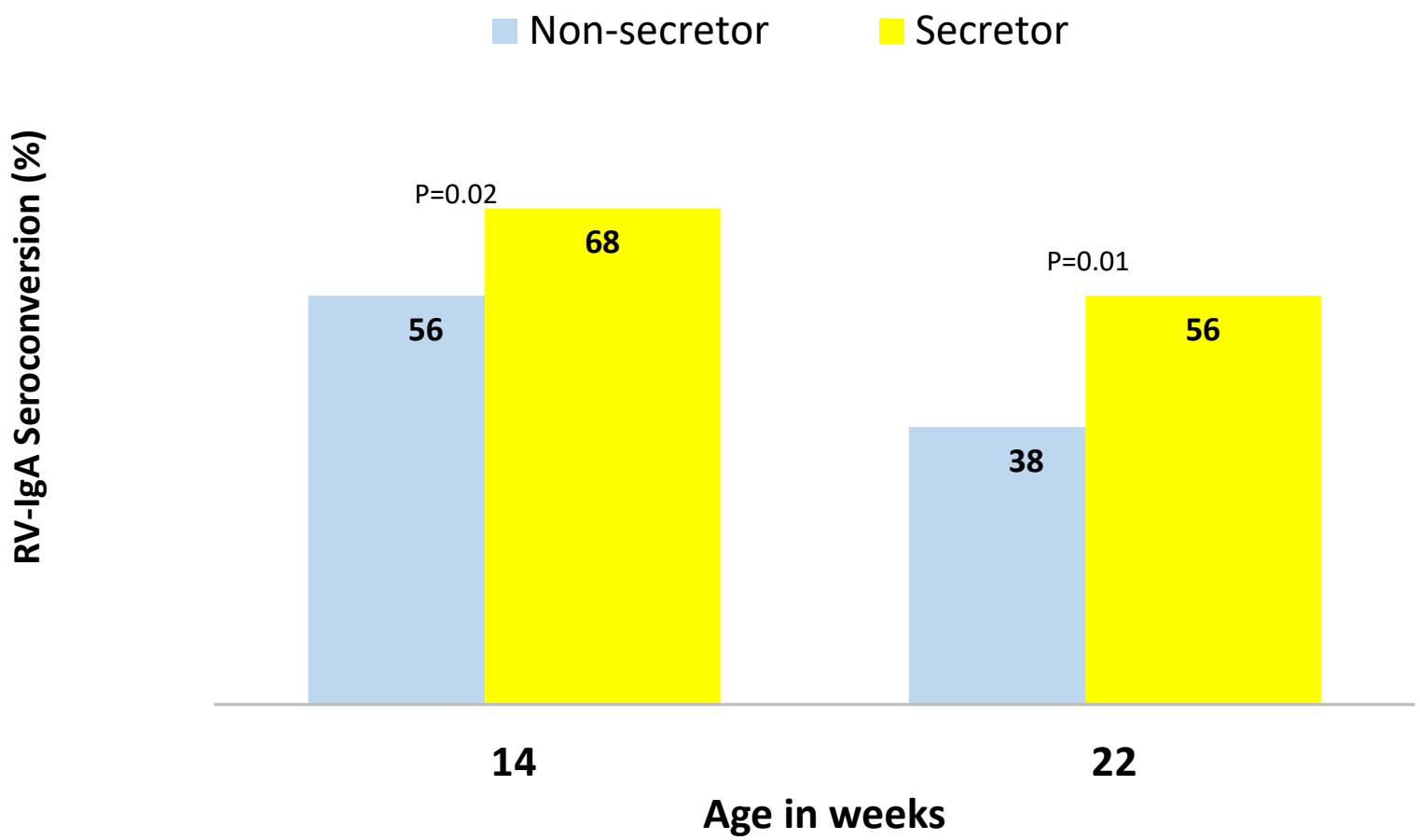


Is the Secretor status affecting the IgA response of RotaTeq and Rotarix?

Secretors showed a higher vaccine IgA seroconversion, RotaTeq

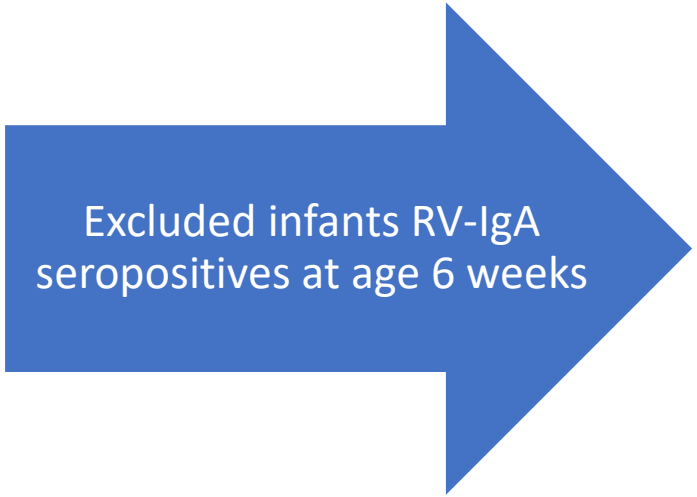


Secretors showed a higher vaccine IgA seroconversion, Rotarix



What are the other factors affecting the immunogenicity of RotaTeq and Rotarix?

Contribution of different risk factors in determining the vaccine responses



Rotarix	Rotateq
n=474	n=464

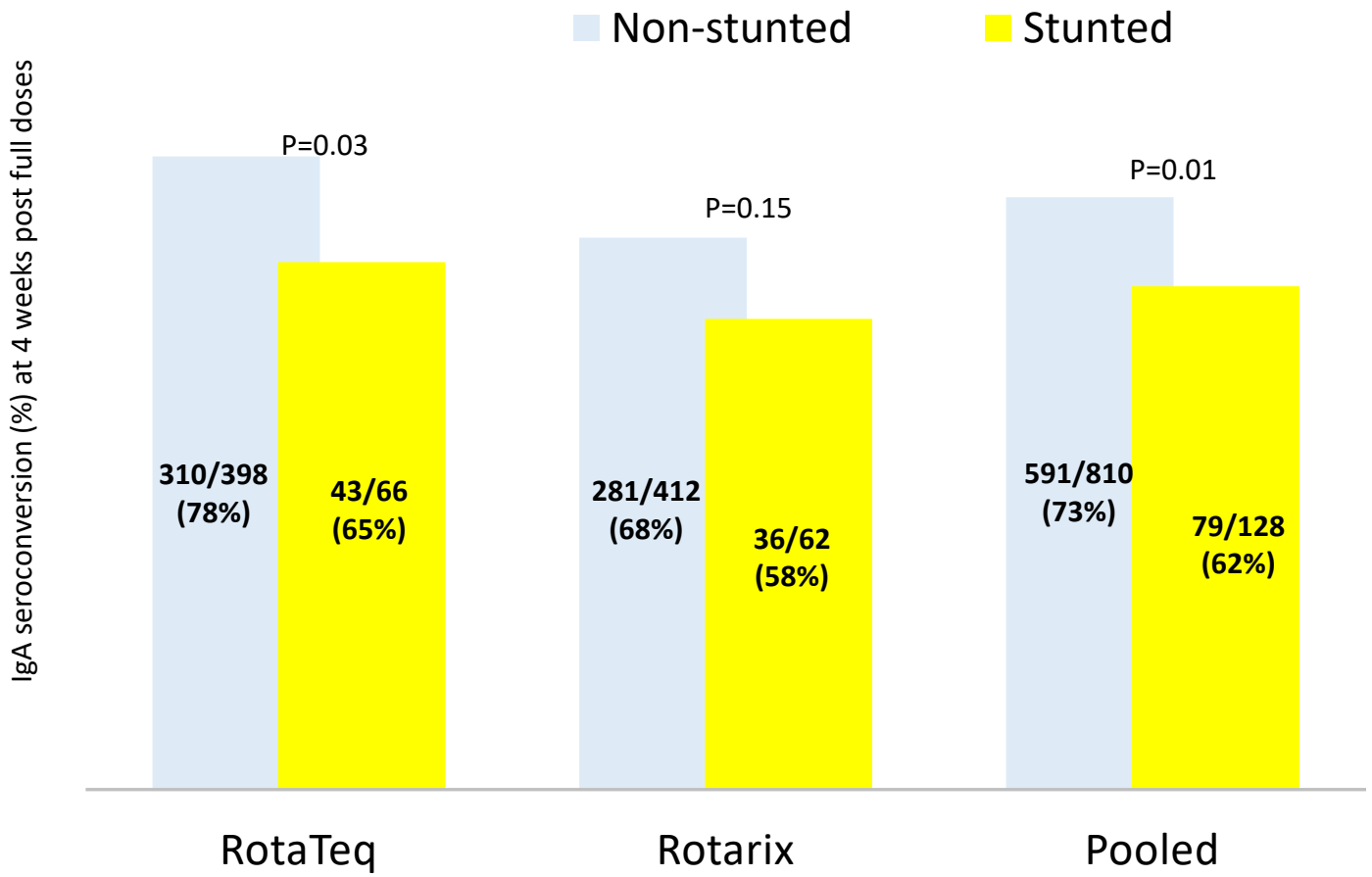
Multiple factors affecting the IgA response post full doses of **Rotarix** –Multivariate analysis

	IgA seroconversion at age 14 weeks		
	n/N (%)	Multivariable RR (95%CI)	Multivariate p value
Secretor phenotype			
Non-Secretor (ref)	80/135 (59%)		
Secretor	230/329 (70%)	1.8 (1.2-2.8)	0.01
Rotavirus IgG titers at age 6 weeks (tertiles)			
80-1280 (ref)	129/173 (75%)		
2,560	89/132 (67%)	0.6 (0.4-1.1)	0.09
5,120-10 240	99/169 (59%)	0.4 (0.2-0.6)	0.01
Stunting at the time of the second dose			
No	281/412 (68%)		
Yes	36/62 (58%)	0.5 (0.3-1.0)	0.04
Rotavirus season exposure between ages 6 and 14 weeks			
Low (October-Nov to November 2016; ref)	77/133 (58%)		
Moderate (December 2016)	123/182 (68%)	2.1 (1.3-3.5)	0.01
High (January to February 2017)	117/159 (74%)	2.5 (1.5-4.3)	0.01

Multiple factors affecting the IgA response post full doses of **RotaTeq** –Multivariate analysis

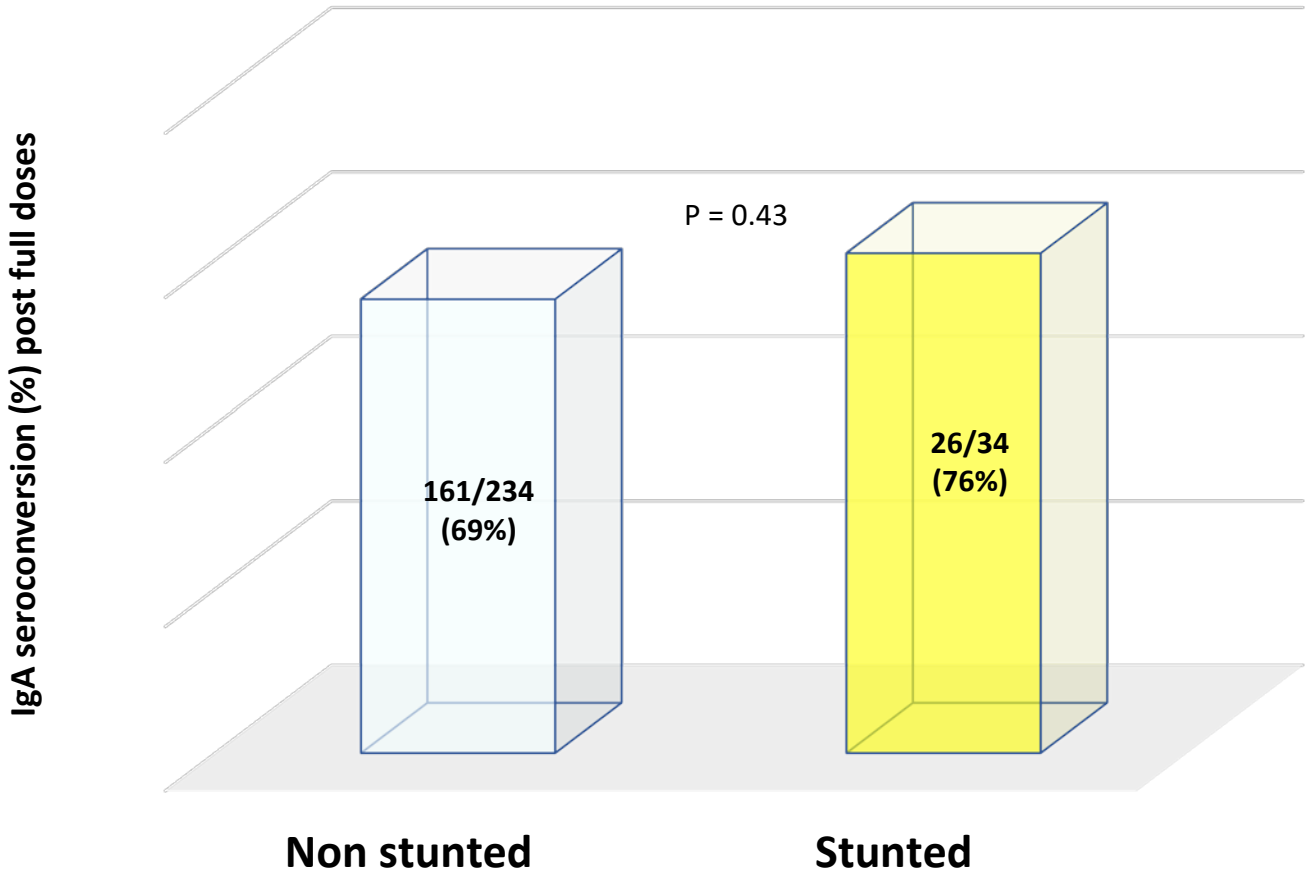
	IgA seroconversion at age 18 weeks		
	n/N (%)	Multivariate RR (95%CI)	Multivariate p value
Secretor phenotype			
Non-Secretor (ref)	102/150 (68%)		
Secretor	248/309 (80%)	1.9 (1.2-3.1)	0.01
Rotavirus IgG titers at 6 weeks (tertiles)			
80-1280 (ref)	141/169 (83%)		
2560	126/158 (80%)	0.7 (0.4-1.2)	0.2
5120-10 240	84/133 (63%)	0.3 (0.2-0.5)	<0.0001
Stunting at the time of the second dose			
No	310/398 (78%)		
Yes	43/66 (65%)	0.5 (0.3-0.9)	0.02
Feeding practices			
Partial breastfeeding at time of ≥ 1 dose (ref)	290/358 (81%)		
Exclusive breastfeeding at time of each dose	63/106 (59%)	0.4 (0.2-0.6)	0.0001

Lower IgA seroconversion in infants stunted [1] around vaccination times of RotaTeq and Rotarix, Bangladesh



RotaTeq vaccine doses at ages 6, 10, and 14 weeks. Rotarix doses at ages 6 and 10 weeks.[1] Stunting: Low length-for-age, with a Z score of <-2.

IgA seroconversion in infants stunted around vaccination times of Rotarix in **Bolivia**



Rotarix doses at ages 9 and 18 weeks. Stunting: Low length-for-age, with a Z score of <-2.

Summary

1. The immunogenicity of two doses of **Rotarix** (measured at 14 weeks of age) is lower than the one prompted by three doses of **RotaTeq** (measured at 18 weeks of age), and this difference remains at 22 weeks of age.

2. **Non-secretor** infants had lower immunogenicity following full series of Rotarix or RotaTeq

3. **High baseline rotavirus IgG titers** were associated with low immunogenicity in Rotarix or RotaTeq

4. **Infants stunted** around vaccination times of Rotarix or RotaTeq had lower immunogenicity in Bangladesh

Published study

Head-to-head comparison of the immunogenicity of RotaTeq and Rotarix rotavirus vaccines and factors associated with seroresponse in infants in Bangladesh: a randomised, controlled, open-label, parallel, phase 4 trial

Daniel E Velasquez-Portocarrero, Xiaoqian Wang, Margaret M Cortese, Cynthia J Snider, Abhijeet Anand, Veronica P Costantini, Md Yunus, Asma B Aziz, Warda Haque, Umesh Parashar, Zufan Sisay, Heidi M Soeters, Terri B Hyde, Baoming Jiang, Khalequ Zaman

Summary

Background A head-to-head comparison of the most widely used oral rotavirus vaccines has not previously been done, particularly in a high child mortality setting. We therefore aimed to compare the immunogenicity of RotaTeq (Merck, Kenilworth, NJ, USA) and Rotarix (GlaxoSmithKline, Rixensart, Belgium) rotavirus vaccines in the same population and examined risk factors for low seroresponse.

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Collaboration

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Thank you!

Questions