Declaración de potenciales conflictos de intereses

Impacto de la vacunación frente a rotavirus

Prof. Dr. Federico Martinón-Torres

Relativas a esta presentación existen las siguientes relaciones que podrían ser percibidas como potenciales conflictos de intereses:

Ha recibido honorarios por conferencias de Abbot, GSK, Sanofi Pasteur MSD, Wyeth/Pfizer, y Novartis.

Ha recibido becas/ayudas de investigación de Sanofi Pasteur MSD, Wyeth/Pfizer, y Novartis.

Ha recibido honorarios por consultorías para Astra-Zeneca, Wyeth/Pfizer, Novartis, Medimmune y Sanofi Pasteur MSD.
Participa / Coordina ensayos clínicos de vacunas de Sanofi Pasteur MSD, Sanofi, Wyeth, Merck, Pfizer, Roche, Medimmune, Novartis, and GSK.

GENVIP

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Instituto de Investigación Sanitaria SANTIAGO DE COMPOSTELA

ReGALIP

RED GALLEGA DE INVESTIGACIÓN PEDIÁTRICA

X Jornadas de Actualización en Vacunas

Almería, 24-26 octubre de 2013

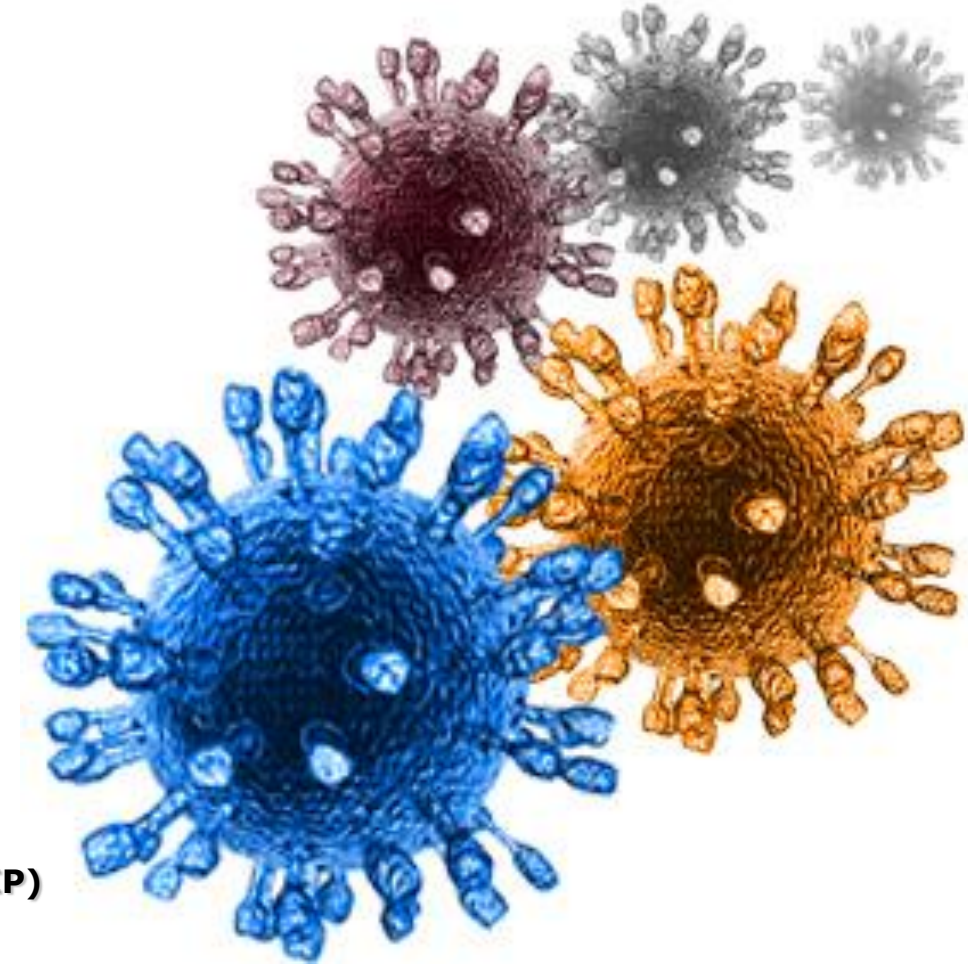
Impacto de la vacunacion frente a rotavirus

Prof. Dr. F. Martinón-Torres

Pediatra, Hospital Clínico Universitario de Santiago

Grupo de Genética, Vacunas, Infecciones y Pediatría (GENVIP)

Instituto de Investigación Sanitaria de Santiago (IDIS)

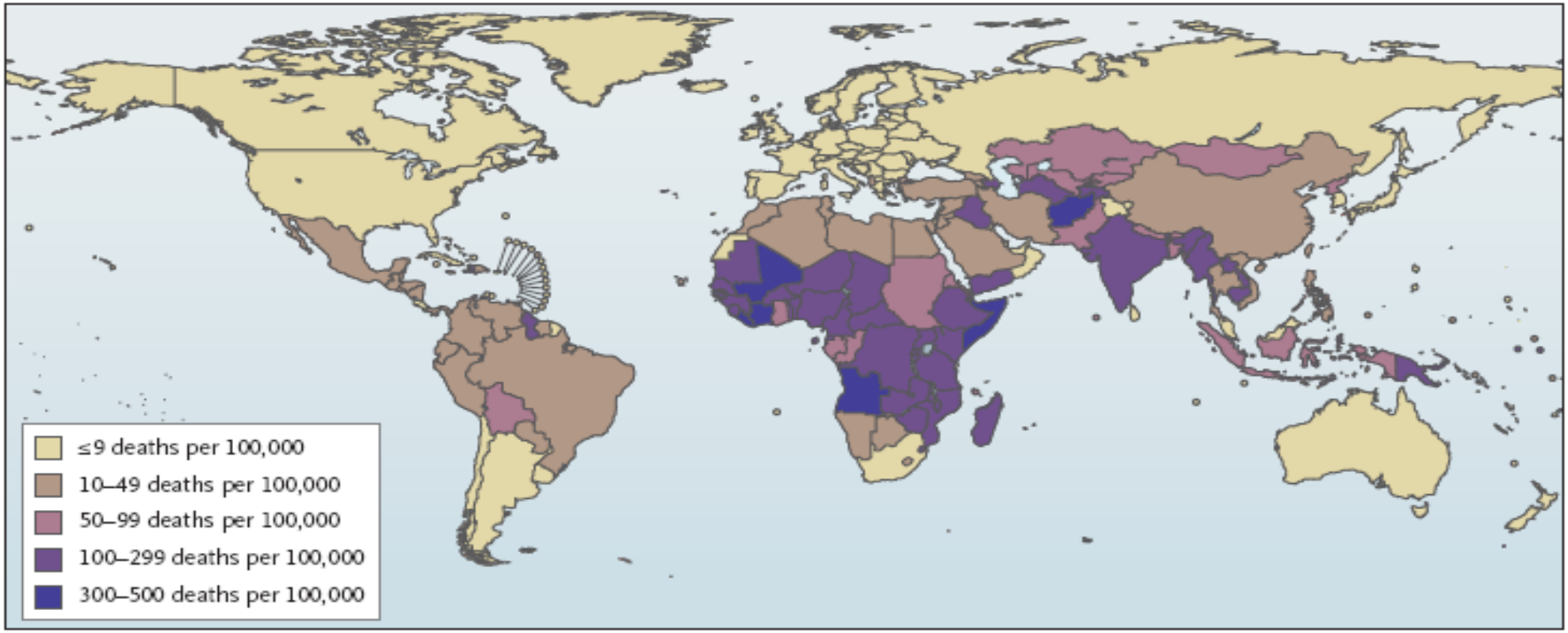


GLOBAL HEALTH

Defeating Rotavirus? The Global Recommendation for Rotavirus Vaccination

Margaret H. Danchin, M.D., Ph.D., and Julie E. Bines, M.D.

N ENGL J MED 361;20 NEJM.ORG NOVEMBER 12, 2009



Mortality Rate Associated with Rotavirus Disease.
Data are from the World Health Organization.

Safety and Efficacy of a Pentavalent Human–Bovine (WC3) Reassortant Rotavirus Vaccine

Timo Vesikari, M.D., David O. Matson, M.D., Ph.D., Penelope Dennehy, M.D.,
[illegible]
[illegible]
[illegible]
[illegible]
Michele L. Coia, B.A., [illegible]atthew T. Onorato, B.S., Ben A. Adeyi, M.P.H.,
Gary S. Marshall, M.D., Leif Gothefors, M.D., Dirk Campens, M.D.,
Aino Karvonen, M.D., James P. Watt, M.D., M.P.H.,
Katherine L. O'Brien, M.D., M.P.H., Mark J. DiNubile, M.D., H Fred Clark, D.V.M., Ph.D.,
John W. Boslego, M.D., Paul A. Offit, M.D., and Penny M. Heaton, M.D.,
for the Rotavirus Efficacy and Safety Trial (REST) Study Team

95.8% [90 – 98.2%]

N Engl J Med 2006;354:11-22.

Pentavalent

Safety and Efficacy of an Attenuated Vaccine against Severe Rotavirus Gastroenteritis

Guillermo M. Ruiz-Palacios, M.D., Irene Pérez-Schael, M.Sc., F. Raúl Velázquez, M.D., Hector Abate, M.D.,
[illegible]
[illegible]
[illegible]
Belén Salinas, M.D., Noris Pavía-Ruz, [illegible]D., Jorge Salmerón, M.D., Ricardo Rüttimann, M.D., Juan Carlos Tin[illegible], M.D.,
Pilar Rubio, M.D., Ernesto Nuñez, M.D., M. Lourdes Guerrero, M.D., Juan Pablo Yarzábal, M.D., Silvia Damaso, M.Sc.,
Nadia Tornieporth, M.D., Xavier Sáez-Llorens, M.D., Rodrigo F. Vergara, M.D., Timo Vesikari, M.D.,
Alain Bouckenooghe, M.D., Ralf Clemens, M.D., Ph.D., Béatrice De Vos, M.D., and Miguel O'Ryan, M.D.,
for the Human Rotavirus Vaccine Study Group*

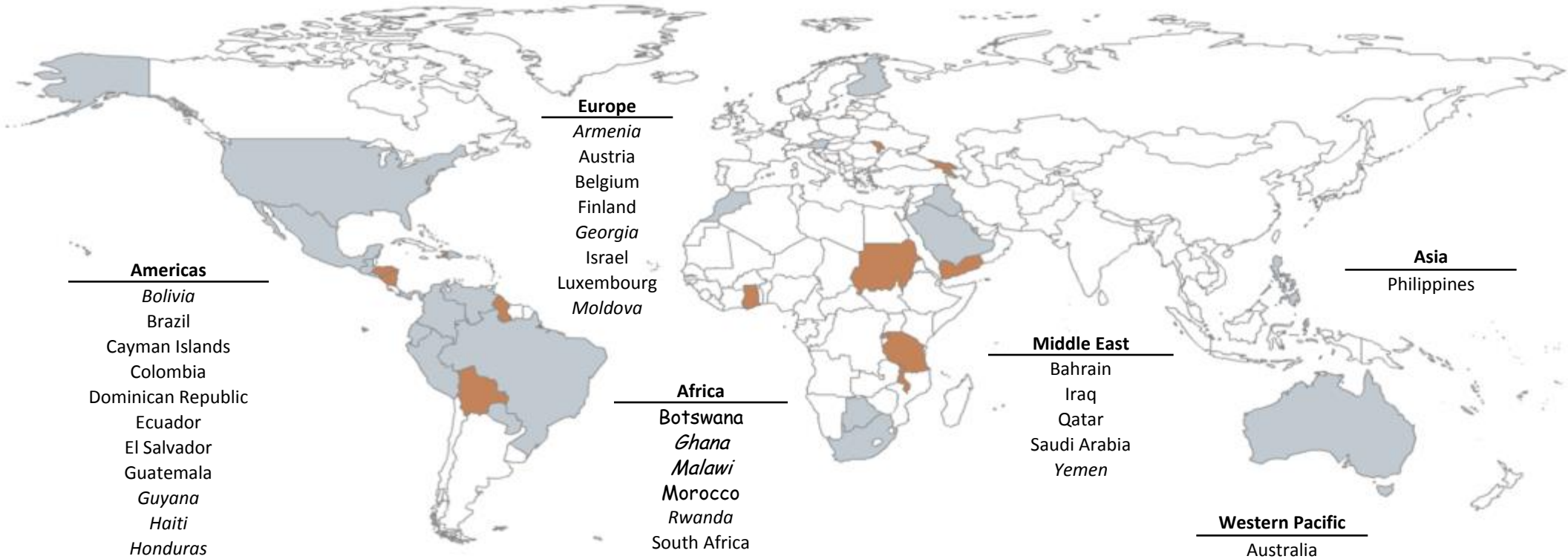
85% [70 – 93.5%]

N Engl J Med 2006;354:23-33.

Monovalent

Reducción de hospitalización por GEA por rotavirus

National RV introductions by geographic region: 45 countries*



Americas
Bolivia
Brazil
Cayman Islands
Colombia
Dominican Republic
Ecuador
El Salvador
Guatemala
Guyana
Haiti
Honduras
Mexico
Nicaragua
Panama
Paraguay
Peru
United States
Venezuela

Europe
Armenia
Austria
Belgium
Finland
Georgia
Israel
Luxembourg
Moldova

Africa
Botswana
Ghana
Malawi
Morocco
Rwanda
South Africa
Republic of Sudan
Tanzania

Middle East
Bahrain
Iraq
Qatar
Saudi Arabia
Yemen

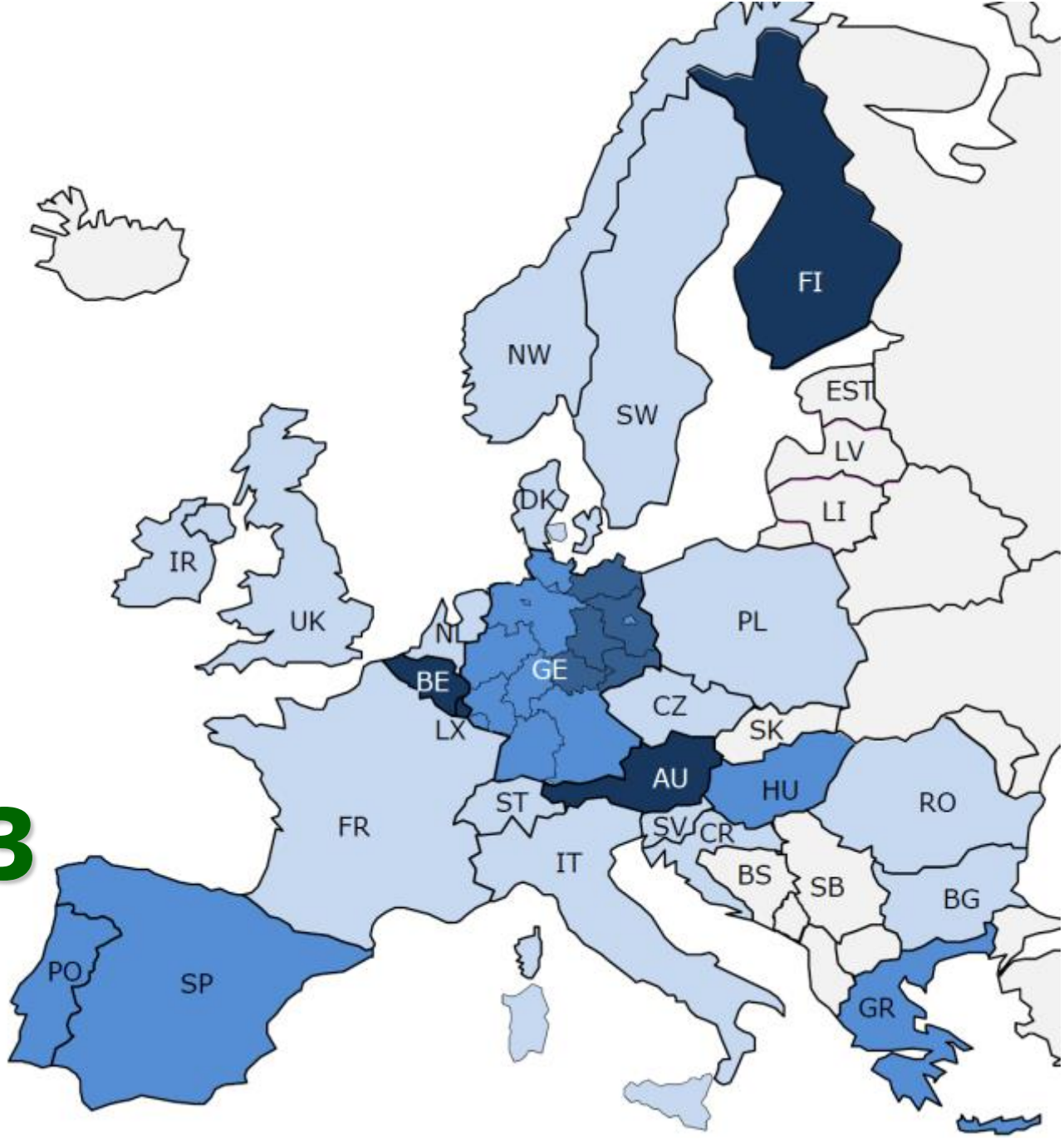
Asia
Philippines

Western Pacific
Australia
Fiji
Marshall Islands
Micronesia
Palau

*National introductions by geographic region, as of 27 April 2013
RV= rotavirus vaccine

Not GAVI-eligible [31] *GAVI-eligible* [14]

ROTAVIRUS VACCINE COVERAGE EUROPE-2013



Parez N, Giaquinto C, Martinón-Torres F, Vesikari T, et al. Lancet Inf Dis 2013 (in press)

@fedemartinon, Almería 2013

Vaccine Advisory Board Pediatric Spanish Association

- Difusion – Information – Sensibilization- Education
  - Professionals
  - Population
  - Policy makers / authorities
- Multidisciplinar Working groups – CPGs & Consensus
- Promote active research (local/national level)
  - Surveillance
  - Epidemiological
  - Pharmacoeconomical
  - Effectiveness

ASOCIACIÓN ESPAÑOLA DE PEDIATRÍA

THE ROLE OF THE ROTAVIRUS VACCINE IN CHILDHOOD VACCINATION SCHEDULES

F. Giménez Sánchez, F. Martinón Torres, E. Bernaola Iturbe, M. Baca Cots, F. de Juan Martín, J. Díez Delgado, M. Garcés Sánchez, J.A. Gómez Campderá, J. Picazo y V. Pineda Solas

An Pediatr (Barc). 2006;64(6):573-7

Impacto familiar de la gastroenteritis por rotavirus en menores de dos años

F. Giménez Sánchez[1], A. Delgado Rubio[2], F. Martinón Torres[3], F. Asensi Botet[4], M. Miranda Valdivieso[5], J.L. Gómez 2.º apellido[1], S. Alfayate Miguélez[6], A. Carmona 2.º apellido[7], J. Romero González[8], M. Crespo Hernández[9], M. Baca Cots[10], P. Solís Sánchez[11], J.A. López Soler[12], M.J. Lozano de la Torre[13], J. Ruiz 2.º apellido[14], V. Pineda Solas[15], I. Manrique Martínez[16], J. García Pérez[17], E. Bernaola Iturbe[18], J.M. del Valle Millán[19], M. Moya Benavent[20], L. Ortigosa Castillo[21], I. Romero Blanco[22], E. Román Riechmann[23], J.M. Vizcay Vilella[24], M.A. Sesmero Lillo[25], C. Rodrigo Gonzalo de Liria[26], E. Serrano Poveda[27], F. de Juan Martín[28] y M. Loriente Tur[29], en representación del Grupo ROTASCORE

An Pediatr (Barc). 2008;69(6):515-20

Acta Pædiatrica ISSN 0803–5253 ©2010

REGULAR ARTICLE

Multicenter prospective study analysing the role of rotavirus on acute gastroenteritis in Spain

F Gimenez-Sanchez (dr.gimenez@cajamar.es)[1], A Delgado-Rubio[2], F Martinon-Torres[3], E Bernaola-Iturbe[4], Rotascore Research Group*

1.Pediatric Infectious Diseases Unit, Hospital Torrecardenas, Almeria, Spain
2.Pediatrics Department Hospital de Madrid, Madrid, Spain
3.Hospital Clinico Universitario de Santiago, Santiago de Compostela, Spain
4.Hospital Virgen del Camino, Pamplona, Spain

Results: A total of 1192 children were enrolled (mean age: 11.2 months). Fever, Vomiting, weakness and dehydration were more frequent in rotavirus-positive AGE cases. Severity score was

An estimation of indirect costs caused by acute rotavirus gastroenteritis in a Galician area, Spain

Federico Martinón-Torres · Marta Bouzón-Alejandro · Maria López-Sousa · Lorenzo Redondo-Collazo · Santiago Almeida-Agudín · Consuelo Astorgano-Fernández · José María Martinón-Sánchez

Eur J Pediatr. 2008 Mar;167(3):337-9 [Epub 2007 Mar 16]

Proyecto ROTACOST
www.rotacost.org

Bouzón-Alejandro et al. BMC Pediatrics 2011, 11:81
http://www.biomedcentral.com/1471-2431/11/81

BMC Pediatrics

RESEARCH ARTICLE Open Access

Prospective evaluation of indirect costs due to acute rotavirus gastroenteritis in Spain: the ROTACOST study

Marta Bouzón-Alejandro[1,3†], Lorenzo Redondo-Collazo[1,2,3], Juan Manuel Sánchez-Lastres[3,4], Nazareth Martinón-Torres[1,2,3], José María Martinón-Sánchez[1,2,3] and Federico Martinón-Torres[1,2,3*†], for the ROTACOST research team[5]

 favoritos

Multiple publications

Formation activities

Clinical guides

Martinón-Torres, ESPID 2012

[Consensus document on Rotavirus Vaccination]

Documento de Consenso de las Sociedades Científicas

VACUNACIÓN FRENTE A ROTAVIRUS

ROTAVIRUS

Vacunación frente a ROTAVIRUS

Documento de Consenso de las Sociedades Científicas

6 de Marzo de 2008

Asociación Española de Pediatría

AEP

SEUP Sociedad Española de Urgencias de Pediatría

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  HOSPITAL SAN JUAN DE DEU. BARCELONA
- **DR. GIMÉNEZ SÁNCHEZ, FRANCISCO**
  UNIDAD DE PEDIATRÍA
  CLÍNICA MEDITERRÁNEO. ALMERÍA
- **DR. MARTINÓN TORRES, FEDERICO**
  SERVICIO URGENCIAS PEDIÁTRICAS
  COMPL. HOSP.UNIV. SANTIAGO. SANTIAGO
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  HOSPITAL CLÍNICO SAN CARLOS. MADRID
- **DRA. WILHELMI DE CAL, ISABEL**
  JEFE DE MICROBIOLOGÍA
  HOSPITAL SEVERO OCHOA. MADRID

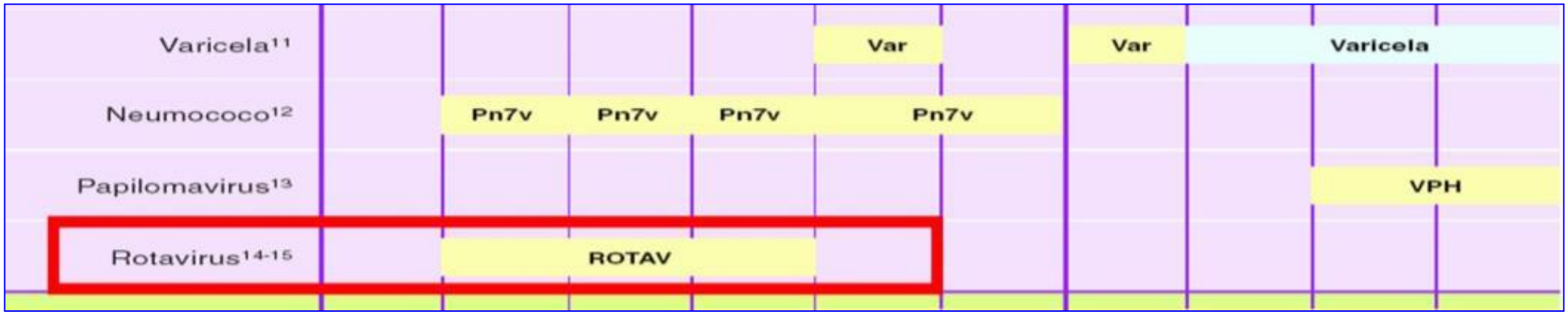
idis

An Pediatr (Barc). 2008;68(1):63-9

IMMUNIZATION SCHEDULE OF THE SPANISH ASSOCIATION OF PEDIATRICS: RECOMMENDATIONS 2008

E. Bernaola Iturbe, F. Giménez Sánchez, M. Baca Cots, F. de Juan Martín, J. Díez Domingo, M. Garcés Sánchez, A. Gómez-Campderá, F. Martinón Torres, J.J. Picazo y V. Pineda Solás

Comité Asesor de Vacunas de la Asociación Española de Pediatría.



Effectiveness of rotavirus vaccination in Spain

Federico Martinón-Torres,[1-3,†,*] Marta Bouzón Alejandro,[1,3,†] Lorenzo Redondo Collazo,[1-3] Juan Manuel Sánchez Lastres,[3,4] Sonia Pértega Díaz,[5] Mª Teresa Seoane Pillado,[5] José María Martinón Sánchez[1-3] and ROTACOST research team[6]

- October 2008-June 2009
- 682 children below 5 yo with AGE prospectively collected
- 18 C.S. y 10 hospitals from Galicia and Asturias
- In all cases, rotavirus antigen detection was performed (Test Vikia®)
- Case-control design VE= 1-OR

Vaccine effectiveness to prevent any rotavirus AGE

91.5%

(CI 95%:83.7%-95.6%)

Complete vacc: 92.8% (84.7-96.6%)

Partial vacc: 84.0% (45.5-95.3%)

Vaccine effectiveness to prevent hospital admision

95.6%

(CI 95%: 85.6-98.6%)

Complete vacc: 98.3% (87.4-100%)

Partial vacc: 89.4% (53.9-97.5%)

Human Vaccines 7:7, 1-4; July 2011; © 2011

Effectiveness of rotavirus vaccines in preventing cases and hospitalizations due to rotavirus gastroenteritis in Navarre, Spain

Jesús Castilla[a,b,*], Xabier Beristain[c], Víctor Martínez-Artola[c], Ana Navascués[d], Manuel García Cenoz[a,b], Nerea Álvarez[e], Isabel Polo[c], Ana Mazón[c], Alberto Gil-Setas[c], Aurelio Barricarte[a,b]

Table 3
Rotavirus vaccine effectiveness in preventing hospital admission due to rotavirus gastroenteritis in children aged 3–59 months.

	Cases/controls	Crude OR (95% CI)	Adjusted OR (95% CI)[a]	Vaccine effectiveness (95% CI)
Total				
Unvaccinated	249/390	1	1	
Fully vaccinated	9/80	0.18 (0.09–0.36)	0.17 (0.07–0.35)	83% (65–93%)
Aged <24 months				
Unvaccinated	207/302	1		
Fully vaccinated	8/69	0.17 (0.08–0.36)	0.18 (0.07–0.40)[b]	82% (60–93%)[b]
Aged ≥24 months				
Unvaccinated	42/88	1	1	
Fully vaccinated	1/11	0.19 (0.02–1.52)	0.11 (0.002–0.83)[b]	89% (17–99.8%)[b]
Period 2008–2009				
Unvaccinated	91/237	1	1	
Fully vaccinated	7/29	0.63 (0.27–1.49)	0.61 (0.21–1.54)[c]	39% (−54 to 79%)[c]
Period January 2010–June 2011				
Unvaccinated	158/153	1	1	
Fully vaccinated	2/51	0.04 (0.01–0.16)	0.04 (0.004–0.15)[c]	96% (85–99%)[c]

[a] Odds ratio and 95% confidence interval obtained by exact logistic regression adjusted for age group, birth year and mayor chronic conditions.
[b] Comparison of vaccine effectiveness in preventing cases with age <24 months vs ≥24 months: $p = 0.9601$.
[c] Comparison of vaccine effectiveness in the period 2008–2009 vs the period January 2010–June 2011: $p = 0.0009$.

Vaccine 30 (2012) 539–543

Efectividad de la vacunación frente a rotavirus en Valencia

Figure 1. Total number of children by year of birth and vaccination status

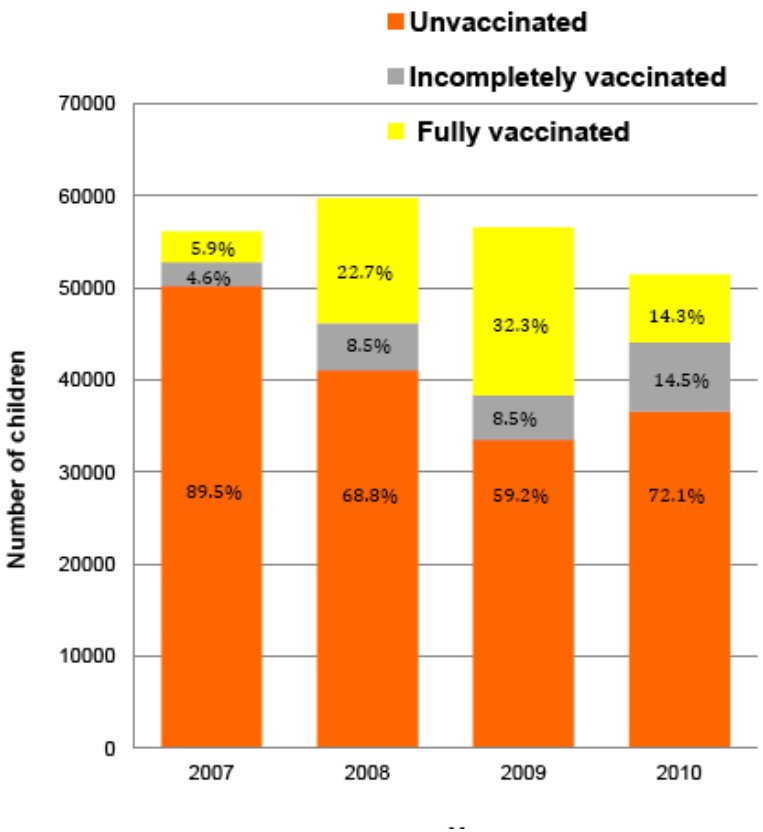


Figure 2. Hospitalizations for rotavirus AG

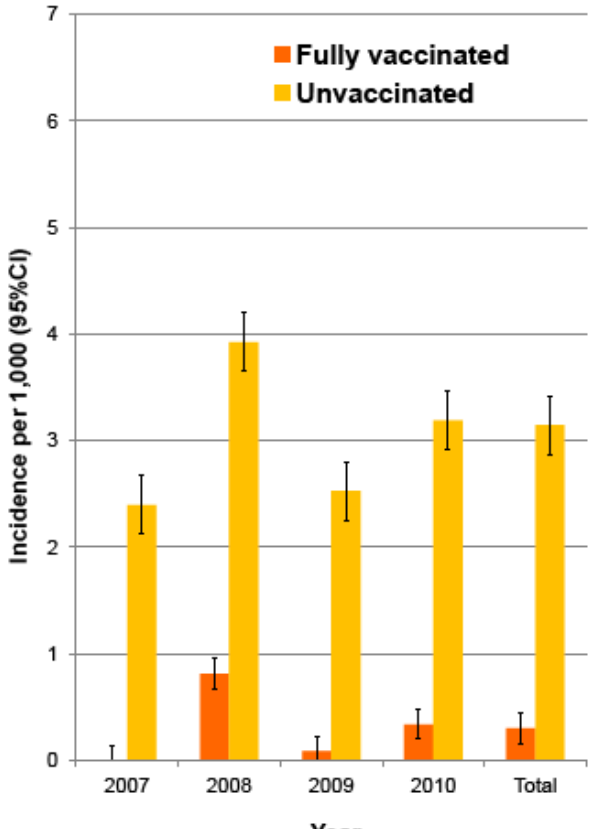
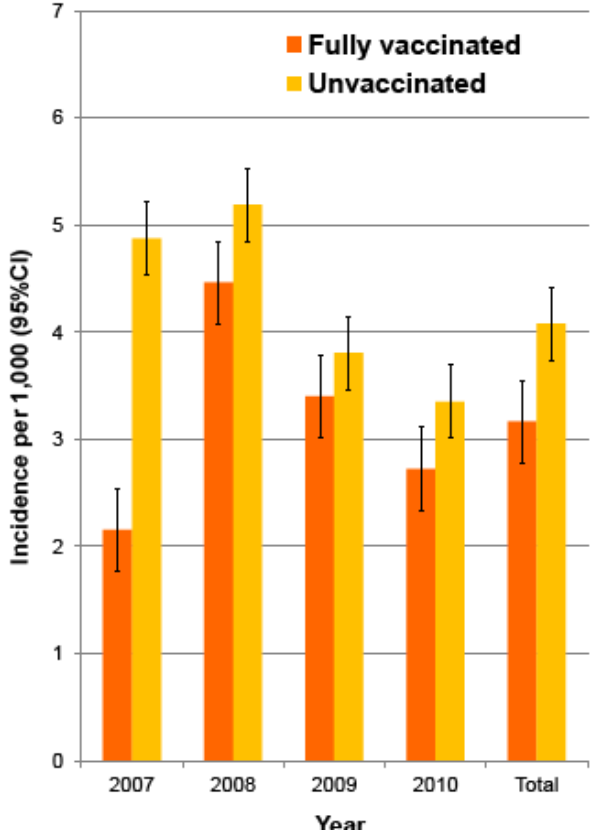


Figure 3. Hospitalizations for other AG

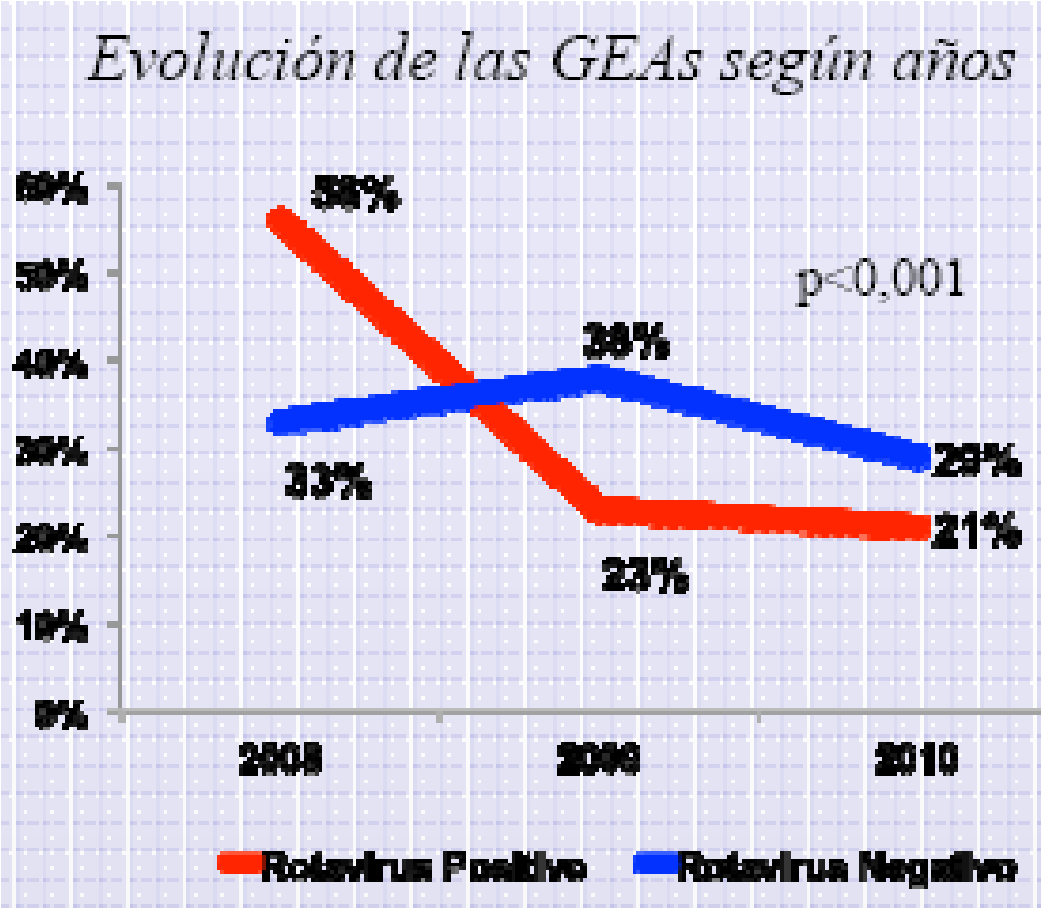


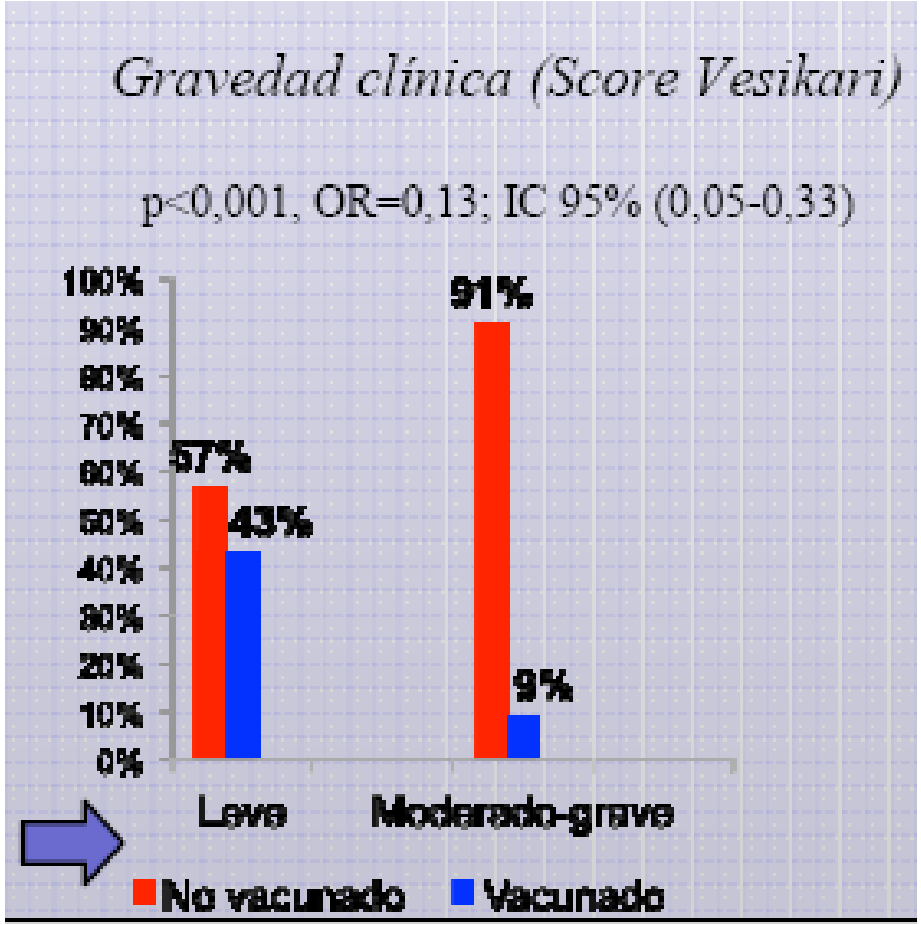
Efectividad RV hospit 90.4% (85-94)

Martinón-Torres, ESPID 2012

Diez Domingo J. et al. ESPID 2012

Efectividad de la vacunación frente a rotavirus en Almería



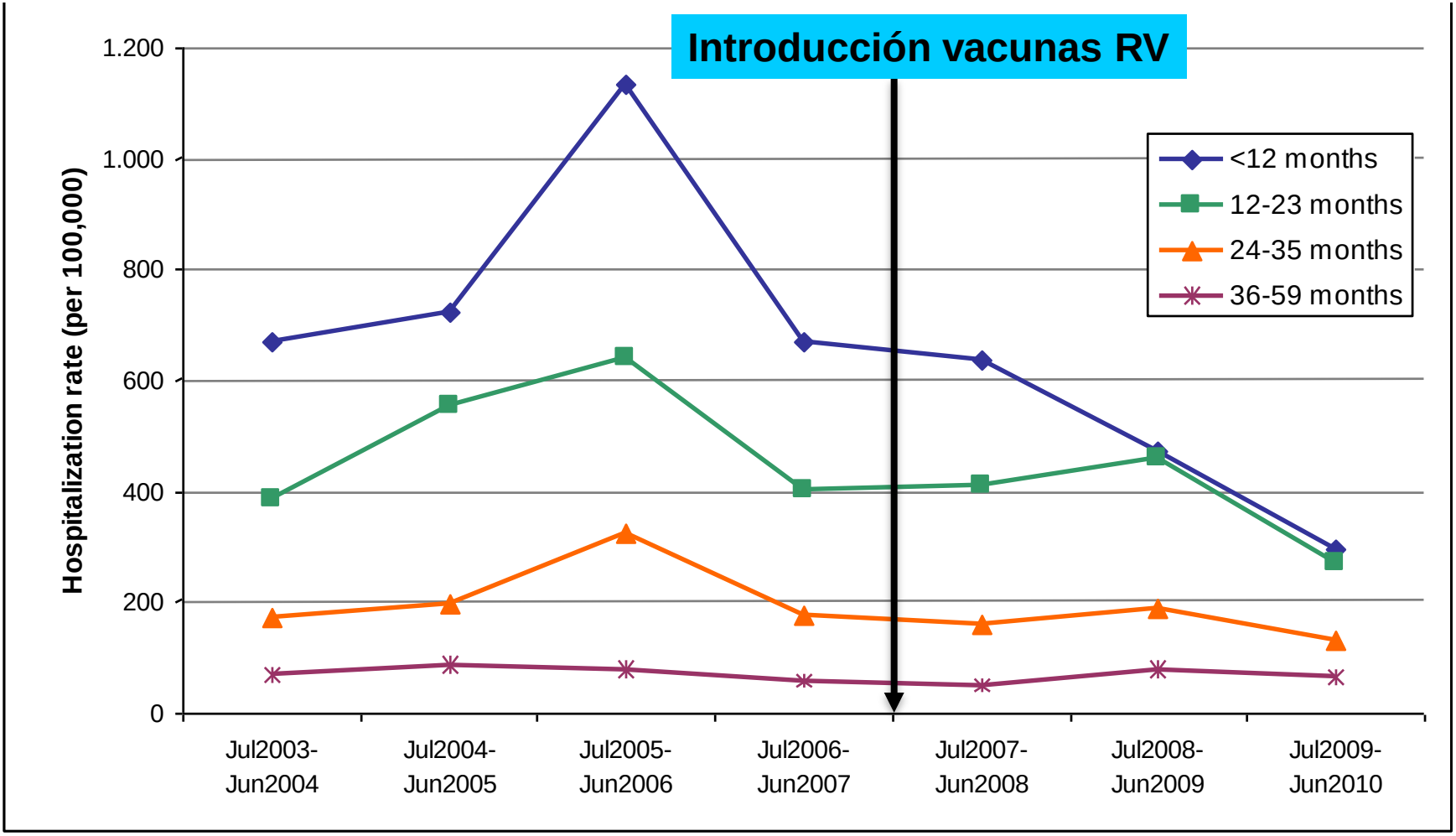


Efectividad RV hospit 90.4% (85-94)

Martinón-Torres, ESPID 2012

Cobos E, et al. SEIP 2012

Impacto de la vacunación frente a rotavirus en Galicia



↓ 45%
RV-AGE

↓ 49%
All cause AGE

Martinón-Torres F, et al. Human Vaccine & Immuno, vol 8, issue 7, July 2012, epub ahead of print

Contents lists available at ScienceDirect

Vaccine 29 (2011) 3753–3759

Impact of rotavirus vaccination on hospitalizations for rotavirus diarrhea: The IVANHOE study

Arnaud Gagneur[a,e,*], Emmanuel Nowak[b], Thomas Lemaitre[b], Jean-Francois Segura[a], Nadège Delaperrière[a], Lydie Abalea[a], Elise Poulhazan[b], Anne Jossens[a], Lucie Auzanneau[b], Adissa Tran[c], Christopher Payan[c], Nadine Jay[a], Loic de Parscau[a], Emmanuel Oger[d], The IVANHOE investigators[1]

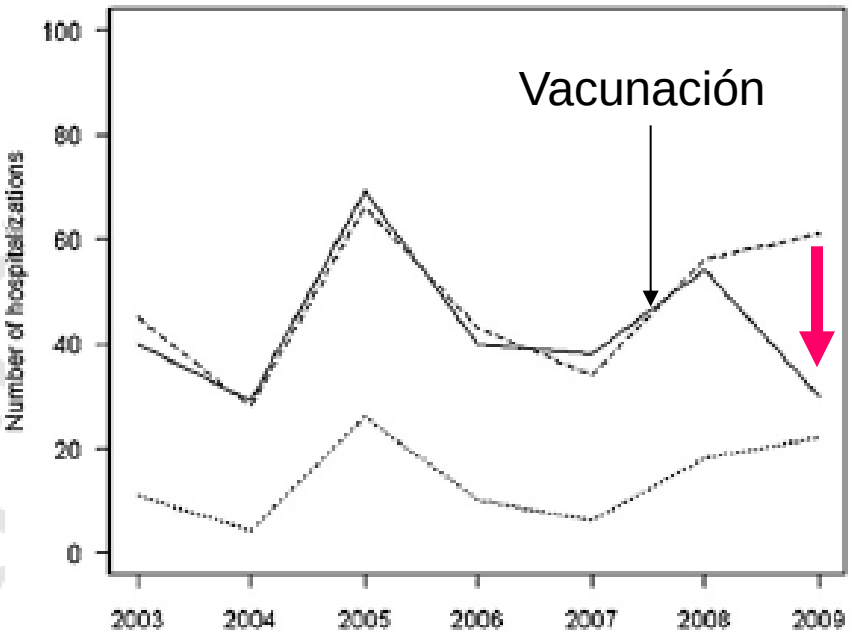


Fig. 4. Observed (<2 and 2–5 years old: continuous and dotted lines) and expected (<2 years old: dashed line) numbers of hospitalizations during epidemic seasons.

Prospectivo – Pentavalente

Vigilancia 5 años previos + 2

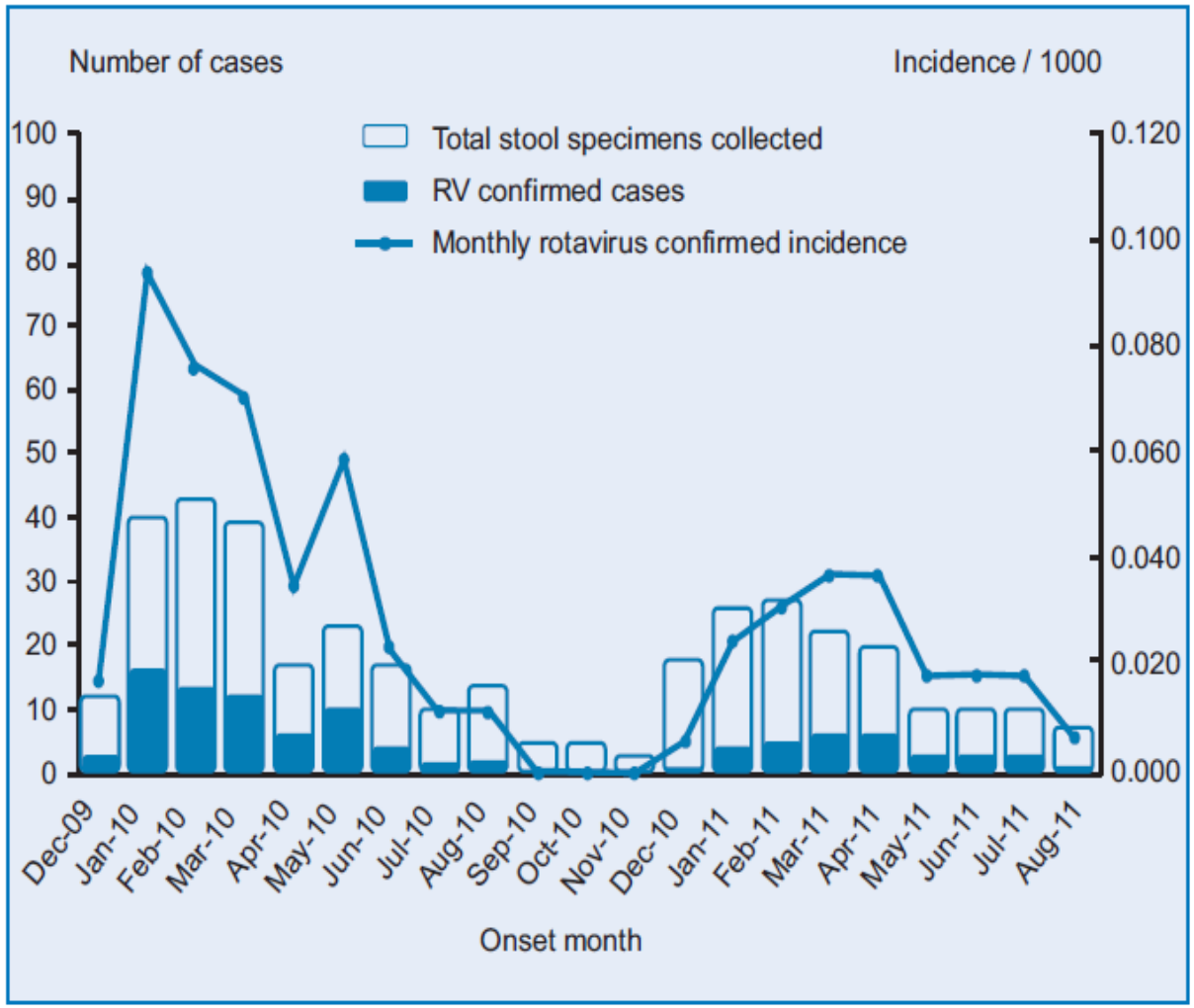
Cobertura: **47.1%**

Tiene en cuenta las variaciones estacionales e interpeidémicas

RRR hospitalización = **98%** **(83-100%)**

FINLANDIA – 2 AÑOS TRAS INICIO VACUNACIÓN UNIVERSAL ROTAVIRUS

Figure 4. Total number of stool specimens collected, number of RV confirmed cases and RV confirmed incidence by month of AGE onset, overall and by study site, Tampere and Oulu, Finland, 2009-2011



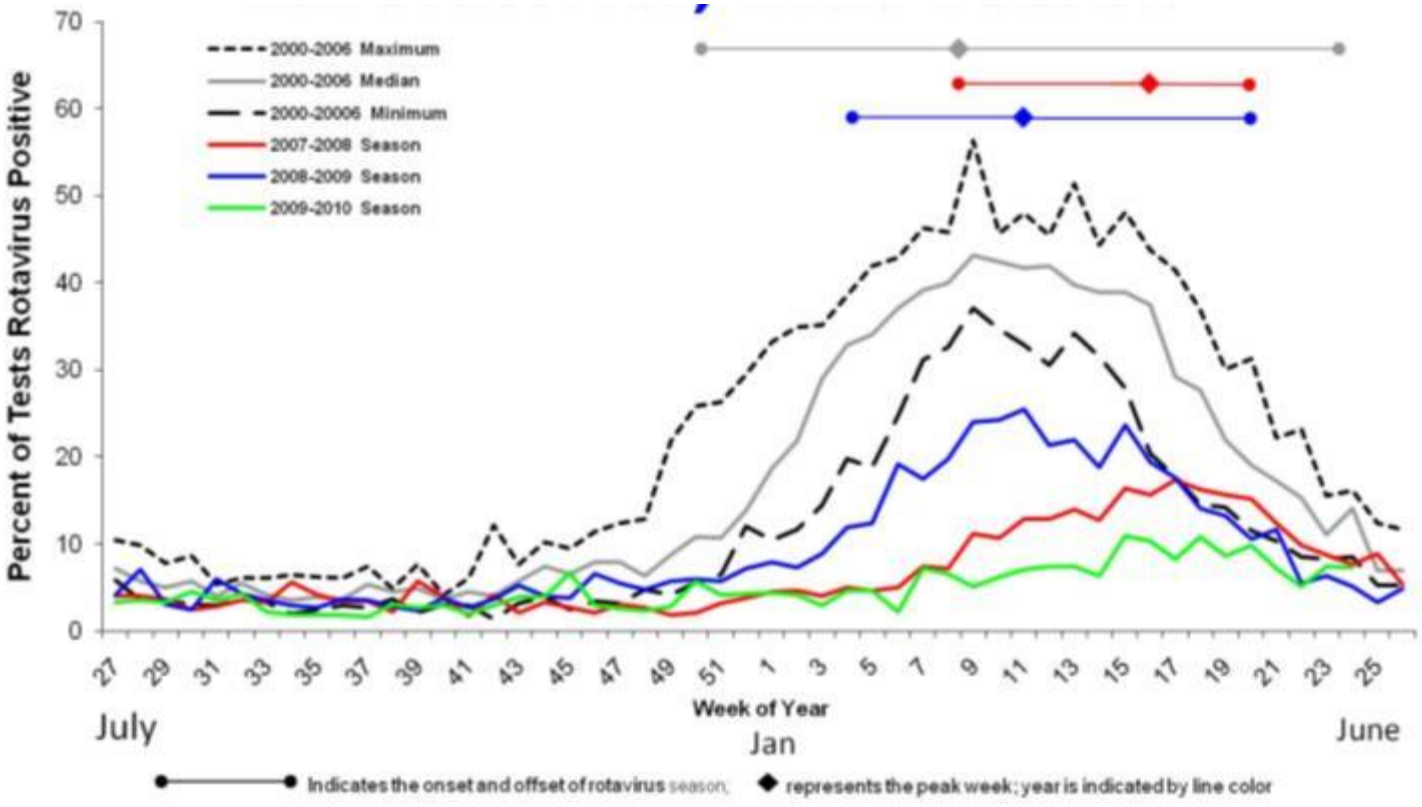
- Pentavalent vaccine included in Finnish National Vaccination Program in September 2009 (schedule 2/3/5 months)
- Vaccine coverage rapidly reached approximately 95-97%
- As of 08-2011, 301 AGE (100 RVGE)
- Vaccine effectiveness estimated **> 95%** in children born after December 2007

Vesikari T et al. ESPID 2012 - Poster nº 683
Vesikari T et al. Eur J Ped 2013 epub ahead

The Pediatric Infectious Disease Journal • Volume 30, Number 1, January 2011

Sustained Decline in Rotavirus Detections in the United States Following the Introduction of Rotavirus Vaccine in 2006

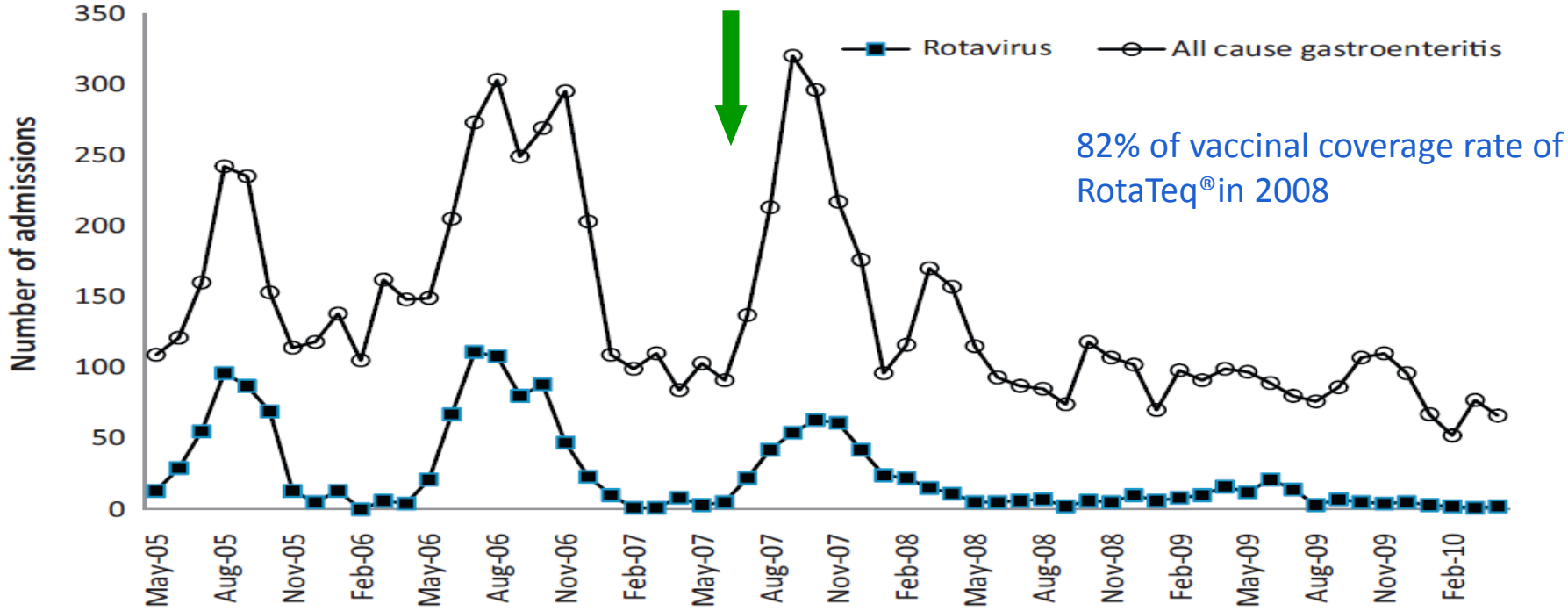
Jacqueline E. Tate, PhD, Jeffry D. Mutuc, MPH, Catherine A. Panozzo, MPH, Daniel C. Payne, PhD, Margaret M. Cortese, MD, Jennifer E. Cortes, MD, Catherine Yen, MD, MPH, Douglas H. Esposito, MD, Benjamin A. Lopman, PhD, Manish M. Patel, MSc, MD, and Umesh D. Parashar, MB BS, MPH



- Cobertura (≥ 1d): 72 % cobertura vacunal (al menos 1dosis)
- Actividad rotavirus disminuida y retrasada
- **NO** cumplió criterios de inicio de temporada!!

South Australia - 3 years after pentavalent rotavirus vaccine introduction

Introduction of RotaTeq®in children vaccination schedule (2/4/6) in July 2007



82% of vaccinal coverage rate of RotaTeq®in 2008

Gastroenteritis Hospital admissions in children < 6 years of age linked to RV or all causes, per month.

Retrospective analysis of hospitals admissions conducted in children < 6 years of age in South Australia

Clarke, Vaccine,2011

JAMA®

Association Between Pentavalent Rotavirus Vaccine and Severe Rotavirus Diarrhea Among Children in Nicaragua

JAMA. 2009;301(21):2243-2251 ı Patel; Cristina Pedreira; Lucia Helena De Oliveira; et al.

Vesikari severity score ≥11			
Cases	110/146 (75)		
Controls			
Neighborhood	338/396 (85)	0.48 (0.28 to 0.82)	52 (18 to 72)
Hospital	278/321 (87)	0.37 (0.20 to 0.66)	63 (34 to 80)
Combined	616/717 (86)	0.42 (0.26 to 0.70)	58 (30 to 74)
Vesikari severity score ≥15			
Cases	28/39 (72)		
Controls			
Neighborhood	86/99 (87)	0.27 (0.09 to 0.82)	73 (18 to 91)
Hospital	81/93 (87)	0.14 (0.04 to 0.55)	86 (46 to 96)
Combined	167/192 (87)	0.23 (0.08 to 0.61)	77 (39 to 92)

Eficacia frente a hospitalización o visitas a urgencias

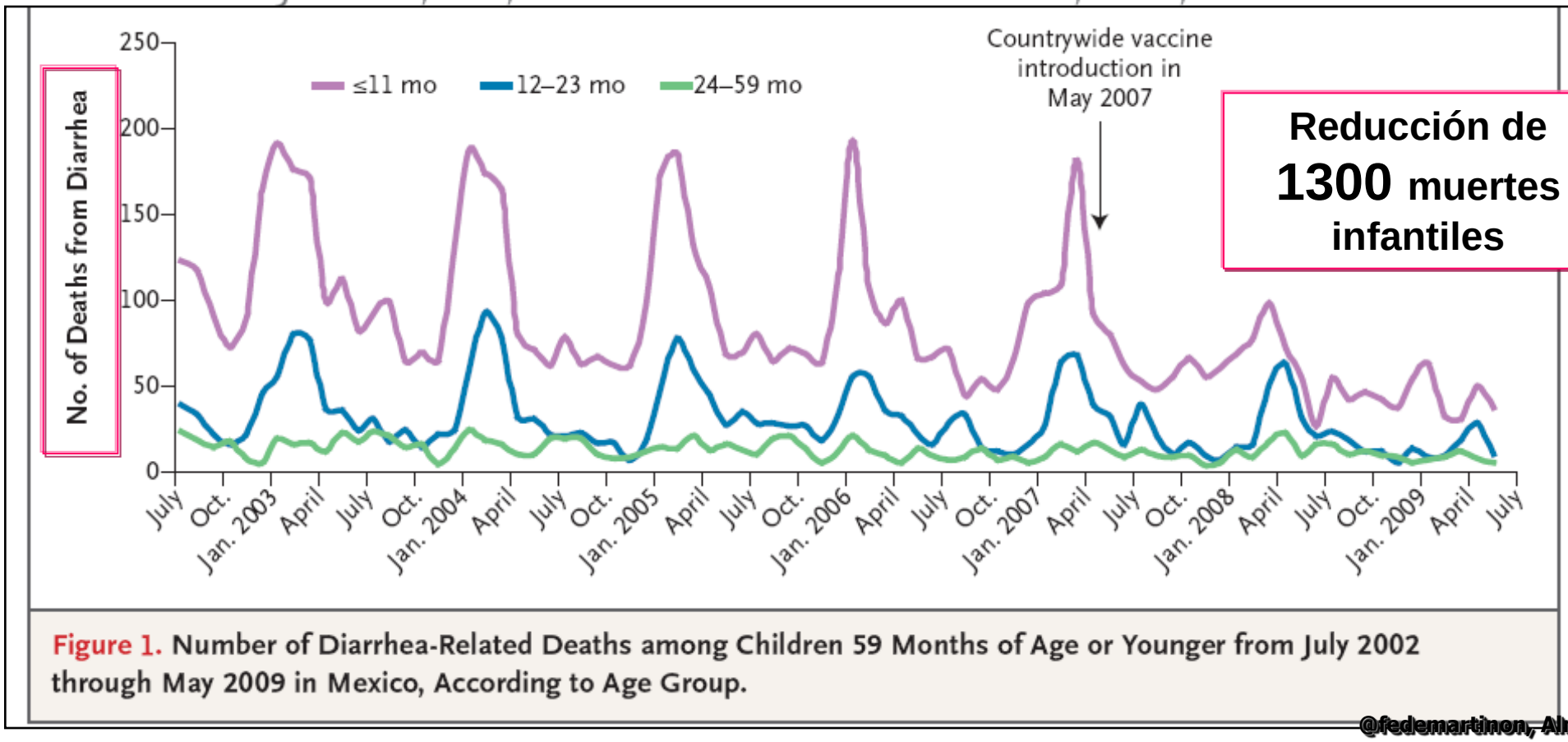
72 al 92 %

Cardellino et al. Human Vaccine 2013, july

N ENGL J MED 362;4 NEJM.ORG JANUARY 28, 2010

Effect of Rotavirus Vaccination on Death from Childhood Diarrhea in Mexico

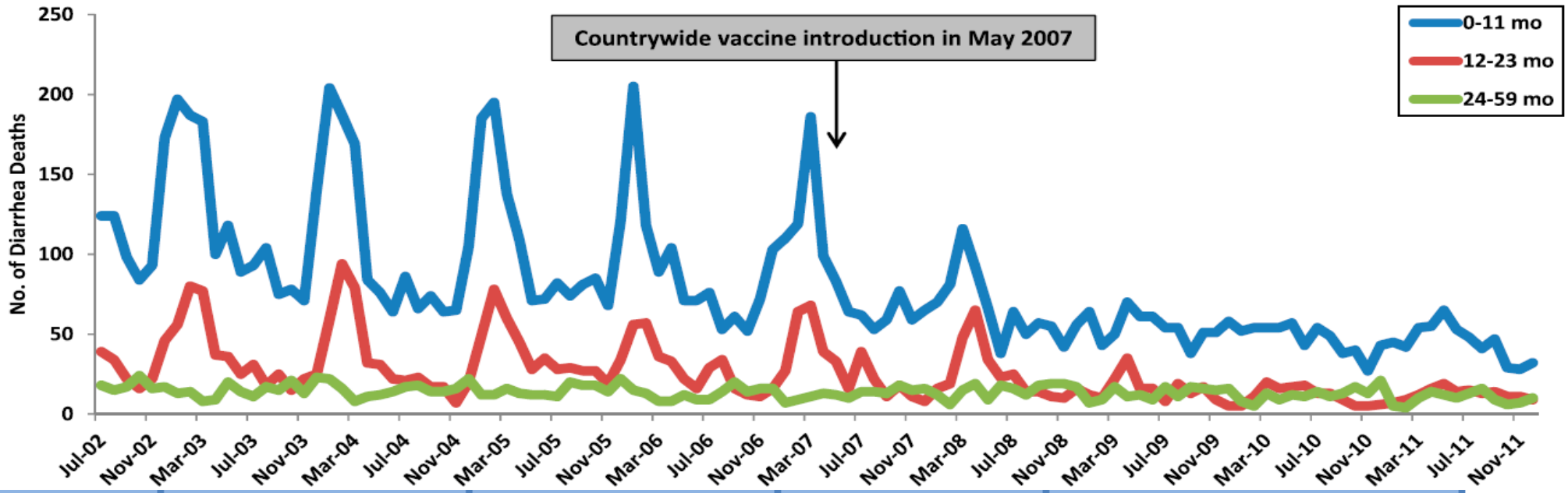
Vesta Richardson, M.D., Joselito Hernandez-Pichardo, M.D., Manjari Quintanar-Solares, M.D., Marcelino Esparza-Aguilar, M.D., Brian Johnson, B.S., Cesar Misael Gomez-Altamirano, M.D.,



Reducción de 1300 muertes infantiles

Figure 1. Number of Diarrhea-Related Deaths among Children 59 Months of Age or Younger from July 2002 through May 2009 in Mexico, According to Age Group.

EFFECT OF ROTAVIRUS VACCINATION ON ACUTE DIARRHEA DEATHS IN MEXICAN CHILDREN



Age group (months)	2003 -2006 period		Post-vaccine		Absolute reduction		Relative reduction		
	Median	Diarrhea-Related Rate of Death	Median	Diarrhea-Related Rate of Death	No.	%	% of reduction	IC 95%	P
0 to 59	**1793**	**16.87**	**872**	**9.14**	**921**	**7.72**	**45.8**	**39.8 – 51.7**	**<0.001**
0 to 11	1197	59.65	601	31.54	596	28.1	47.1	40.0 - 54.2	<0.001
12 to 23	421	19.53	155	8.13	266	11.41	58.4	46.5 – 70.3	<0.001
24 to 59	175	2.71	116	2.03	59	0.68	25.1	4.8 – 45.4	0.015

Gastañaduy PA, et al. Pediatrics. 2013 Apr;131(4):e1115-20

GREEN APPLES – CUESTIONES ABIERTAS

1.- Lactancia materna y prematuros

2.- ¿Cuánto dura la protección?

3.- Impacto epidemiológico

4.- Inmunidad Colectiva

5.- Otras formas de infección

Safety and Efficacy of the Pentavalent Human-Bovine (WC3) Reassortant Rotavirus Vaccine in Healthy Premature Infants

Michelle G. Goveia, MD, Zoe M. Rodriguez, MD,† Michael J. Dallas, PhD,* Robbin F. Itzler, PhD,* John W. Boslego, MD,* Penny M. Heaton, MD,* and Mark J. DiNubile, MD* for the REST Study Team*

The Pediatric Infectious Disease Journal • Volume 26, Number 12, December 2007

TABLE 4. Rate Reduction for Hospitalizations and Emergency Department Visits Attributable to Rotavirus Gastroenteritis Regardless of Serotype in Premature Infants

	Vaccine	Placebo	Rate Reduction (%)	95% CI
Per-protocol population starting 2 weeks after the third dose				
Number of evaluable premature infants completing the full 3-dose series	764	818		
Number of hospitalizations and emergency department visits	0	21	100	82.2–100
Number of hospitalizations	0	9*	100	53.0–100
Number of emergency department visits	0	12†	100	66.6–100
Intention-to-treat population anytime after the first dose				
Number of evaluable premature infants receiving at least 1 dose	938	990		
Number of hospitalizations and emergency department visits	1	24	95.5	76.4–99.9
Number of hospitalizations	0	10‡	100	58.8–100
Number of emergency department visits	1§	14‖	92.3	56.6–99.8

N= 2070 pacientes

Edad 25-36 sem [34 s]

NO efectos adversos

↓↓↓ **100%** (82-100)

Hospitalización y Asistencia a Urgencias

Martinón-Torres, Granada 2009

Rotavirus Vaccination of Very Low Birth Weight Infants at Discharge From the NICU

WHAT'S KNOWN ON THIS SUBJECT: Preterm and low birth weight infants are at increased risk of hospitalization due to rotavirus gastroenteritis, and rotavirus vaccine is immunogenic and well tolerated among these infants when provided at or after discharge from the NICU.

WHAT THIS STUDY ADDS: Many preterm infants with a birth weight of ≤1500 g are not eligible to receive rotavirus vaccination because they remain in the NICU beyond the upper age limit recommended for immunization. New strategies are needed.

AUTHORS: Katherine A. Stumpf, MD,[a] Tami Thompson, MSN, PNP,[b] and Pablo J. Sánchez, MD[a]

[a]Department of Pediatrics, University of Texas Southwestern Medical Center, Dallas, Texas; and [b]Women & Infants' Specialty Health, Parkland Health and Hospital System, Dallas, Texas

KEY WORDS
rotavirus, immunization, preterm infant, neonatal ICU

ABBREVIATIONS
AAP—American Academy of Pediatrics
ELBW—extremely low birth weight
PMH—Parkland Memorial Hospital
RV5—RotaTeq
VLBW—very low birth weight

Por edad insuficiente, excesiva u omisión, la mayoría acaban NO vacunándose

Pediatrics 2013;132;e662; originally published online August 12, 2013; DOI: 10.1542/peds.2013-0291

EFFICACY OF PENTAVALENT HUMAN-BOVINE (WC3) REASSORTANT ROTAVIRUS VACCINE BASED ON BREASTFEEDING FREQUENCY

Michelle G. Goveia, MD, MPH, Mark J. DiNubile, MD, Michael J. Dallas, PhD, Penny M. Heaton, MD, and Barbara J. Kuter, PhD, MPH; for the REST Study Team

The Pediatric Infectious Disease Journal • Volume 27, Number 7, July 2008

NO interferencia de la lactancia materna (exclusiva o mixta)

TABLE 1. Efficacy Against Any and Severe G1-4 Rotavirus Gastroenteritis Through the First Full Rotavirus Season Based on Frequency of Breastfeeding (Per Protocol Population and Analysis)

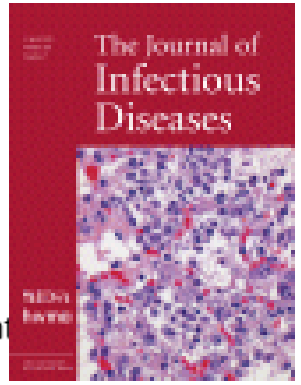
Breastfeeding Frequency	Any G1-4 Rotavirus Gastroenteritis			Severe G1-4 Rotavirus Gastroenteritis		
	No. Cases/Number Vaccinated		Efficacy (95% CI)	No. Cases/Number Vaccinated		Efficacy (95% CI)
	Vaccine Recipients	Placebo Recipients		Vaccine Recipients	Placebo Recipients	
Never	19/815	60/817	68.3% (46.1–82.1)	0/815	9/817	100% (48.3–100)
Some	24/953	133/947	82.2% (72.3–89.0)	1/953	22/947	95.4% (71.3–99.9)
Exclusively	39/767	122/799	68.0% (53.8–78.3)	0/767	20/799	100% (79.3–100)

Martinón-Torres, Granada 2009

MAJOR ARTICLE

JID 2010:201 (1 February)

(Rotarix) against Severe Diarrhea Caused by Serotypically Unrelated G2P[4] Strains in Brazil



Jailson B. Correia,[1] Manish M. Patel,[2] Osamu Nakagomi,[3,4] Fernanda M. U. Montenegro,[1] Eliane M. Germano,[1] Nancy B. Correia,[1] Luis E. Cuevas,[5] Umesh D. Parashar,[2] Nigel A. Cunliffe,[4] and Toyoko Nakagomi[3,4]

[1]Instituto de Medicina Integral Prof Fernando Figueira, Recife, Brazil; [2]Centers for Disease Control and Prevention, Atlanta, Georgia; [3]Department of Molecular Microbiology and Immunology, and Global Centre of Excellence, Nagasaki University, Nagasaki, Japan; [4]Department of Medical Microbiology, University of Liverpool, and [5]Liverpool School of Tropical Medicine, Liverpool, United Kingdom

Group	G2P[4] rotavirus strains		All rotavirus strains	
	Adjusted OR (95% CI)	Effectiveness (95% CI)	Adjusted OR (95% CI)	Effectiveness (95% CI)
Severe rotavirus disease (requiring hospital admission or treatment at emergency department)				
Case patients 6–11 months of age				
Rotavirus-negative control participants	0.23 (0.09–0.58)	77 (42–91)	0.27 (0.11–0.64)	73 (36–89)
Control participants with ARI	0.23 (0.10–0.57)	77 (43–90)	0.27 (0.12–0.61)	73 (38–88)
Case patients >12 months of age				
Rotavirus-negative control participants	1.24 (0.53–2.90)	−24 (−190 to 47)	1.51 (0.67–3.48)	−51 (−248 to 34)
Control participants with ARI	0.84 (0.36–2.01)	15 (−101 to 64)	1.01 (0.43–2.38)	−1 (−138 to 57)
Rotavirus disease requiring hospitalization				
Case patients 6–11 months of age				
Rotavirus-negative control participants	0.15 (0.05–0.46)	85 (54–95)	0.19 (0.07–0.53)	81 (47–93)
Control participants with ARI	0.17 (0.06–0.49)	83 (51–94)	0.20 (0.08–0.52)	80 (48–92)
Case patients >12 months of age				
Rotavirus-negative control participants	0.95 (0.31–2.88)	5 (−187 to 69)	0.95 (0.31–2.88)	5 (−187 to 69)
Control participants with ARI	0.58 (0.19–1.80)	41 (−79 to 81)	0.58 (0.19–1.80)	41 (−79 to 81)

¿Cuánto dura la protección inducida por la vacuna frente a rotavirus?

Contents lists available at SciVerse ScienceDirect

Vaccine 31 (2013) 2686–2691

journal homepage: www.elsevier.com/locate/vaccine

Table 1
Incidence rates per 100,000 in different age groups in the pre-vaccination era 2001–2005 (mean), in 2010 and 2011, and change (in %) in incidence rates in different age groups in the years 2010 and 2011 compared to the mean pre-vaccination era 2001–2005.

	Mean prevaccination era (2001–2005) Incidence rate per 100,000	UMV 2010 Incidence rate per 100,000 (change in %)	UMV 2011 Incidence rate per 100,000 (change in %)
0–<1 year	2141	344 (–84%)	397 (–81%)
1–<2 years	1745	331 (–81%)	332 (–81%)
2–<3.5 years	611	235 (–62%)	216 (–65%)
3.5–<5 years	206	188 (–9%)	201 (–3%)
5–<10 years	53	35 (–34%)	78 (+48%)
10–<15 years	13	9 (–32%)	14 (+6%)
0–<5 years	1008	261 (–74%)	271 (–73%)
0–<15 years	329	98 (–70%)	120 (–64%)

RV1 forma parte del programa de inmunización nacional
La mayoría de los casos son por G2P4

G Model
EIMC 1015 1–3
ARTICLE IN PRESS

Enferm Infecc Microbiol Clin. 2013;xxx(xx):xxx–xxx

ELSEVIER DOYMA

Enfermedades Infecciosas y Microbiología Clínica

www.elsevier.es/eimc

Original breve

Caracterización microbiológica de las gastroenteritis agudas virales atendidas en un servicio de pediatría en un área de alta cobertura vacunal frente a rotavirus

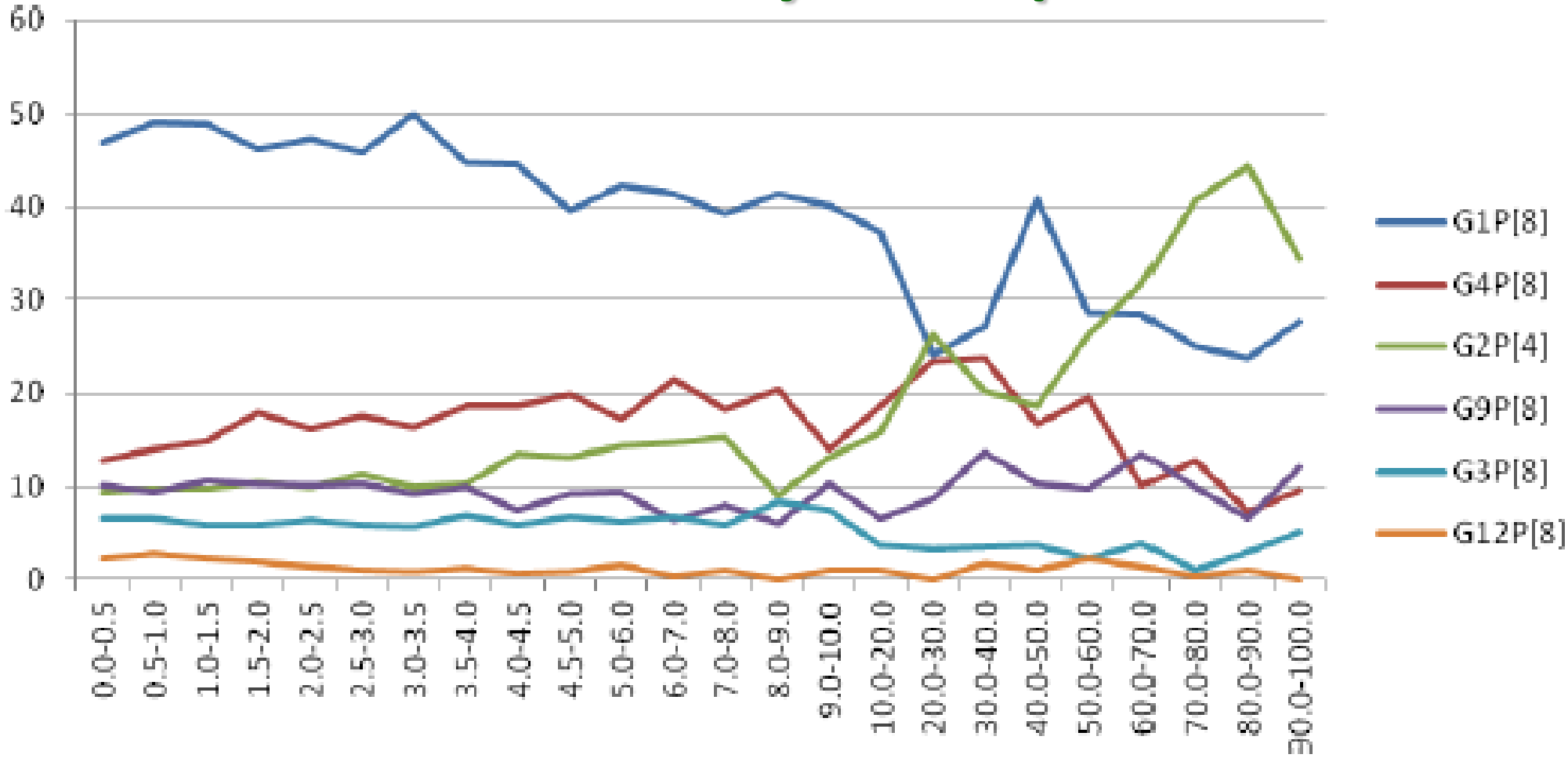
Carlos García-Magán[a], María José de Castro-López[a], José Llovo-Taboada[b], Carmen Curros-Novo[a], Alicia Sánchez-Fauquier[c] y Federico Martinón-Torres[a,*]

[a] Departamento de Pediatría, Complejo Hospitalario Universitario de Santiago de Compostela, Santiago de Compostela, España
[b] Servicio de Microbiología, Complejo Hospitalario Universitario de Santiago de Compostela, Santiago de Compostela, España
[c] Instituto de Salud Carlos III, Madrid, España

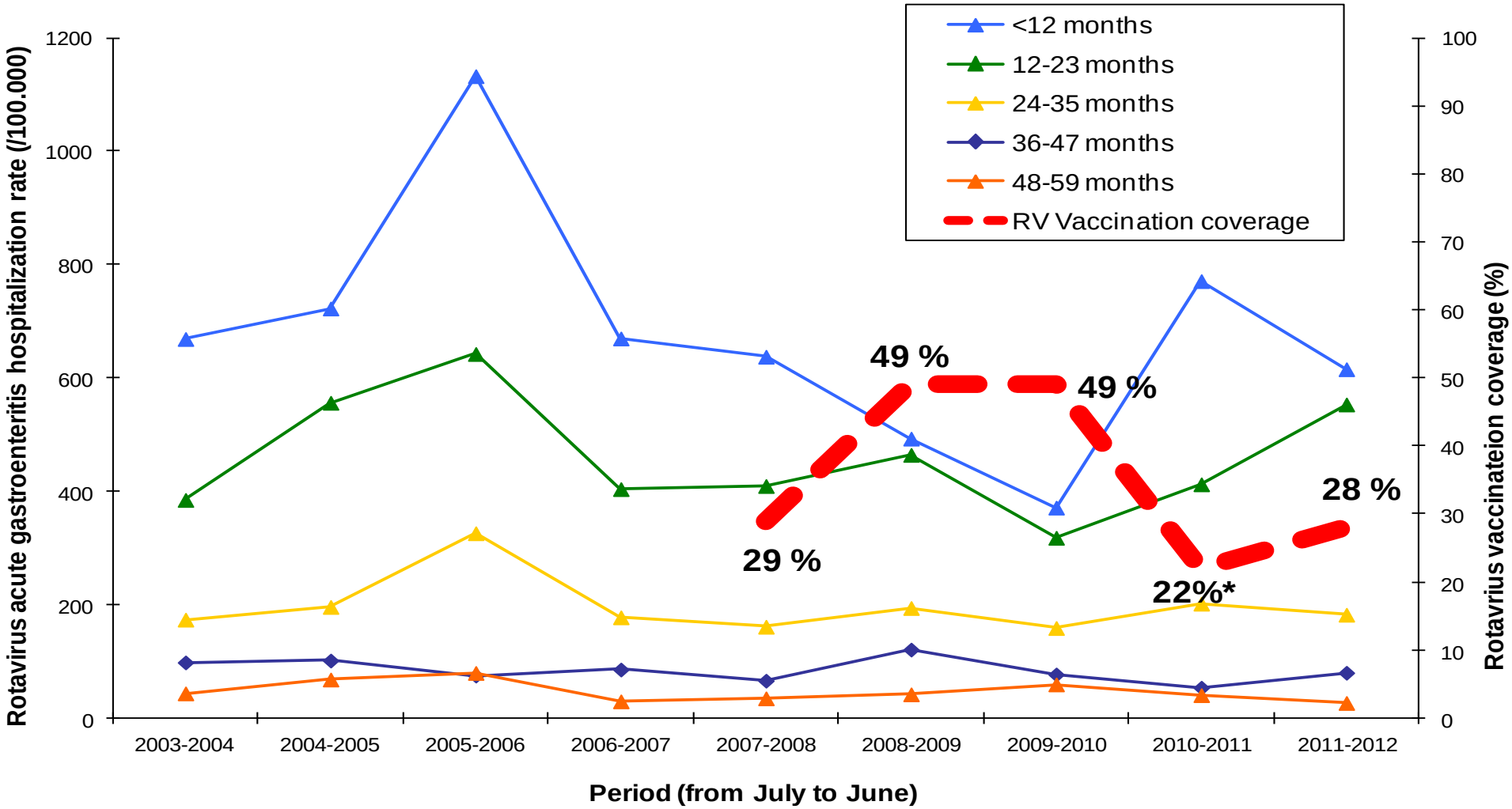
Sin evidencias de reemplazamiento de serotipos en un área con cobertura alta frente a rotavirus

Genotipos rotavirus según edad en EUROPA

EURO-ROTANET 6 years report



Reverse evidence of rotavirus vaccines effectiveness



(*) 22% is the mean RV vaccine coverage for that period. However, for 5 months within that period, no new batches of vaccine were released onto the market, and the coverage estimated for those months was 0-5%.

Martinón-Torres F et al. Human Vaccine 2013

@fedemartinon, Almería 2013

Jay M. Lieberman[1,2], Xioahua Huang[3], Eileen Koski[4], Harvey Kaufman [5], Richard Furlanetto[6], Herman Hurwitz[7], Pradeep Ragothaman[5], Marsha Green[4]
[1]Quest Diagnostics Nichols Institute, San Juan Capistrano, CA; [2]Focus Diagnostics, Cypress, CA; [3]Quest Diagnostics, Norristown, PA; [4]Quest Diagnostics, Lyndhurst, NJ; [5]Quest Diagnostics, Madison, NJ; [6]Quest Diagnostics Nichols Institute, Chantilly, VA; [7]Quest Diagnostics, Philadelphia, PA

ICAAC/IDSA 2008

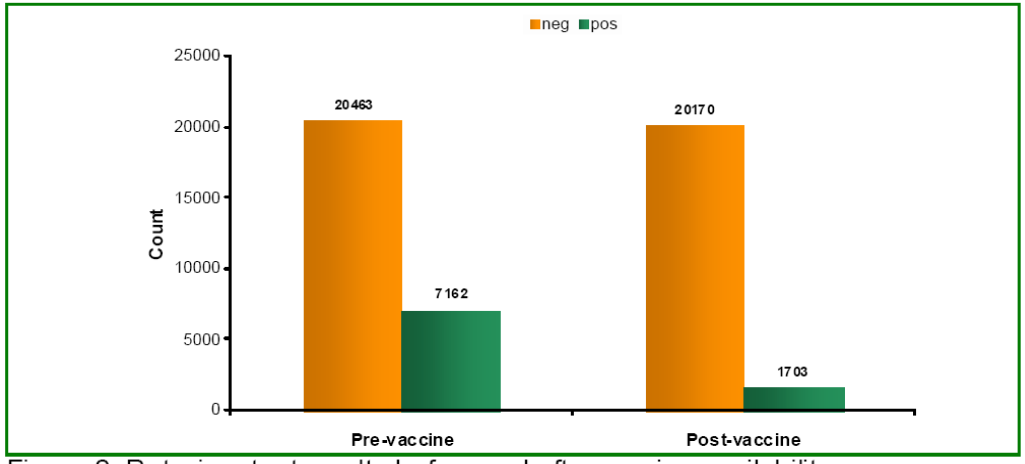


Figure 2. Rotavirus test results before and after vaccine availability.

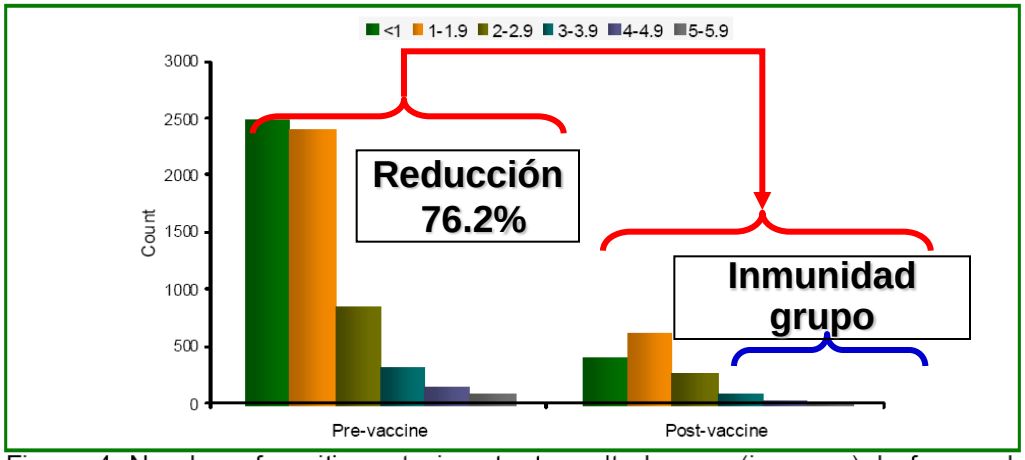


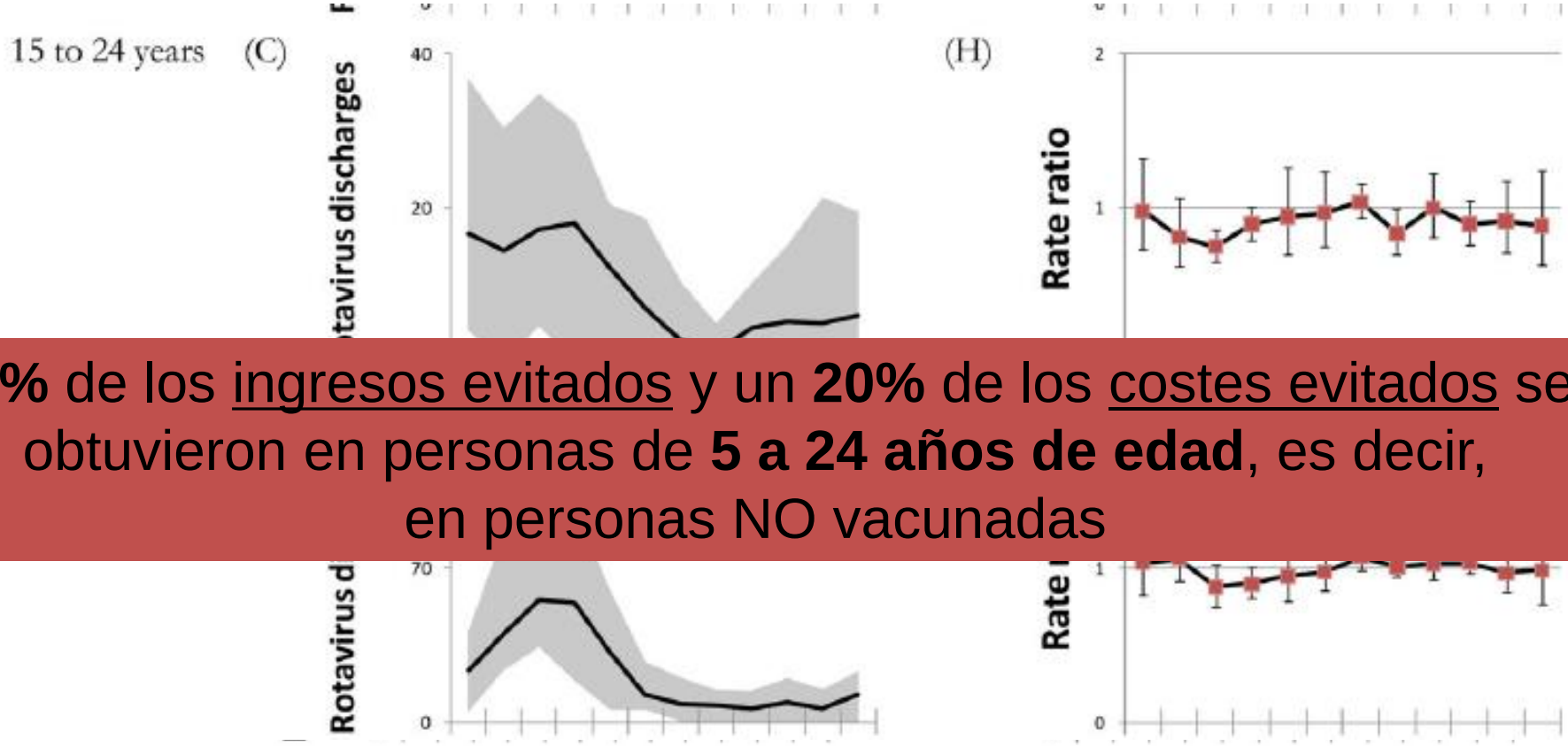
Figure 4. Number of positive rotavirus test results by age (in years), before and after vaccine availability.

- Reducción **76.2%**, a expensas sobre todo de menores de 1 año
- Descenso >>> lógico esperable : Cobertura **49%** con ≥ 1 dosis)
- **PROTECCION INDIRECTA**

Infant Rotavirus Vaccination May Provide Indirect Protection to Older Children and Adults in the United States

Ben A. Lopman, Aaron T. Curns, Catherine Yen, and Umesh D. Parashar

Division of Viral Diseases, National Center for Immunization and Respiratory Diseases, Centers for Disease Control and Prevention, Atlanta, Georgia



15% de los ingresos evitados y un **20%** de los costes evitados se obtuvieron en personas de **5 a 24 años de edad**, es decir, en personas NO vacunadas

Martinón-Torres, Coimbra 2013

Indirect benefits of rotavirus vaccination « herd immunity or herd protection»

Location	Reduction in rotavirus hospital admissions among	
	Children age-eligible for vaccine	Children not age-eligible for vaccine*
Nationwide, USA[1]	79-81%	69-78%
Nationwide, USA[2]	74-85%	41-80%
Queensland, Australia[3]	50-70%	30-70%
Nationwide, Belgium[4]	65-80%	20-64%
Nationwide, Austria[5]	76-79%	35%
Sao Paulo, Brazil[6]	56-69%	24%
Nationwide, El Salvador[7]	79-86%	41-81%

*Typically aged 2-5 years, but age range assessed in each study differed depending on year of vaccine introduction and type assessment.

1. Cortese MM et al. Pediatric Infectious Disease Journal. 2010;29:489–494.
2. Yen C et al. Pediatrics. 2011;127:e9–e15.
3. Field EJ et al. Pediatrics. 2010;126:e506–512.
4. Raes M et al. Pediatric Infectious Disease Journal. 2011;30: e120–e25.
5. Paulke-Korinek M et al. Vaccine. 2011;29:2791–2796.
6. Safadi MA et al. Pediatric Infectious Disease Journal. 2010;29:1019–1022.
7. Yen C et al. Pediatric Infectious Disease Journal. 2011;30 (suppl 1):S6–S10.

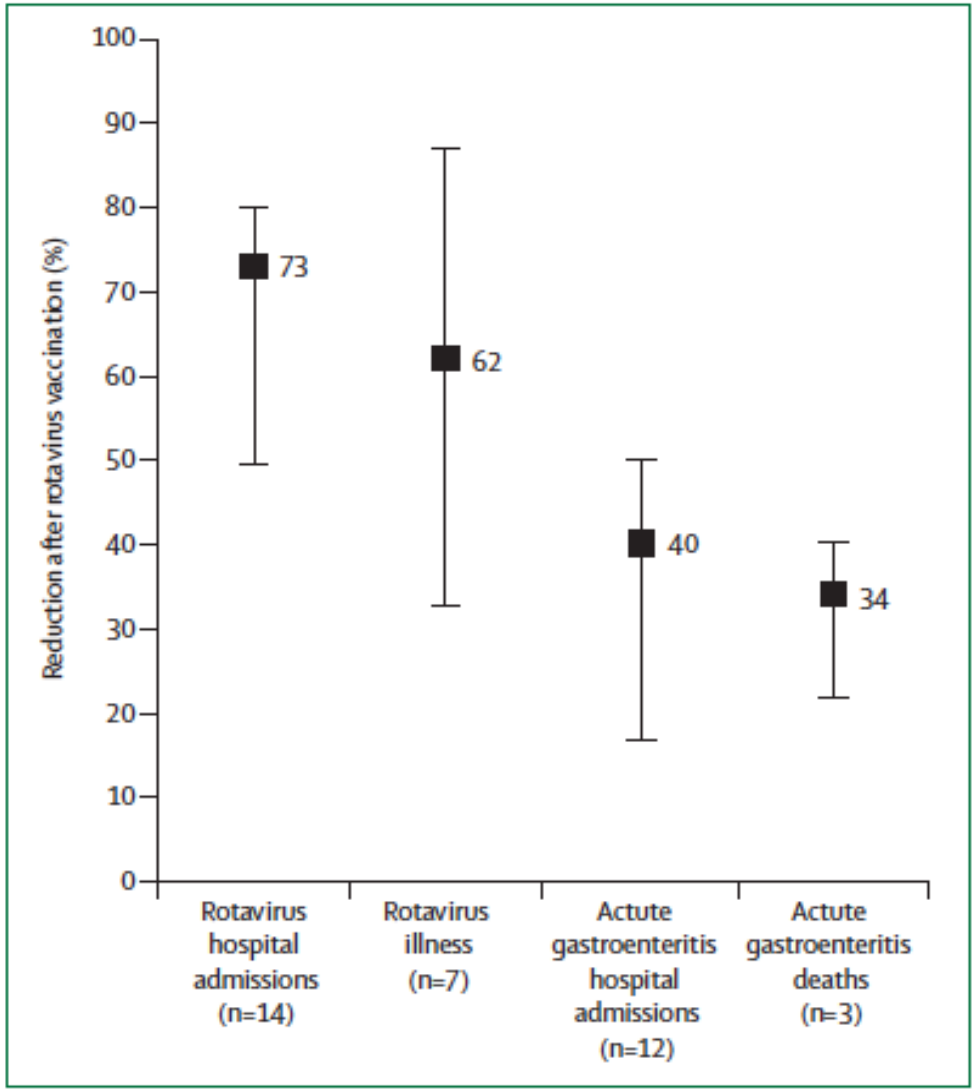
Table derived from Table 2 from: Patel MM, Glass R, Desai R, Tate JE, Parashar UD. Fulfilling the Promise of Rotavirus Vaccines: How Far Have We Come Since Licensure? *The Lancet Infectious Diseases*. 2012;12(7):561-570.

Resumen del valor de la vacunación frente a rotavirus

	Study type	Vaccine	Effectiveness for prevention of RV hospital admissions		Predominant circulating strain
			Full series	Partial series	
High-income					
Houston, TX, USA[56]	Case-control	RV5	100%	69–81%	G3P[8]
USA (nationwide)[53]	Cohort	RV5	100%	..	..
New Haven, CT, USA[57]	Case-control	RV5	94%	93%	G3P[8], NT
Houston, TX, USA[58]	Case-control	RV5	84%	..	G3P[8]
US military dependants[33]	Cohort	RV5	90%	86%	..
Cincinnati, OH, Nashville, TN, and Rochester, NY, USA[59]	Case-control	RV5	95%	89%	G1-G3, G9, G12
Queensland, Australia[39]	Screening	RV5	94%	..	..
Central Australia*[60]	Case-control	RV1	84%	..	G9P[8]
Central Australia*†[61]	Case-control	RV1	51%	..	G2P[4]
Northern Israel‡[62]	Case-control	RV5, RV1	89%	..	..
Spain (nationwide)‡[63]	Case-control	RV5, RV1	96%	89%	..
Northwest Brittany, France[64]	Cohort	RV5	98%	..	..
Middle-income					
Northeast Brazil[65]	Screening	RV1	89–95%	..	G2P[4]
Recife, Brazil[65]	Case-control	RV1	85%	..	G2P[4]
Belem, Brazil[66]	Case-control	RV1	40–76%	..	G2P[4]
El Salvador (nationwide)[55]	Case-control	RV1	76%	51%	G1P[8]
Chiapas, Mexico[67]	Case-control	RV1	94%	84%	G9P[4]
Low-income					
Four hospitals, Nicaragua[54]	Case-control	RV5	44%	55%	G2P[4]

RV=rotavirus. RV5=RotaTeq. NT=non-typeable strain. RV1=Rotarix. *Indigenous low-income population in Australia's Northern Territory. †Data are for children younger than 1 year only rather than for all vaccinated children—sample size was small in children older than 1 year, and vaccine effectiveness was lower (9%). ‡Private market only.

Table 3: **Postlicensure vaccine effectiveness for prevention of rotavirus hospital admissions**



Patel M, Glass R, Parashar U. Lancet 2012

MENSAJES PARA CASA

- **Evidencia científica** justifica **vacunación frente a rotavirus**
- Las vacunas frente a rotavirus **funcionan**
  - … **MEJOR** incluso de lo esperado…
  - … pero sólo funcionan **si** se **utilizan.**

VII CONGRESO DE LA SEIP

SOCIEDAD ESPAÑOLA DE INFECTOLOGÍA PEDIÁTRICA

Ab Osterhaus
Timo Vesikari
Rino Rappuoli
Simon Kroll
William Haussdorf
Heinz-Josef Schmitt
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Sociedad Española de Infectología Pediátrica (SEIP) de la AEP

Santiago de Compostela

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