

EMI 2030: Objetivos por cumplir

Jesús Ruiz Contreras

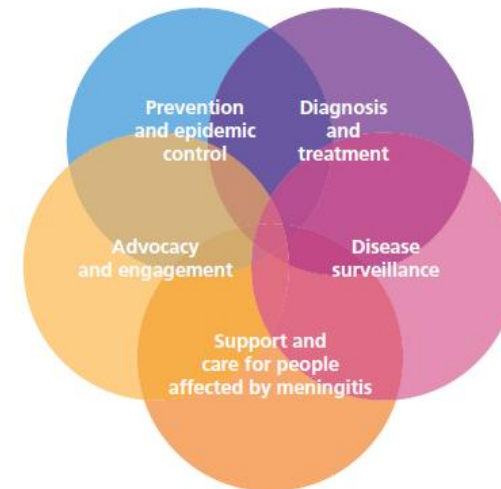


 DEFEATING MENINGITIS BY 2030
A GLOBAL ROAD MAP

Visionary goals by 2030

- ✓ Eliminate bacterial meningitis epidemics⁵
- ✓ Reduce cases of vaccine-preventable bacterial meningitis by 50% and deaths by 70%⁶
- ✓ Reduce disability and improve quality of life after meningitis due to any cause

All United Nations Member States are committed to achieving universal health coverage by 2030 (20). The visionary goals of eliminating epidemics, reducing the number of cases and deaths, and giving priority to caring for those with disability are fully aligned with universal health coverage and have equity as a guiding principle.



Defeating meningitis by 2030: a global road map. Geneva: World Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO.





Vacunas

www.elsevier.es/vac



Artículo especial

Revisión histórica de la vacunación frente a meningococo en España (1996-2021). Lecciones aprendidas



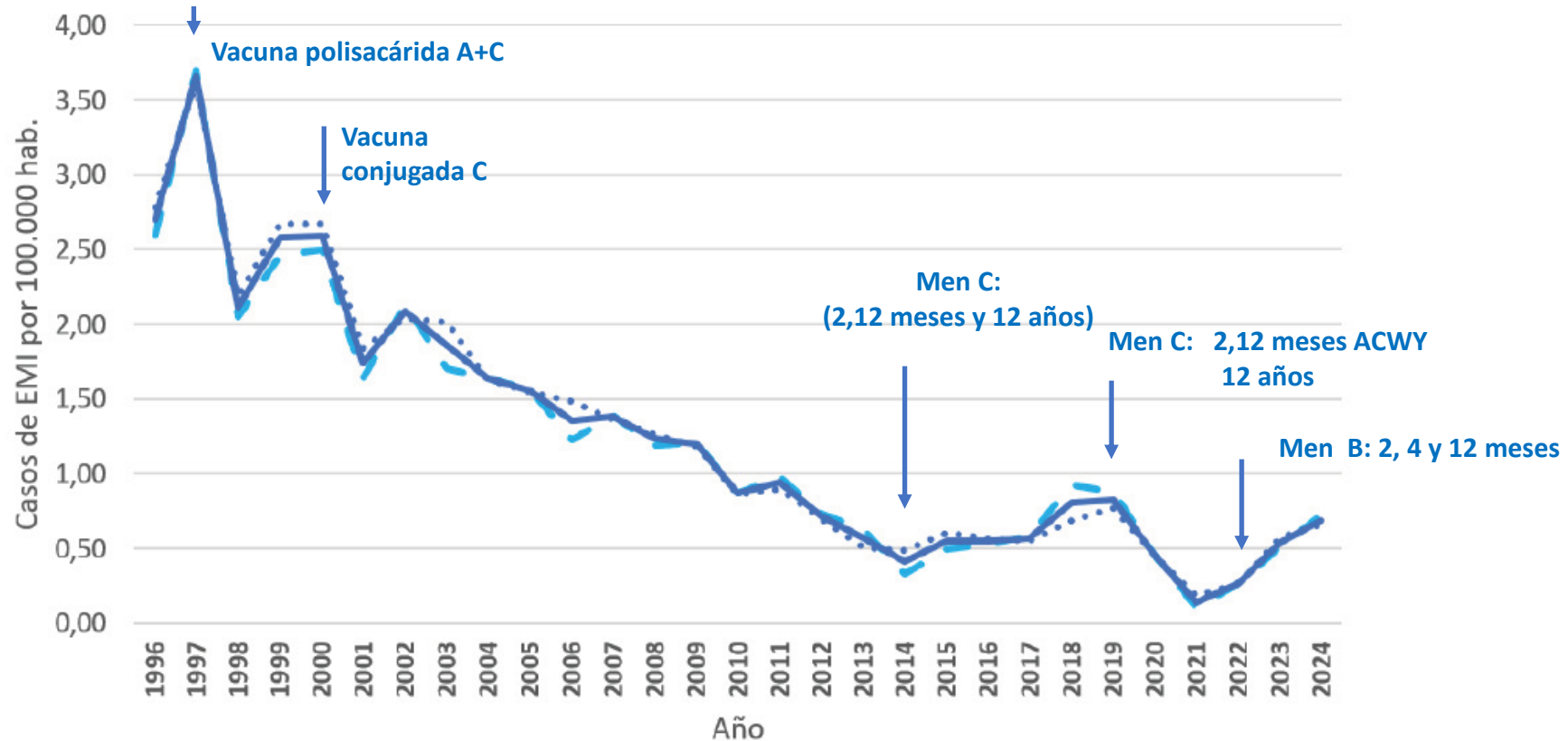
Angel Valls-Arévalo^a, Auxiliadora Fernández de Alba^b, David López-Martín^c,
Walter Goycochea-Valdivia^d, Irene Mate-Cano^e, Marta García-Fernández de Villalta^f,
Ignacio Salamanca de la Cueva^b y María Garcés-Sánchez^{a,*}



Brote de meningitis por grupo C: 2b P1.2,5



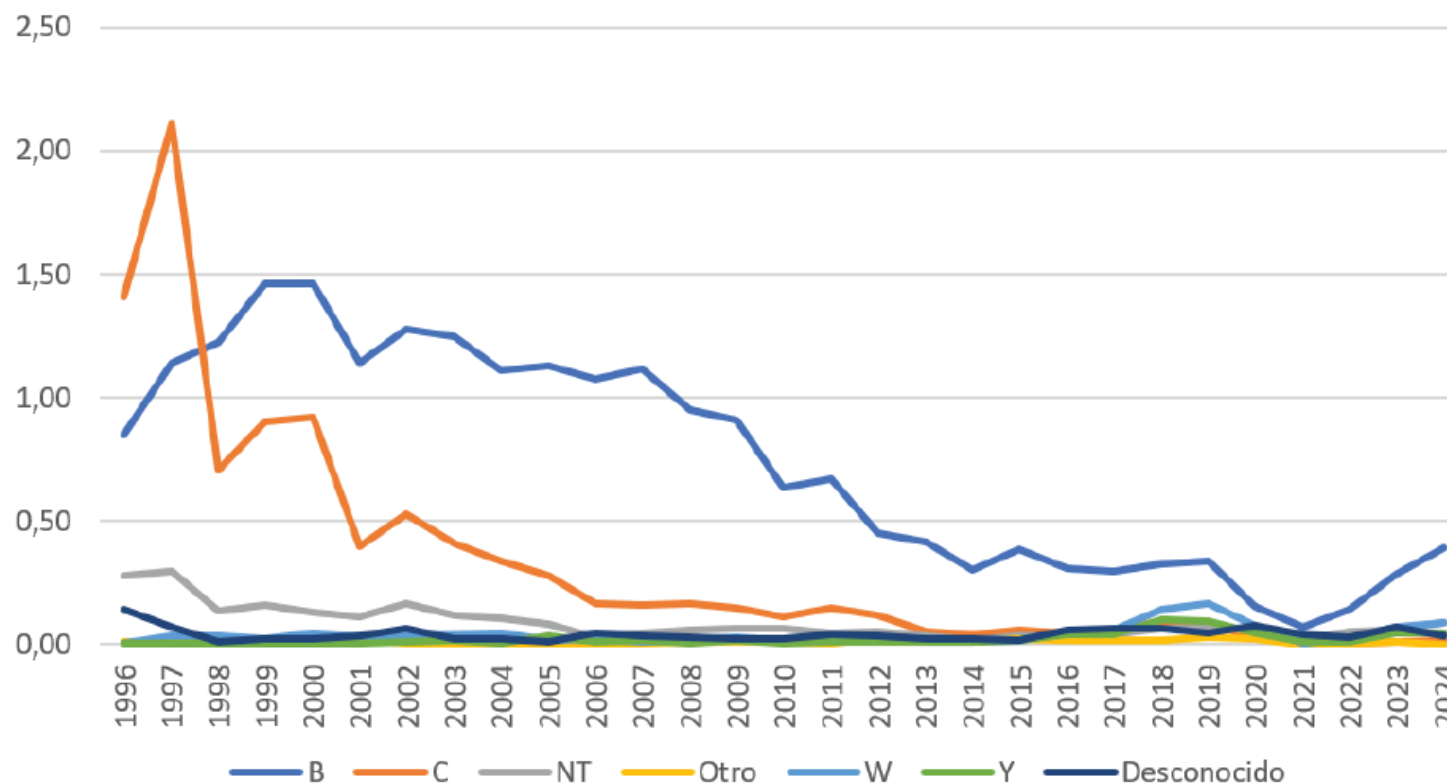
Incidencia de EMI en España (1996-2024)



Martín-Sánchez A, et al. Boletín Epidemiológico Semanal 2025; 33 (3): 135-152



Incidencia de EMI por los diferentes serogrupos en España



Martín-Sánchez A, et al. Boletín Epidemiológico Semanal 2025; 33 (3): 135-152



Enfermedad meningocócica en España

Casos según serogrupos, años 2013 a 2025

Fuente: datos provisionales, adaptado de Centro Nacional de Epidemiología, Instituto de Salud Carlos III



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Enero de 2026



Enfermedad meningocócica por MenB en España

Tasas según grupos de edad en la semana 19, años 2023 a 2025

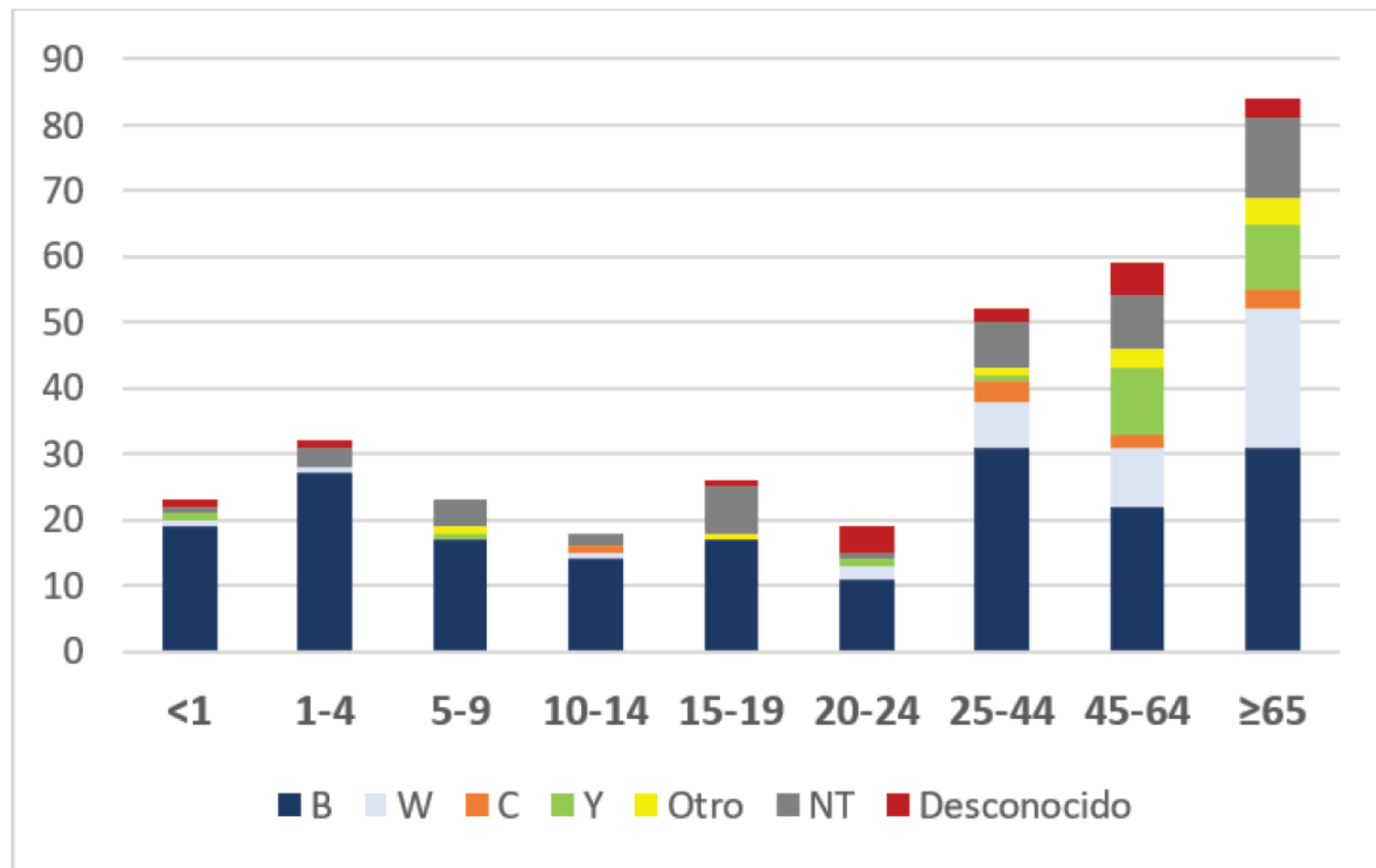
Fuente: datos provisionales, adaptado de Centro Nacional de Epidemiología, Instituto de Salud Carlos III

<https://vacunasaep.org/> • @CAV_AEP

Mayo de 2025



EMI en España en 2024



Echemos cuentas para 2025

- 379 casos
- 35-40 fallecimientos
- 100 personas con secuelas



E Una nueva variante de meningitis B causó el brote en el que falleció la gimnasta de 17 años María Herranz

Una investigación descubre que el patógeno, más virulento, causó dos fallecidos y dos hospitalizados en Madrid y Guadalajara, todos ellos jóvenes

OUTBREAKS

Outbreak of invasive meningococcal disease caused by a meningococcus serogroup B expressing a rare *porA* genosubtype (19-54, 15), Spain, March to April 2024

Raquel Abad¹, Carmen Navarro¹, Cristina García-Amil¹, Marina Montes¹, Alfredo Castañeda-García¹, Juan A Cuadros², Alicia Galar^{3,4}, Fernando Martín⁵, Ester Mena⁶, Sara Pérez de Madrid⁷, Carmen Román⁸, Marta Soler^{9,10}, Julio A Vázquez¹

Síntomas gastrointestinales

El suero de vacunados con 4CmenB tiene SBA frente a estas cepas

News story

Cases of invasive meningococcal disease notified in Kent

Update 18 March

The UK Health Security Agency is continuing to investigate an outbreak of meningococcal disease in Kent. As of 5pm on 17 March, 9 laboratory cases are confirmed and 11 notifications remain under investigation, bringing the total to 20. Six of the confirmed cases are confirmed to be group B meningococcal disease.





¿Será posible evitar los
fallecimientos y secuelas
de EMI en 2030?

Lecciones aprendidas con
las vacunas
meningocócicas

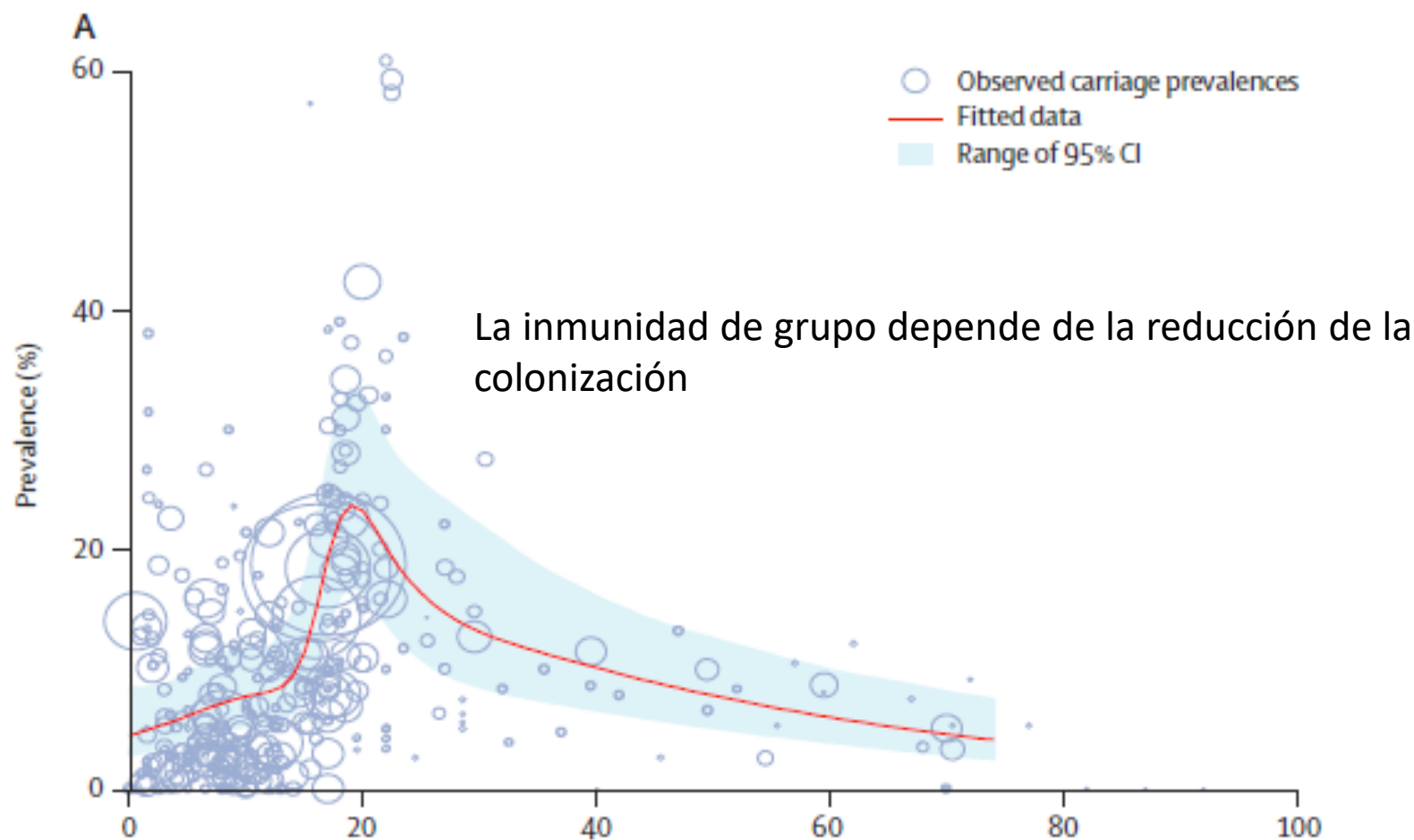
Reservorio y transmisión de las enfermedades producidas por bacterias capsuladas



1. Volker Vetter, Roger Baxter, Gülhan Denizer, Marco A. P. Sáfiadi, Sven- Arne Silfverdal, Andrew Vyse & Ray Borrow (2016) Routinely vaccinating adolescents against meningococcus: targeting transmission & disease, Expert Review of Vaccines, 2017



Colonización nasofaríngea por meningococo



Christensen H, et al. Lancet Infect Dis 2010; 10: 853-61



A group of four teenagers are smiling and posing for a photo outdoors. In the foreground, a young man with dark, curly hair is smiling broadly, wearing a grey zip-up jacket over a red and white checkered shirt. Behind him to the left, a young woman with long brown hair and a grey beanie is smiling. To his right, another young woman with long blonde hair is smiling. On the far right, a young man with dark hair is partially visible, also smiling. The background shows trees with yellow and orange autumn leaves, suggesting a park or schoolyard setting. The overall mood is positive and youthful.

Vacunación frente a meningococo B en adolescentes

Duración de la protección
Inmunidad de grupo

Meningococcal B Vaccine and Meningococcal Carriage in Adolescents in Australia

Table 2. Analysis of Primary and Secondary Outcomes for *N. meningitidis* Carriage and Acquisition at 12 Months with the Use of Multiple Imputation.*

Outcome	Vaccination Group (N = 12,746)	Control Group (N = 11,523)	Odds Ratio (95% CI)†
	no. (%)		
Carriage of disease-causing genogroup	326 (2.55)	291 (2.52)	1.02 (0.80–1.31)‡
Carriage of any <i>N. meningitidis</i>	547 (4.29)	561 (4.87)	0.85 (0.70–1.04)
Carriage of genogroup B	164 (1.29)	135 (1.18)	1.10 (0.81–1.47)
Carriage of genogroup Y	117 (0.92)	131 (1.13)	0.81 (0.56–1.18)
Carriage of genogroup W§	17 (0.16)	18 (0.18)	0.89 (0.43–1.85)
Carriage of genogroup C§	12 (0.11)	7 (0.07)	1.87 (0.63–5.55)
Carriage of genogroup X§	8 (0.07)	1 (0.01)	7.59 (0.98–58.83)¶
Acquisition of any <i>N. meningitidis</i>	430 (3.38)	427 (3.70)	0.91 (0.73–1.13)
Acquisition of disease-causing genogroup	272 (2.13)	238 (2.07)	1.03 (0.79–1.34)

Marshall HS et al. N Engl J Med 2020; 382: 318-27

Jerez de la Frontera, 20 y 21 de marzo 2026



Clinical Infectious Diseases

MAJOR ARTICLE



Meningococcal Carriage Evaluation in Response to a Serogroup B Meningococcal Disease Outbreak and Mass Vaccination Campaign at a College—Rhode Island, 2015–2016

Heidi M. Soeters,^{1,2} Melissa Whaley,² Nicole Alexander-Scott,³ Koren V. Kanadianian,⁴ Jessica R. MacNeil,² Stacey W. Martin,² Lucy A. McNamara,² Kenneth Sicard,⁴ Cynthia Vanner,³ Jeni Vuong,² Xin Wang,² Utpala Bandy,³ and Manisha Patel,² for the Rhode Island Meningococcal Carriage Evaluation Team

The Journal of Infectious Diseases

MAJOR ARTICLE



Meningococcal Carriage Following a Vaccination Campaign With MenB-4C and MenB-FHbp in Response to a University Serogroup B Meningococcal Disease Outbreak—Oregon, 2015–2016

Lucy A. McNamara,¹ Jennifer Dolan Thomas,^{1,a} Jessica MacNeil,¹ How Yi Chang,¹ Michael Day,³ Emily Fisher,^{2,3} Stacey Martin,^{1,a} Tasha Poissant,³ Susanna E. Schmink,¹ Evelene Steward-Clark,¹ Laurel T. Jenkins,¹ Xin Wang,¹ and Anna Acosta,¹ for the Oregon Meningococcal Carriage Team

No efecto en la colonización nasofaríngea



Duración de la protección de la vacuna 4CMenB

Time after last dose	Post-priming protection (%) [95% CI (%)]	Post-booster protection (%) [95% CI (%)]
4CMenB-types MenB strains		
6 months	86.4 [76.7; 96.1]	91.7 [74.1; 98.9]
1 year	80.7 [66.6; 93.7]	87.2 [64.2; 97.6]
2 years	73.9 [55.3; 90.1]	82.2 [55.2; 95.8]
4 years	67.5 [45.7; 85.5]	77.3 [47.9; 93.6]
8 years	62.0 [38.2; 80.7]	72.8 [41.7; 91.4]

Argante L, et al. NPJ Vaccines 2024; 9: 239



*Ni siquiera vacunando a los
adolescentes se protegerá a los
adultos frente a meningococo B*



¿Por qué
persisten los
casos de EMI
por serogrupo
B en los niños?

Tres obstáculos:

- Efectividad
- Duración de la protección
- Ausencia de protección indirecta

ORIGINAL ARTICLE

Effectiveness of a Meningococcal Group B Vaccine (4CMenB) in Children

EMI por cualquier serogrupo

- ≥ 2 dosis: reducción 76%
por

EMI por serogrupo B

- ≥ 2 dosis: 71%
- Al menos una dosis: 64%

Castilla J, et al. N Engl J Med 2013; 388: 427-38

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812

JANUARY 23, 2020

VOL. 382 NO. 4

Vaccination of Infants with Meningococcal Group B Vaccine (4CMenB) in England

- Reducción 75% por EMI
por serogrupo B
- Efectividad ajustada:
 - 2 dosis primarias: 53%
 - dos dosis + refuerzo: 59%

Ladhani SN, et al. N Engl J Med 2020; 382: 309-17



Enfermedad meningocócica por MenB en España

Tasas según grupos de edad en la semana 19, años 2023 a 2025

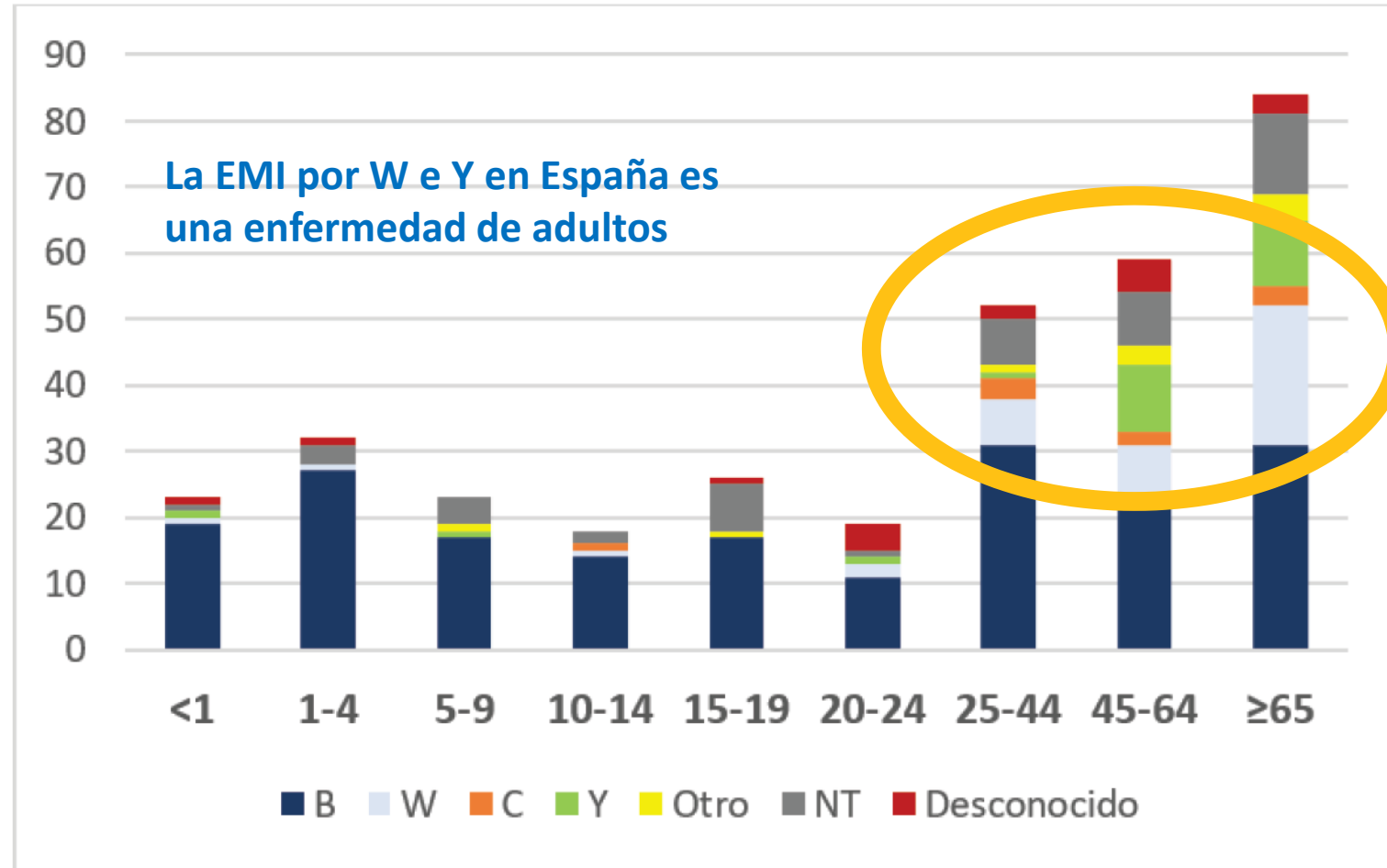
Fuente: datos provisionales, adaptado de Centro Nacional de Epidemiología, Instituto de Salud Carlos III

<https://vacunasaep.org/> • @CAV_AEP

Mayo de 2025



Volviendo a la epidemiología: EMI por W e Y en España en 2024



¿Podemos proteger al adulto de los casos C, W e Y?

Lecciones aprendidas de la vacuna MenC

17

Jerez de la Frontera, 20 y 21 de marzo 2026

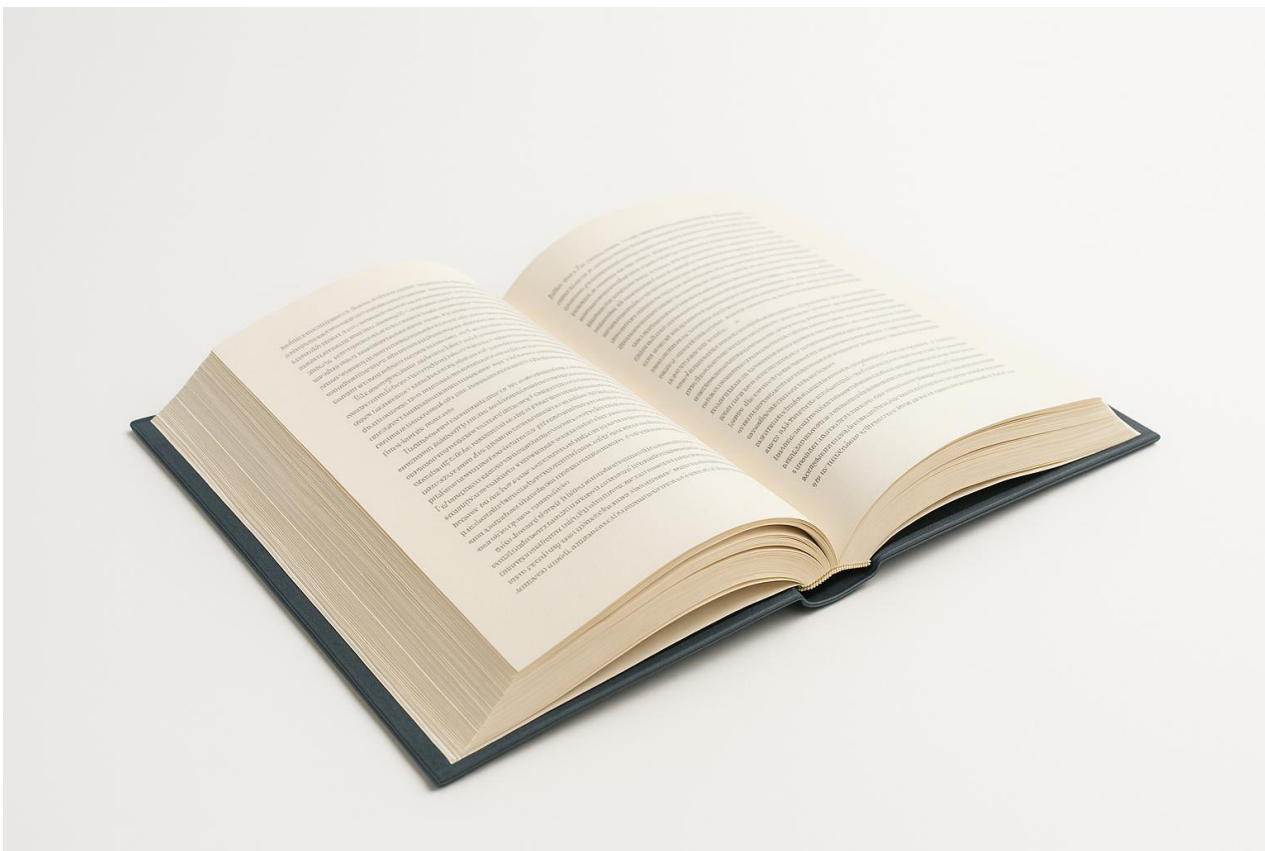
JORNADAS DE INMUNIZACIONES



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Pediatría

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de Vacunas
e Inmunizaciones



Lecciones de las vacunas conjugadas frente a meningococo C



Cambio del número de casos por grupo etario por edad tras las vacunación con MenC Periodo prevacunal (1999-2000) vs vacunal (2004-2005)

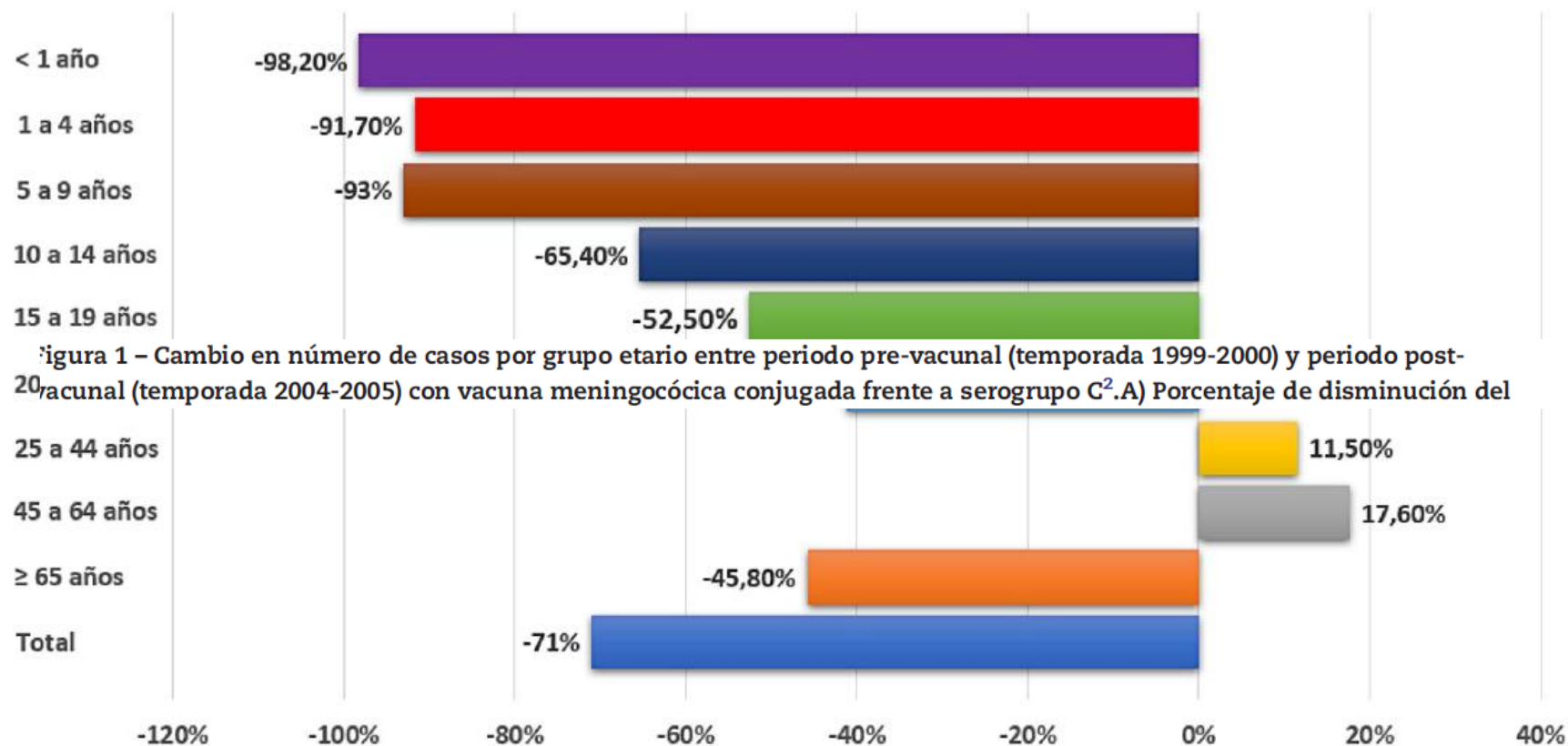
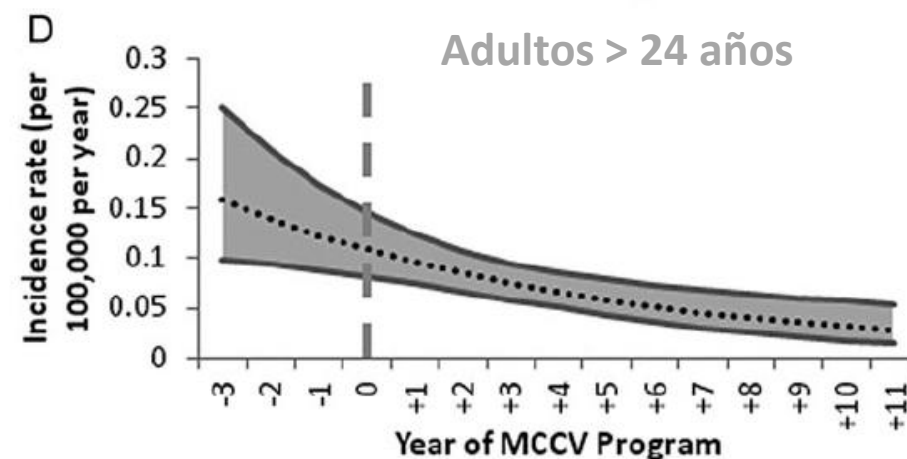
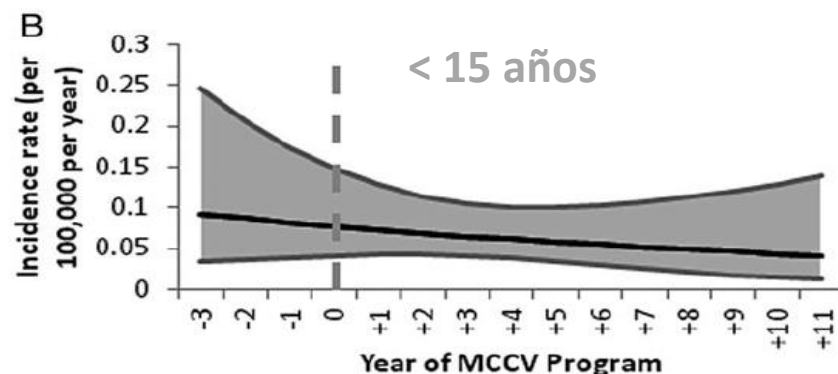
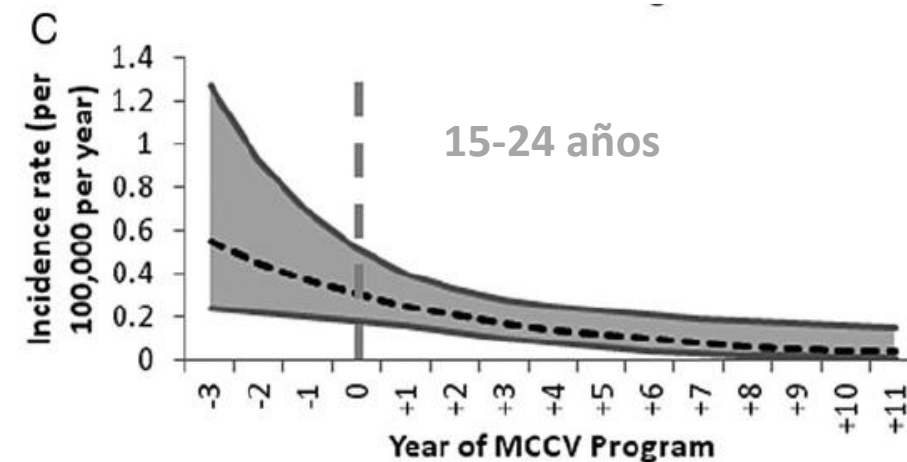
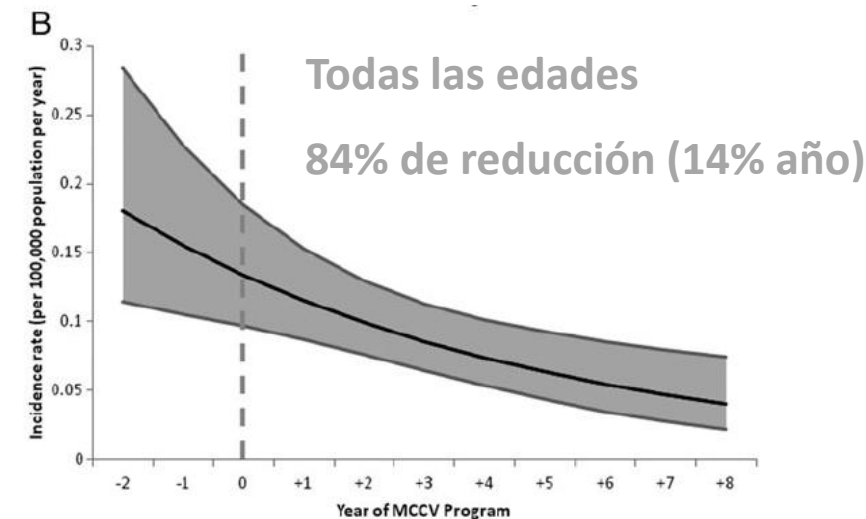


Figura 1 – Cambio en número de casos por grupo etario entre periodo pre-vacunal (temporada 1999-2000) y periodo post-vacunal (temporada 2004-2005) con vacuna meningocócica conjugada frente a serogrupo C^{2.A})

Valls-Árevalo et al. Vaccine 2023; 24: 45-54



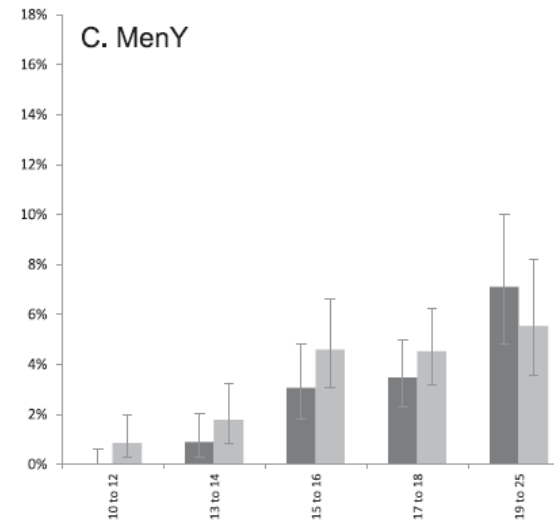
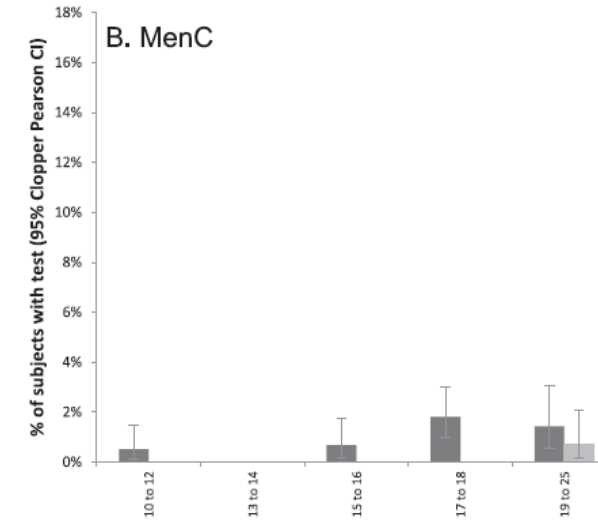
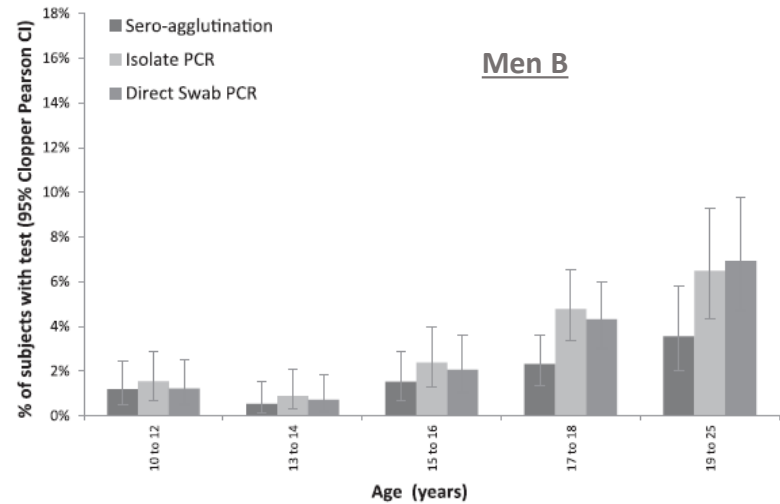
Efecto de la inmunización con vacuna MenC en Canadá



Sadarangani M et al. Clin Infect Dis 2014; 59: 1208-15



Colonización nasofaríngea por meningococo en adolescentes en el Reino Unido (2011)



Jeppesen CA, et al. J Infect 2015; 71: 43-52



Vacunas cuadrivalentes frente a meningococo en el adolescente

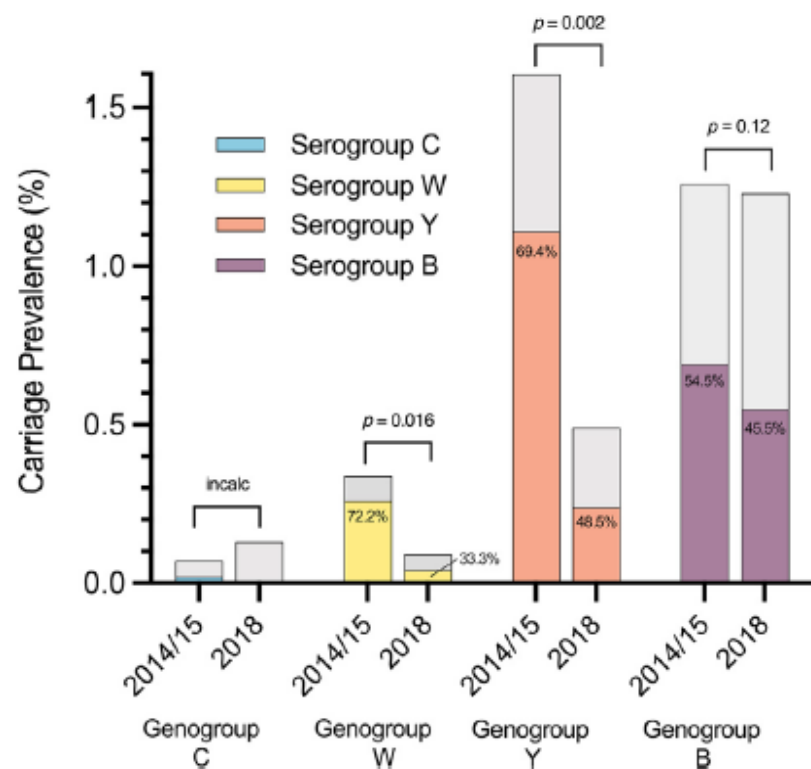
Disminución de la colonización nasofaríngea

Inmunidad de grupo

Memoria inmunológica

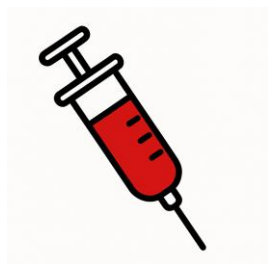


Vacunación ACWY en el adolescente y EMI por W e Y en al adulto



¿Se puede confirmar totalmente en la memoria inmunológica?

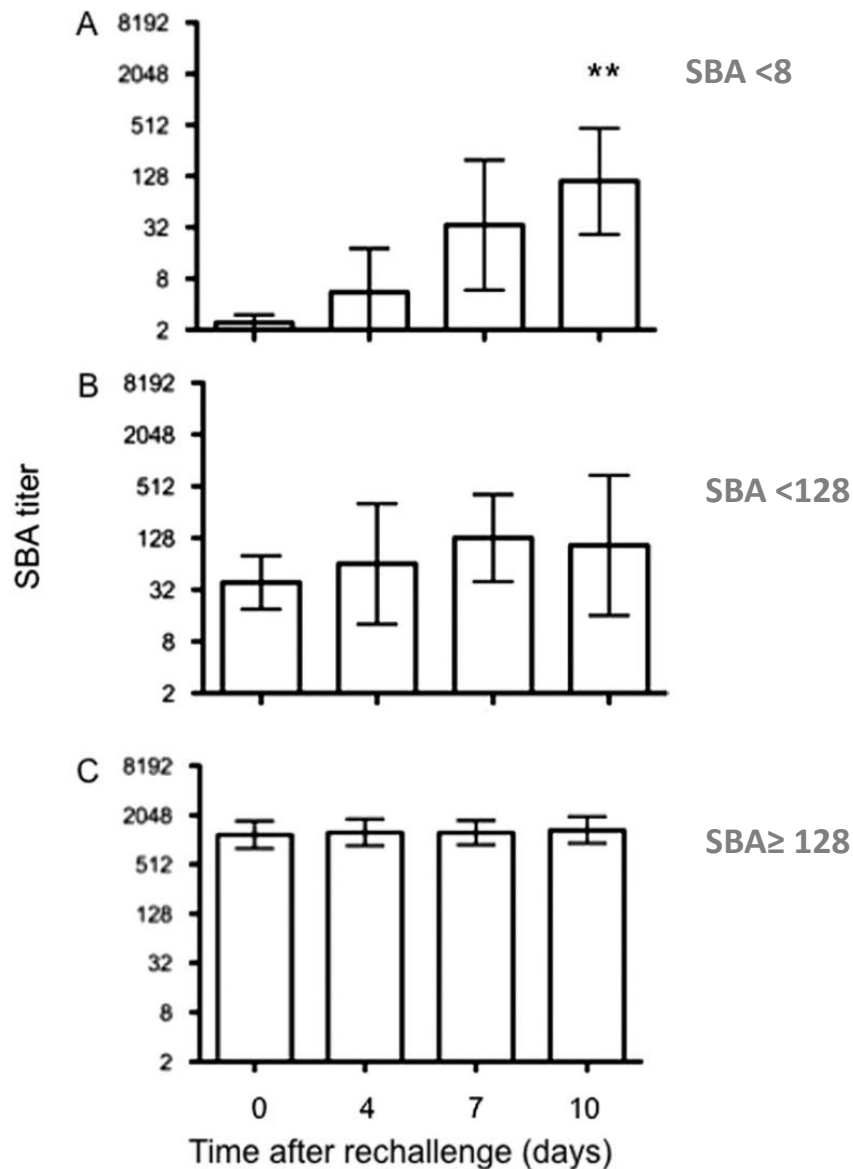
VC MenC



1 año



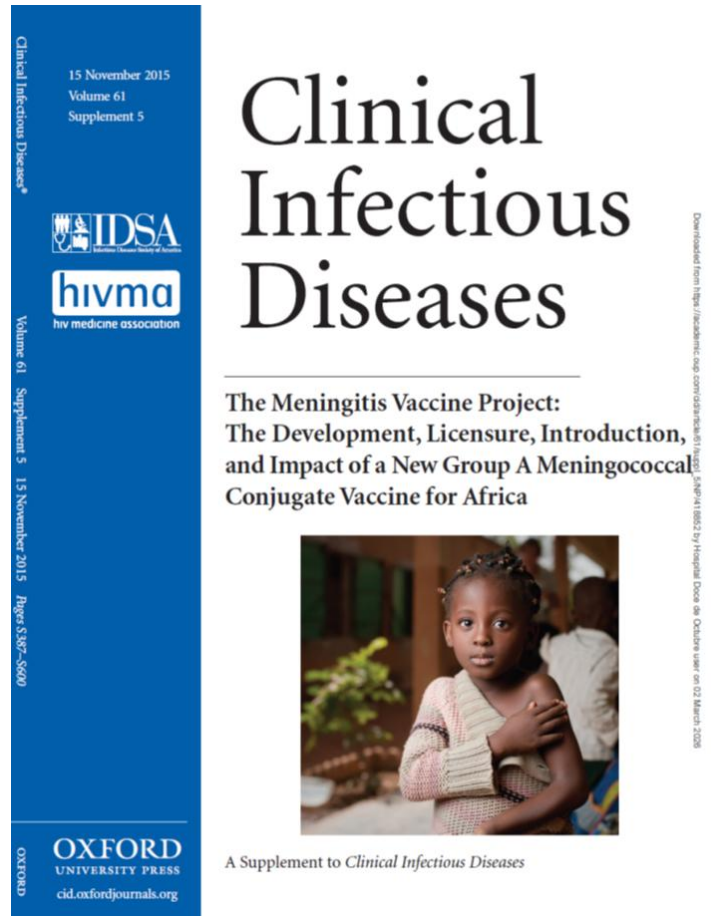
Exposición nasal a la vacuna



Wing JB, et al. Clin Infect Dis 2011; 52: 1317-1323



The meningitis vaccine project



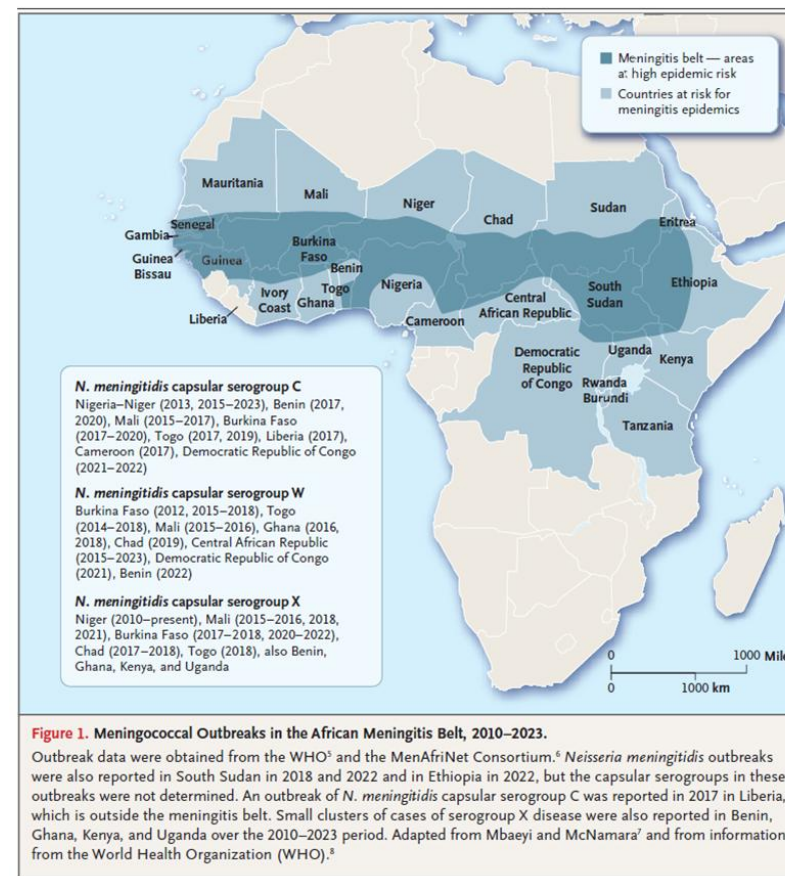
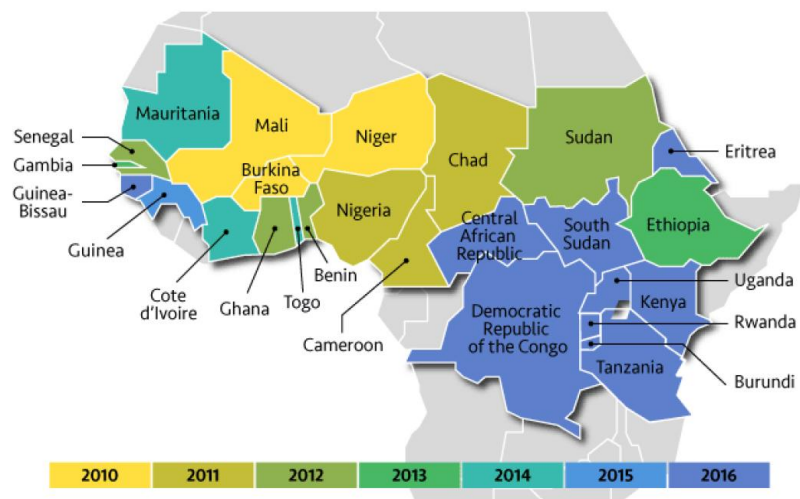
- Fundación Bill & Melinda Gates
- Program for Appropriate Technology in Health (PATH) y OMS
- Serum Institute de la India
- Vacuna frente al serogrupo A
 - Pocas dosis
 - Estable a temperatura ambiente
 - Bajo costo (< 0,5 dólares)
 - Lista en 2010 (MenAfriVac)



MenAfriVac (A-TT)



Introducción de la vacuna MenAfriVac y brotes de EMI en los países del Cinturón de la meningitis (2010-2023)



Mustapha MM, et al. Human Vaccines Immunother 2018; 14: 1107-1115

Stephen DS. N Engl J Med 2023; 388: 2003 - 2005



Impact of MenAfriVac in nine countries of the African meningitis belt, 2010–15: an analysis of surveillance data



Caroline L Trotter, Clément Lingani, Katya Fernandez, Laura V Cooper, André Bitá, Carol Tevi-Benissan, Olivier Ronveaux, Marie-Pierre Préziosi, James M Stuart

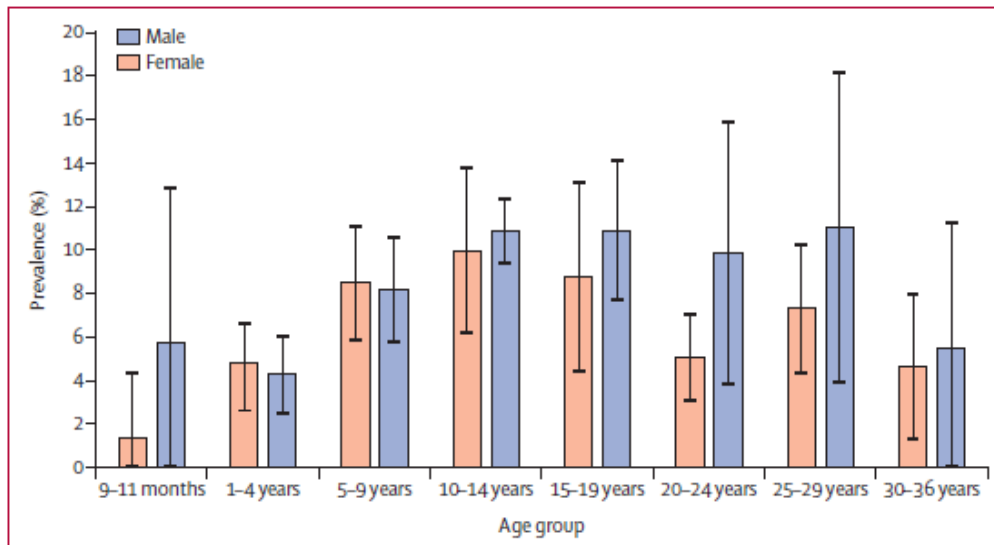
Findings The incidence of suspected meningitis cases declined by 57% (95% CI 55–59) in vaccinated compared with unvaccinated populations, with some heterogeneity observed by country. We observed a similar 59% decline in the risk of a district reaching the epidemic threshold. **In fully vaccinated populations, the incidence of confirmed group A disease was reduced by more than 99%.** The IRR for non-A serogroups was higher after completion of MenAfriVac campaigns (IRR 2·76, 95% CI 1·21–6·30).

Trotter CL, et al. Lancet Infect Dis 2017; 17: 867-72

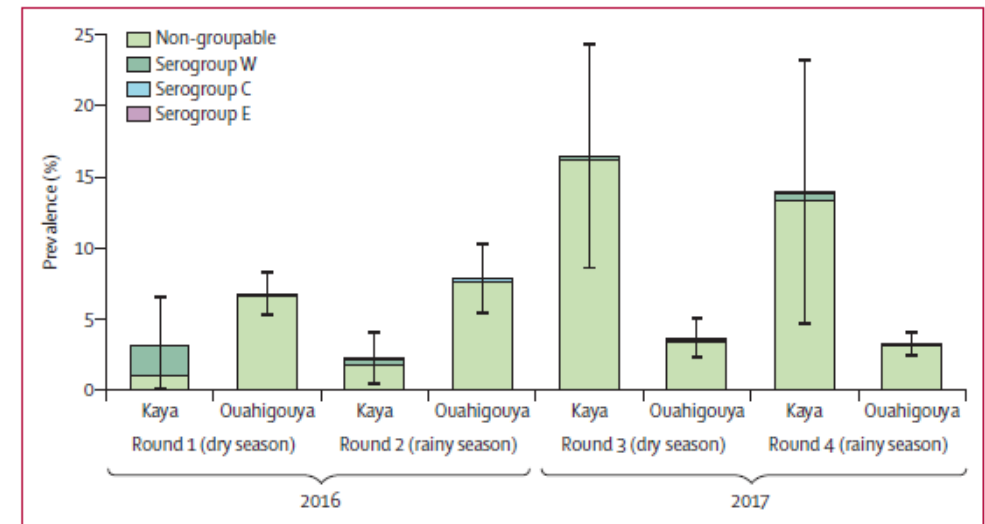


Meningococcal carriage 7 years after introduction of a serogroup A meningococcal conjugate vaccine in Burkina Faso: results from four cross-sectional carriage surveys

Prevalencia colonización nasofaríngea por edad



Colonización nasofaríngea por distintos serogrupos



Mbaeyi S et al. Lancet Infect Dis 2020; 20: 1418-25





SERUM INSTITUTE OF INDIA PVT. LTD.

Cyrus Poonawalla Group



A, X: Toxoide tetánico
C, W, Y: CRM197

The NEW ENGLAND JOURNAL of MEDICINE

RESEARCH SUMMARY

Meningococcal ACWYX Conjugate Vaccine in 2-to-29-Year-Olds in Mali and Gambia

Haidara FC et al. DOI: 10.1056/NEJMoa2214924

CLINICAL PROBLEM

Because of mass vaccination campaigns, meningitis caused by serogroup A has been nearly eliminated in the African meningitis belt. However, high rates of disease from other serogroups persist, so an effective, affordable, multivalent meningococcal conjugate vaccine is needed.

CLINICAL TRIAL

Design: A phase 3, randomized, noninferiority trial assessed the efficacy and safety of the pentavalent ACWYX vaccine NmCV-5 among participants 2 to 29 years of age in Mali and Gambia.

Intervention: 1800 participants were randomly assigned in a 2:1 ratio to receive a single intramuscular dose of NmCV-5 or the licensed quadrivalent vaccine MenACWY-D. The objectives of the trial were to determine whether the immune responses to serogroups A, C, W, and Y generated by NmCV-5 were noninferior to those generated by MenACWY-D and whether the immune responses to serogroup X generated by NmCV-5 were noninferior to the lowest response generated by MenACWY-D. Immune responses were defined by the serogroup-specific seroresponse and the geometric mean titer (GMT) at 28 days after vaccination. Safety was also assessed.

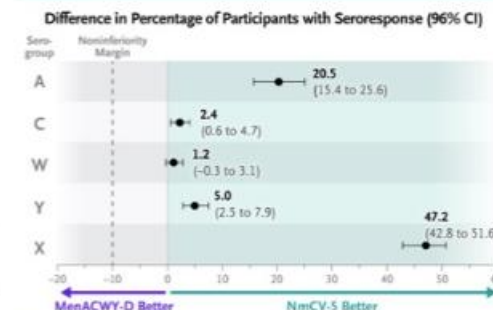
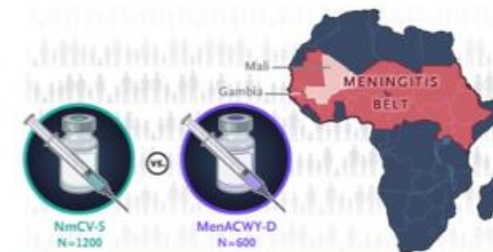
RESULTS

Efficacy: At 28 days after vaccination, the noninferiority of the NmCV-5 vaccine to the MenACWY-D vaccine was shown for both objectives on the basis of both seroresponse and GMT.

Safety: The incidence of systemic adverse events was similar in the two trial groups, and all the events were mild or moderate in severity.

LIMITATIONS AND REMAINING QUESTIONS

- The current trial studied only immunogenicity, not efficacy in disease prevention.
- The trial did not assess whether immune responses would persist at 6 months and 12 months.
- The percentage of participants with a seroresponse for serogroup A was limited because of previous campaigns with the MenAfriVac vaccine and routine immunization programs in the region.



CONCLUSIONS

Among participants 2 to 29 years of age in the African meningitis belt, the meningococcal conjugate NmCV-5 vaccine was noninferior to the MenACWY-D vaccine in generating an immune response and had a similar safety profile.

Links Full Article | NEJM Quick Take | Editorial



Nuevas vacunas frente a meningococo: Vacunas PENTAVALENTES



Cortesía de V. Pineda



Algunas dudas...

¿Las vacunas cuadrivalentes en lactantes serán tan efectivas como las MenC conjugadas? (MenQuadfid más inmunógena frente a C que Nimenrix y Menveo)

¿En qué grado las vacunas cuadrivalentes y pentavalentes reducirán la colonización nasofaríngea?

¿Podrá variar la efectividad frente a los distintos serogrupos dependiendo de los CC circulantes?



¿Dónde estaremos en 2030?



Con las vacunas actuales y la situación humanitaria catastrófica de nuestros días los objetivos de la OMS parecen seriamente comprometidos, aunque habrá una fuerte disminución de los grupos X, C, W e Y en África

Muy pocos casos de EMI C, disminución de W e Y en adultos, menos casos de EMI B (que seguirá con nosotros) en niños y adultos



Muchas gracias

