ASSESSING DIFFERENT COMBINATIONS OF 4CMENB AND MENACWY-CRM197 VACCINES IN INFANTS, TODDLERS AND ADOLESCENTS OF ARGENTINA TO MAXIMIZE ITS IMPACT AGAINST INVASIVE MENINGOCOCCAL DISEASE

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Background

IMD is of major public health importance due to its global distribution, epidemic potential, predominant disease burden in infants, and fulminant clinical manifestations.[1]

Worldwide, most cases are caused by *Neisseria meningitidis* serogroups A, B, C, W and Y.[1] The 4CMenB and MenACWY-CRM197 vaccines provide protection against infections by MenB and MenACWY, respectively.

The current NIP in Argentina includes the tetravalent conjugate vaccine against serogroups A, C, W, and Y in infants/toddlers and adolescents since 2017.[2]

Aim This analysis assesses the public health impact of six vaccination strategies compared to the current NIP for the period 2022–2047.

Methods

The dynamic cost-effectiveness (DyCE) model[3] was calibrated to Argentina settings to evaluate 6 different meningococcal vaccine schedules, compared with the current NIP.

Vaccination schedules	4CMenB at 3, 5 and 15 moa	MenACWY at 3, 5 and 15 moa	MenACWY at 11 yoa
Current NIP		○	○
Strategy 1	●		
Strategy 2	●		●
Strategy 3			●
Strategy 4	●	●	
Strategy 5		●	
Strategy 6	●	●	●

Vaccination parameters for 4CMenB and MenACWY

	4CMenB			MenACWY			
Dosing	3 moa	5 moa	15 moa	3 moa	5 moa	15 moa	11 yoa
VE[3]	0%	80.0%	82.8%	0%	79.0%	79.0%	79.0%
Average duration of protection[3]	33 m	33 m	38 m	48 m	48 m	48 m	187 m
Carriage effect	0%			36.2% against MenACWY[2]			
Potential VE cross-protection	Against MenACWY IMD: 3/5 moa: 77.6%; 15 moa : 72.1%[a]			No cross protection against MenB IMD			
Coverage	85.0%[b]	85.0%[b]	82.0%[b]	85.0%[b]	85.0%[b]	82.0%[b]	80.0%[c]

[a] Calculations are using: 80% MenW IMD, 93.8% MenY IMD, 0% MenA, C IMD.[3] [b] Based on Argentina "Pentavalent vaccine" (DTP-HB-Hib).[4] [c] Based on MMR vaccine coverage in adolescents in Argentina.[4]

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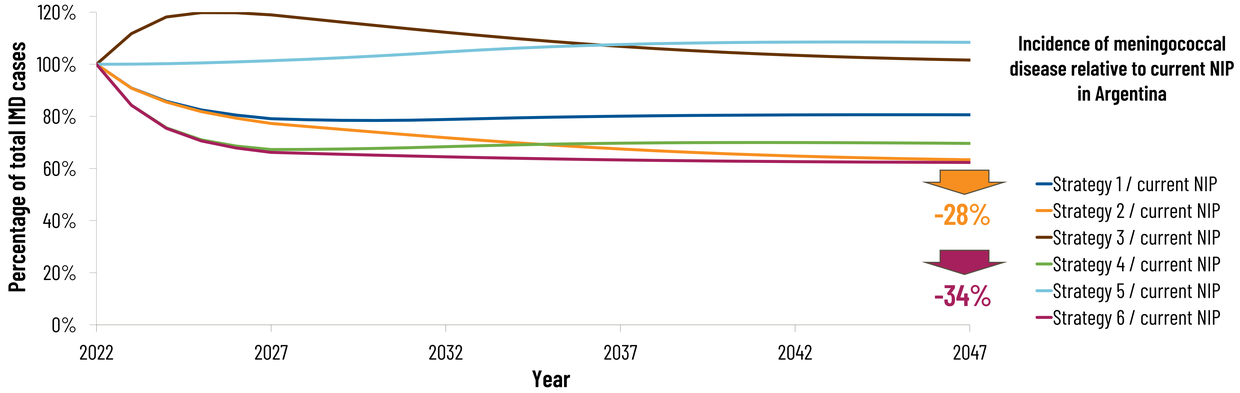
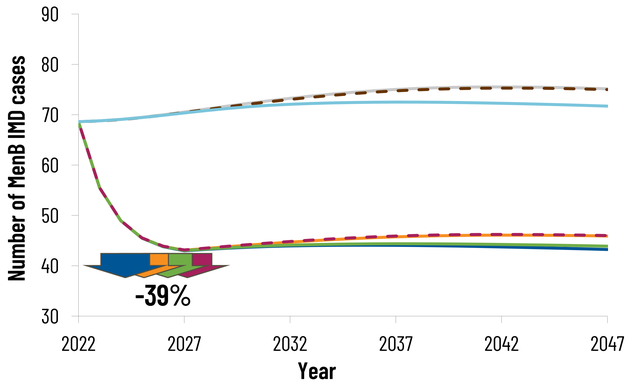
Results

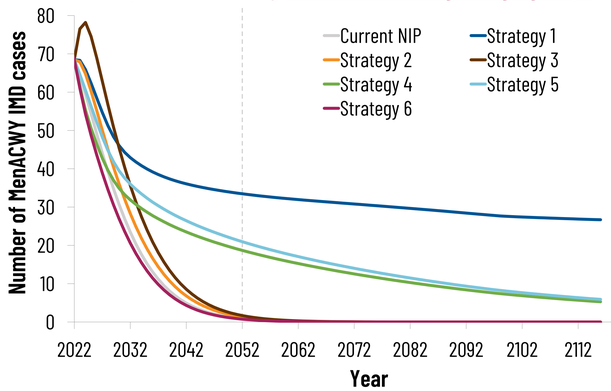
Over 25 years, vaccinating infants with 4CMenB and adolescents with MenACWY (strategy 2) would decrease IMD cases in the age group 0-4 yoa by 28% (615 cases). Combining the existing NIP and 4CMenB vaccination in infants/toddlers (strategy 6) would decrease IMD cases by 34% (745 cases).



MenB IMD cases decrease by 39% in 5 years with strategies 1, 2, 4, 6 in the age group 0-4 yoa



Strategies 2, 3, 6 and current NIP would make MenACWY IMD cases disappear after 30 y when considering all age groups



Key messages

Overall, strategies 6 and 4, demonstrated the greatest reduction in IMD cases in 0-4 yoa compared with the present NIP of Argentina.

Vaccinating infants with 4CMenB vaccine and adolescents with MenACWY vaccine (strategy 2) achieved nearly as many reductions in IMD cases as strategy 6, but with fewer injections, due to MenB cross-protection.

- Strategy 6 would generate a **reduction of 776 IMD cases** (23%) **in all age groups** after 25 years.
- Strategy 2 would generate a **reduction of 631 IMD cases** (19%) **in all age groups** after 25 years.
- Strategies 1, 2, 4, 6 would respectively **reduce by 43%, 39%, 40%, and 39% the annual number of MenB IMD cases in 94 years**, in the age group 0-4 years.

Limitation: high coverage was assumed for both vaccines

More information on these scenarios behind **QR code**

IMD invasive meningococcal disease, **m** months, **MenB** meningococcal B, **MenACWY** meningococcal ACWY, **moa** months of age, **NIP** national immunisation programme, **VE** vaccine effectiveness, **y** years, **yoa** years of age

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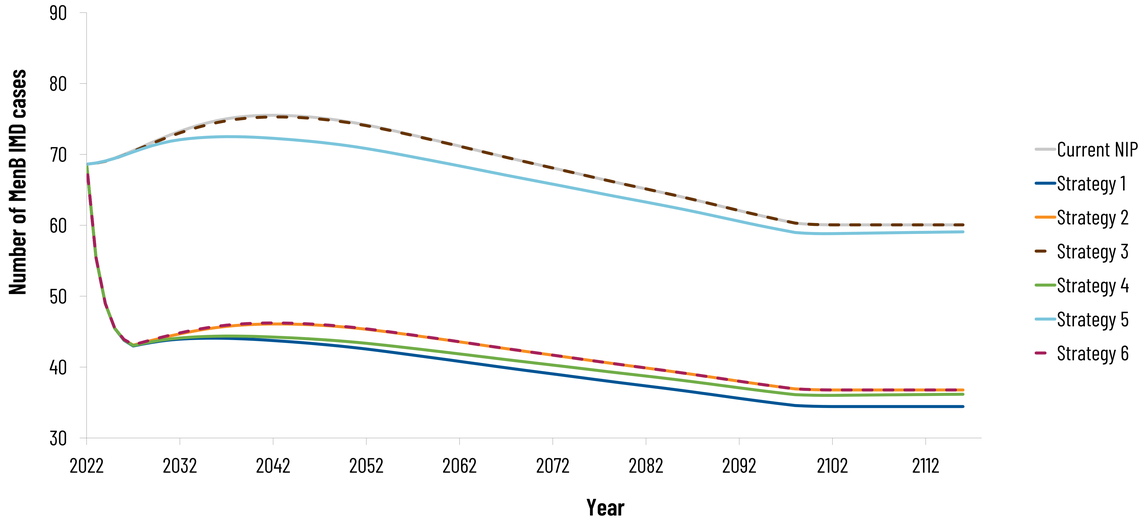
Supplementary Figures

Strategies 1, 2, 4 and 6 would reduce by 39-43% the annual number of MenB IMD cases over a 94-year time horizon, in the age group 0-4 yoa



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Current NIP		○	○
Strategy 1	●		
Strategy 2	●		●
Strategy 3			●
Strategy 4	●	●	
Strategy 5		●	
Strategy 6	●	●	●

If other time horizons and age groups are considered:

- Strategy 6 would generate a reduction of **348 (23%) IMD sequelae**, and **48 (20%) IMD deaths** in 25 years (all ages).
- Strategy 2 would generate a reduction of **283 (19%) IMD sequelae**, and **39 (16%) IMD deaths** in 25 years (all ages).
- Strategies 1, 2, 4, 6 would **reduce by 43%, 39%, 40%, and 39%, respectively, the annual number of MenB IMD cases in 94 years**, in the age group 0-4 years.

References

1. Pace D et al. Meningococcal disease: Clinical presentation and sequelae. Vaccine, 2012. 30: p. B3-B9
2. Ministry of Health, Directorate to Control Immunopreventable Diseases. Fundamentos de la introducción de la Vacuna tetravalente (ACYW) Conjugada contra el Meningococo al Calendario Nacional de Inmunizaciones. [accessed 2022 Nov 6]. https://bancos.salud.gob.ar/recurso/lineamientos-tecnicos-vacuna-meningococo
3. Beck E et al. Modelling the impact of 4CMenB and MenACWY meningococcal combined vaccination strategies including potential 4CMenB cross-protection: An application to England. Vaccine, 2020. 38(47): p. 7558-7568
4. Ministry of Health. Vaccine Coverage 2009-2020. (Accessed April 2022); https://bancos.salud.gob.ar/sites/default/files/2021-12/coberturas-de-vacunacion-por-jurisdiccion-cnv-2009-2020.pdf

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