

# Economic Evaluation of Meningococcal C Vaccination in Fiji

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## Background & Study Aims

In 2016-2018 Fiji experienced an outbreak of meningococcal C (MenC) disease, followed by a mass vaccination campaign of 1-19 year olds in 2018.

We conducted a cost-effectiveness analysis and budget impact analysis to assist decision making on whether to introduce routine MenC vaccination in Fiji following the 2018 mass campaign.

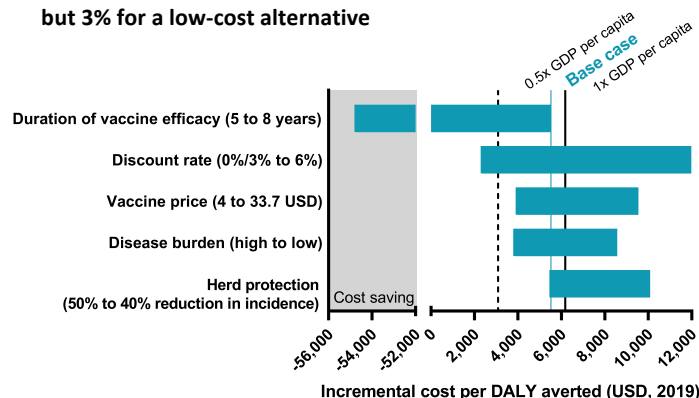
## Methods

- A single-dose school-based adolescent (13 yr old) MenC vaccination program (from 2022-2036) compared to no routine vaccination and mass vaccination campaign(s) of 1-19 year olds following subsequent outbreak(s)
- Adolescents are those most likely to drive transmission, thus routine adolescent vaccination has the potential to provide herd immunity (1;2)
- UNIVAC model (3) adapted to capture herd immunity (50% reduction in disease incidence in unvaccinated groups in the base case) through changes in background incidence of disease
- Input data on demography, vaccine coverage, invasive meningococcal disease (IMD) incidence and mortality rates during 2016-2018 outbreak
- MenC disease modelled from 0-20 yrs old (when majority of disease occurs)
- Vaccine efficacy and duration of protection from the literature (2;4)
- Data on hospitalized IMD cases (2016-2019) and a survey of IMD survivors used to estimate costs associated with management and treatment of IMD cases and IMD-related disabling sequelae to government and households
- Prevalence of IMD-associated sequelae from survey of IMD survivors
- Health systems cost of mass vaccination campaign(s) and routine vaccine introduction from budget estimates by MHMS and partners
- Health care payer perspective (Government of Fiji & partner contributions towards vaccine purchases), with sensitivity analysis from partial societal perspective (including out-of-pocket costs for direct medical expenditures, transport, additional food and childcare, but not productivity losses)
- 18-year time horizon modelled, with 3% discounting for future costs and benefits in base case (0% for benefits and 6% for both in sens. analysis) (5)
- Vaccine dose price from Pan American Health Organization (PAHO) with a lower and higher cost explored in uncertainty analysis

## Results

Results presented as incremental cost-effectiveness ratios (ICERs) in 2019 USD per disability-adjusted life year (DALY) averted

- Assuming 5 years duration of vaccine efficacy, two outbreaks are modelled to occur over the 18-year time horizon in the no routine vaccine scenario; routine vaccination is cost-saving
- Assuming 8 years duration of vaccine efficacy, one outbreak is modelled to occur in the absence of routine vaccination; routine vaccination averts 43 IMD cases and 9 deaths, or 284 DALYs, with an ICER just under 1x GDP/capita (6,176 USD; 13,340 FJD)
- Figure depicts the substantial uncertainty: duration of vaccine efficacy, discount rate, vaccine price, disease burden, and herd protection assumptions have the biggest influence on ICER
- The total cost of routine vaccination is less than 0.3% of total health budget; vaccine dose costs represent 15% of current vaccine budget, but 3% for a low-cost alternative



## Discussion and Implications

- Findings represent “worst case” scenario: future outbreak(s) occur immediately when population becomes susceptible.
- A 2022 routine vaccine introduction allows for high continued coverage of adolescents to maintain indirect effects of the 2018 campaign; this may not be possible if introduction is delayed beyond 2022 (e.g., due to COVID-19).
- The budget impact of MenC vaccine introduction is substantial in comparison to the current vaccine budget; however, introduction of a low-cost vaccine is likely to have minimal budget impact. A low-cost MenACYWX vaccine is in clinical development and may be available in 2022. (6)
- A better understanding of the appropriate cost-effectiveness thresholds in Fiji is important to guide policy-making.

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