Modelling the decline and potential elimination of endemic hepatitis A in Australia

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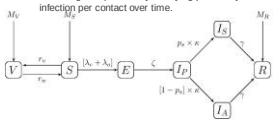
Introduction

- Hepatitis A infection rates have declined in most countries through a combination of prevention measures.
- Australian hepatitis A epidemiology transitioned from medium to low endemicity over 1950 – 1990.
- At present – very low endemicity/risk – high **opportunistic vaccination** rates.
- Outbreaks in MSM population / Sporadic point-sourced outbreaks (food contamination)
- High percentage of cases are travel related – NNDSS surveillance reports

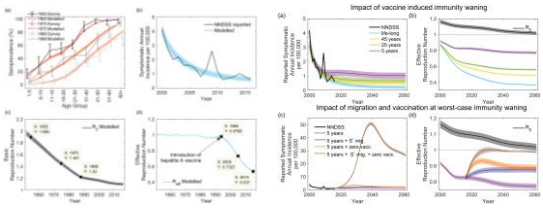
Methods

- Age-structured, SIR type, deterministic hepatitis A transmission model incorporating demographic changes.
- Calibrated using:
  - Cross-sectional seroprevalence data and
  - NNDSS notification data
  - assuming a exponentially decaying probability of infection per contact over time.



- Evaluated the trends in the basic (R_0) and effective (R_{eff}) reproduction numbers.
- Projected incidence trends in the presence of extrapolated vaccination trends until 2061 in the general population.
- Tested whether R_{eff} can be sustained below the endemic threshold ($R_{eff} < 1$).

Results



Conclusions

- Projections to 2061 in the general population:
  - $R_{eff} < 1$.
  - $R_0 > 1$.
  - Continued low Incidence.
- Return to endemic transmission is only possible under a combination of highly unrealistic scenarios.
- There is potential for local elimination of hepatitis A given that the elimination criteria are defined and met in high risk groups.