INTERNATIONAL VACCINE INSTITUTE

Cost-effectiveness of conjugate typhoid vaccination: a preliminary analysis

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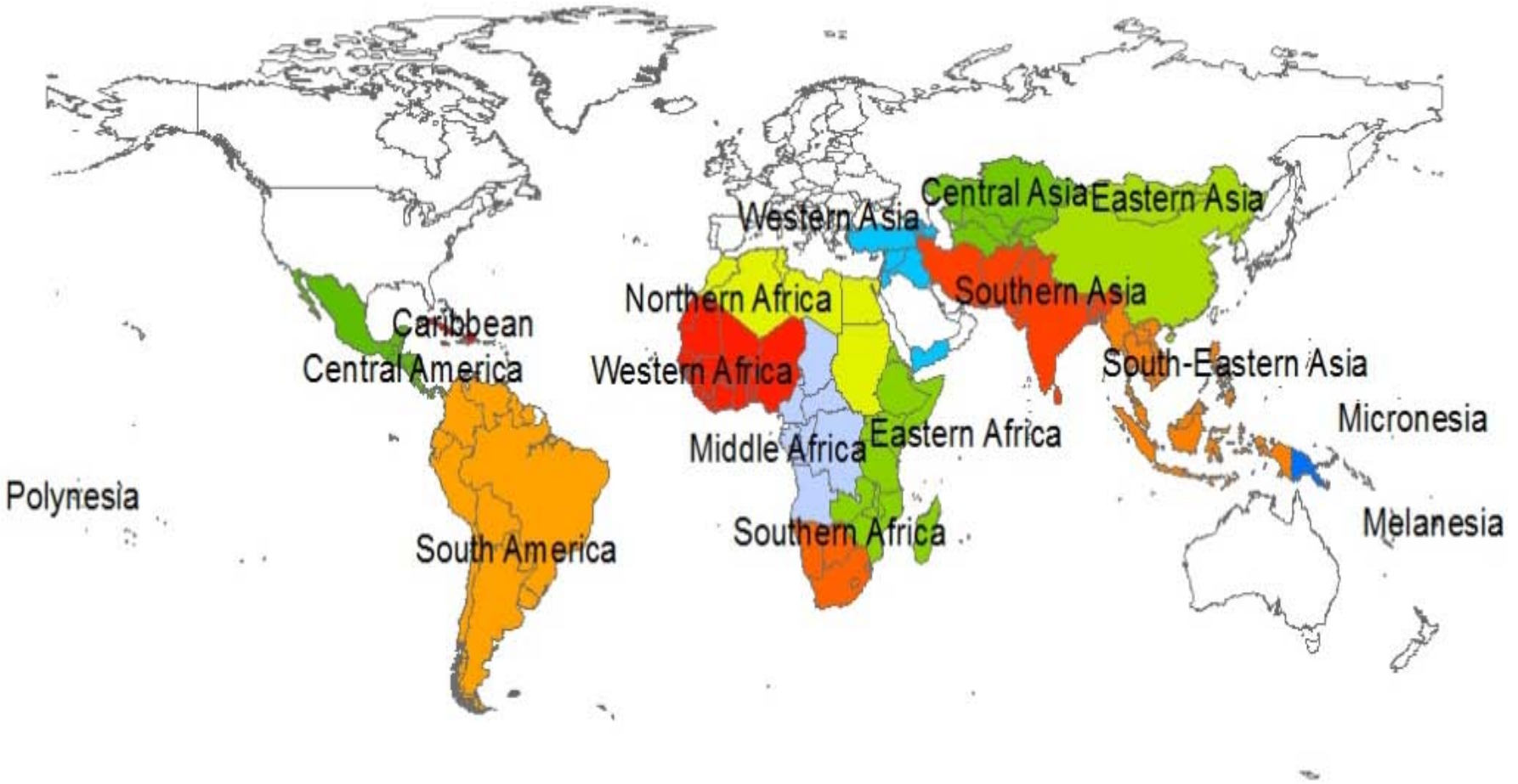
Contents

- Background
- Assumptions
  - Vaccine and vaccination strategies
  - Vaccine and vaccination costs
- Estimations
  - Disease burden and disease costs
  - Vaccination impacts
- Cost-effectiveness results
- Next steps
- Conclusions

Background : cost-effectiveness analysis

- Part of IVI's typhoid global investment case study
- Builds on disease burden and economic burden work
- Uses standard set of assumptions across developing countries
- Estimated by UN sub-regions

UN regions included in the analysis



assumptions

ASSUMPTIONS

Vaccine introduction assumptions

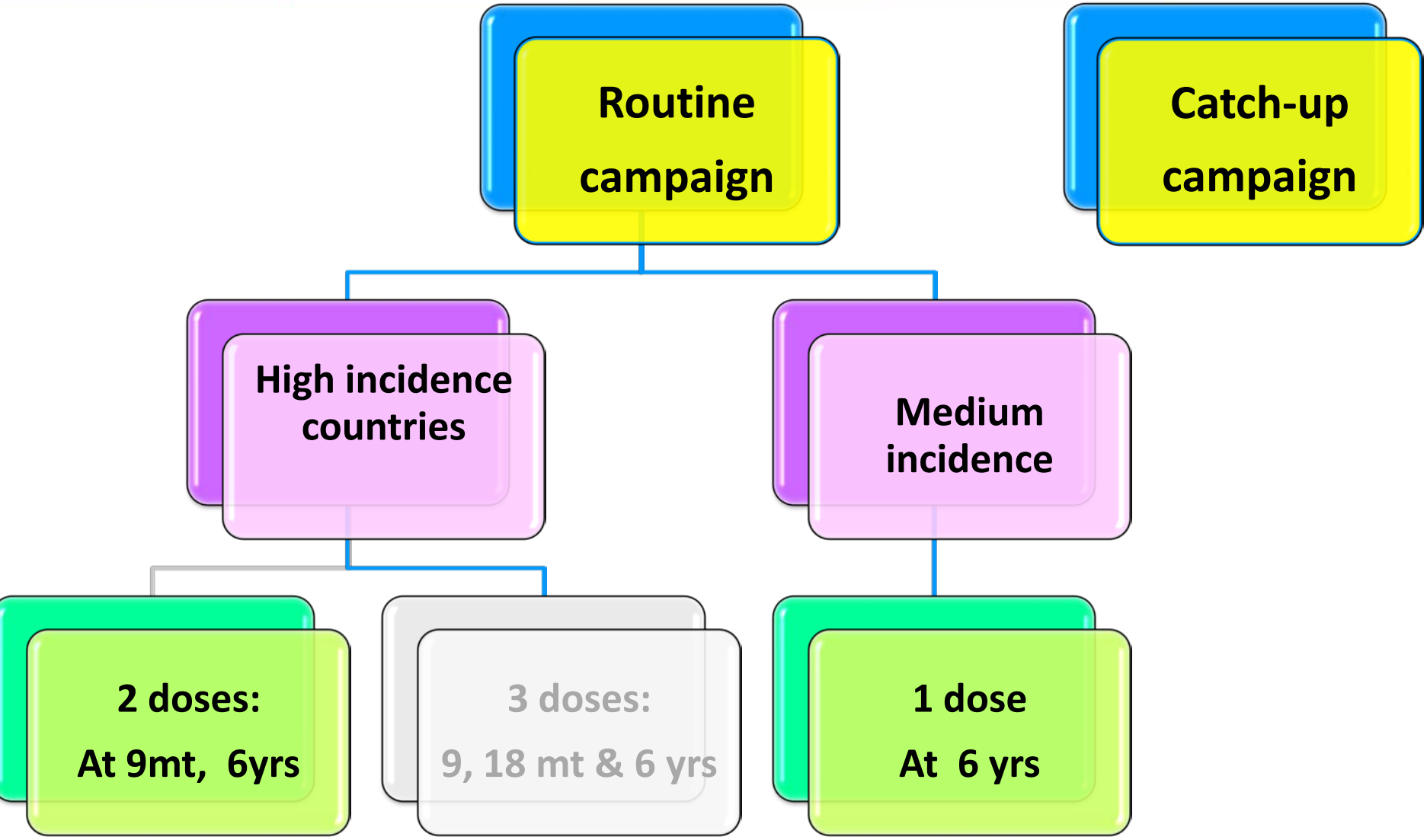
- Vaccine is introduced in high *(>100/100,000)* and medium incidence *(10~100/100,000)* countries
- Targeted to high-risk population *(Urban slums and rural area without improved water)*
- The reference population is that of 2010
- Vaccination is in campaign mode and completed in 2010

Vaccine characteristics

- Assumed Vi conjugate vaccine characteristics
- 1-3 doses with and without catch-ups
- Duration of protection: 14 years
- Efficacy: 90% on 1st year
- Efficacy waning: exponential decay

- Separate analysis will be conducted for ViPS and Ty21a based on known characteristics

Vaccination strategies: Vi conjugate vaccine



Vaccination coverage assumptions

- Dose at 9 month: MCV1 100% coverage
- Dose at 6 years: MCV2 75% coverage
- DTP 1 to DTP 2 dropout rate was used to estimate MCV2 incase data unavailable
- Based on WHO report

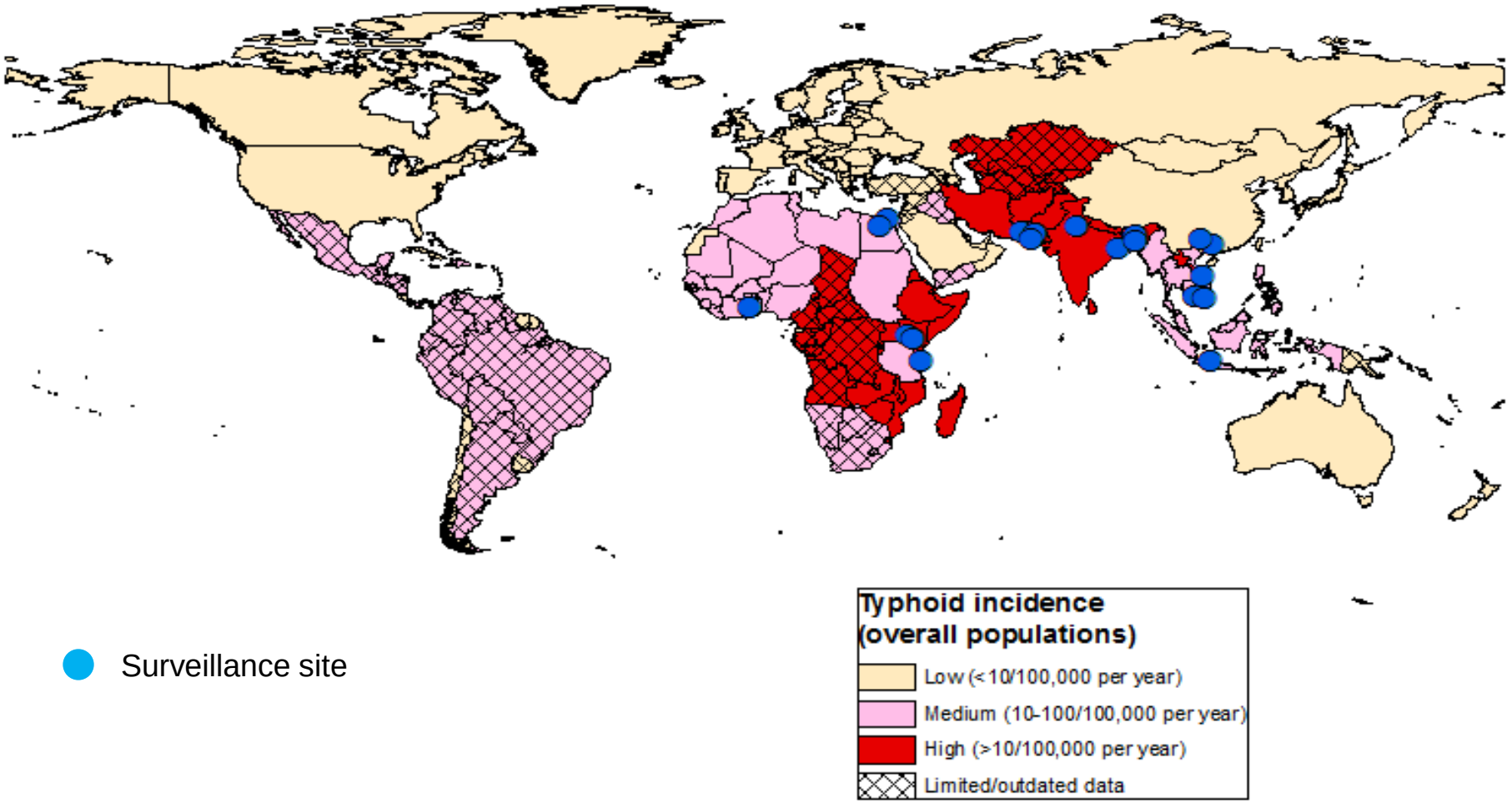
Costs assumptions

- Total Vi-conjugate per dose = $2.33 per dose
  - Vi-conjugate = $1.50 per dose + 15% FIC = $1.73 per dose
  - Delivery = $0.60 per dose (from WHO cMYP costing manual for campaigns)
- Estimate would be improved later
- Wastage = 10%
- Discounting =3%

IVI estimations

IVI ESTIMATIONS

High and medium incidence countries

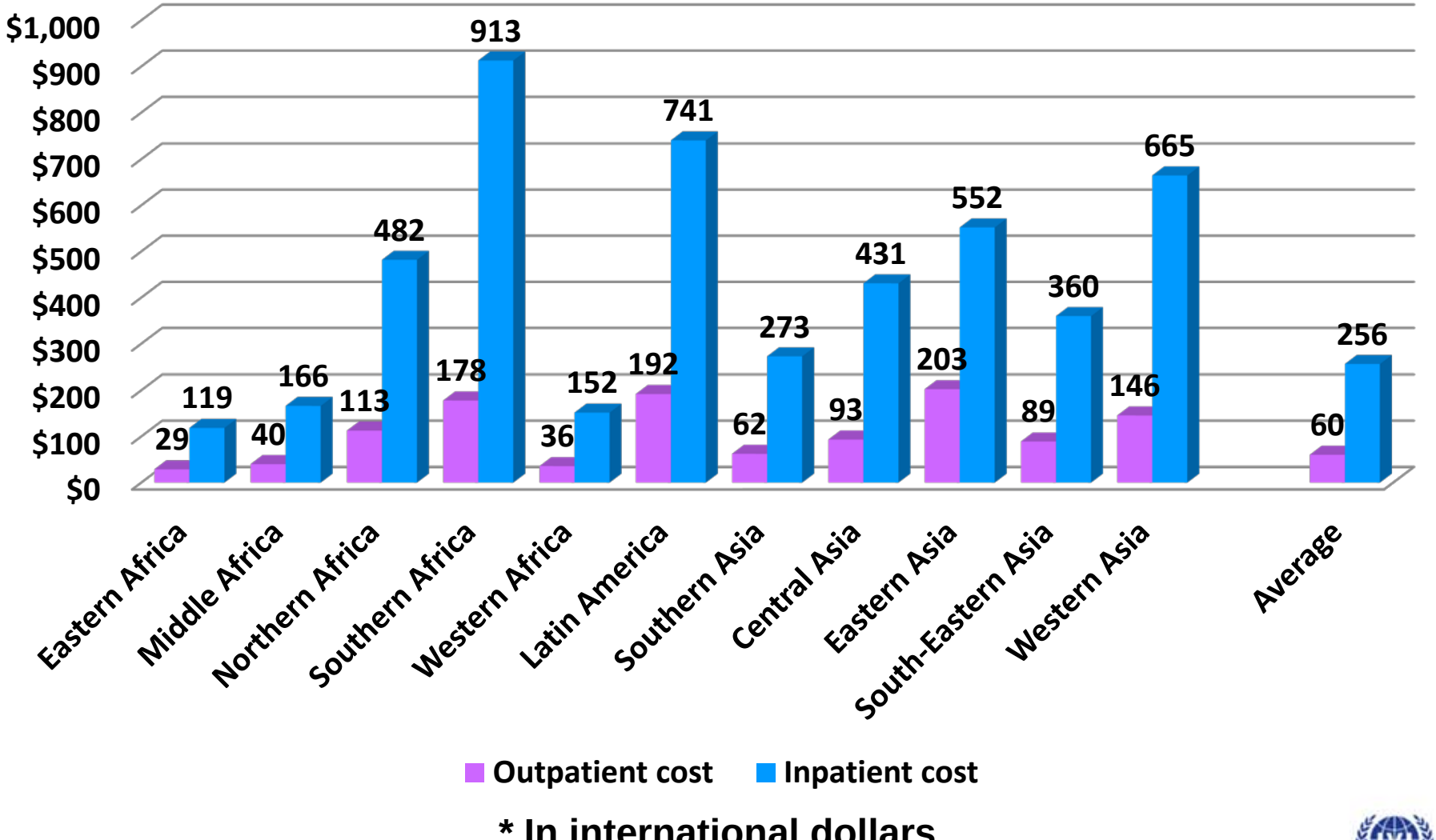


* Not adjusted for blood culture sensitivity

Disease burden (2010)

Region	Median no. of cases	Median no. of Deaths
Africa	3,977,170	37,892
Asia	8,353,453	38,983
Latin America	143,005	667
Total	**12,473,628**	**77,542**

Economic burden (2010)

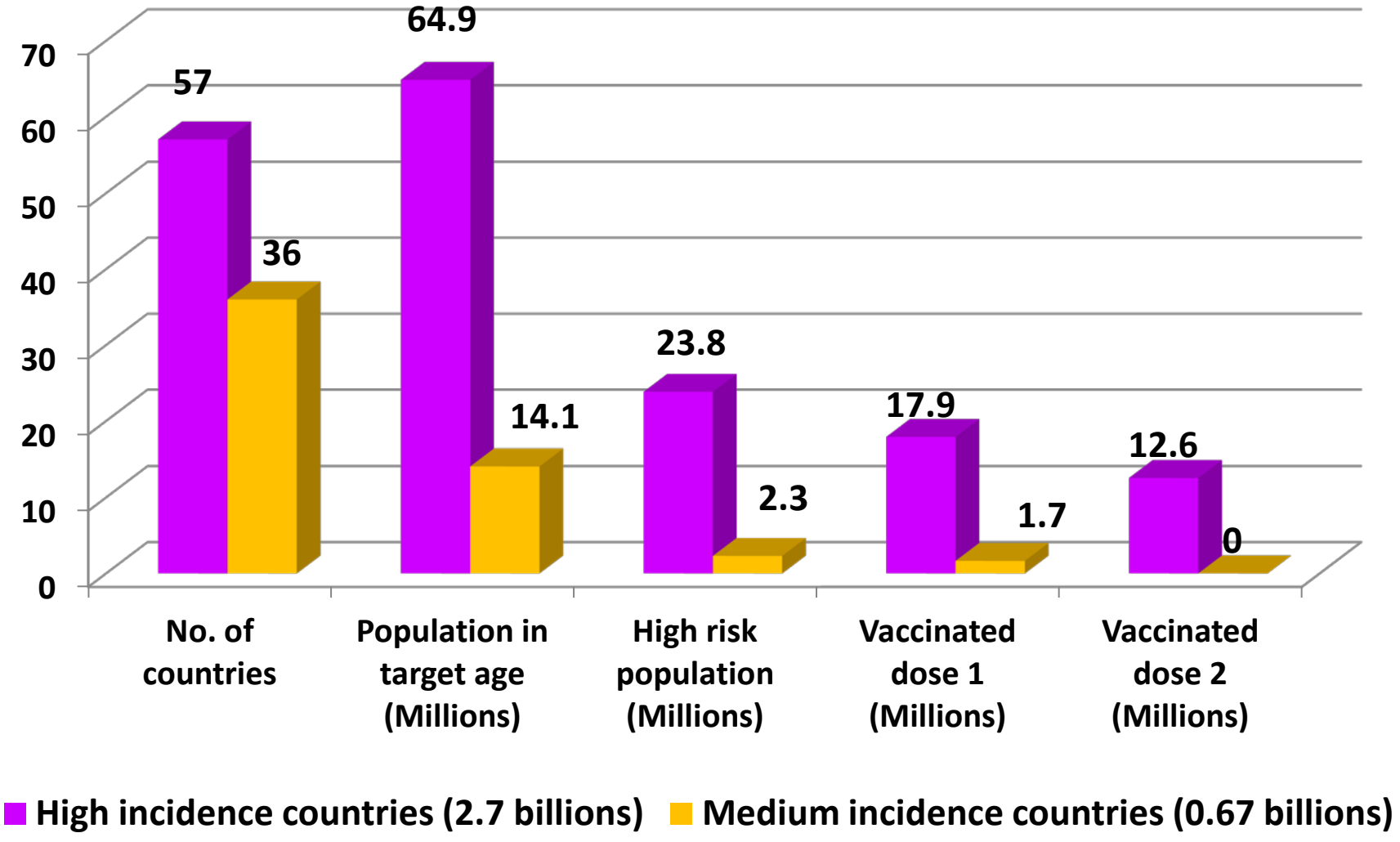


* In international dollars

results

RESULTS

Population targeted for vaccination

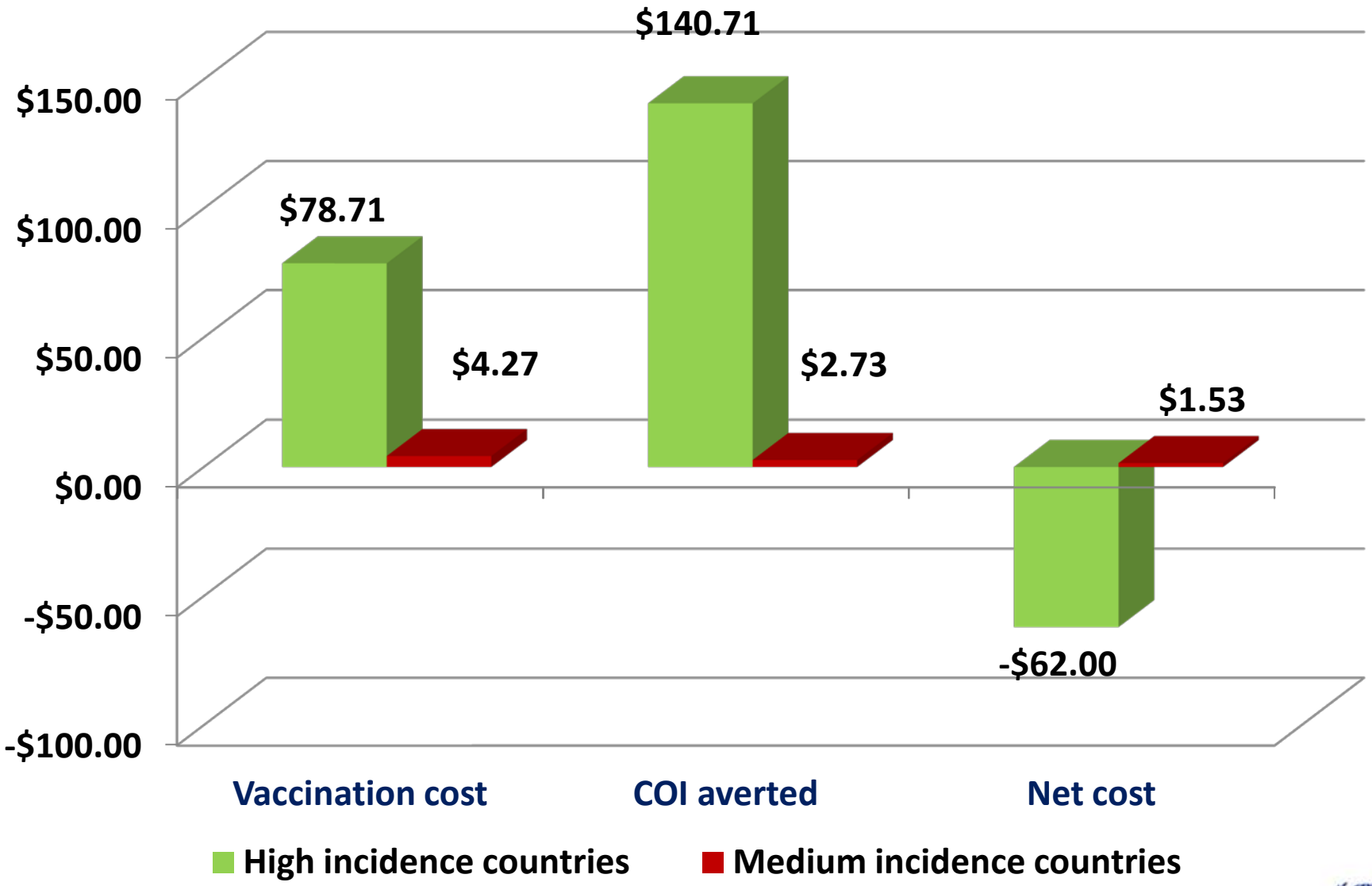


Vaccination impact*

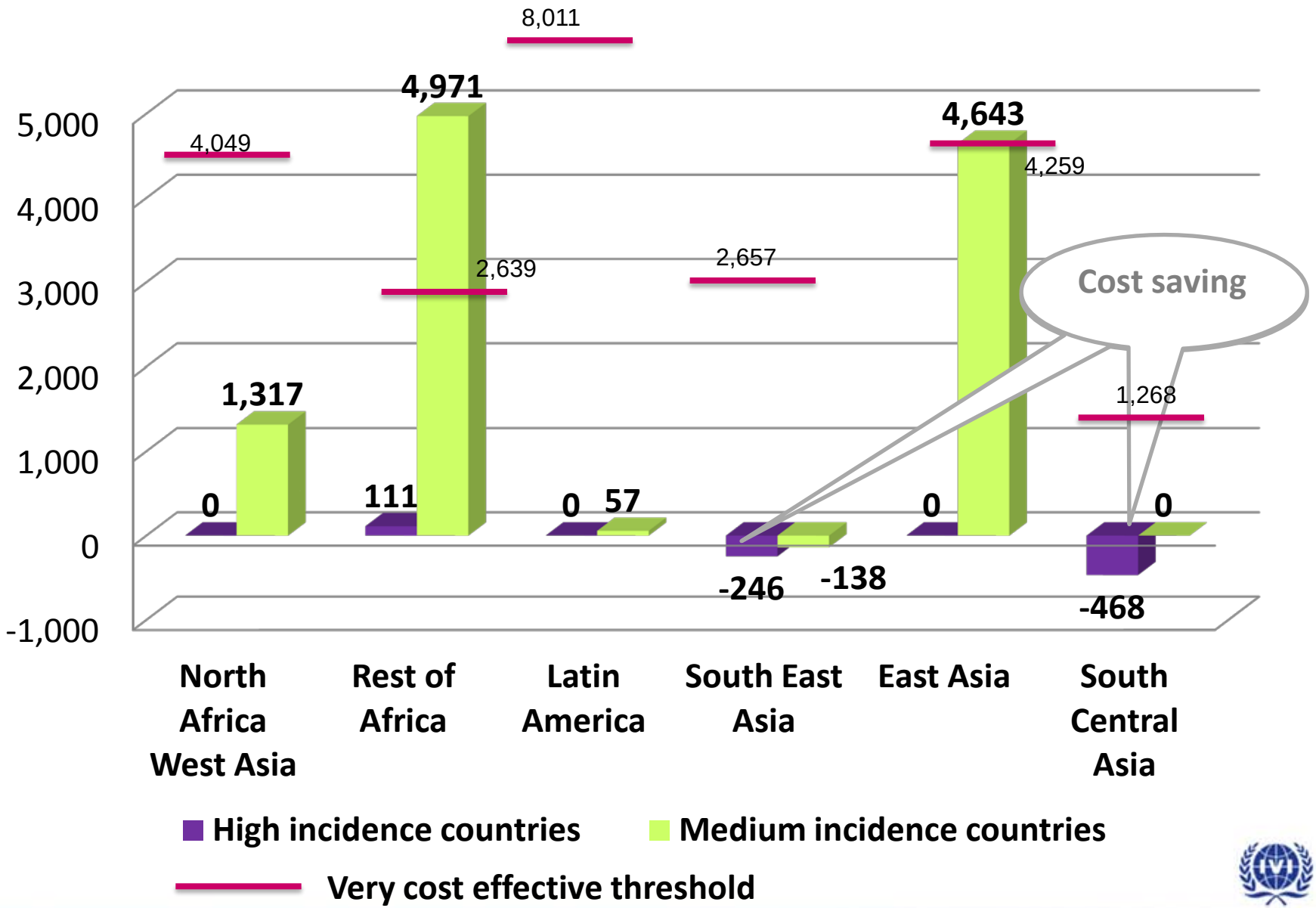
	Averted cases	**Averted deaths**	**Averted DALYs**
High incidence countries	2,461,317	8,122	256,899
Medium incidence countries	21,723	72	2,446
Total	2,483,040	8,194	259,345

*Estimated till 2030, no herd protection considered

Costs (in millions, $ 2010)



Cost-effectiveness (cost per DALY)



Next steps

- Uncertainty interval estimation
- Cost-effectiveness of other vaccination strategies
- Incorporating herd effect into cost-effectiveness based on IVI dynamic disease transmission model
- Cost-effectiveness of ViPS and Ty21a vaccines
- Vaccination strategy expansion pathway analysis

Conclusions: ViCV

- Targeting high incidence countries with two doses and medium incidence countries with one dose of ViCV would be cost-saving to cost-effective.
- These are preliminary results, findings may change with change in assumptions

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