

Correspondence

To the Editors

A risk-benefit analysis on dengue vaccination: an assessment from Indochina

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Dear Editors,

Dengue is common in many tropical countries including those in Indochina. The disease is a vector borne disease and can result in a febrile illness with haemorrhagic complication. For prevention of dengue, a new vaccine has just been introduced and is available in many endemic countries¹. The usefulness of dengue vaccination is still under consideration for implementation of vaccination in many settings. For example, in Indochina, low cost-effectiveness of dengue vaccine is detected and it is not recommended for routine vaccination².

Additionally, there is concern about post-vaccination adverse effects. In patients with and without previous dengue infection, differences in clinical utility and adverse events are observed. Here, the authors perform a risk-benefit analysis on dengue vaccination in a tropical country in

Indochina where dengue is highly endemic and still an important problem in clinical paediatrics. For analysis, the primary data on risks and benefits of the vaccine from local report from Ministry of Public Health and data on local seroprevalence of dengue among the local paediatric population are used³. Risk-benefit analysis for children with and without previous dengue infection according to path probability (specific probability for having history with or without previous dengue) based on seropositivity chance (rate of positive serological test to dengue), was done. The risk is hereby assigned as a severe dengue infection triggered by dengue vaccination. The benefit is assigned as the reduction rate of hospitalization due to dengue after vaccination. The path specific and overall risk-benefit ratios are calculated. Results are shown in Table 1.

Table 1: Risk-benefit analysis of dengue vaccination for dengue prevention in children

Groups	Path probability (%)	Risk (/1000)	Benefit (/1000)	Path risk – benefit Ratio
With previous dengue	80 %	1/1000	15/1000	0.0533
Without previous dengue	20 %	4/1000	-5/1000	-0.16
Overall	100 %	1.6/1000	11/1000	0.1455

*Path probability is referred to data from previous report on seropositivity chance.³

**Path risk-benefit ratio is calculated by “path probability x risk/benefit”.

According to the analysis, there is no benefit in case that there is no previous dengue infection. Regarding overall case, there is also a high percentage of risk after vaccination comparing to yield benefit. Based on this observation, the advantage of dengue vaccination in this dengue endemic area is still limited. If dengue vaccination is planned for implementation, a pre-vaccination sero-screening for dengue should be implemented.

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