The Costs of Preparation and Delivery of Td Vaccine to 7-Year-Old Children in Vietnam
Maternal and neonatal tetanus have been eliminated and maintained.

Diphtheria outbreaks have occurred more frequently.

Vietnam is planning to follow WHO recommendations to replace \textit{TT vaccine} for Women of Child-Bearing Age (WCBA) and \textit{Td vaccine} for outbreak control \textbf{WITH} \textit{Td vaccine} for all 7-year-old children. \textbf{Cost evidence is required.}
## CURRENT AND PROPOSED SCHEDULE FOR TT AND Td VACCINATION

### The current schedule (for 2017)

<table>
<thead>
<tr>
<th></th>
<th>TT vaccine</th>
<th>Td vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target group</strong></td>
<td>Pregnant women</td>
<td>Women of childbearing age (WCBA)</td>
</tr>
<tr>
<td><strong>Coverage</strong></td>
<td>All pregnant women</td>
<td>WCBA from high-risk areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>People in outbreak affected areas</td>
</tr>
<tr>
<td><strong>Delivery strategy</strong></td>
<td>Facility-based and outreach</td>
<td>Facility-based, outbreak and school-based</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Campaign</td>
</tr>
</tbody>
</table>

### The proposed replacement plan

<table>
<thead>
<tr>
<th></th>
<th>TT vaccine</th>
<th>Td vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Target group</strong></td>
<td>Pregnant women</td>
<td>WCBA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-year-old children</td>
</tr>
<tr>
<td><strong>Coverage</strong></td>
<td>All pregnant women</td>
<td>WCBA from high-risk areas</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Children from all 63 provinces</td>
</tr>
<tr>
<td><strong>Delivery strategy</strong></td>
<td>Same as the current schedule</td>
<td>Complete cessation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scenario 1: Facility-based</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scenario 2: Facility-based and outreach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scenario 3: School-based</td>
</tr>
</tbody>
</table>
STAKEHOLDER ENGAGEMENT

— HUPH consulted NEPI at start to identify cost needs, define research question, co-develop research protocol
— Early socialization with WHO
— Engagement of NEPI manager and staff, MoH budget rep, other MoH staff in ICAN cross-country workshops to discuss methods and interpret findings
— HUPH engagement of NEPI periodically, especially to solicit inputs on prospective costing
— NEPI has formally disseminated results subnationally in meetings about the cessation of TT and replacement with Td
— Cost data already being used to plan introduction pilots in 2019
RESEARCH QUESTIONS

1. What are the costs of delivery of TT vaccine to women of childbearing age (WCBA) in Vietnam?

2. What are the costs of Td campaign vaccination for diphtheria outbreak control?

3. What are the one-time costs associated with introduction of Td for 7-year-olds (projected new vaccine introduction costs and incremental costs)?

4. What are the costs of delivery of Td vaccine to 7-year-old children in Vietnam?

*IS THE SWITCH COST SAVING?*
METHODOLOGY

Ingredients-based costing from a public health care provider perspective to estimate the budget impact:

Retrospective costing:
- To estimate the delivery cost of TT for WCBA in 2017
- To estimate the delivery cost of Td for diphtheria outbreak control through campaigns in 2017

Prospective costing of the replacement (2018-2025):
- Complete cessation of TT vaccination for WCBA
- Routine implementation of Td vaccination for 7-year-old-children
  - Three possible delivery strategies: (1) health facilities, (2) combination facilities and outreach sites; and (3) schools
- A 3-year-transition period where Td outbreak control campaigns still occur
CALCULATION OF COST SAVINGS AND BUDGET IMPACT

- Savings = A – (B + C), where
  - A = the current schedule: TT for WCBA and Td for outbreaks
  - B = the new schedule: Td for 7-year-old children
  - C = transitional period (2018-2020), assuming 50% of covered population in 2017 Td campaign

<table>
<thead>
<tr>
<th></th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NO replacement</strong>¹</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- TT for CBWA</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>- Td campaigns</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Replacement</strong>²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Td for 7y children</td>
<td>70%</td>
<td>90%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>- Transitional for Td campaigns</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
¹ Empirical study (EPI 2017); ² NEPI experts estimations
Total 73 sites: national level (1), regional (3), provincial (9), urban (10) and rural (13) districts, and urban (11) and rural (26) facilities.
FINDINGS: NOTES

— All averages presented on the pages that follow are **volume-weighted averages**, not simple averages.
  
  — A weighted average takes total output into account. The sum of total costs is divided by total output (either doses or fully immunized children), as opposed to calculating simple averages.

— Costs presented are **immunization delivery costs** which exclude vaccine costs and immunization supplies costs.

— All findings are fiscal costs, unless otherwise noted.
  
  — Fiscal costs represent actual spending in 2017; economic costs include actual time spent and MOF regulations for payment of per diems and travel (accommodation and transport), with annualized capital costs included.
  
  — Economic cost results are available in the study report.

— All findings are presented in **2018 U.S. dollars (US$)**.
COSTS OF THE CURRENT SCHEDULE: TT FOR WCBA AND Td FOR CAMPAIGN IN 2017

<table>
<thead>
<tr>
<th>Current Strategies</th>
<th>Total doses</th>
<th>Average unit cost per dose (2018 US$)</th>
<th>Average total cost (2018 US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT vaccination for WCBA</td>
<td>1,100,000</td>
<td>%</td>
<td>$2,071,366</td>
</tr>
<tr>
<td>Facility-based delivery</td>
<td>305,723</td>
<td>27.8%</td>
<td>$1.80</td>
</tr>
<tr>
<td>Multiple strategies (Facility-based and outreach)</td>
<td>137,354</td>
<td>12.5%</td>
<td>$3.90</td>
</tr>
<tr>
<td>School-based delivery</td>
<td>656,923</td>
<td>59.7%</td>
<td>$1.50</td>
</tr>
<tr>
<td>Td vaccination through campaigns</td>
<td>82,603</td>
<td></td>
<td>$3.50</td>
</tr>
</tbody>
</table>

Notes:
Costs are presented in USD and were inflated to 2018 prices.
Total TT doses for WCBA from all 11,626 facilities across the country.
The cost per dose is the same for all routine vaccines in the current EPI.
TOTAL COST BY INGREDIENT AT THE FACILITY LEVEL

Total Cost by Ingredient

Fiscal Cost: 2,000
Economic Cost: 2,500

Ingredient Share of Total Cost

Fiscal Cost: 100%
Economic Cost: 100%
TOTAL COST BY ACTIVITY AT THE FACILITY LEVEL

Total Cost by Activity

Activity Share of Total Cost

- Fiscal Cost
- Economic Cost

2018 US$
FACILITY-BASED FISCAL COST PER DOSE BY GEOGRAPHIC AREAS

Facility-based fiscal cost per dose

Urban

Rural

Adjusted cost per dose (USD)

Number of facility-based administrated dose

Graphs by residence

- Red river
- Mekong river
- Northern Moutainous
- Megacity in the North
- Megacity in Centre
- Highland
- South East
- Centre Coast
- Megacity in the South
- Fitted values
FISCAL COST SAVING FROM REPLACEMENT PLAN 1

The new schedule: Td for 7-year-old children via school-based delivery strategy
FISCAL COST SAVING FROM REPLACEMENT PLAN 2

The new schedule: Td for 7-year-old children via facility-based delivery strategy
FISCAL COST SAVING FROM REPLACEMENT PLAN 3

**The new schedule:** Td for 7-year-old children via **multiple delivery strategies** (69% facility-based and 31% outreach based)
Total cost of replacing TT delivery to WCBA with Td delivery to 7-year-olds during 2018-2025

BUDGET IMPACT

<table>
<thead>
<tr>
<th>2018 US$ (millions)</th>
<th>New Td vaccination via school-based strategy</th>
<th>New Td vaccination via facility-based strategy</th>
<th>New Td vaccination via multiple strategies (69% facility-based and 31% outreach)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current strategy</td>
<td>22.21</td>
<td>22.21</td>
<td>22.21</td>
</tr>
<tr>
<td>New strategy and transitional period</td>
<td>15.34</td>
<td>18.03</td>
<td>24.54</td>
</tr>
<tr>
<td>Difference in cost</td>
<td>6.86</td>
<td>4.18</td>
<td>-2.33</td>
</tr>
</tbody>
</table>
OPPORTUNITIES FOR USE

— NITAG decision about cessation of TT delivery and introduction of Td delivery to 7-year-old children
  — Piloting underway
— 5-year plan/budget (2021-2025)
— Annual plan/budget
— Vaccine Introduction Plan
Thank you
Cảm ơn bạn