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PATH's zero-dose related costing work

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Examples of PATH's costing work related to zero-dose

HPV vaccine
delivery to girls out
of school

Integrated
campaigns

Innovations to
extend the reach of
vaccines

System to track
vaccination status

Strengthening RI in
high-risk
geographies

HPV vaccine delivery costing in Ethiopia (1)

Context: This project builds on a prior study in Ethiopia, which costed vaccine delivery to a **single-age cohort** of 14-year-old girls receiving a **two-dose schedule** of HPV vaccine.

Primary objective: Understand the operational context and evaluate the cost of the upcoming HPV vaccination activities in Ethiopia that will deliver a **single-dose schedule** to a **multi-age cohort** of adolescent girls.

Our secondary objectives are to:

- Gain insights on **delivery locations and strategies used to reach girls who are out of school** and the associated costs of reaching this population.
- Provide insights into the extent to which HPV vaccination activities are integrated with other program activities.



HPV vaccine delivery costing in Ethiopia (2)

Methods: Ingredients based micro-costing

Perspective: Health system costing with no tracking of payer

Sampling: Purposive selection of regions to represent urban, agrarian, and pastoralist regions and also some pastoralist regions with large number of girls out of school; stratified random sampling of zones / subcities, woredas (districts) and health facilities

Sample size: 70+ health facilities and then their affiliated administrative levels

Expected timeline: Campaign expected to happen in Q4 2024 and costing data collection shortly thereafter

Results expected by: mid 2025

Study funder: Bill & Melinda Gates Foundation

Collaborators: Ethiopia Federal Ministry and Health and Ethiopia Public Health Institute

Status: Ongoing

Costing of the 2023 Malawi integrated campaign

Context: Campaigns are any opportunity to reach children missed through routine immunization.

Objective: Costing of the delivery of four interventions provided as part of the 2023 Malawi integrated campaign. The campaign delivered 4 interventions (typhoid conjugate vaccine, measles rubella vaccine, oral polio vaccine, vitamin A supplements) to a target population of +9 million people in May 2023.

Methods: Ingredients based micro-costing

Perspective: Health system costing with no tracking of payer

Sampling: 50 health facilities and their affiliated administrative levels

Study funder: Bill & Melinda Gates Foundation through the Typhoid Vaccine Acceleration Consortium (TyVAC)

Collaborators: Mpambe Research and Consulting Group

Status: Study complete, dissemination ongoing

Costing of systems implemented to track vaccination status

Electronic immunization registries

- **Context:** Immunization programs in low/middle-income countries face challenges with data quality and use and so electronic immunization registries (EIRs) combined with data use interventions may be a solution to help identify zero-dose and under-vaccinated children.
- **Countries included:** PATH has costed implementation of EIRs in Tanzania, Zambia and Vietnam.
- **Data sources for costing:** Project and partner records to gather expenditure data combined with microcosting to capture opportunity costs of using existing resources such as human resources and equipment.
- **Key takeaways from the costing:** There are incremental costs from implementing these interventions which can help identify unvaccinated populations. Cost estimates vary by country depending on number of health facilities and size of the populations served. The annualized average expenditure per child was estimated to be between US\$3.30 and US\$3.81 for the three regions in Tanzania and US\$8.46 for the one province in Zambia. For Vietnam, these costs were estimated at US\$0.48 per child.
- **Study collaborators:** Ministries of Health in study countries
- **Study funder:** Bill & Melinda Gates Foundation
- **Status:** Completed



Costing of innovations that can extend the reach of vaccines (1)

PATH has conducted several studies to evaluate cost and or cost-effectiveness of interventions intended to extend the reach of vaccines to zero dose and under-immunized children. Some of these innovations include:

Controlled temperature chain (CTC):

- **Context:** The CTC approach leverages the thermostability of some vaccines which allows them to be stored and transported at temperatures not exceeding 40 degrees Celsius for a specified duration (minimum of 3 days) during the last mile (just before administration).
- PATH has costed use of CTC for oral cholera vaccine in Zambia (unpublished) and MenA in Togo (published).
- **Methods:** Costing studies were conducted during the campaign implementation of CTC to compare delivery costs when using the CTC approach versus when using the standard cold chain approach where vaccines are stored and transported at 2 to 8 degrees C. Data were collected in intervention and control districts and related health facilities.
- The findings show that if proper planning is done, CTC use can decrease vaccine delivery costs and does not result in greater wastage. Acceptability and feasibility is high but challenge has been around providing effectiveness / true increased reach / coverage.
- **Collaborators:** MOH, World Health Organization
- **Funder:** Bill & Melinda Gates Foundation
- **Status:** Completed



Costing of innovations that can extend the reach of vaccines (2)

Microarray patches (MAPs)

- **Context:** MAPs are an innovation in clinical development which are a promising single-dose device for the delivery of vaccines directly to the dermis or epidermis. For vaccines, that require reconstitution, MAPs will remove this need for reconstitution. MAPs have the potential for increased thermostability and ease of use, which can enable delivery strategies like house-to-house delivery or extended outreach for injectable vaccines.
- PATH has conducted modeling to evaluate the comparative delivery costs when using MAPs versus current vaccine presentation in vials administered with needle and syringe.
- This modeling has been conducted using the PATH VTIA model which evaluates the comparative delivery costs of alternative vaccine presentations.
- MAPs are likely to come at a price premium and so some cost-effectiveness studies have been conducted to model the potential incremental costs versus incremental benefits (effectiveness of MAPs to increase coverage).
- **Examples of MAP vaccines evaluated:** HepB birth dose vaccine, measles and rubella vaccine, typhoid conjugate vaccine
- **Collaborators:** WHO, Gavi
- **Funders:** Bill & Melinda Gates Foundation, Wellcome Trust
- **Status:** Some ongoing and some completed

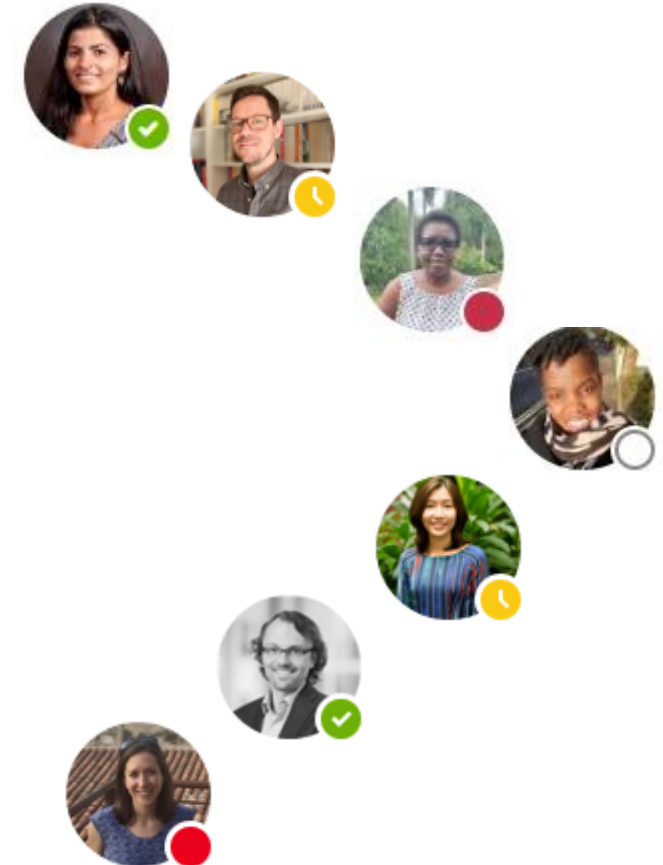


Strengthening routine immunization in high-risk geographies

- **Context:** In 2019, BMGF launched the **Routine Immunization Strengthening (RISP) program**, a five-year initiative focused on improving routine immunization (RI) for children in under-immunized and conflict-afflicted geographies.
- The RISP Learning Consortium, which was kicked off in late 2023, is an innovative, five-year initiative that will tell a comprehensive, holistic, and data-driven story that describes the effectiveness of the RISP program's country-based approaches.
- A cost study is planned to assess the incremental costs of RISP on country RI systems
- **Geographies where costing may occur:** Chad and / or DRC
- **Scope:** microcosting of intervention implemented to strengthen the routine immunization program
- **Collaborations:** Ministries of Health, Bill & Melinda Gates Foundation
- **Status:** Planned

PATH Health Economists Team

- PATH has seven health economists who are based on four continents and have conducted studies in nearly 40 countries:
 - Ranju Baral, MPH, PhD; Sr. Health Economist, CVIA, Seattle
 - Frederic Debellut, M.Sc.; Sr. Health Economist, CVIA, Geneva
 - Mercy Mvundura, PhD; Technical Advisor, MDHT, Seattle
 - Teddy Naddumba, MSc; Health Economist, MDHT, Kampala
 - An Nguyen, MD, PhD; Sr. Health Economist, CVIA, Ho Chi Minh City
 - Clint Pecenka, MPP, PhD; Director of Health Economics and Outcomes Research, CVIA, Seattle
 - Rose Slavkovsky, MPA; Health Economist, CVIA, Seattle
- The team works to evaluate vaccines, medical devices, reproduction health products, non-communicable disease interventions and many other interventions for global health.



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