BANGLADESH

Maternal immunization

Estimating the cost of delivering new maternal vaccines in Bangladesh

Health system considerations for introduction

While vaccines save millions of lives every year, immunization does not yet reach all life stages equitably, including pregnancy and early infancy. Maternal immunization (MI), or vaccination during pregnancy, is a way to help close immunization gaps and protect populations traditionally missed. The maternal vaccine landscape is expanding, offering a chance to more broadly and routinely integrate MI into health systems to strengthen maternal, newborn, and child health care – especially in low- and middle-income countries (LMICs) where disease burdens and prevention needs are greatest. Understanding cost of delivery (COD) and introduction implications for such interventions is important for informing policy decisions.

MI enhances a pregnant individual's protective antibodies, which naturally transfer to the baby and protect in the first critical few months after birth. It is used safely and effectively against diseases like tetanus, influenza, pertussis, and COVID-19. Several new maternal vaccines are emerging – including to address serious early childhood illnesses such as respiratory syncytial virus (RSV; licensed) and Group B *Streptococcus* (in development) – and could be available for global use in the next few years. Efforts to accelerate access to such products are ongoing, including pending investment discussions at Gavi, the Vaccine Alliance. Adding new maternal vaccines to health systems, however, may require adapting immunization and maternal (antenatal) health care programs to establish conducive delivery platforms.

In Bangladesh, MI helped the country reach maternal and neonatal tetanus elimination status in 2008[1] and is permitted for COVID-19 (with qualifications).[2] To support country and global decision-making on the economic feasibility of implementing new maternal vaccines, PATH, in collaboration with the Bangladesh Directorate General of Health Services (DGHS) and Ministry of Health and Family Welfare (MHFW), conducted a study to help understand COD in Bangladesh. Results will inform broader analyses of the cost-effectiveness and affordability of integrating new MI interventions in the Bangladeshi health system.

Key study findings

- New maternal vaccines are expected to be delivered using Bangladesh's existing service delivery platforms.
- Excluding commodity costs, the estimated financial and economic costs of delivering one dose of a given new maternal vaccine are **US$0.49 and $2.01**, respectively.
- The estimated costs of delivering new maternal vaccines are comparable to the costs of other routine vaccines for children, though comparisons should be made cautiously given differing contexts.

Key terms

» ***Activity-based costing:*** Identifies and costs each activity associated with intervention introduction and delivery.

» ***Incremental costs:*** Costs additional to existing program operations that are necessary to implement new maternal vaccines, such as planning and organizing meetings, training.

» ***Financial costs:*** Direct expenses related to introducing and delivering new maternal vaccines, such as staff allowances for specific trainings.

» ***Economic costs:*** Financial costs plus costs of existing resources, such as health worker time and value of donated goods.

» ***Commodity costs:*** Vaccine and immunization supplies/product costs.

Study summary & methods

This COD study explores the costs associated with vaccine introduction and recurrent operational costs (e.g., program planning and coordination, logistics, supplies, training, communications and demand generation, waste management). The methods we used for this COD study in Bangladesh consisted of three stages:

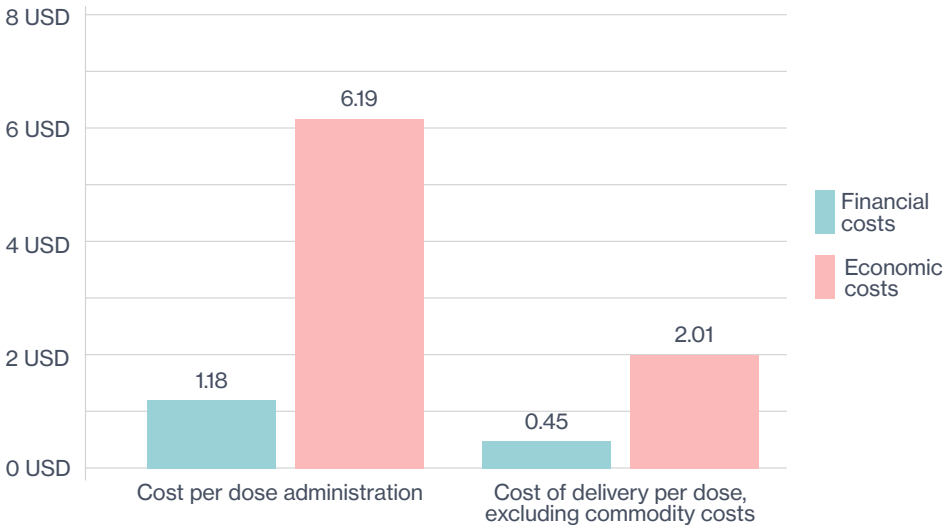
1. **Stakeholder workshop:** The COD study team held a workshop with 57 participants from the DGHS, MHFW, and other in-country stakeholder groups to discuss MI delivery strategies. Given the growing landscape of existing and emerging maternal vaccines, determining appropriate delivery platforms is a critical aspect of understanding COD for new maternal vaccines. Currently, most women in Bangladesh receive vaccines during pregnancy (such as tetanus vaccine) and are usually referred to immunization clinics during antenatal care visits. Workshop participants concluded that Bangladesh's existing service delivery platforms are best positioned to deliver new maternal vaccines, though key areas will need strengthening in advance of introduction.
2. **Prospective costing:** Guided by the insights from the stakeholder workshop, we generated projected costs for product introduction and delivery. Cost projections were from the health system perspective; consider only incremental costs; were derived via an ingredient-based activity approach; covered a five-year period; assumed national introduction across all regions and districts; and included both financial and economic costs. The current costing analysis only estimates cost/resource needs. It does not consider financing mechanisms or donor support that may likely be available.
3. **Validation:** National program representatives validated the study inputs, assumptions, and results of the prospective costing study.

Data collection occurred between August and November 2023. Costing interviews with Expanded Programme on Immunization and antenatal care program leads at the national level allowed us to map the activities necessary to implement new maternal vaccines, and activities associated with strengthening existing service delivery platforms. We sourced additional data from representative health administrative units, vaccine storage records, and health facilities adminstrative data to inform potential introduction and recurring costs at all levels of the health system. Data from district health offices (N=4), city corporations (N=4), upazilas (N=8), health facilities (N=20), and vaccines stores (N=15), representing four divisions across Bangladesh informed the costing analysis.

Cost of delivery & cost drivers

At an assumed price of $3 per dose for a given maternal vaccine, the estimated financial and economic costs of administering one dose were $1.18 and $6.19, respectively. Excluding commodity costs (vaccine dose and other immunization supplies), the estimated financial and economic costs of delivering one dose of maternal vaccine were $0.45 and $2.01, respectively. To clarify, vaccine doses were assumed to be donated and, therefore, were only included in the economic cost estimate. Excluding commodity cost, the largest cost drivers were shown to be demand creation activities, training, and program planning and coordination activities.

Cost estimates



Conclusions

No other studies on the costs of delivering maternal vaccine in Bangladesh exist and very few exist for LMICs in general. While comparisons between this study and other new vaccine introductions should be made with caution, findings from this study are within range of other new vaccine introduction and delivery costs in Bangladesh.[3] Though cost estimates generated in this study are projections, they provide useful insights for local and global stakeholders seeking to understand what introducing and delivering new maternal vaccines might cost.

Endnotes

1 WHO. Maternal and Neonatal Tetanus Elimination. Accessed April 10, 2024 at: https://www.who.int/initiatives/maternal-and-neonatal-tetanus-elimination-(mnte)/progress-towards-global-mnt-elimination.

2 Johns Hopkins University. "Bangladesh." COMIT website. Accessed April 10, 2024 at: https://www.comitglobal.org/country/bd.

3 Hossain M.T., Yesmin A., Islam M.M., Moi F., Archer R., Boonstoppel L. 2024. Analysis of the Cost of COVID-19 Vaccine Delivery at Selected Sites in Bangladesh. Geneva: ThinkWell.

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For detailed information about this study, and questions, please contact HEOR@path.org.

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