

# MOMENTUM

## Routine Immunization Transformation and Equity



What Works Series: Rapid Evidence and Insights to Overcome Entrenched Obstacles to Immunization Coverage & Equity

Ida Vahire, MOMENTUM Routine Immunization Transformation and Equity



## 2 Addressing Insufficient Operational Funding to Reach Zero-Dose Children and Missed Communities

### Background


The World Health Organization's (WHO's) Immunization Agenda 2030 and Gavi, the Vaccine Alliance's 2021–2025 Strategy, emphasize “leaving no one behind in routine immunization.” Over the past two decades, extraordinary progress has been made in reducing the immunization coverage gap between lower- and higher-income countries, resulting in tens of millions of children's lives saved.


As a result of the COVID-19 pandemic, global childhood routine immunization coverage fell to 81 percent in 2021, the lowest since 2008. This significant decline in coverage resulted in 25 million children missing out on one or more doses of diphtheria, tetanus, and pertussis (DTP) vaccine through routine immunization services in 2021. Of these 25 million children, 18 million are “zero dose” children, having received no vaccination doses.<sup>1</sup> Even before the pandemic, progress on extending routine immunization services to all children was stagnating, with an average of 20 million infants not receiving a full course of even basic vaccines each year. Coverage levels in many countries fell below the WHO goal of 90 percent.<sup>2</sup>

Reaching children and communities missing out on immunization, and then ensuring newly reached children are fully vaccinated, requires national immunization programs to develop and implement context-specific strategies to overcome entrenched obstacles related to access and quality. This brief focuses on a key entrenched obstacle to reaching zero-dose children and missed communities with routine immunization services—insufficient operational funds available at sub-national and facility levels to implement tailored delivery and advocacy strategies to reach specific hard-to-reach and vulnerable populations.

### ABOUT THIS SERIES

The goal of the What Works Series is to identify, review, synthesize, and share ways to overcome entrenched obstacles to improving immunization coverage and equity. We achieve this using root cause analysis (RCA) and rapid evidence synthesis.

 **Root cause analysis:** Starting with an entrenched obstacle, bottleneck, or challenge, our team performs an RCA to identify its causes and root causes. Root cause analysis is a problem-solving tool that continually asks ‘why?’ about an observed challenge, drawing from multiple evidence sources to establish causes. This process helps us to identify a subset of root causes that, if resolved, could lead to significant improvements.

 **Rapid evidence synthesis:** This brief aims to collate and synthesize evidence on what works to overcome the identified root cause. We define evidence broadly, but start with a search of existing systematic reviews that relate directly or indirectly to the issue. We supplement this with grey literature, case studies, and tacit knowledge. We use a “realist” lens to interpret and synthesize evidence that often comes from diverse sources and contexts.

## What are the Root Causes of Insufficient Operational Funds?

Multiple and interrelated causes lead to insufficient operational funds to implement immunization activities that reach zero-dose children and missed communities, ranging from sub-optimal planning to inadequate political commitment. Ensuring sufficient resource availability to reach missed children requires that:

- National and sub-national budgets adequately account for the implementation of strategies to reach these children and communities.
- The allocated funds are available when and where they are needed.
- The funds are efficiently and effectively expended during implementation.

Our root cause analysis recognized that a critical barrier in this pathway is the failure of sub-national budgets to adequately account for the higher cost of reaching each additional zero-dose or under-immunized child, also known as the marginal cost. As such, this brief will focus on two key questions to overcome this challenge:

1. What evidence is available on the marginal costs of reaching zero-dose and under-immunized children?
2. What are best practices or opportunities in planning and budgeting for immunization activities that help ensure that the operational costs for reaching zero-dose and under-immunized children are adequately incorporated into budgets at sub-national levels?

These two questions are addressed in findings and lessons.

## Findings and Lessons

### 1. What evidence is available on the marginal costs of reaching zero-dose and under-immunized children through routine immunization?

A 2021 statement from the Equity Reference Group for Immunization noted “limited evidence on the costs associated with providing and scaling immunization and broader primary health care services to disadvantaged communities,”<sup>4</sup> and noted that “it is critical to incorporate an assessment of costs at the outset of designing and planning tailored delivery strategies in order to facilitate the implementation of efforts to reach zero-dose communities.” While a review of the evidence shows that it does cost more to reach harder-to-reach populations, most likely driven by the additional labor and operational costs required, coming to a widely applicable understanding of the costs of tailored delivery strategies is difficult, as costs vary widely across the types of strategies and the varied contexts across countries and populations.

Ozawa et al.’s *Systematic review of the incremental costs of interventions that increase immunization coverage* shows that the marginal cost of efforts to further improve coverage increases with higher baseline coverage. The study found that the cost per dose per percent coverage increase is higher when the baseline coverage level is higher. This finding suggests that when countries at higher levels of coverage implement interventions to further increase coverage by reaching unreached populations, the costs per person vaccinated are increasingly higher.<sup>5</sup> This is shown in Figure 1 below, which is drawn from Ozawa et al.’s article.

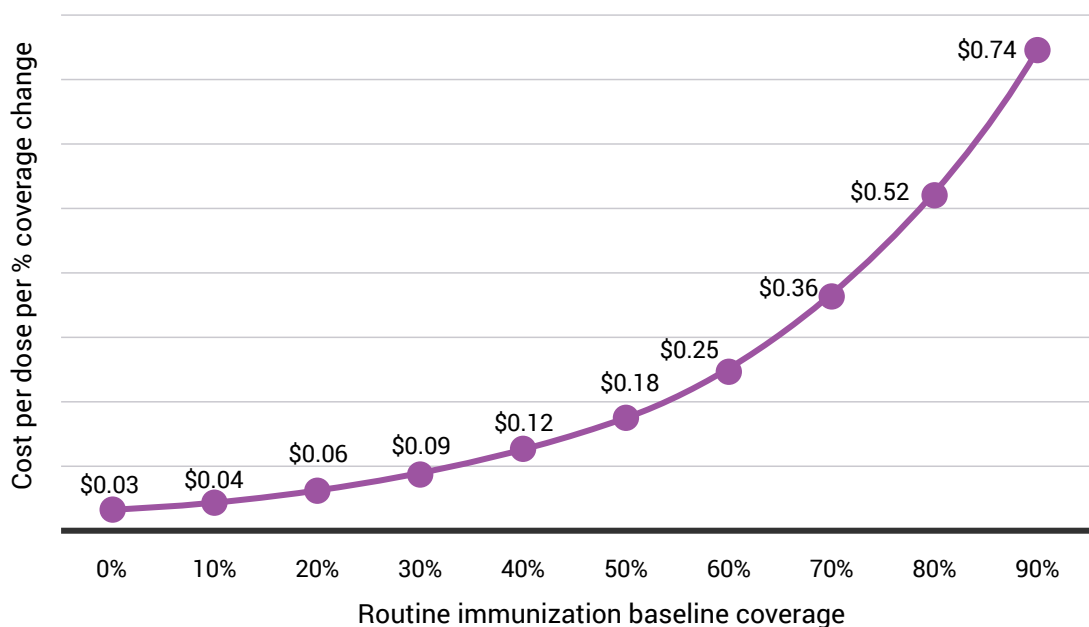


## snapshot

### THE MARGINAL COST OF INCREASING COVERAGE IN INDIA

The Government of India’s Intensified Mission Indradhanush (IMI) was an initiative to increase full immunization coverage from 62 percent in 2016 to 90 percent by 2018. The government implemented the program in 173 lower-coverage districts and 17 urban areas across 24 states. The program’s basic strategy was to identify children with missing doses, then prepare a microplan for conducting sessions during one week of each month for four consecutive months in new vaccination sites. If needed, the program formed mobile teams to reach large mobile and isolated populations. Across multiple studies, the proportion of fully immunized children increased by a range of 11 to 19 percent as a result of IMI. Across Bihar and Uttar Pradesh, two states with a high concentration of IMI activities, the cost per dose (USD 2019) for IMI activities was, respectively, \$4.73 (compared to \$1.31 cost per dose for routine immunization) and \$3.45 (compared to \$1.43 cost per dose for routine immunization). The higher cost per dose represents the additional effort to reach the unreached, specifically identifying missed children through extensive household surveys and establishing and coordinating additional session sites to vaccinate these missed children.<sup>4</sup>

**Figure 1. Routine immunization intervention cost per dose per percent absolute coverage change (USD 2016)<sup>3</sup>**



Note: Figure results shown are from low- and lower-middle-income countries.

Systematic reviews from Ozawa et al. and Munk et al. (2019) examined the available evidence on the costs of interventions to increase vaccination coverage in low- and middle-income countries. (The table of studies on page 7 summarizes Munk et al.'s relevant findings on impact and cost-effectiveness across routine immunization interventions.) Both studies point to the difficulty of developing a general cost estimate or range of costs for these interventions due to the variation of costing methods. Additionally, the cost evidence available is largely from studies presenting the costs of implementing discrete interventions to increase routine immunization coverage, such as new delivery strategies, as opposed to interventions that extend or expand existing routine immunization services.

As national immunization programs seek to increase coverage by reaching zero-dose and under-immunized children, the evidence confirms what most immunization program managers already know—it will cost more. And not only will it cost more, but the marginal cost of reaching each child will be greater as baseline coverage rates increase. As to how much more, countries should ensure funding for an effective microplanning process and a local situational analysis, which seeks inputs from local immunization stakeholders to identify strategies and activities needed to reach these children, to accurately estimate the additional financial and operational costs required.

## **2. What are best practices or opportunities in planning and budgeting for immunization activities that help ensure that the operational costs for reaching zero-dose and under-immunized children are adequately incorporated into budgets at sub-national levels?**

The Reaching Every District (RED) guide<sup>6</sup> to increasing immunization coverage and equity in all communities outlines the process for developing microplans and provides recommendations for preparing budgets with the resources needed for implementation and including them in budgets for health facilities, districts, and higher levels of sub-national and national government. These recommendations are as follows:

- Proposed budgets for implementing pro-equity strategies should be feasible and realistic, reflecting the resources available.
- If funding and resources are not sufficient to fully implement the plan, efforts should be made to raise additional support from government, donor projects, communities, non-government organizations (NGOs), and the private sector.

- Items in the budget must be prioritized so that the most critical activities, such as immunizing high-risk communities, will be conducted.

The RED guide emphasizes that a well-prepared budget will help justify the budget request and ensure that the RED microplan budget is included in the overall health facility plan and sub-national government budgets.

However, even with a well-prepared implementation plan and budget, the resources allocated at sub-national levels to increase immunization coverage are often insufficient. This is often the result of a lack of prioritization for immunization and competing resource demands at the sub-national levels. Additionally, limited political will to allocate resources to improve the reach of immunization services to politically marginalized populations may be a barrier.

A review of the evidence identified two key best practices to support immunization practitioners in ensuring that the operational resources needed to reach zero-dose and under-immunized children are adequately incorporated into sub-national budgets. Both best practices indicate that broader engagement of both government and non-government stakeholders is critical to building political support for allocating the resources necessary to extend immunization services to reach hard-to-reach populations. This is not surprising, as resource allocation decisions are decisions between competing priorities within and beyond the health sector and are also based on political motivations to demonstrate the government's responsiveness to the community's needs. Even in contexts where microplanning has not recently been completed, broader engagement of stakeholders will continue to be an effective means of mobilizing the resources needed.

### **Best practice 1: Stakeholders from communities with zero-dose and under-immunized children should be engaged in the microplanning process and in an inclusive budgetary prioritization process.**

Engaging civil society and local populations in a participatory microplanning process increases the effectiveness and responsiveness of immunization service delivery, especially delivery to hard-to-reach populations; engaging a broader coalition of stakeholders and the population in a budgetary prioritization process to voice support for immunization's importance in the budget increases its prioritization. Mechanisms to engage broader health and immunization stakeholders in the community in local-level primary health care planning consultations should be tailored specifically to the local circumstances. Representatives of remote and hard-to-reach areas, as well as marginalized and vulnerable population sub-groups, should be integrated into these consultations through trusted local actors.

### **Strengthening Health Facility Engagement in Planning Processes in Tanzania**

A 2013 appraisal of immunization program planning and budgeting in Tanzania found that many councils (the administrative equivalent of districts) did not budget properly for the recurring costs of annual immunization program delivery, resulting in insufficient funds to support immunization outreach clinics, fuel for cold chain equipment, electricity, and transport costs for distributing vaccines.

Tanzania's annual planning and budgeting process in the councils, the Comprehensive Council Health Planning (CCHP) process, uses a bottom-up approach, engaging community stakeholders, health facilities, hospitals, and dispensaries to communicate their annual health program priorities to their council health planning team.

From 2014 to 2017, the Muleba council focused on strengthening the CCHP planning process to improve council-level immunization program performance. Specifically, the CCHP planning process incorporated use of a country-adapted microplanning tool at all 42 health facilities in the council, and the linkage between the CCHP and health facilities' plans and budgets was strengthened by ensuring that the CCHP shared with health facilities all critical information needed for the planning process (including budget ceilings) during the pre-planning stage, which had not previously been done and had resulted in unrealistic council plans and budgets.

In the years immediately preceding these efforts, the total budget allocated for immunization services in Muleba council was lower than the required budget by approximately 20 percent. In the year following the improved planning process, the allocated immunization budget for all components was the same as or within 5 percent of the required budget developed using the microplanning tool, indicating a marked improvement in CCHP budgeting accuracy for that year. The shrinking gap between allocated and required

---

funds meant that Muleba did not face any immunization program funding deficits, and all planned outreach, vaccine distributions, and immunization services were able to take place as planned. Importantly, accurate CCHP budgeting may have played a role in increasing immunization coverage in the Muleba council.<sup>7</sup>

### **Participatory Budgeting for Health in Benin**

Benin's village forum process provides an opportunity, via participation, to empower not only poor neighborhoods and villages, but also vulnerable groups, particularly women. While this process is not specific to routine immunization, it demonstrates how communities can be engaged to advocate for and take ownership of their needs directly with key budget allocation decision-makers.

The village forum is the first level of participation in Benin's participatory budgeting process; it is frequently the main setting for identifying and assessing community needs and related community projects. Village forums also monitor the implementation of municipal projects as budgeted and are responsible for facilitating the mid-term evaluation and reporting for the projects. Citizens' level of participation in the budgeting process varies across local communes in Benin. Some forums are carried out in an open and accessible space where citizens could freely join in, express concerns, and provide input. In other communes, for political and logistical reasons, direct citizen participation is somewhat limited and often took place via representatives or organized groups.<sup>7</sup>

In the community, this budgeting process in Benin seems to have gradually instilled a sense of engagement and responsibility over matters that concern citizens, notably the provision of health services. In many areas, it inspired villagers to have dialogue with local council members and motivated them to pay their taxes because they understood that their tax money would help fund their village's projects. The presence of women in the budget process was hailed as a significant achievement in Benin given that women are virtually absent in most of the country's communal councils.<sup>8</sup>

**Best practice 2: Non-health government stakeholders should be engaged via advocacy efforts to understand the potential impact of resources to reach zero-dose and under-immunized children to meet broader pro-poor, equity, economic, educational, and health goals.**

It is important to remember that budget preparation at all levels is fundamentally a political rather than purely technocratic process. Sub-national authorities and political leaders are often the critical decision-makers for allocating the necessary resources to cover operational costs for immunization and other health services, including primary health care (PHC). Therefore, these "non-health stakeholders" have key roles to play in supporting immunization. They must understand their roles and why immunization is vital to their community's well-being and beneficial to their own leadership.<sup>9</sup> Integrated planning and budgeting—defined as processes undertaking this sub-national planning and budgeting exercise for a range of PHC services—can not only maximize resources but also frame immunization as a key lever for achieving broader PHC and universal health care goals.

### **Translating Evidence to Policy in Tanzania**

The Government of Tanzania identified the need for cost evidence to ensure the allocation of sufficient financial resources for the national immunization program. The cost data available at the time was insufficient, as it focused on specific antigens or geographics. During the national planning exercise conducted to develop a comprehensive multi-year plan for immunization from 2016 to 2020, the Government of Tanzania generated new cost evidence by conducting a costing study as a priority. In addition to generating this evidence, the government needed to translate it so that it could be effectively used in decision-making and operational management. The researchers conducting the costing study found that for the cost evidence to be usable, they needed to develop briefs and advocacy messages to use with non-finance stakeholders, tailored to policymakers and funders at different levels of the health system. They also found that to facilitate ongoing use of the evidence, supplemental analyses were needed to transform the costing data for specific use cases. In Tanzania's decentralized health system, this effort was challenging because of the number of ministries and offices involved in financing and delivering immunization services. But these efforts were needed to increase the usability of cost evidence for planning and decision-making.<sup>8</sup>

## Engaging Local Non-health Stakeholders in Uganda and Ethiopia

In Uganda, local civil authorities and political leaders, collectively referred to as “non-health stakeholders,” were actively involved in monitoring immunization program performance to ensure sufficient resources to remove last-mile bottlenecks. District health officers regularly shared immunization performance data with local leaders and civil authorities and invited them to attend quarterly review meetings and participate in supervision visits. These efforts increased these non-health stakeholders’ understanding of the program’s accomplishments and challenges and the role they could play in strengthening the program. As a result of these efforts, financial, in-kind, and social/political support for routine immunization increased in more than 20 districts. Additional financial support was used to procure fuel for refrigerators and conduct outreach sessions, while in-kind and political support resulted in new and innovative strategies to improve immunization, such as use of the mayor’s motorcycle to transport health workers, a megaphone to mobilize communities, and the District Commissioner’s outreach to resistant communities and use of his regular radio address to generate demand for routine immunization. The allocation of additional local resources addressed bottlenecks to higher immunization performance, and the increased engagement of these local stakeholders enhanced their ownership of the immunization program in their area.<sup>8</sup>

Itang district in Ethiopia experienced many challenges implementing its routine immunization program. The district lacked clearly defined plans and strategies to reach children with immunization services at clinics or community outreach sites, and scheduled vaccination sessions were frequently canceled due to budget constraints. To address these challenges, the district developed a detailed immunization microplan and estimated the additional funding needed to deliver the activities outlined in the microplan.

The district’s health staff then used the microplan to highlight critical budget gaps and engaged local civil authorities over several months to successfully advocate for increased funding that was critical to expanding outreach to reach and vaccinate more children.<sup>8</sup>

## In Summary

Pro-equity strategies must be tailored to overcome the barriers to reaching specific populations with routine immunization, and just as these strategies will be context specific, so will the costs. The evidence presented in this brief suggests that bottom-up approaches to budgeting and planning will be most effective in overcoming the critical failure of sub-national budgets to adequately account for the higher marginal costs of reaching zero-dose and under-immunized children.

Simply knowing what resources are needed to reach these populations is not enough if the necessary resources are not included in the budget. The evidence suggests that to ensure that the funding needed to reach zero-dose and under-immunized children is actually included in the budget, local governments should engage the communities where these children reside and the health facilities serving those communities to participate in the budget prioritization. Additionally, sub-national health authorities should recognize that the budget process is inherently political, and it is critical to engage non-health actors to see the broader benefits of increasing immunization—and access to other PHC services—among zero-dose and under-immunized children.

## ACTIONS NEEDED

Bottom-up approaches to budgeting and planning will be most effective in overcoming the critical failure of sub-national budgets to adequately account for the higher marginal costs of reaching zero-dose and under-immunized children. To ensure that the funding needed to reach zero-dose and under-immunized children is actually included in the budget, governments should:

- Ensure that budget planning and microplanning processes capture the actual costs of reaching zero-dose and under-immunized children.
- Engage the communities where these children reside and the health facilities serving those communities to participate in microplanning and budget prioritization.
- Recognize that the budget process is inherently political, and it is therefore critical to engage non-health actors to see the broader benefits of increasing immunization among zero-dose and under-immunized children.
- Foster innovation to potentially identify cost-minimizing approaches to reach zero-dose and under-immunized children.

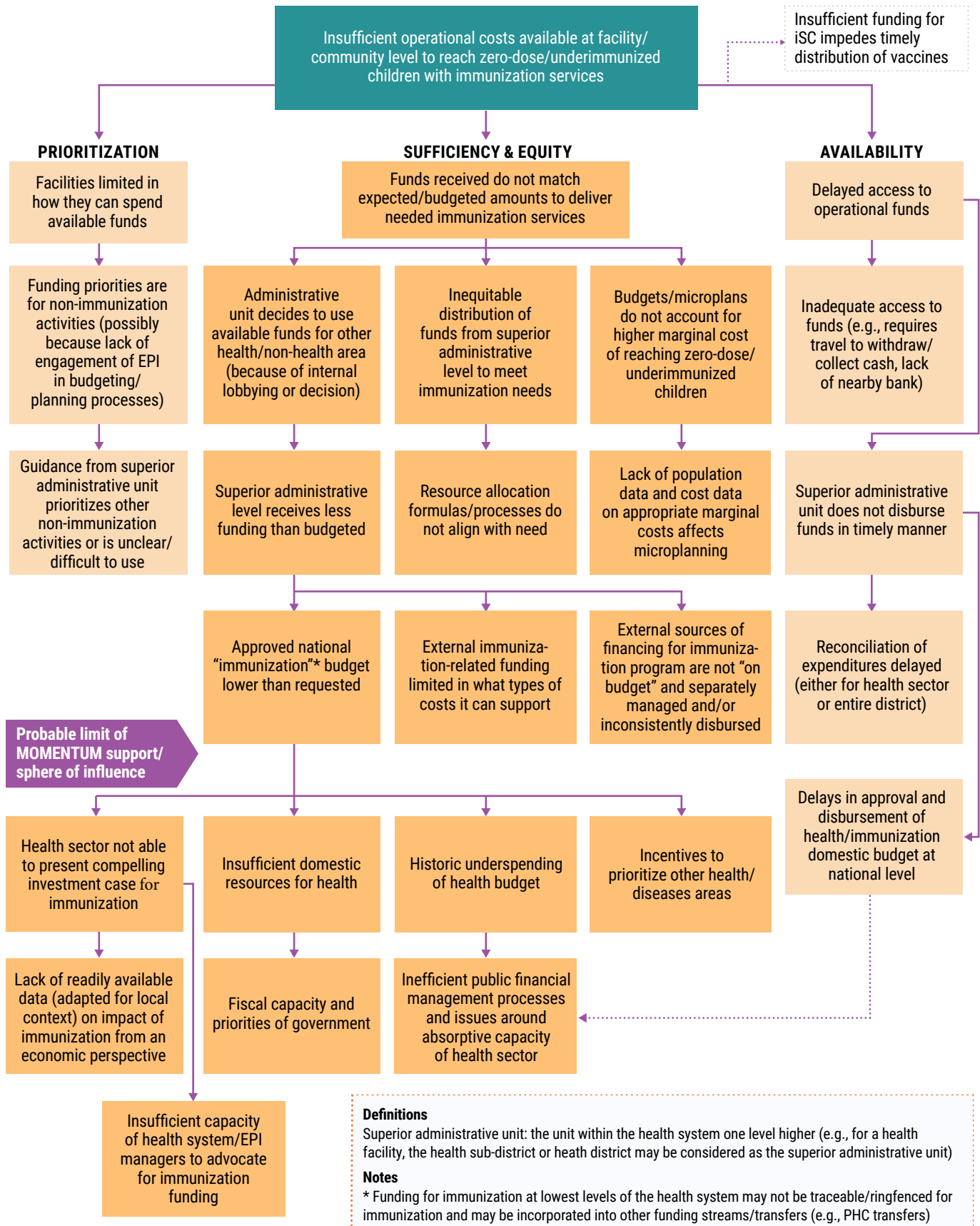
**Table of studies reviewed by Munk et al. (2019)**

Country	Intervention*	Coverage increase (percentage points)	Incremental cost-effectiveness ratio (ICER) per child vaccinated**
<b>SOCIAL NORMS</b>			
<b>PAKISTAN</b> Balochistan province	Community discussion groups on measles vaccine benefits, costs, and coverage	22%	\$124.86
<b>INDIA</b> Uttar Pradesh state	Four to six meetings in each village to disseminate information on entitled health and education services	20%	\$6.88
<b>INDIA</b> Uttar Pradesh state	Health information messaging targeting mothers of unvaccinated or incompletely vaccinated children through home visits	15%	\$161.95
<b>UTILIZATION</b>			
<b>INDIA</b> Rajasthan state	Monthly immunization camps conducted by mobile team in villages (Group A)	11%	\$1.09
<b>INDIA</b> Rajasthan state	Monthly immunization camps conducted by mobile team in villages (Group B)	34%	\$0.66
<b>BUDGET AND EXPENDITURES</b>			
<b>CAMBODIA</b>	Developing and implementing immunization microplans that are supported by performance-based agreements and a secure system of financing	16%	\$13.75

\*Note: Interventions are grouped by UNICEF's pro-equity determinants of effective coverage.

\*\*Note: The incremental cost-effectiveness ratio (ICER) is a statistic used in cost-effectiveness analysis to summarize the cost-effectiveness of an intervention. It is the change in cost between two interventions, divided by the change in effect. It represents the average incremental cost associated with 1 additional unit of the measure of effect.

## Root cause analysis of insufficient operational costs to reach zero-dose and under-immunized children





## References:

1. Buechner, Maryanne. "Steep Declines in Childhood Vaccinations Prompt Call to Action." UNICEF USA, July 15, 2022. <https://www.unicefusa.org/stories/steep-declines-childhood-vaccinations-prompt-call-action/40202>.
2. "Immunization Agenda 2030 - World Health Organization." Immunization Agenda 2030, 2021. [https://cdn.who.int/media/docs/default-source/immunization/strategy/ia2030/ia2030-draft-4-who\\_b8850379-1fce-4847-bfd1-5d2c9d9e32f8.pdf?sfvrsn=5389656e\\_66&download=true](https://cdn.who.int/media/docs/default-source/immunization/strategy/ia2030/ia2030-draft-4-who_b8850379-1fce-4847-bfd1-5d2c9d9e32f8.pdf?sfvrsn=5389656e_66&download=true).
3. Ozawa, Sachiko, Tatenda T. Yemeke, and Kimberly M. Thompson. "Systematic Review of the Incremental Costs of Interventions That Increase Immunization Coverage." *Vaccine* 36, no. 25 (May 10, 2018): 3641–49. <https://doi.org/10.1016/j.vaccine.2018.05.030>.
4. Chatterjee, Susmita, Palash Das, Anita Pinheiro, Pradeep Haldar, Arindam Ray, Logan Brenzel, and Stephen Resch. "The Incremental Cost of Improving Immunization Coverage in India through the Intensified Mission Indradhanush Programme." *Health Policy and Planning* 36, no. 8 (May 5, 2021): 1316–24. <https://doi.org/10.1093/heapol/czab053>.
5. Equity Reference Group for Immunization. "Consensus Statement on the Economics of Reaching Zero-Dose Communities with Immunization and Primary Health Care." August 2021. [https://irp.cdn-website.com/44236788/files/uploaded/ERG%20Consensus%20Statement%20on%20the%20Costing%20of%20Immunization%20and%20Primary%20Health%20care%20Services\\_August%202021.pdf](https://irp.cdn-website.com/44236788/files/uploaded/ERG%20Consensus%20Statement%20on%20the%20Costing%20of%20Immunization%20and%20Primary%20Health%20care%20Services_August%202021.pdf).
6. Maternal and Child Survival Program. Strengthening Comprehensive Council Health Planning to Increase Immunization Coverage. USAID, January 2019. [https://pdf.usaid.gov/pdf\\_docs/PA00TKWD.pdf](https://pdf.usaid.gov/pdf_docs/PA00TKWD.pdf).
7. Lassou, Philippe, Kelum Jayasinghe, Teerooven Soobaroyen, Pawan Adhikari, Andy Wynne, Maxime Akakpo. (2021). "Fostering Health Service Delivery via Public Financial Management: The Case of Participatory Budgeting in Benin's Local Governments." PEFA Research Paper Series, August 2021. [https://www.researchgate.net/publication/354690123\\_Fostering\\_Health\\_Service\\_Delivery\\_via\\_Public\\_Financial\\_Management\\_The\\_Case\\_of\\_Participatory\\_Budgeting\\_in\\_Benin%27s\\_Local\\_Governments](https://www.researchgate.net/publication/354690123_Fostering_Health_Service_Delivery_via_Public_Financial_Management_The_Case_of_Participatory_Budgeting_in_Benin%27s_Local_Governments)
8. JSI. "Mobilizing Local Support for Immunization: Experience from Uganda and Ethiopia in Engaging Local Stakeholders and Leaders." Mobilizing Local Support for Immunization: Experience from Uganda and Ethiopia in engaging local stakeholders and leaders, January 29, 2021. <https://www.jsi.com/resource/mobilizing-local-support-for-immunization-experience-from-uganda-and-ethiopia-in-engaging-local-stakeholders-and-leaders/>.
9. Vaughan, Kelsey, Emma Clarke-Deelder, Kassimu Tani, Dafrossa Lyimo, Alex Mphuru, Fatuma Manzi, Carl Schütte, and Annette Ozaltin. "Immunization Costs, from Evidence to Policy: Findings from a Nationally Representative Costing Study and Policy Translation Effort in Tanzania." *Vaccine* 38, no. 48 (November 10, 2020): 7659–67. <https://doi.org/10.1016/j.vaccine.2020.10.004>.