

# Gavi's Zero-Dose Learning Hub IRMMA Aligned Interventions: October 2023 Semiannual Update

## Uganda

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### **Gavi Zero-Dose Learning Hub (ZDLH)**

Funded by [Gavi](#), the Zero-Dose Learning Hub (ZDLH) serves as the global learning partner and is led by [JSI Research & Training Institute, Inc.](#) (JSI) with two consortium partners, [The Geneva Learning Foundation](#) (TGLF) and the [International Institute of Health Management Research](#) (IIHMR). Together, the consortium enables sharing and learning across four Country Learning Hubs (CLHs) in Bangladesh, Mali, Nigeria, and Uganda to advance the uptake of evidence by synthesizing and disseminating key learnings. The ZDLH also focuses on improving immunization equity and reducing the number of zero-dose (ZD) and under-immunized children globally by facilitating high-quality evidence generation and uptake.

### **Recommended Citation**

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### **Acknowledgments**

1. **Bangladesh Country Learning Hub:** Led by the International Center for Diarrhoeal Disease Research, Bangladesh (icddr,b) with partners Jhpiego and RedOrange Communications.
2. **Mali Country Learning Hub:** Led by GaneshAID with the Center for Vaccine Development-Mali (CDV-Mali).
3. **Uganda Country Learning Hub:** Led by Infectious Diseases Research Collaboration (IDRC) with partners PATH and Makerere University School of Public Health (MakSPH).
4. **Nigeria Country Learning Hub:** Led by the African Field Epidemiology Network (AFENET) with the African Health Budget Network (AHBN).

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## INTRODUCTION

The Zero-Dose Learning Hub (ZDLH) mechanism is rapidly underway to improve how data and evidence are used to successfully identify and reach the millions of children who have not yet received a single routine vaccine shot, known as “zero-dose” (ZD) children, and the missed communities in which they live. This ZDLH semiannual update informs Gavi, the Vaccine Alliance Board (Gavi Board) and other stakeholders about the mechanism’s work to use evidence to better understand the factors influencing implementation and performance of approaches to identify and reach ZD and under-immunized (UI) children and missed communities.

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## BACKGROUND AND COUNTRY SELECTION

The ZDLH helps generate, synthesize, and share ZD data and evidence at both the global and country levels. The structure is a hub-and-spoke model, where learning and evidence at the global level is managed by a global learning partner, and four country learning hubs (CLHs) (in Bangladesh, Mali, Nigeria, and Uganda) comprised of local partners/consortiums work that capture and use county-level programmatic data and evidence that contribute to performance reporting to the Gavi Board and other key stakeholders. The CLHs are implemented with the support of local organizations that have strong capacity to generate evidence, convene local stakeholders, and understand the national context and policies. They deploy resources to augment monitoring with implementation research (IR), along with other data collection activities. The CLHs are motivated to explore why children and communities are systematically missed and to evaluate effective practices to identify and reach those children. Each country is focused on targeted subnational geographies and will produce timely evidence on what is working, what is not working, what it takes to implement the approaches, and how processes can improve the use of evidence generated to ultimately inform future outreach strategies to better reach ZD children.

In the [Gavi 5.0 Strategy](#), the Alliance moved to a more targeted, differentiated, and systematic approach to programming to reach ZD and under-immunized (UI) children. The Alliance recognized the lack of complete answers on how to reach communities that have been systematically missed for generations, including those in complex country contexts, such as urban areas, remote communities, and populations in conflict settings. In 2020, the CLH approach was proposed to the Programme and Policy Committee (PPC) and the Gavi [Board](#) as an initiative to address the knowledge gaps. To this end, the CLHs were established to generate, synthesize, and share data and programmatic learnings at both the country and global levels across the IRMMA (Identify – Reach – Monitor – Measure – Advocate) Framework and to provide data to complement Gavi’s implementation monitoring approach. This approach includes a cross-cutting focus on gender equity, focusing on targeted subnational settings with high numbers or proportions of ZD children and across a diversity of settings, including rural, urban, conflict, and refugee settings.

Findings and learning generated through the CLHs will help identify: (1) effective strategies and approaches that should continue for ZD measurement and programming, (2) which strategies and approaches should be scaled up, and (3) what strategies and approaches are not effective and should be discontinued. Each CLH consists of local partners focused on three key objectives:

1. Generate and synthesize learnings based on the barriers to reach ZD children and apply these learnings to program planning and tailoring equitable approaches.
2. Strengthen the evidence base of effective approaches to identify and reach ZD children.
3. Improve metrics, measures, and methods to access and use data on a regular basis to improve outreach to ZD children and missed communities.

## LEARNING HUB PROVIDERS AND AWARD DATES

In addition to the four CLHs, the ZDLH mechanism includes a global consortium led by JSI Research & Training Institute, Inc. (JSI), in partnership with the International Institute of Health Management Research, New Delhi (IIHMR) and The Geneva Learning Foundation (TGLF) (see Figure 1). The global consortium provides technical and operational support to the CLHs and disseminates learnings at the community, regional, national, and global levels.

Figure 1. Timeline of Global and CLH Awards



The four CLHs include:

1. [Bangladesh](#): Led by the International Center for Diarrhoeal Disease Research, Bangladesh (icddr,b) with partners Jhpiego and RedOrange Communications.
2. Mali: Led by GaneshAID with the Center for Vaccine Development-Mali (CDV-Mali).
3. Uganda: Led by Infectious Diseases Research Collaboration (IDRC) with partners PATH and Makerere University School of Public Health (MakSPH).
4. Nigeria: Led by the African Field Epidemiology Network (AFENET) with the African Health Budget Network (AHBN).

The CLH countries were selected to ensure variation by region and context, including rural, urban, conflict, or refugee, and based on a relatively high number and proportion of ZD children. Other considerations included feasibility and risk mitigation. Table 1 illustrates different coverage estimates of the first dose of the Diphtheria-Tetanus-Pertussis vaccine (DTP1) and numbers of ZD children in the four CLH countries in 2022. The table highlights how estimates of ZD children can vary based on the data source due to a variety of reasons, including data quality and survey frequency (for estimates such as World Health Organization [WHO]/United Nations Children’s Fund [UNICEF] Estimates of National Immunization Coverage (WUENIC) that combine survey and administrative data).

Table 1. Comparison of Different Estimates of DTP1 Coverage (2022) in Children 12-23 Months of Age in Gavi CLHs

	Bangladesh	Mali	Nigeria	Uganda
Percent of DTP1 coverage (Administrative data 2022)	122	107	91	94
Percent of DTP1 coverage (Official estimate 2022)	n/a	78	70	94
Percent of DTP1 coverage (WUENIC 2022)	99	82	70	94
Estimated Number of ZD children in 2021 (WUENIC 2022)	29,405	160,626	2,271,265	100,096

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## CURRENT AND UPCOMING ACTIVITIES

Currently, the CLHs are conducting a rapid assessment of data and interventions across the IRMMA Framework in their subnational targeted areas; engaging stakeholders; defining learning agendas; conducting data systems assessments; and designing IR studies. Through their planned research and programming activities, the CLHs will also provide insights into the use of the behavioral and social drivers (BeSD) tools, costing of programs to reach ZD children, and ways to improve data systems for monitoring and measurement.

In March 2023, the ZDLH online platform launched to orient visitors to the purpose of the ZDLH, raise awareness of the IRMMA Framework, and connect to the ZD Community of Practice (CoP). A press release featured the website along with the formal announcement of the ZDLH and four CLH awards. The website includes a robust resource library featuring tools and materials to support ZD practitioners. The ZDLH resource repository already includes more than 40 resources, such as the ZDLH's recently published Typhoid Conjugate Vaccine (TCV) case study, Bangladesh and Mali Country Landscapes, and FHI 360's Pro-Equity Evidence Map. New resources will continue to be added, and the new website will work to serve ZD practitioners by acting as a global resource to increase access to key tools, learning, and evidence generation aligned with the IRMMA Framework.

In May 2023, the ZDLH hosted its first inter-country learning exchange, (ZDLH-X1), which featured Bangladesh and Mali and engaged nearly 2,000 immunization practitioners, primarily from the district- and facility-levels and directly involved in ZD work. Topics included identifying ZD and missed communities in Chattogram City in Bangladesh, and community engagement in urban and rural remote areas, and in areas of insecurity.

Insights and learning exchanges from the ZDLH-X1 session focused on rapid convenience monitoring, microplanning, gender-related barriers and ensuring equity, and community ownership. Engagement with frontline staff through peer learning is powerful and can identify 'what works' and 'how' at the local levels and strengthen approaches for knowledge translation and evidence use. Progress on the second ZDLH-X event, ZDLH-X2, featuring CLHs in Uganda and Nigeria, will be included in the next semiannual update.

In June 2023, a [ZDLH launch meeting](#) held in Kampala, Uganda convened stakeholders from Gavi; the JSI-led global ZDLH consortium; CLH providers from Bangladesh, Mali, Nigeria, and Uganda; and the Uganda Ministry of Health (MOH) to increase alignment across the initiative and operationalize the peer-to-peer support component of the CLH model. The meeting focused on establishing common measures, strengthening existing monitoring systems, and tailoring program activities based on country-specific contexts. Key outputs included:

- Coordination with the JSI Monitoring, Evaluation, and Learning (MEL) team to convene ongoing meetings to harmonize; ensure alignment with the IRMMA Framework; and finalize country-level theories of change, monitoring and learning (M&L) plans, and measurements in line with the GAVI 5.0 Strategy and learning questions.
- Agreement that the birth cohorts for the rapid assessment across the four CLH countries consisted of 18 weeks to 23 months (as adopted by the Bangladesh CLH), and provided a grace

period of four weeks following expected uptake of the third dose of the Diphtheria-Tetanus-Pertussis (DTP3) vaccine.

- Establishment of a knowledge management system to support collaboration across the global consortium and CLHs and disseminate contextualized country-specific information. The attendees also determined next steps to contribute evidence to capture, synthesize, and disseminate learning through a gender- and equity-focused lens.

In 2024 and 2025, initiative activities will yield insights into progress in implementing ZD strategies through strengthened and more timely monitoring data, IR, and additional learning activities. Evidence use will be facilitated through a clear understanding of the review fora and timing, and targeted knowledge translation activities that include subnational staff, who are a recognized sources of local expertise and end-of-chain implementers who test evidence validity and applicability, alongside national partners. Critical users include partners developing Gavi funding applications, such as Full Portfolio Planning (FPP) and Equity Accelerator Funding (EAF), or justifying funding reallocation and annual performance review activities, including joint appraisals (JAs).



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## IMPROVED TIMELY MONITORING

Part of the ZDLH scope of work is to provide more timely monitoring data at the global level on key indicators (e.g., the number of children vaccinated with DTP1, DTP1 coverage rates, and dropout from DTP1 to DTP3) from the targeted subnational level in the CLH countries. Bringing this data forward is intended to provide more timely insight about progress in reaching ZD children. This information, combined with other learning about the interventions and the intensity of their implementation, will help global stakeholders understand what works and how to reach those children at risk of ZD or under immunization. WUENIC and country official estimates of the key indicators noted above are available in July of the following year. While the estimates are generally accepted to be more accurate because of how they are estimated, they are not timely, may not provide enough disaggregation to identify where pockets of ZD children are located, and do not provide information about what policies and program are driving change. Disaggregating data on key indicators by subnational level can help with some of this interpretation if one has information about the context and intensity of implementation of interventions, although disaggregated subnational data is not usually widely available at the global level except through occasional surveys or modeling.

To improve timely monitoring, the CLHs rely on routinely collected administrative data, such as data available through the District Health Information Software 2 (DHIS2), which are available on a more regular basis and at subnational levels in countries. But those data often suffer from poor data quality as indicated by coverage rates greater than 100 percent. The reasons for poor data quality are often due to inaccurate denominators, for example, estimating the number of surviving infants in a geographic area. Additionally, there could be inaccuracies with the numerator caused by the incorrect recording of immunization doses administered, which may be caused by several reasons, including the lack of data recording tools or human error. Moreover, data can fluctuate widely from month to month based on both supply- and demand-side factors such as vaccine stock outs, holidays, poor weather, health worker strikes, etc. Regular review of these data by health workers familiar with the context can reveal what those factors may be so they can propose and implement remedies. Nevertheless, at the global or even national level, all of these factors challenge our ability to interpret routinely collected data to understand the effect of interventions designed to identify and reach ZD children.

CLHs will be regularly reviewing and reporting administrative data for their targeted subnational areas (e.g., upazila in Bangladesh, Local Government Area [LGA] in Nigeria, and district in Uganda and Mali) which will allow us to examine subnational progress every six months and dive into the issues and root causes of important trends. Given the limitations noted above, the CLHs are taking the following steps: CLHs will provide administrative data for analysis of six-month trends, comparison of trends over time, and comparison against previous years' trends. Data available on other variables, such as stock outs and number of immunization sessions planned versus conducted, can provide some insight on the corresponding dips or peaks in immunization coverage. CLH activities such as systems assessments, activity implementation monitoring, and data reviews can help improve interpretation of trends, but also improve the availability and quality of ZD-relevant data over time. Information pulled from system assessments can also help determine actionable steps for addressing gaps in monitoring and measuring ZD and improve data quality. Therefore, a key benefit of the CLHs is not only the availability of more granular monitoring data, but also the analysis, interpretation, and use of the data for action at both the local and global levels, plus improvements in data quality and reliability in CLH study areas.

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# OVERVIEW OF THE MEASUREMENT AND LEARNING PLAN

The vision of success for the CLHs is reflected in the measurement and learning (M&L) plans at the global level (ZDLH) and with each CLH, and includes monitoring performance to describe successes and challenges of the model and approach. The ZDLH mechanism is working toward the outcome of timely, increased, and sustainable use of evidence to improve global, regional, and country immunization programs and policies in alignment with the Gavi 5.0 Strategy and IRMMA Framework.

M&L plan outputs include:

- CLHs have strong networks, technical expertise, and practices
- Cross-country evidence generated
- Evidence and learning available and accessible to identify and track ZD children and missed communities through a gender and immunization equity lens
- Project-generated evidence and learnings translated for use in local policy and programming
- Learnings around ZD barriers and effective interventions communicated globally to partners, stakeholders, and immunization practitioners

As mentioned above, the four CLHs came onboard at different times and are in different stages of implementation, which affects the depth of reporting for each CLH in this update. Nevertheless, several common findings are emerging across the four CLHs that merit follow-up in the second year of the initiative:

- There is a lack of demand-side insights based on validated instruments such as the BeSD tools in all CLH countries, particularly at the subnational level where insights are needed for specific geographic and sociodemographic contexts. The CLHs are responding to this gap by incorporating guidance and indicators from the BeSD tools in their planned research to understand reasons for low vaccination uptake and to inform planning priorities and intervention design.
- In all CLH countries, triangulation of existing data and identification of ZD children relies primarily on administrative data. The CLH data system landscapes and diagnoses currently underway are revealing similar results of data quality issues with numerators and denominators, and yet this is the main source of monitoring data going forward.
- While stakeholder engagement models are different in each CLH, they all recognize the importance of partner engagement at national and subnational levels and the need to engage frequently to influence policy decisions.
- The IR component in all CLHs is dependent on government and/or Gavi funding for the targeted interventions. The timing and scope of funding is outside the control of the CLHs, which is a risk worth noting.

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# COUNTRY-SPECIFIC CONTEXT

## UGANDA

### Context

The delivery of vaccines that protect against preventable childhood diseases has been a key priority for Uganda's health system for several decades, resulting in significant improvements in vaccination coverage and child mortality rates. However, just over half of all children in the country have received all basic immunizations, and challenges with coverage and equity persist as coverage varies greatly from region to region. Estimates of the number of zero-dose (ZD) children in Uganda vary based on the data source, but according to the national District Health Information Software 2 (DHIS2) analysis of districts, the number of ZD children in Uganda has increased in the last three years, from 152,391 children reported in 2020 to 197,998 in 2022. Urban areas of the country, particularly Kampala, have a higher proportion of ZD children than less-populated areas, in part due to a high concentration of informal settlements in the capital, as well as a large number of refugees and asylum seekers, the majority of whom come from South Sudan and the Democratic Republic of the Congo.

### Accomplishments

The Uganda Country Learning Hub (CLH) has undertaken a number of activities since its inception phase ranging from preparation for learning activities to engagement with stakeholders and project sensitization to setting up internal program structures and identifying areas for capacity strengthening.

In preparation for learning activities, the Uganda CLH selected focus districts for research studies, including Kasese, Mubende, and Wakiso. The districts were purposively in consultation with the Uganda National Expanded Program on Immunization (UNEPI) and other key immunization stakeholders based on the following factors: 1) their Diphtheria-Tetanus-Pertussis (DTP1) vaccine coverages have been consistently low over time, 2) they are targeted for interventions to address the ZD challenge under Gavi's Equity Accelerator Funding (EAF), 3) they have high numbers of ZD children based on both DHIS2 and Institute for Health Metrics and Evaluation (IHME) data, 4) they have communities that are considered to have immunization inequities, 5) they have a mix of ethnic groups, and 6) they reported high numbers of ZD children for polio during the polio campaigns in 2022, which is a proxy indicator of presence of DTP1.

Additionally, to prepare for CLH learning activities, the Uganda CLH submitted a revised protocol for the rapid assessment to the local Institutional Review Board (IRB) for approval; conducted secondary data analysis to determine the number and location of ZD children in the three selected focus districts (Wakiso, Mubende, and Kasese); and conducted two desk reviews. The first review focused on the functionality, quality, usability, effectiveness, and sustainability of the DHIS2, and the second explored the barriers to reaching ZD children in different contexts in Uganda (see summary in Table 6).

Regarding stakeholder identification and engagement, the CLH mapped the key immunization stakeholders at national and subnational levels; assembled and held the first meeting of the CLH

Technical Advisory Committee (TAC); attended the launch meeting of the Gavi ZDLH initiative, held in Kampala; conducted entry meetings in the selected focus districts of Wakiso, Mubende, and Kasese; and conducted stakeholder engagement on priority ongoing interventions targeting ZD children.

Finally, the Uganda CLH focused on developing internal project structures and standards by drafting the CLH Measurement and Learning (M&L) Plan and began the process of identifying areas for internal capacity strengthening and technical support by conducting a capacity self-assessment.

## Learning and Results

Table 6 features a summary of the results of the exploration into the causes and risk factors for ZD children in the different equity reference settings in Uganda.

**Table 2. Causes of ZD Children in Different Equity Reference Settings in Uganda**

Equity Reference Group Setting (Uganda)	Key Barriers Leading to ZD Children in These Communities
Urban Settings	Key barriers in urban setting include difficulty in accessing informal settlements and gated communities; high mobility of urban residents due to work demands; hidden costs of accessing immunization services; unfavorable frequency and duration of the immunization services; long appointment wait times, suboptimal data quality, which makes it difficult to identify and track defaulters; inadequate information that affects access to immunization services; inadequate engagement of the private sector; and inadequate coordination of stakeholders.
Fishing Communities	High mobility of the population in fishing communities coupled with opportunity cost of seeking vaccines versus making a living; long distance to the health facility and associated costs; limited number of health facilities; limited availability of service providers, as deployed health workers do not stay close to the health facilities; unfavorable frequency and duration of the immunization services; fear of vaccines side effects; and gender barriers such as limited decision making power by women.
Islands	Inadequate service delivery points within the island communities. For instance, only 12 of 84 inhabited islands in Kalangala district have health facilities.
	Inadequate recruitment and retention of health workers to work in the island areas due to poor living conditions; inadequate transport means to support integrated EPI service delivery; high transport costs inadequate safety gadgets including, life jackets, gumboots, umbrellas, and raincoats; and poor tele-communication networks, including cell phone, radio coverage, and internet to reach these communities.
Pastoralists	Difficulty in mobilization of pastoralists for immunization services due to high mobility and unfavorable schedule of vaccination sessions.
Refugees	Limited capacity of health workers to routinely conduct vaccination status screening; registration and vaccination at entry points for refugees; lack of individual vaccination documentation; fear of data sharing with immigration authorities; the perceived marginalization of refugees by some health workers leading to low demand for immunization service; misinformation about vaccine safety and side effects especially for new vaccines; high population movement; and lack of cross border policies for sharing of vaccination data and records. In addition, the challenges of attracting and retaining an experienced health workforce persist (Health Sector Integrated Refugee Response Plan [HSIRRP] 2019-2024).

Religious Sects	There is increased influence of religious sects, such as Triple 6 (Njiiri Nkalu) that are resistant to immunization services. In addition, there is limited engagement of the religious leaders to embrace vaccination and mobilize their followers for immunization services.
Communities Living in Mountainous Settings	Limited accessibility due to the difficult terrain which affects community mobilization. Poor attraction and retention of health workers due to fear of landslides, which are a common occurrence in these areas, especially in the Bududa district; poor tele-communication network high operational costs to implement in these areas; inadequate safety gears, including helmets, ropes, and hooks for vaccination teams; and limited engagement of community leaders in these communities for immunization service delivery planning.
Conflict-Prone Locations	Insecurity in Karamoja and neighboring regions due to internal and external armed cattle rustling affects implementation of immunization outreaches. In 2021, 24 percent of the planned outreaches in the Karamoja region were not implemented.
	Difficulty in attracting and retaining health workers; mistrust between communities and authorities; uncertain target populations due to displacement and migration which makes planning for immunization sessions and forecasting of vaccine requirements challenging; high ambient temperatures lead to temperature excursions during transportation and outreach; and damage or destruction of the infrastructure and the supply chain.

Other results reported by the Uganda CLH focus on response and reaction to the establishment of the CLH. The District Health Teams (DHTs) in the selected districts welcomed the CLH and perceived it as a timely undertaking to inform efforts to reach ZD children. They also anticipate that the CLH will raise visibility on the issues that affect their immunization performance. Additionally, the DHTs anticipate that the feedback from the CLH will inform their efforts and interventions to reach ZD children in their communities.

To date, the Uganda CLH identified challenges with the current systems in place for defining and identifying ZD children. The CLH determined that there is a need to harmonize the definition of ZD children to allow for uniform understanding and reporting. The definition currently varies across stakeholders, including internationally and locally, and this lack of standardization may lead to conflicting data on ZD children. The CLH also determined that currently, there is no standard way of estimating catchment area target populations at the health facility level, which is critical for identifying ZD children. The catchment areas are overlapping and may lead to multiple counting of the same population. Therefore, district level data may be unreliable because it is estimated based on catchment areas of health facilities within the district. The CLH found that some health facilities are using village health teams (VHTs) to enumerate and map the target population, an innovation that is likely to result in a more reliable estimate of the target population.

The Uganda CLH also analyzed current immunization structures and services in the country, resulting in a number of findings and opportunities for intervention moving forward. One finding indicates that the involvement of local leadership in health promotion activities, including routine immunization (RI), at the subdistrict level has been inadequate. The CLH found that during the district meetings, local political leaders, who are often more engaged and “closer” to the population, are not involved in discussions of immunization coverage. Engaging this stakeholder group is likely to improve identification, reach, monitoring, and advocacy for reaching ZD children at their levels. Additionally, the CLH found that there is an inadequate supply of immunization services. In some areas of the country, there are few health facilities providing immunization services. For example, the subcounty of Kiruuma, in Mubende district, has a population of approximately 20,000 residents and is served by only Kituule health center level II (HC II). By national

standards, this level of health center is designed to serve a single village of around 5,000 people, subsequently compromising the population's access to health services, including immunization.

The Uganda CLH also found gaps in coordination and regulation of the private sector. For example, during the district entry meeting in Wakiso district, the CLH learned that some private health facilities delay reporting and others do not report at all on their immunization data.

Finally, the Uganda CLH was able to develop recommendations based on some of the initial findings. For example, they determined that some districts in Uganda leverage existing ongoing partner support programs (financial and technical), such as the Integrated Community Case Management (ICCM) program to improve the identification and reach of ZD children with immunization services. The CLH concluded that these best practices should be assessed for impact and subsequently recommended for scale up, if they are found to be effective. Additionally, the CLH concluded that data quality concerns related to the use of paper-based data capture systems suggest that digitization of the immunization system may improve tracking of immunization status and the monitoring and measurement of ZD children.

### Evidence Use

As activities, assessments, and findings are documented, the Uganda CLH will disseminate evidence and learnings for uptake and use.

### Challenges

Despite largely successful implementation to date, the Uganda CLH noted that it has been very difficult to get an audience with UNEPI and other key stakeholders, as they were busily engaged in a Gavi portfolio planning application, requiring the CLH to be creative and develop innovative approaches for engagement.

### Data on Key Indicators

The Uganda CLH provided data on DTP coverage in the three target districts for the period 2019-2022. However, reporting on key indicators (e.g. DTP1 coverage and Dropout DTP1-DTP3) for the reporting period (April - June 2023) in CLH-targeted study areas is not yet available. The CLH has engaged UNEPI for an analysis of the Gavi Monitoring and Performance Management (MPM) indicators, which will be shared when available.

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