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Review of the Health Information Systems Programme (HISP) Model for Supporting Countries in the Effective Implementation and Use of DHIS2 as a Health Management Information System

A collaboration between Gavi, The Vaccine Alliance and The Global Fund to Fight AIDS, Tuberculosis and Malaria (The Global Fund)

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Executive summary

This report was commissioned by Gavi, the Vaccine Alliance and The Global Fund to Fight AIDS, Tuberculosis and Malaria to better understand how the HISP model of providing technical support, capacity building and platform development is meeting the needs in the national governments and effectively transferring skills with a path to sustainability for both the HISP network and national government management of DHIS2. The HISP network is committed to strengthening the implementation and use of DHIS2 as a foundational health management information system and for program-specific DHIS2 functionalities.

This summary report includes a synthesis of the feedback and perspectives from 26 key informant interviews with global and regional stakeholders as well as three country workshops in Bangladesh, Mali, and Uganda with 118 participants across the three countries representing national governments, donors, implementation partners and HISP groups to provide perspectives on country-level priorities and needs. Stakeholder views and experiences highlight the strengths, weaknesses, opportunities and threats with the current HISP model of delivering DHIS2 capacity building and support.

The current HISP model's strength is perceived as providing decentralized DHIS2 technical support with a local perspective and value for money. Stakeholders view HISP as having a strong community, guiding principles, trust, commitment and willingness to share across the network. In addition, HISP groups are viewed as having strong long-term relationships with local governments and Ministry of Health (MOH) departments. The current state of the HISP model is perceived as lacking equal and standardized capacity and skills across HISP groups and clear lines of accountability within the network. Respondents noted that HISP groups may struggle with short-term deliverable-based contracts and expectations to fill gaps. It was expressed by informants that HISP is not

well positioned to provide sub-national training or more in-depth guidance on disease-specific data use. There is thought to be great potential to use the existing network to support HISP group capacity building and standardization of services and skills and the opportunity to broaden tools and approaches with other open-source tools. Improvements in donor coordination and targeted advocacy are suggested to make better use of the network's strengths. However, the strong influence of donor and global partner agendas and project cycles are perceived as a threat to the sustainability of HISP groups due to the constant challenge of bringing in new business.

Key themes identified throughout the review present perspectives on the current state of the HISP model and opportunities to strengthen the network for the future. At the center of these themes is the HISP network's perceived need to define, communicate and clarify its role and responsibilities. It is recommended that HISP improve how their network evaluates its own success, communicate these outcomes and the added value of the HISP Model for the partners they work with and donors that support their work. Recommendations for a range of stakeholders suggest a path forward to build upon the valuable investment that the HISP network has made in a strong and supportive community.

Introduction

Gavi, the Vaccine Alliance and The Global Fund to Fight AIDS, Tuberculosis and Malaria have invested in supporting countries to utilize DHIS2 for national management of health information, data and reporting for immunization, HIV, TB and Malaria. The effective use of a national health management information systems (HMIS) can help countries identify gaps in coverage, monitor disease outbreaks, track treatment, reduce stock wastage, optimize cold chain management, and follow up on gaps and problem areas.

The Health Information Systems Programme (HISP) Centre develops, implements and supports the DHIS2 platform with the goal of "*strengthening health information systems and information architecture in a sustainable way to achieve the SDGs in the health sector and beyond*." As donors look to the future of health systems strengthening, they would like to understand the range of successful approaches, challenges and gaps in the current HISP model of providing capacity building and support to countries and health programs for the effective implementation and use of DHIS2.

Investments in the HISP network are intended to strengthen the implementation and use of DHIS2 as a foundational HMIS, for program-specific DHIS2 functionalities and to support reporting on donor mandates. In general, investments and funding mechanisms for data and health systems strengthening assist the government agencies in charge of the national HMIS to build up their own capacity to deploy, manage and customize the system, with a path to sustainability as the primary goal. The HISP network is seen as a mechanism to support system strengthening and transfer of capacity to the national entity in charge of the HMIS.

The Global Fund and Gavi supported this review in order to better understand how the HISP model of providing technical support, capacity building and platform development is meeting the needs in national governments and effectively transferring skills with a path to sustainability for both the HISP Network and national government management of DHIS2. In the likely event of a reduced funding environment in the coming years, these donors would like to prioritize areas for investment and mitigate risks.

This review was conducted by HealthEnabled as part of the Gavi Digital Health Information (DHI) MEL Plan Implementation with co-funding from the Global Fund. This HISP Model Review is part of a larger 3-country retrospective evaluation on the effective use of DHIS2 and data to improve planning and monitoring of immunization, HIV, Malaria and TB programs.

Study Aims and Objectives

This review aims to **understand stakeholder perspectives and experiences with the HISP implementation and technical support model and provide suggestions on how the model can be improved.** The review seeks to

1) **understand and document experiences and perspectives with the current model of implementation, technical assistance and capacity building** and

2) **understand the HISP model's path towards sustainability, including financial and technical support, collaboration and long-term ownership by local stakeholders, governments and implementing partners.**

This report is the result of a rapid review process and provides a summary of experiences and views on the HISP model approach for delivering support, technical assistance and capacity building in line with country efforts to sustainably implement DHIS2 with recommendations for long-term investment.

Study Methodology

This review was conducted from August to October, 2023 using the following methods:

- **Remote key informant interviews** were conducted with 26 global stakeholders and donors, regional HISP Hubs and HISP country groups to gather and record perspectives and experiences. Standard interview guides were used for Global and National-level interviews. See Annex A for a complete list of key informants and Annex B for interview guides.
- **Stakeholder workshops** were convened in three countries - Mali, Uganda and Bangladesh - with a total of 118 government and national DHIS2 stakeholders, donors, implementing partners and HISP groups to better understand local perspectives about the gaps and challenges of implementing DHIS2 and how the HISP model might be positioned to provide necessary support. As part of these workshops, in-person key informant interviews and focus group discussions with the national HISP groups were also conducted. See Annex C for summary findings of each country's workshop.
- **Desk review** of relevant documents and publications. See Annex D for a list of resources consulted for this review.
- **Qualitative analysis** of all interview and workshop content and synthesis of key themes and recommendations for this final report.

Constraints and Limitations

This review is not a formal evaluation nor is it intended to quantify data or validate statements about the HISP model. It is intended to provide an overview of opinions from invested stakeholders and to highlight main themes and ideas from their experiences.

Potential key informants were contacted over the course of one month based on recommendations from Gavi and The Global Fund focal persons as well as suggestions from key informants themselves. In total, 43 people were invited to participate with an email invitation and one follow-up email; 25 virtual interviews were carried out, representing a total of 26 individuals (some interviews included multiple key informants and some key informants were interviewed more than once). The depth of this review was constrained by the time frame and limited availability of potential key informants during the review process.

Background

THE HISP MODEL

HISP is a network of independent organizations united by their dedication to foundational principles outlined in a Memorandum of Understanding (see text box below). The underlying core principles describe the network's dedication to sustainable, open source digital global goods, local ownership and capacity building of national governments for effective implementation and use of health information systems. DHIS2 is a customizable and open source digital global good that is used by over 70 low- and middle-income countries as the national health management information system (HMIS).

Memorandum of Understanding (MOU) guiding the collaboration and cooperation between the HISP Centre and HISP Groups (from HISP Centre website)

1. Give priority to activities strengthening sustainable national health information systems;
2. Support development processes broadly and the capacity strengthening and empowerment of health staff;
3. Support country ownership of health information systems and build resilience;
4. Focus on the use of information to improve health service delivery;
5. Foster local innovation and entrepreneurship;
6. Support research by giving researchers access to data and empirical sites;
7. Promote reciprocity and sharing in the global HISP movement;
8. Promote transparency and trust in the global HISP movement;
9. Commit to free and open source software and standards;
10. Develop software applications that are generic and reusable;
11. Adhere to the principles of hierarchy of standards;
12. Engage the users in participatory design and development;
13. Develop integrated, not stand-alone systems;
14. Software development based on global standards and best practices;
15. Design training materials for global use and as a public good;
16. Document and share best practices, case studies and knowledge as a public good;
17. Professional project management including planning, reporting, financial management etc.;
18. Professional execution of contracts, in terms of deliverables, their quality, timeliness etc.;
19. Duly acknowledge all outputs emerging from projects or research.

According to the HISP Centre 2023-2025 Strategy, the components of the HISP Model include **action research**, supported by PhD and Master's programs and links to local research institutions; decentralized **software development** to maintain and grow the platform functionality; and **capacity building** through standardized curriculum, training, and online Community of Practice. These three main roles are performed by the different organizations that make up the HISP Network as follows:

HISP Centre at the University of Oslo (UiO) manages the software development, updates and global development and maintenance of the platform. UiO is removed from the details of country implementation but they do act as a funding mechanism or pass-through for donors to fund specific HISP groups for regional or country work. Every year the HISP Centre develops an annual contract with each HISP group that represents one portfolio for the HISP group's work but may consist of funding streams from several different donors. In that way, UiO takes on a grant management role by sub-contracting to individual HISP groups and provides some oversight on spending and finances but not on the content of the activities or deliverables - the specific workplans are managed between the HISP group and the national department or unit within the Ministry of Health responsible for the HMIS or in some cases the local country representative of the donor or implementing partner.

HISP Regional Hubs are a relatively recent mechanism established and supported by the Global Fund in the last 3 years. The objective was to decentralize and distribute some of the project management and regional coordination as well as build regional capacity for administrative, budget and management skills. A total of three HISP Regional Hubs exist, which are not separate legal entities but were established as part of existing HISP country groups: HISP India for Asia, HISP West and Central Africa based in Togo, and HISP Uganda for Southern and Eastern Africa. Significant work and effort went into building the capacity of the three Hubs' management skills to be able to qualify as direct recipients of funding from the Global Fund and other potential global partners. They are able to coordinate subcontracts to the HISP groups in their region to complete specific activities according to the Global Fund's needs and priorities. Part of the work supported by the Global Fund during this initial start-up of the Hubs is the development and implementation of country maturity profiles. This tool and the accompanying process of assessing DHIS2 enablers and foundations helps countries prioritize areas for future development and investment. The resulting reports can function as an action plan with high-level budgets and activities to guide future planning. This process has been well received by the countries and stakeholders that were involved in the first round and ideally will become a tool to monitor performance over time, help countries prioritize activities and coordinate donor support to align with country agendas.

HISP Groups are the country-level organizations that perform direct TA support and implementation on the ground. There are over 20 individual HISP groups in the world and include many graduates of the UiO-supported Masters and PhD programs. They vary widely in size, experience and expertise.

Each of these components of the HISP network are independent entities participating in a consortium or community of like-minded organizations that support each other through formal and informal relationships. Networking, collaboration, sharing of experiences and tools, as well as the Community of Practice, all combine to create strong partnerships within the HISP network. Contractual agreements, standardized training and Academies, shared work plans and multi-year budgets create more formal relationships based on donor and partner funding to the different entities in the network.

FUNDING MECHANISMS

Given the wide range of roles and geographic spread of the organizations that make up the HISP network, there are several different ways that they receive support, funding and contractual agreements. Although not a comprehensive list, six main funding mechanisms from global, regional and national stakeholders were mentioned by informants during the course of this review:

- Global donor contract to UiO for core support of the software platform
- Global donor contract to UiO for sub-contract to specific HISP groups
- Global donor contract to UiO for specific programmatic work, with technical advisory role provided by another global partner (i.e. WHO, CDC)
- Global donor or Implementing Partner contract to Hubs for coordinated regional work which may be subcontracted from Hub to country groups
- National government contract to a local HISP group to provide support for HMIS - this may involve funds that are part of a bilateral agreement or grant from global donor
- NGO or Implementing Partner contract to local HISP group to deliver local or regional services

Although a detailed financial review was not within the scope of this work, the subject of funding mechanisms and contractual agreements is important to understand key themes that emerged especially as they relate to roles and sustainability of the organizations in the HISP Network.

HISP Model: Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

The following categories reflect the opinions and perspectives documented through this review regarding the current state of the HISP network implementation and operation model. The impressions and reflections from key informants and country workshops captured in this SWOT Analysis are meant to highlight opinions about what is going well in the HISP model (strengths), to understand what stakeholders perceive as lacking or missing in the current model (weaknesses), find areas of success to build on (opportunities) and minimize risks and shortcomings (threats).

STRENGTHS

PERCEIVED STRENGTHS OF THE HISP NETWORK AND MODEL

- Providing DHIS2 technical support
- Local perspective and knowledge, decentralized support and value for money
- Strong community, guiding principles, trust, commitment and sharing across the network
- Long-term relationships with local government/ Ministry of Health departments

The stakeholders and informants involved in this review expressed the opinion that the main advantage of the HISP model is the HISP groups' expertise in DHIS2 technical support, development, configuration and customization. There is a perception that local HISP groups develop long-term relationships and partnerships with national government institutions, speak the local language, understand the local context, and provide tailored, cost-effective and agile support. Some expressed the opinion that some local governments may be reluctant to give external partners access to sensitive data and national systems, but that the HISP presence builds trust and local ownership of the HMIS. There is the opinion that countries can rapidly implement new functionalities in response to emergency situations thanks to the locally available DHIS2 expertise of the HISP Network.

The network is seen by stakeholders as a strong community that is built on trust and partnership without an "us vs them" mentality. There is a perception that the HISP network maintains a dedication to their guiding principles and support each other through cross-learning, sharing of experiences and approaches. Stakeholders view the HISP network as a benefit for local organizations that can claim support from the wider community, including a global team of developers, giving HISP groups perceived credibility and access to a wide knowledge- and skills-base. The Community of Practice is viewed as a strong asset of the network, and is viewed as an outstanding model of a professional learning community that facilitates the sharing of experiences and helps to equalize language barriers.

Informants and stakeholders view the HISP expertise and the local presence of HISP groups as the main force driving the uptake and growth of DHIS2 into a ubiquitous platform. The network is perceived to have contributed to building local HMIS capacity on a global scale and is viewed as successfully maintaining a high caliber of experts at the national/regional level over long periods of time. Most stakeholders recognize that their primary activities in countries involve DHIS2 training, training of trainers, hands-on coaching and engaging users through participatory design processes. They are perceived as providing expert support to customize and configure DHIS2 so that data is available for decision-making. Some individuals are thought to be very good at seeing the bigger picture and focusing on their core role as providing support to the national HMIS.

"The sense of community [between HISP groups] they have is a really strong asset and that's where I've really seen them shine - when they are able to help each other as a broader community and across countries. You can hire someone to manage a project but you won't have that same sense of community - you can't replicate that"
- Implementing partner, key informant K

"I think it is still one of the best models I've seen - if you look at all the other major digital public good implementations, nobody has fully cracked the nut on how you localize support and embed it within national structure. I do think HISP is the closest we have to that but I still think it's by far an imperfect model"
- Implementing partner, key informant P

"They know how to speak to country stakeholders and how to make it meaningful."
- Global donor, key informant G

"Those who [stay] in the HISP network [do so] because they have a dedication and commitment to public health and the system."
- Global donor, key informant D

"It is the only community of practice that I have seen working."
- Global donor, key informant D

Overall, HISP groups are viewed as providing an overlap between IT/technical support skills and health-related expertise. They are perceived to contribute to the decentralized development of DHIS2 by providing local feedback for software developers with strong commitment to sharing new developments. Being part of the HISP Network is perceived as a benefit by opening up funding opportunities and advanced skills training through master's and PhD programs.

WEAKNESSES

PERCEIVED WEAKNESSES OF THE HISP NETWORK AND MODEL

- HISP Groups are not equal in their capacity and skills, especially project management - there is no standardization or guarantee of quality across the network and no clear lines of accountability
- HISP groups are stretched thin and engaged in short-term deliverable-based contracts; often called to fill gaps and support the ministry without a contract or without pay
- Not well positioned to provide sub-national training or more in-depth guidance on disease-specific data, data literacy, data use, workflow
- Stakeholders and partners lack clarity about the HISP network's role, workplans and value added

Some stakeholders who have personal experience with national HISP groups feel that the administrative and project management capacity is unequal across national HISP groups. Some express concern that some deliverables lack the fine-tuning, testing and optimization necessary to align with end-user workflow and use. While the broader global network of HISP groups described above was mentioned as a major strength of the model, some stakeholders express dismay that there are no clear, transparent standards or base level of skills required for national groups to use the HISP name; some feel that this results in varying levels of organizational capacity. According to some stakeholders, the autonomy of HISP groups exists at the expense of accountability, standardization, quality and cohesion.

Some stakeholders both inside and outside of the HISP network characterize local HISP groups as resource-constrained organizations that are continually seeking additional contracts to make up for their lack of core funding. Key informants recognize that it is difficult for HISP groups to achieve financial stability and feel that some HISP groups often operate on slim budgets with slim margins. There is concern that HISP groups are perceived as a stop-gap measure to address problems with no funding and frequently work pro bono for the national ministries. There is a perception among stakeholders that most HISP groups are engaged in deliverable-based contracts with operational constraints and individual contract deliverables that do not allow them to advise about optimal architecture, interoperability or implementation. These constraints are thought to contribute to HISP groups' limited agency and financial stability and do not place them in a position to advise against an undesirable course of action.

In terms of their role at the country-level, HISP groups are most often contracted to provide support to the central level ministry structures, not sub-national levels. Although HISP groups are well-known and utilized by global organizations, there is concern that they have less recognition at local or national levels. HISP groups do provide quality information systems strengthening expertise but there is the opinion that they do not uniformly include experts who can advise on applications of data, epidemiology, public health data use or programmatic content. There is recognition that data use training is done in partnership with subject matter experts, including national disease programs.

There is a sense that national HISP groups regularly compete for contracts either from donors or national governments. As such, the contractual mechanisms used to implement the HISP model can present complications and barriers to the successful realization of activities. National HISP contracts and implementation is often subject to bottlenecks within government processes. Some informants feel that government contracts usually offer little money for too much work and are narrowly focused on finite deliverables instead of core strengthening of the national system. In some cases, HISP groups are viewed or listed as preferred providers but there is no clarity on how they are distinguishable from any other contracted service provider or consultant service. There is concern that some HISP contracted activities are not implemented through the national government HIS units or in coordination with other implementing partners engaged in similar or overlapping activities.

When funding is channeled through UiO for HISP groups, there is a perception from within the HISP network that funding or support to develop new features/apps may create products that are prioritized by HISP Centre/UiO rather than country or HISP group priorities and may create duplication of efforts. Some stakeholders also expressed a lack of clarity and transparency about the intended roles for HISP groups and Regional Hubs, how they operate, receive funding and how they are connected to UiO. There is an assumption that HISP groups represent UiO in the field but there is a perceived lack of oversight or standardization from Oslo or clear lines of accountability. There is also a general lack of awareness and understanding among stakeholders about the Regional Hubs, and they are perceived as unsustainable because of their reliance on a single donor funding.

"Their disadvantage is also their strength - they are a kind of monopoly." -
Global donor, key Informant D

"There is an assumption that [HISP groups] represent UiO in the field but in terms of quality assurance and top to bottom communication it doesn't seem like anyone wants to take responsibility for that."
- Implementing partner, key informant P

"There is a disconnect between what's happening in the global space and what [HISP Centre] decides to promote and work on."
- Global donor, key informant O

The HISP network has a perceived lack of overall strategic planning and internal governance. Some stakeholders are unaware of a clear overarching plan to provide focus for the HISP Centre activities or to outline a path to sustainability and demonstrate the success/value add of the platform and the HISP model. It was noted by some stakeholders that the network may be missing opportunities to communicate their successes and role in the HMIS and digital global goods space. In addition, some expressed that the network's exclusive focus on DHIS2 excludes and dismisses other views, discussion and opportunities for collaboration across the ecosystem.

OPPORTUNITIES

PERCEIVED OPPORTUNITIES OF THE HISP NETWORK AND MODEL

- Existing mechanisms can support comprehensive internal capacity building and standardization of services and skills
- Broaden the range of approaches and complementary open source tools to ensure the sustainability of the network
- Improved donor coordination and targeted advocacy to make better use of the network's strengths
- Strengthen the network's internal governance, communications and ability to demonstrate their unique role and value

Thanks to the strong sense of community and infrastructure investments, the broader HISP network, including the HISP Centre and affiliated organizations, possesses all of the learning, sharing and exchange mechanisms necessary to build the capacity of HISP groups for better project management, professionalism, client management and quality control. Stakeholders expressed optimism that targeted investment and comprehensive capacity building can guide HISP groups to become self-sustaining businesses. Some suggested establishing standardized packages of skills and services (e.g. certification program, training and minimum qualifications) to strengthen HISP groups while maintaining their flexibility to adapt to the needs of the national context. Strengthening exchange and partnership opportunities with local universities were also suggested to help build the capacity and sustainability of both HISP groups and national HMIS staff.

It was recommended that the HISP network could strengthen their familiarity and expertise with other systems and digital global goods to secure the sustainability and growth of the HISP network. The existing strengths of the network could function as a regional coordination, assessment and training body that focuses on cross-cutting work and learning. Some suggest that this could help separate the distinct HISP roles of providing discrete consulting/service delivery contracts from a broader role as a partner that promotes and recommends alignment to global recommendations and guidelines.

It was also suggested that the existing Regional HISP Hubs could benefit from more support to promote their strengths to other donors; more advocacy could strengthen their role as a regional mechanism and decentralized coordination of country group activities. Many stakeholders agree that the country maturity profiles should be leveraged to guide country prioritization and coordination between government, donors, implementing partners and HISP.

It was also noted that donors have the opportunity to promote HISP groups and country capacity building by encouraging governments to create work plans and contracts that explicitly specify capacity building activities for government staff rather than assigning activities to be completed directly by HISP groups. Donors are perceived to be in a good position to help alleviate some of the bottlenecks in government activities by orienting key stakeholders to the agenda and presenting a common message. It was recommended that governments, implementing partners and donors could better engage national HISP groups to take advantage of their position and experience to advise on the bigger picture, coordination, optimal architecture, interoperability and standards.

> *"It is a model that has had a good deal of success - it's one that needs to use this opportunity to reflect on where they are headed, which means looking beyond DHIS2."*
> - Global donor, key informant H

At the central level, some see an opportunity for the HISP Centre at UiO to develop a plan for leadership succession to ensure the network's sustainability. Improved governance and oversight within the network was suggested as a way to enhance a shared understanding about the HISP model's role in capacity strengthening. For example, it was noted that a communication strategy could provide an opportunity to share valuable experiences about the HISP Model of TA and examples of how the HISP Model provides added value to remind stakeholders of the benefits of the network, showcase concrete country examples for donor advocacy, global investments and to promote the strengths of local groups. Some stakeholders suggested that the HISP network could engage in more self-advocacy and articulation of successes to demonstrate their value for money and potential for return on investment as compared to other partners. Another opportunity that was mentioned was that the network could expand to share experiences and promising approaches and work towards building up a role as a valued partner in the effective use of data at national and sub-national levels.

THREATS

PERCEIVED THREATS TO THE HISP NETWORK AND MODEL

- HISP and national HIS departments activities are influenced and dictated by donor and global partner agendas
- HISP groups face the constant challenge of bringing in new business

Informants and stakeholders who participated in this review had opinions about several external challenges and threats to the HISP Network and model. At the national level, HISP groups are perceived as being subject to the priorities of donors and implementing partners who do not always prioritize core systems strengthening or national priorities. Some feel that a HISP group may be contracted to do a technical activity rather than contacting them to work with and build the capacity of the national HIS unit; this may produce results faster but does not help build the local capacity or ownership. There is an acknowledgement that when a HISP group is contracted to train central level ministry staff on certain skills, the follow-through and cascade of training to sub-national levels is dependent on the ministry's priorities and is out of HISP's control.

Some feel that national HMIS unit's priorities for strengthening and building the core system are at times overshadowed by donor agendas, making it difficult to secure funding and support for the national core systems. HISP and national HIS units are perceived as being excluded from planning activities until the last minute when programs realize they need HMIS support or when it is time to handover a system when a donor project ends. Some feel that vertical donor-driven programs create parallel mechanisms that may drive the design of a system for reporting rather than using data. The high rates of turnover and attrition in national ministry staff is a commonly perceived problem that creates a constant need for more capacity building while short-term funding cycles make it difficult for HISP groups to maintain long-term staff.

> *"This is a risk of success - everyone sees [HISP] and believes they will stay there forever but they need to be sustained in one way or another."*
> - Global donor, key informant D

There is some ambiguity and lack of clarity among the stakeholders and informants who participated in this review about the HISP network's role which some feel presents a challenge to partnering effectively. At the national level, there is concern that HISP groups face the constant struggle of bringing in new contracts and are perceived as unwilling to turn down business even if the activities are not in the best interest of the national HIS or not appropriate for current country maturity. In addition, the evolution of the DHIS2 platform in English-speaking countries and the focus on English language for advanced training (PhDs) and donor relations puts HISP groups in Francophone countries at a deficit in terms of capacity, skills, training and reporting.

SUMMARY of the HISP NETWORK and MODEL SWOT Analysis

PERCEIVED STRENGTHS
- Providing DHIS2 technical support
- Local perspective and knowledge, decentralized support and value for money
- Strong community, guiding principles, trust, commitment and sharing across the network
- Long-term relationships with local government/Ministry of Health departments

PERCEIVED WEAKNESSES
- HISP Groups are not equal in their capacity and skills, especially project management - there is no standardization or guarantee of quality across the network and no clear lines of accountability
- HISP groups are stretched thin and engaged in short-term deliverable-based contracts; often called to fill gaps and support the ministry without a contract or without pay
- Not well positioned to provide sub-national training or more in-depth guidance on disease-specific data, data literacy, data use, workflow
- Stakeholders and partners lack clarity about the HISP network's role, workplans and value added

PERCEIVED OPPORTUNITIES
- Existing mechanisms can support comprehensive internal capacity building and standardization of services and skills
- Broaden the range of approaches and complementary open source tools to ensure the sustainability of the network
- Improved donor coordination and targeted advocacy to make better use of the network's strengths
- Strengthen the network's internal governance, communications and ability to demonstrate their unique role and value

PERCEIVED THREATS
- HISP and national HIS departments activities are influenced and dictated by donor and global partner agendas
- HISP groups face the constant challenge of bringing in new business

Country Perspectives, Challenges and Needs

As part of this HISP model review, three countries were selected for deeper engagement with national-level DHIS2 stakeholders to understand the achievements and challenges with DHIS2 implementation capacity and the role of government and national HISP groups. Summaries of the three country workshops can be found in Annex C. This section provides an overview of themes and key takeaways from the three countries.

The countries selected for a deep-dive, namely Bangladesh, Mali, and Uganda, present varying levels of scale, maturity and experience in supporting DHIS2 platform as a national HMIS.

HISP Bangladesh has 11 staff members and a long history of supporting the national MIS unit that oversees DHIS2 since 2010 (HISP Bangladesh became a registered organization in the country in 2016). The Bangladesh system represents the largest deployment of DHIS2 in the world and provides an important large-scale use case for the global DHIS2 software developers. Despite having a small core team "*it really is amazing how much they have been able to achieve - it is a huge implementation with so many health facilities it is really amazing*." (Global implementing partner, key informant S)

HISP Mali is led by the core team from HISP West and Central Africa (WCA, based in Togo) which completes most of the work with support from two staff members in Mali to guide local implementation; HISP Mali is in the process of becoming a legal entity in the country. The national use of DHIS2 as the HMIS dates back 10 years and is currently deployed in most regions of the country, hospitals, health districts and community health centers (Centres de Sante Communautaire, or CSComs). Stakeholders in Mali agree that the use of DHIS2 in the country has led to improvements in data collection, availability and quality.

HISP Uganda is a large organization with 25 staff members and also serves as the host for the regional HISP Hub for South and Eastern Africa. DHIS2 has been used by the government as the National Health Information System since 2012 and now includes a number of DHIS2 apps, packages, Tracker and disease surveillance functions in the country. There is a great deal of enthusiasm, ownership and pride for DHIS2 in Uganda and a sense that the system has made good improvements: "*we are enjoying the future with DHIS2*…" (Uganda workshop participant B)

Despite these very different local histories and contexts, there are a number of common challenges, gaps and needs in these three DHIS2 implementation and capacity building stories.

It is important to note that the HISP organizations in these three countries, as well as other national HISP groups in the network, are most commonly contracted to provide technical assistance (TA) and specialized expertise on DHIS2 customization and implementation at the central level with stakeholders responsible for the national HMIS. At times this support takes the form of training of trainers (TOT) for national government staff to cascade down the necessary training to district and sub-national levels. The frequency, effectiveness and success of capacity building, training and DHIS2 support at the sub-national levels depends largely on the motivation, budget allocation and prioritization of the national governments, vertical disease programs and, in some cases, implementing partners, who are responsible to transfer capacity according to national standards, guidelines and protocols. Multiple layers of people, systems, and financing mechanisms external to any individual HISP group's contractual obligation play a large role in the transfer of capacity within national structures.

The table on the following page outlines the common themes and challenges discussed across the three country workshops.

Workshop participants noted that the HISP network and local HISP groups are well positioned to provide local support to address many of the challenges that countries face in the management of DHIS2. HISP groups can provide quality and technical services to customize, configure and update the DHIS2 platform and they have long-standing relationships and intimate knowledge with the national systems. However, they lack sustainable funding and predictable contracts to enable them to play a role in designing and supporting a national system. It was also noted that there is a lack of central governance and coordination bodies or roadmaps from governments to guide decision-making and prioritization for the system as a whole.

"We had several good coworkers but we couldn't afford them for longer-term owing to financial constraints and limited funds."
- HISP member, key informant M

"We need HISP there is no doubt - but we need sustained support to keep them."
- Government HMIS stakeholder R

"There are multiple data systems within the district… implementing partners each come with their own packages."
- National workshop participant B

Donors have played a crucial role in the development, support and implementation of DHIS2 in the three focus countries included in this review. Unfortunately, workshop participants noted that some global partner activities tend to exacerbate country tensions over ownership, agency and authority when funding bypasses the national HMIS department in order to fund HISP or other non-governmental consultants.

Workshop participants expressed that some of the mechanisms used to contract HISP groups to complete donor-supported work create complications. Non-competitive contracts can strain relationships and perceptions of unjustified favoritism and fuel resentment over control and lack of alignment to national priorities. When there is no involvement of the government

unit or central coordination with the national HMIS system, fragmented and siloed reporting systems can result in further strain and challenges in the country. On the other hand, funding that is channeled through government bi-lateral agreements face bottlenecks in the local procurement, contracting and approval requirements, preventing progress and completion of services.

There are other overarching critiques and challenges with the HISP model from the global perspective (see Key Considerations below), but in speaking to government stakeholders and country teams, the narrative seems less focused on these big issues and center more on coordination and funding. The experience of talking with HISP groups and national stakeholders in these workshops presented the HISP model's success in delivering capacity building and technical support as dependent on the contracting mechanisms, coordination structures and priorities of the national government and global partners. In order to better utilize their local and technical expertise, HISP groups noted that governments and donors need to have a sound plan that maximizes the HISP groups' strengths and provides enough support and allocation of resources necessary for them to work effectively and in coordination with the national system needs and priorities.

Common country theme/challenge	Discussion and key points from country workshops
HISP Capacity	
HMIS unit and HISP staff turnover and vacancies	Staff retention is a challenge both in the government departments and in HISP groups. Trained staff often leave for higher paying jobs with international NGOs, resulting in many vacancies within the government structures that are intended to support and manage sub-national HMIS. High rates of staff turnover create a need for constant capacity building and retraining. HISP groups struggle to keep high-quality staff over time due to financial instability; they frequently hire from a pool of short-term contractors. HISP groups are routinely described as overstretched and short-staffed.
Training and capacity building	As the platform evolves and grows there is constant need for HMIS and HISP staff to stay on top of changes, new functionalities, updates and increasing datasets and complexity. High rates of staff turnover make this particularly challenging.
Government & Donor Contracting	
Lack of adequate HISP contracts with government units	HISP groups often work pro bono, on short notice, or under contracts with very little funding, without a clear plan or involvement in the bigger picture national HMIS strengthening or project planning cycle. The government contracting process can be extremely cumbersome.
Bottlenecks in government approval and/or contracting	Government bureaucracies and procedures may prevent projects from moving forward, either from lack of approval or delays in subcontracting, even when donor funds are earmarked.
Donor coordination and long-term sustainability	Short-term and narrowly-focused project funding often does not consider the long-term sustainability and maintenance of critical HMIS functions. Funding for technical support is often aligned with donor priorities instead of those of the country. There is a lack of sufficient national mechanisms or central governance to coordinate donor investment and implement a roadmap to maintain the system, infrastructure, servers, data hosting, training and human resources.

Key Considerations

This review set out to distill thoughts, opinions and experiences pertaining to a wide-ranging network of organizations in more than 20 countries. The considerations that emerged through this process help to understand the current state of the HISP model and suggest areas for future improvement in how DHIS2 capacity building and technical support is made available to countries.

Current State of HISP Model: Implementation, Technical Assistance and Capacity

Internal HISP Network Capacity and Quality

As mentioned in the SWOT analysis above, there is a general acknowledgement that HISP groups do not have equal capacities and skills across the network, especially in the areas of project management. Most people speak highly about HISP groups' strength and capacity in technical assistance and IT-related support for DHIS2 deployment and configuration, but even in these technical skills there is no minimum standard or core skill set that is uniform across the network. In addition, it was noted that when HISP groups are contracted by implementing partners, these partners expect them to operate like other consulting firms in terms of project management while at the same time praising their value as local agencies that know the local system, language and provide relatively low-cost technical support. Not all HISP groups have strong project management and administrative capacity, which led to some global partners and implementing agencies expressing reluctance to engage HISP groups because of the extra burden of managing the project timeline and expected deliverables. Some stakeholders believe that varying levels of technical and management capacity may be due to the fact that there are no technical or organizational requirements, and no standard accreditation process, for adopting the HISP title.

Many implementing and technical partners interviewed as key informants for this review would like UiO to provide more oversight, monitoring, quality control and management of individual HISP work plans and activities, especially when HISP groups or Hubs are involved in large-scale technical projects. Even when HISP groups are subcontracted from HISP Centre for global partner work, it was noted by some stakeholders that UiO does not always play an active role in monitoring or advising on technical aspects or details of the activities - the details of individual HISP workplans are negotiated with the local ministry departments or local partner presence in the country.

> *"[Partners are not] funding them to strengthen themselves institutionally and set up a good management process and all these things fall by the wayside."*
> - Implementing partner, key informant K

> *"Both UiO and HISP need to invest in better management - they haven't had to deal with the pressure as much as other partners because they have a de facto monopoly in many places and we feel like we have to keep going back to them regardless of the quality of support and services."*
> - Implementing partner, key informant P

Some HISP Network stakeholders involved in this review acknowledge this shortfall within the network and a recognize that project management, professionalism and organizational management skills should be strengthened in order to continue to be competitive as viable independent organizations. The process of creating the Regional Hub mechanism included a great deal of funding and support from The Global Fund for building up the financial management systems and structures in the 3 organizations in order to prepare them to qualify as direct recipients of Global Fund resources. Some HISP stakeholders mentioned that the need for general organizational strengthening for HISP groups has been discussed, but no stakeholders who participated in this review were aware of any plan or structured training program even though the mechanisms and systems to facilitate such support do exist. A structured capacity program could take the form of a maturity assessment for HISP groups and guidance for creating individual strengthening plans for growth and sustainability. With more targeted support, more HISP groups could become eligible to compete for funding from a wider range of national, regional and global partners, social entrepreneurial and small business financing.

Monopoly and Potential or Perceived Conflict of Interest

One theme of feedback from stakeholders involved in this review relates to the perception that the HISP community sees DHIS2 as the answer to fulfill any functional need in the digital health ecosystem even if there may be other existing fit-for-purpose management systems that perform complementary functions. One way to limit a perceived monopoly would be to ensure a balance between countries having the agency to make informed decisions about their desired platforms and digital applications while donors promote an openness to work with a range of open-source digital health global goods that fit the country's needs.

The other category of related comments revolves around a perceived DHIS2 monopoly within the HISP network. The perception among stakeholders of HISP and UiO is that their primary focus of training and research centers around DHIS2 (Academies and support for master's and PhD programs), that most HISP groups specialize in DHIS2 technical support, and that this focus tends to generate DHIS2-related solutions to most problems to the exclusion of other platforms, tools and approaches. There is a sense of a conflict of interest in exclusively promoting and supporting one digital platform rather than a more holistic approach of promoting a sustainable ecosystem of interoperable systems that optimize country monitoring, evaluation and data use to facilitate program and service delivery improvements.

"By refusing to engage in conversations [about other digital systems] they are holding the whole ecosystem back and training people in a narrow-focused way so that they can't branch out."
- Global donor, key informant O

Contracting and Funding Mechanisms

As mentioned earlier, the different funding and contracting mechanisms used by global partners introduce complications and confusion. In some situations, a HISP group may be contracted as the sole service provider without any open procurement or competition, which is viewed by some as a conflict of interest. There is the opinion that this process reduces accountability, lacks clear guidelines and expectations on the delivery of services, but can also contribute to financial risks for donors and national governments.

On the other hand, when there is open bidding for a contract through government procurement processes, it may be difficult for a HISP group to compete with cheaper vendors. Local HISP groups mentioned that often the government contract is awarded to another vendor with the lowest bid, but HISP will then be asked to fix or compensate for poor-quality work. This adds to the complications discussed in country workshops of government bureaucracy creating contracting bottlenecks and delaying implementation and completion of activities.

Because the HISP network is comprised of a collection of independent organizations, most HISP groups struggle to sustain themselves and will often take on multiple contracts to keep afloat. The project-based funding cycles make it difficult for HISP groups to achieve financial sustainability, maintain staff and build their own institutional capacity.

"[HISP groups] get paid on an individual basis for a specific task but don't have resources to develop strong structures that they need to play a bigger role." -
Implementing partner, key informant K

"[Governments] should be using fair practices to identify the best partner to deliver these services rather than HISP being the defacto monopoly based on an MOU with Oslo. Why not invest in entrepreneurial companies that can support not only DHIS2 but a suite of other global goods?"
- Global donor, key informant O

In another contracting-related consideration, some implementing and technical partners mentioned that contracting HISP groups through UiO HISP Centre lacks transparency and creates another layer separate from implementation. Possibly because the annual agreements between UiO and each HISP group represents a comprehensive portfolio, some donor and implementing partner stakeholders expressed a challenge in understanding HISP group workplans, budget details and activities included in these agreements and express some frustration in trying to coordinate through UiO.

Lack of Clarity on HISP Roles & Responsibilities

In many respects the opinions and critiques from different groups of stakeholders regarding the HISP network boils down to differing opinions and lack of clarity about their mandate. Many key informants expressed that they do not understand how the HISP network functions, who they are accountable to or how they are connected. At times there are conflicting and unfair expectations placed on HISP by different stakeholders.

"[HISP is] in a difficult position - expected to satisfy everyone."
- Global donor, key informant H

"There are different views depending on who you talk to, which gets to the [essential problem] of HISP and UiO - there is a lot of groupthink, a lot of indoctrination into what is a lovely and supportive community. But it is somewhat exclusive to what is happening [outside the community]."
- Global donor, key informant H

"The question is: are they more valuable as another high-quality consultancy helping implement things, or are they more valuable as a true network?"
- Global donor, key informant

Groups of non-HISP stakeholders in this review hold different views about HISP and expectations about how they should or should not function in relation to those preconceptions. These different expectations speak to the lack of clarity about HISP's role, position and areas of expertise among different external stakeholders. For example, HISP is neither a software company not an extension of UiO; HISP is not a voice of the national Ministry of Health; HISP is not a professional international consulting firm; most HISP groups are not experts in public health or disease-specific program analysis and data. Some misconceptions and expectations speak to the fact that there is a lack of clarity about the HISP network from outside the network.

"HISP is a global movement to support DHIS2 implementation, local customization and configuration, offer in-country and regional training, and to promote DHIS2 as a global public good." -
From the HISP Centre website

When HISP describes itself to others, some stakeholders feel that the description lacks a concrete explanation of roles, accountability, skills and standards that some stakeholders expect. Within the network, HISP members and staff who participated in this review seem very clear about their roles and responsibilities but could improve how this is communicated and translated for the partners they work with and donors that support their work.

Looking to the Future of HISP: Sustainability and Strengthening

Donor and Country Coordination

There are two levels of coordination that emerged as major themes in this review and that provide a view for future sustainability: 1) coordination between donors, and 2) alignment of all stakeholders to a country-led agenda. Both of these areas can be improved for more effective support to country HMIS and DHIS2 implementation.

A lack of donor coordination around HMIS system strengthening and multiple donor-led initiatives that involve DHIS2 was noted by many stakeholders as factors that contribute to fragmentation and duplication of reporting systems in a country. HISP groups are often pulled in different directions when they are contracted to support a new app or project, lead training events or develop a new instance of DHIS2 in a country where the same functionality is replicated or could be combined with other siloed projects. HISP groups and Regional Hubs are perceived as in a position to see these patterns but some think they are not utilized effectively to help coordinate or advise on opportunities for synergies and cooperation. There is a perception that donors tend to enter with their own set agendas that make it difficult to merge and compromise, even when it would save time, effort and resources. The planning between donors is another area that was mentioned which could be improved, especially at regional and national levels. A core group of DHIS2 donors and investors have frequent meetings and good relationships at the global level; while these are occasionally useful to flag country-specific areas for coordination, it was noted that country-level implementation details are not systematically discussed.

The need for country-level donor coordination speaks to the second area of coordination that emerged from this review - alignment and coordination across national priorities and stakeholders. Global donors are committed to supporting the national government in health system strengthening; while they may try to suggest areas and approaches that should be prioritized, the decisions about implementation are at the discretion of the ministry of health or disease-specific units. Funds from Gavi to HISP groups, for example, are used to support activities that are negotiated between the HISP group and the EPI department, not mandated by Gavi. However, some vertical programs may fail include the HMIS unit in the planning process, resulting in inadequate resources being reserved for underlying HMIS activities.

Countries included in this review stressed the need for regular national HMIS stakeholder coordination meetings to discuss and resolve specific issues and ensure the inclusion of the government department responsible for the HMIS across disease-specific and program-specific activities. Programs that require links to and use of DHIS2 do not systematically consult with the HMIS unit. IT Infrastructure, server capacity, hosting and storage needs are often overlooked in planning projects and budgets across different disease programs, resulting in suboptimal funding and support for HMIS.

For the government to lead on HMIS coordination, the capacity within the ministry departments must be sustained and supported. Likewise, donors need to all be on the same page in terms of shared priorities and messages when approaching the government - if the global partners are all repeating the same message about HMIS governance, sustainable solutions, and prioritized investment in building capacity, the government will be more likely to prioritize these areas. This kind of coordinated message may also help alleviate some of the government bottlenecks that HISP groups encounter in approval and implementation.

"Donor alignment to drive the common good is really needed." -
HISP member, key informant E

"Part of the major tension is where does that country level coordination come from? - where is that voice? - how do you coordinate across various ministries to see actual priorities?"
- Global donor, key informant H

"This is a huge challenge when we see the donor community is financing a system in the same country that is not sustained but for the same purpose…We really need the donor community to be better coordinated. Instead of funding different things for the same purposes they can complement each other."
- HISP member, key informant C

"It's really difficult when [implementation] is all done in donor silos and then that trickles down to HISP. You want HISP to be this cross-cutting partner and they tend to have good visibility across ministry digital health initiatives but it ends up being siloed and not able to really connect the dots between different systems…"
- Implementing partner, key informant F

The DHIS2 country maturity profiles that were developed and implemented by the Regional HISP Hubs in the last couple of years offer an opportunity to help national governments guide and coordinate central HMIS activities. The hope is that country application submissions to Global Fund and other donors will make use of the country maturity profiles to help guide and prioritize their system strengthening investments. Further implementation, expansion and regular assessment with this HISP-led process could be useful to help countries structure how they talk about, plan and improve DHIS2 across programs and to coordinate different funding streams from donors. In order to maximize the potential and utility of the country maturity profiles for coordination, the resulting reports and assessments should be shared across partners and donors to align their investments and TA with country needs.

Data Use

There is a great deal of discussion about the analysis and effective use of data from DHIS2 and other data systems to guide decision-making and improve service delivery and ultimately health outcomes. Most stakeholders consulted for this review consider HISP's role in data use to be that of designing, creating and customizing a system that makes the appropriate data available, according to the specifications and needs of country disease programs. HISP can be a catalyst for data use and is a necessary component in the move towards using data to make decisions, not just to produce a report, but HISP itself is not responsible for how the data generated from DHIS2 is used.

There is a general sentiment among stakeholders in this review that true data use is a cultural problem rather than technical one. HISP's role and strength is to provide support and training on the technical aspects and implementation of DHIS2. Although HISP groups have a critical role in promoting data use by designing a usable system, the culture of data use, agency and motivation to make data-driven decisions must come from within the ministry and disease programs and requires a different level and focus of training, skills and capacity building than that provided by DHIS2 academies.

"Data use is only going to be as good as the usability of the system."
- Global technical partner, key informant I

"We need more emphasis on data that will help improve performance rather than reporting on the performance."
- Global donor, key informant D

"The primary thing DHIS2 gets used for is not patient health improvement, it's to report to the donors and report national health indicators values."
- Global donor, key informant A

"If you want data to be used it may not look like a graph on a dashboard at all but maybe a nudge or a schedule automatically set up or a reminder or an alert."
- Global donor, key informant O

The topic of data use is complex and relies on a suit of factors, stakeholders and organizational culture but is an important issue to emphasize and make incremental steps towards improvements if the intended impact of health information and data systems will be realized in the future.

Sustainability

There is a feeling of uncertainty and anxiety as the global partner community and the HISP network stakeholders who participated in this review perceive an impending reduction in funding levels for the near future. While HISP and government stakeholders discuss the strong need for more stable resources, longer-term contracts and support for their core capacity, organizational development and core DHIS2 system strengthening, donors anticipate that their ability to fund these crucial foundational elements will be greatly reduced in future funding cycles. The unpredictability of funding levels has always been a challenge for national HISP groups in particular, and the project-based fragmented systems and funding cycles have not been optimal for building cohesive and sustainable systems in the countries that rely on DHIS2 and HISP support.

There is recent expansion of DHIS2 into the education sector as well as movements to optimize synergies in nutrition, child protection and overall Sustainable Development Goal monitoring. DHIS2 itself is generalizable and applicable to any program, which may be an opportunity to expand the HISP network's utility beyond the health sector. There is a perceived opportunity for the HISP network and HISP Centre to expand their area of expertise beyond health and beyond DHIS2 to include a family of open source tools and make a lasting contribution to the public sector digital ecosystem.

"The way funding comes out - bound by timelines - makes it difficult to hire people for long- term."
- Global technical partner, key informant J

"A priority should be for [HISP] to be knowledgeable and able to work on different data and different tools"
- Global donor, key informant Q

"Standardization and interoperability are above and beyond any one software - becoming increasingly able to apply, use and be more compatible with different solutions is critical."
- Global donor, key informant Q

HISP, as well as other development agencies, often say that their goal is to 'work themselves out of a job' - to build the capacity in the government institutions to such a level that the HMIS deployment, customization and maintenance can be managed efficiently by the ministry of health. While this is an ambitious and commendable goal, it seems quite distant for many of the high-impact and priority countries supported by Gavi and the Global Fund. In order to maintain the gains achieved to date in HIS strengthening, local capacity building in both the HISP network and local ministries, institutions and systems need support to be maintained and more effort made to create local mechanisms and coordinating bodies to guide further development and growth in the national HMIS systems.

Global and Regional Recommendations

This review of experiences and perspectives on the HISP Model highlights opportunities to enhance the reach and impact towards the achievement of the HISP mission. These recommendations are meant to guide investment and coordinate efforts to improve the potential for the HISP Network to support country ownership and local capacity with a view towards sustainability and effective implementation of DHIS2 as a means of increasing availability, quality and use of data to improve planning, delivery, and monitoring of health services.

Recommendations for the HISP Network

1. Clarify the role, comparative advantage, and vision for HISP and DHIS2 within the broader digital ecosystem [HIGH IMPACT : LOW EFFORT]

The HISP Centre, with support and input from donors, should consider hosting a series of participatory design workshops with meaningful involvement from a wide range of stakeholders to develop a strategy and costed operational plan that clearly outlines and communicates their strategic path to achieve their stated mission of "supporting countries and regions to strengthen their information systems and information architecture in a sustainable way to achieve the SDGs in the health sector and beyond." Suggested topics for discussion and outcomes from this process might include:

- Develop a vision for the future that aligns DHIS2 with prioritized health outcomes, digital global public goods, and interoperable tools that support country plans and priorities for improving the availability, quality, and effective use of data at national and sub-national levels.
- Priority strategic objectives that identify the following:
    - Identify priority areas for health and/or other SDGs (education)
    - A strategy or roadmap for the coming 5 years to outline clear goals and objectives for the HISP Centre, HISP regional and national groups, and DHIS2 functionality, development and broader requirements for a user-centered design process that will achieve desired outcomes and contribute to the HISP Centre mission and goals
    - A plan and vision for harnessing the potential and mitigating the risk of GenAI
- Define and articulate the roles of the HISP Centre and HISP regional and national groups, relationship with governments, UiO, and donors, including how these roles might evolve to support other digital and data initiatives for greater stability and sustainability
- Prioritized short- and long-term activities at Global, Regional, and National levels
- Provide transparent budgeting including annual operations, priority activity budgets, and country support budgets
- A Monitoring, Evaluation and Learning Plan that reflects prioritized goals and outcomes to achieve the mission of the HISP Centre, including systematic reporting on the availability and use of data
- A Communications Plan to clearly state the roles, responsibilities and activities of different components of the HISP Model, highlight achievements and the value of the HISP Model, and lessons learned from successful examples of the HISP Model for capacity building and TA that can be used for advocacy and to strengthen donor, implementing partner and national government coordination and buy-in

2. Facilitate a systematic plan and pathway for national HISP groups to achieve long-term organizational sustainability [HIGH IMPACT : MODERATE EFFORT]

Some HISP groups would benefit from standardized approaches to the services they provide as well as to how they deliver and ensure the quality of their services. **The regional coordination Hub mechanism should be maintained and strengthened as a systematic way to organize regional activities and delegate responsibilities to country groups.** Sustainable investment in the longevity of this mechanism for regional coordination can attract more donor and partner interest and continue to decentralize administrative responsibilities and build regional capacity.

To support the continued and strengthened operations of the regional and national HISP organizations, it is recommended to:

- Create clear and transparent guidelines and standards for membership in the HISP network as well as technical and managerial oversight by the HISP Centre for subcontracted work conducted by HISP groups.
- Develop clear and consistent standardized requirements and qualifications with a certification program, training, and minimum skill qualifications for HISP groups so that any group that uses the HISP name brings a minimum level of excellence.
- Develop a standardized menu of services offered by HISP groups with standardized costing parameters.
- Develop and provide comprehensive training to strengthen project management, budget and financial management, client management, professionalization, and quality control. Existing mechanisms such as the Community of Practice, Academies, and other virtual support structures within the HISP network can be used to support a capacity-building program for interested HISP groups to help them become self-sustaining and successful businesses.
- Consider documenting the financial mechanisms utilized by HISP groups or regional Hubs to understand effectiveness, challenges, and areas for improvement (also see Areas for Further Exploration below).
- To better understand and communicate the advantages of the regional Hubs, consider documenting the lessons learned, strengths and areas for growth of the mechanism (also see Areas for Further Exploration below).

- Consider documenting well-capacitated independent HISP groups to understand how they were able to navigate the path to sustainability (also see Areas for Further Exploration below).

Recommendations for Global Donors and International Partners

1. Continue to support and invest in open source digital global goods such as DHIS2 [MEDIUM IMPACT : HIGH EFFORT]

Open source tools require sustained and long-term investment in capacity building, human resources, core systems and associated infrastructure to realize their potential and be used effectively. The regional and national HISP groups are well positioned to continue providing critical decentralized and local support for national DHIS2 systems, but this requires sustained investment. Until national governments are able to fully provide the necessary support and investment, global donors should be prepared to commit the necessary resources while taking steps to foster local capacity and local ownership of the systems. Specifically, it is recommended that donors:

- Increase the investment in capacity strengthening for HISP groups and Hubs through a coordinated and comprehensive plan to strengthen their role in providing local, decentralized project management, administrative and technical support to countries.
- Recognize the value that HISP groups bring to the field and support their internal capacity building through mentorship and support. Allow funding for HISP core/indirect costs and overhead, not only direct implementation project-based costs.
- Create a requirement for partners and national governments to allocate a certain percentage of donor funding, project budgets, and national co-funding, to support the national HMIS and to strengthen prioritized DHIS2 enablers and foundations based on standard assessments and planning from the DHIS2 maturity profiles and the Global Digital Health Monitor. Support may take the form of systematic and intentional activities that support the national HMIS unit.

2. Continue to support and expand the use of country maturity profiles [HIGH IMPACT : LOW EFFORT]

The country maturity profiles have been successfully completed in 35 countries to date and are proving to be a useful tool to help countries prioritize and plan for future activities related to DHIS2 enablers and foundational strengthening. The assessment process, discussions and resulting report with high-level work plans help countries establish the fundamental systems, requirements and capacity in place before implementing advanced features and tools. Donors should provide support to the regional HISP Hubs to complete the maturity profile process in all countries with regular updates every few years to help monitor progress and realign priorities as time goes on. The profiles and resulting prioritization/ work planning should be shared across partners, donors and implementers to facilitate greater coordination and alignment to national priorities.

3. Establish a structure and a commitment to improve donor coordination and communication [MEDIUM IMPACT : LOW EFFORT]

Donors should encourage countries to establish a national HIS working group with clear linkages to any existing digital health governance structures, working groups, or coordinating bodies. The national HIS working group is coordinated through the responsible Ministry of Health or government unit, with local or regional HISP group and all relevant implementing partners, stakeholders and donors in the country to discuss, coordinate and provide advice on standards, mechanisms and technical operational details of the national HMIS. They should also complement this with:

- Regular monthly calls across donors and global partners to leverage and coordinate activities and discuss country-specific programs and priorities. Support and encourage national-level working group/s to participate.
- A coordinated donor community's message about HMIS/ DHIS2 strengthening and priorities and engaging in advocacy to orient government representatives about the agenda, mechanisms and available resources.
- Donors should engage with other groups that work on digital public goods and systems that support national enterprise architecture approaches in countries.

Recommendations for National Stakeholders

1. Support, prioritize and institutionalize a national HMIS working group [HIGH IMPACT : LOW EFFORT]

It is recommended that countries create and establish regular meetings (monthly or quarterly) of a national HIS working group with clear linkages to any existing digital health working groups or coordinating bodies. The HIS working group can align to national strategies and promote standard approaches and mechanisms. They can also serve as a coordination mechanism to share all related HMIS activities across donors, partners and programs to leverage and complement each other. This group should be designed to share success stories and learnings as well as to discuss, share and resolve specific issues within the DHIS2 ecosystem, implementation, coordination and maintenance. They can also advocate to donors and implementing partners to coordinate with the national HMIS unit and HMIS working group including allocation of a portion of funds to support HMIS for program/disease-specific projects.

2. Strengthen training opportunities and remuneration to incentivize staff retention [HIGH IMPACT: MODERATE EFFORT]

It is recommended that governments prioritize staffing and filling positions for critical HMIS focal persons at all levels of the Ministry of Health with a salary scale to draw and maintain high quality personnel and increase training, partnerships and exchange opportunities between HMIS staff, HISP, local Universities and research institutions to build a base of standard knowledge and appreciation for the critical role of the national HMIS. Resources to maintain continuity and sustainability of HMIS investments at country level include:

- Design and prioritize a comprehensive and long-term plan for delivering training to all levels of HIS users that can advance technical skills but also build local ownership, promote a data use culture that values high-quality data for the benefit of improved daily decision-making. This plan can be used to demonstrate to donors and global partners how any planned or requested training is aligned to the national long -term capacity building plan.
- Make sure that all users have access to a comprehensive and simplified user manual that is easily accessible and includes relevant data definitions and reporting protocols
- Understand and address local barriers to access and utilization of DHIS2 such as multiple login passwords, lack of access/logins for local users that could be address by utilizing role-base security features, duplicate reporting requirements, local languages and staff workflow.

Cross-cutting Recommendation

1. Elevate the status and importance of programmatic data in formats that are useful for sub-national decision-making (rather than a focus on reporting performance data up the chain) [HIGH IMPACT : HIGH EFFORT]

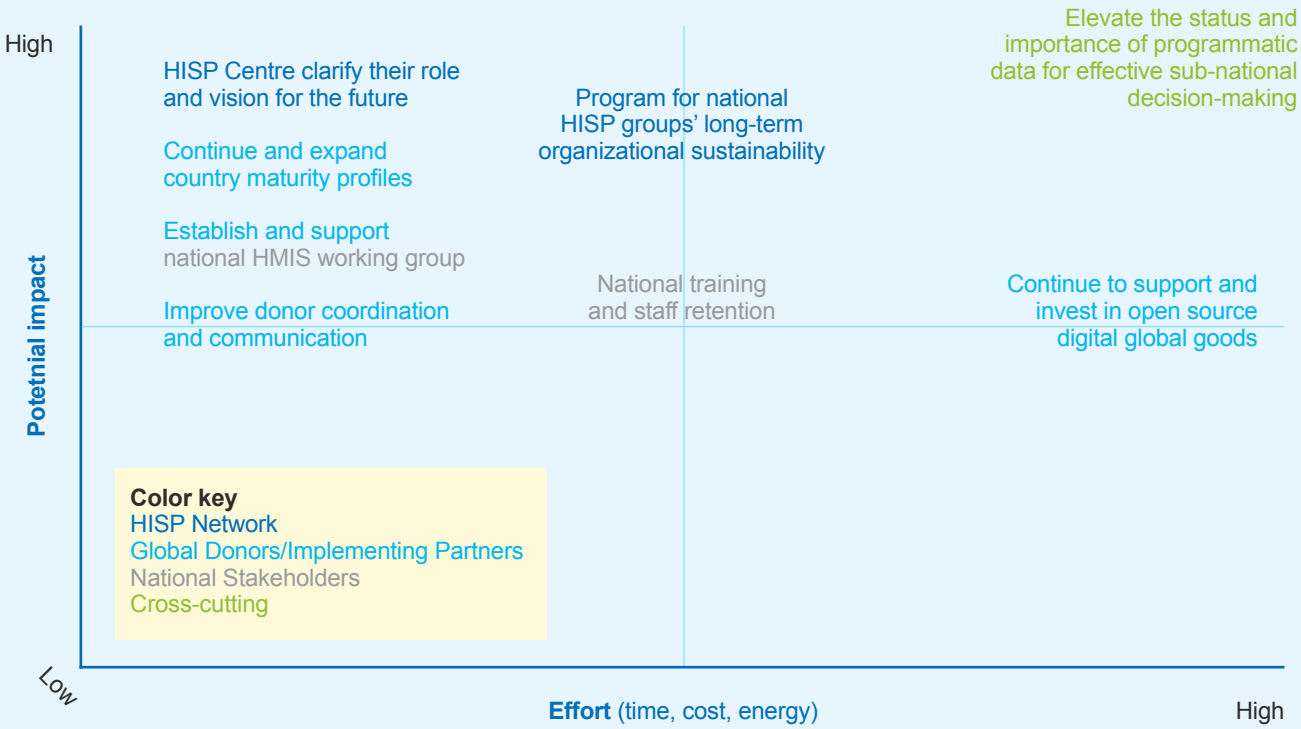
There is a big push to move beyond the collection of data for reporting and into the more active use of data for service delivery and service optimization. To do this, it is recommended to re-envision the role of a national HMIS to facilitate the use of health data in the best way for integrating and managing systems, services and performance rather than solely reporting indicators.

Areas for Further Exploration

During the course of this review, a number of topics present opportunities for more in-depth investigation that can help clarify the overall understanding of the HISP model and more focused recommendations on priority areas for sustainability.

- **HISP Hub Mechanism** - How has the Hub mechanism supported the HISP groups in the 3 regions? Have the HISP groups benefited from more funding and workflow? Are the HSIP groups better able to support the country-level work? What have been the experiences, benefits and challenges with the Hub mechanism? What is needed to strengthen the model and make this a role that donors want to use?
- Document and develop a **financial case study** or deep dive into different mechanisms for funding a HISP group or region to understand how the different avenues facilitate desired outcomes of quality, project management, deliverables, client satisfaction, and support for internal HISP capacity
- Document and develop a **case study for a well-capacitated independent HISP group** to understand how they were able to navigate the path to sustainability. What characteristics and experiences make a HISP group successful and how can those experiences be transferred to other groups?

Recommendations and Illustrative Relative Ranking



Conclusion

Data and information systems can help improve the collection and timely reporting of health program performance with the potential to improve program services, coverage and outcomes. However, the quality and value of any HMIS depends on the strong foundation of the core platform and the people who are responsible for developing, managing and using the system. A commitment and focus on sustainable health information systems with strong capacity, leadership and governance is critical for countries to continue the development of digital systems that cater to the needs of the government health system and the people they serve. DHIS2 and the HISP network have been a catalyst for promoting country ownership in national data management and in building the capacity of local stakeholders to manage their own information. The HISP network has invested a great amount of time and effort in building long-term relationships within the network and with local governments that are built on trust and personal connections. These strengths can continue to be an important resource for countries and global partners with some refinements in funding mechanisms, recognition and communication of roles and better coordination within the stakeholder community.

Annex A: List of Key Informants

Name of key informant	Organization
Mark Landry Michelle Monroe	Global Fund
Riswana Soundardjee	Gavi
Reggis Katsande	WHO Afro
Ryan Williams Ahn Chu	WHO
Maria Muniz Sean Blaschke	UNICEF
Anne Thorseng Ola Hodne Titlestad Rebecca Potter	University of Oslo, HISP Centre
Austen Davis Tine Mejdell Larsen	Norad
Merrick Schaefer	USAID
Mark DeZalia	PEPFAR
Carine Gachen	Bill and Melinda Gates Foundation
Carl Kinkade Louie Rosencrans Angela Montesanti Porter	US CDC
Marelize Gorgens	World Bank
Karin Gichuhi Sam Johnson	The Global Financing Facility for Women, Children and Adolescents (GFF)
Sameen Babur	CHAI
Koffi Siliadin	HISP West and Central Africa
Pamod Amarokon	HISP Sri Lanka
Elmarie Clasen	HISP South Africa

Annex B: Key Informant Interview Guides

Global Stakeholder Interview Guide

1. Please describe your role in your organization and how you are involved with HISP and DHIS2.
2. What do you see as the greatest strength of DHIS2? In what ways can DHIS2 have the greatest impact on health systems and health outcomes?
3. How does your organization engage with, fund and/or support HISP/DHIS2? How are these activities prioritized within your organization?
4. What is the role of the HISP Network in building country capacity and providing technical support for DHIS2?
5. Has your organization funded the development or implementation of DHIS2 Packages or DHIS2 Tracker? If yes, which Packages / Tracker functionality you have supported and what are your goals in providing that support?
6. In your view, what are the major challenges and barriers to the effective use of DHIS2?
7. How can the HISP Model and the HISP Network have the greatest impact on country implementation and local ownership of the DHIS2 platform? What type(s) of activities need to be prioritized, especially as we are seeing overall global reductions in funding availability?
8. Are there any other comments or feedback you would like to share?

HISP Network Interview Guide

1. Please describe your role in your HISP organization and how you are involved with DHIS2.
2. What are the strengths of the global HISP network? How does being a part of this network help your organization?
3. What is the relationship of your HISP organization with the Ministry of Health?
4. How does your HISP organization receive financial support?
5. Do you feel that the funding received by your HISP organization supports your organization's growth and development? What changes would you like to see in the way your organization receives funding?
6. Does your HISP organization provide training on DHIS2? What type of DHIS2 users are the main recipients of this training?
7. What is the role of your HISP organization in supporting district and facility-level users of the DHIS2 platform? What are the successful approaches to provide support to sub-national users? What would you do differently?
8. What is the role of your HISP organization in supporting DHIS2 Packages and Tracker functionality? How are these components received and used by different disease programs?
9. Are there other organizations involved in supporting DHIS2 implementation in your country? What partners/NGOs help develop new functionality, provide training, capacity building and technical support?
10. What are your HISP organization's plans for long-term sustainability? What obstacles may challenge your organization's long-term sustainability?
11. What recommendations do you have to improve the HISP model? How can funders better support this vision?

Annex C: Country Workshop Summaries

Country workshops were held in three countries in late September, 2023 to gather and document national perspectives on DHIS2 capacity, skills and training required for effective implementation and use of the system. Stakeholders included Ministry of Health representatives involved with the national HMIS and disease-specific programs from central and sub-national levels, donors and implementing partners. HISP representatives in each country were also active participants in the workshops and gave their own perspectives during key informant interviews and focus group discussions.

The challenges and solutions documented in each workshop are included in the body of the main report, but a synthesis for each country is provided here to inform country-specific planning and guidance.

Uganda Workshop Summary

The workshop was facilitated by Makerere University School of Public Health and attended by 45 stakeholder participants in Kampala, Uganda on September 21, 2023.

HISP Uganda supports efforts to strengthen DHIS2 and the national HIS and is also the host of the regional HISP Hub for Southern and Eastern Africa. The staff of 25 individuals includes software developers, system analysts, M&E specialists, capacity building and financial management teams. HISP Uganda receives funding each year through UiO consisting of a mixed portfolio of funding from global partners. The Hub receives support from Global Fund and has recently been awarded a global implementing partner contract with the Hub for West and Central Africa for 5-years.

DHIS2 was adopted and scaled as the national HMIS in 2012 and has seen significant growth and investment since that time. The system is currently used for immunization program data (Aggregate, Tracker, AEFI, stock management, digital vaccination certificates), eIDSR for notifiable diseases, TB case notification, COVID surveillance, real time vaccine campaign monitoring and Ebola outbreak surveillance.

At the **national level**, DHIS2 is used routinely for performance monitoring, quality assessments and to inform decision-making, as notification for disease outbreaks by the Ministry of Health. There is good capacity to use and interpret the data in the system within the MOH but the high turnover of trained staff in the departments result in the need for constant training and unequal capacity levels. In general the system is overwhelmed, costly and does not include reporting from the private sector facilities, leaving information gaps and incomplete data for decision-making.

At the **district level**, DHIS2 is used for monitoring service delivery, quality and performance, campaign monitoring and drug stock logistics management. Some districts use Tracker to monitor HIV and TB service delivery and access to services. In general the DHIS2 platform is underused at the district level and users at the sub-national level do not have a sense of ownership or engagement with the system or the data. Interoperability and multiple system log-ins present challenges in using DHIS2 in coordination with data in other systems. Staff need more training to support data entry, analysis and to improve data quality.

At the **facility level**, DHIS2 is used for routine data capture, reporting, for birth and death notifications, and has improved timeliness and quality of reporting compared to the older paper-based systems. However, there is a feeling that some reporting requirements are unrealistic, not appropriately tailored for facility-levels, and the ownership and use of data (visualization, analysis or dashboards) is not developed or encouraged. Health workers dedicate a significant amount of time to enter data for the required reporting but do not perceive or view any benefit from the data. Logistical, infrastructure and hardware challenges also exist, which can lead to frustration. There is a need to harmonize passwords and improve interoperability for accessing multiple systems, reduce paralele reporting requirements, and clarify roles and permission for data entry.

Overall, stakeholders involved in the workshop in Kampala were enthusiastic, proud and optimistic about the improvements and milestones that have been achieved with DHIS2 in the country. Data entry, timeliness and quality improvement at all levels supports data triangulation for analysis, monitoring performance, identifying gaps and areas for improvement, and notification of potential disease outbreaks.

> *"In some districts, you have 40 facilities reporting to you in hard copies. You have to sit and combine them into one copy. But today, facilities just enter it directly to the system."*
> - Uganda workshop participant

In addition to those mentioned at each level above, challenges and gaps need to be addressed in order to secure the stability and utility of DHIS2 for the national HMIS into the future:

- The speed and **capacity of the platform** is stretched and limited due to the ever increasing number of records and volume of data; storage, network and internet service, hosting and maintenance costs are not sustainable. A huge increase in system users creates duplication, uncoordinated activities and system freezing. **Infrastructure and hardware** requires upgrade and maintenance in many areas.
- **Training and capacity to effectively use the system** lags behind advances and changes in the technology; people are constantly stretched beyond their capacity; training efforts are not coordinated and do not follow a logical plan according to staff needs; staffing gaps, vacant positions and low pay contributes to over-burdened HMIS staff at all levels.
- **Ownership and data-use culture** is lacking in district leadership and in facility-level use of the system. There is limited capacity and motivation to utilize the system for decision-making at subnational levels.
- **Lack of interoperability** between DHIS2 and other applications and systems limit its usefulness for decision-making. No integration between DHIS2 and data that exists

in human resources, laboratory and financial management systems leave decision-makers in the dark and unable to track and link critical information.

- **Parallel reporting systems**, often introduced by implementing partners, increase data entry burden at subnational levels and are not interoperable with national systems, leaving gaps in data. Private facilities also use their own platforms that are not interoperable.
- **Automated quality checks and feedback loops** for data quality are not optimized for many specific use cases and data fields do not follow the logical flow of the workplace. Specific problems with incorrect data fields, indicator definitions, and feedback loops need improvement.

> *"Not everyone has the money to keep throwing at the daily infrastructure of DHIS2. It eats up resources. The question is how far we're going to go in giving more resources. We're using over $30k [annually] to maintain the infrastructure of DHIS2."*
>
> - Uganda workshop participant

Recommendations and solutions suggested during the workshop address the challenges and gaps discussed by participants. There is a general sense that DHIS2 should be maintained and continue to be supported with coordinated capacity building at all levels, including advanced skills training at the national level for complex data analytics. There is also a need to map and align all systems used for data capture and reporting in the country to improve interoperability; all systems should be interoperable with DHIS2 before any authorized deployment in the country. Private facilities also need to be brought into the system to avoid gaps and duplication of patent records.

Electronic reporting should be mandatory to complete the translation from paper-based to digital data collection. This includes community health workers and primary data collection at the facility and community level, which will require a large and coordinated effort to build up the infrastructure, hardware and skills at these levels. The reporting requirements and expectations need to be carefully aligned and appropriate for the level and speciality of each facility.

Overall investment and commitment to health systems strengthening, including the necessary and skilled human resources, will benefit the effective functioning and use of DHIS2. Long-term financial planning and sustainable resources are needed to drive and guide these strengthening efforts.

HISP Uganda is well positioned to provide some of the necessary support to help realize many of the recommendations discussed in the workshop. They possess the relationships, local knowledge and skills to build the capacity of the MOH and other stakeholders in the country to more effectively manage and use data in DHIS2. These include DHIS2 Academy training, workshops, webinars and direct technical support. HISP Uganda is committed to building the capacity of the HMIS department in the MOH and always encourages other stakeholders to coordinate activities through official structures.

However, HISP Uganda currently faces their own challenges and operates with limited and unpredictable funding that is often inadequate to meet the high demand for technical support in the country. They are often left out of central planning with the MOH but called in to fill gaps on very short notice and to provide technical support or troubleshoot parts of the system that have been modified or changed without any documentation. The bureaucracy and approval processes within the government structure and MOH often delay progress and implementation of activities. Funding provided by global partners only covers their technical expertise, with no funds available for implementation, testing, training and supplies.

Better coordinated and holistic core support following a joint plan between the government, implementing partners and global donors can help support the sustained maintenance and growth of the DHIS2 system. This should include funds for deployment and implementation, staff remuneration, testing and troubleshooting, coordinated capacity building that responds to user needs, and a predictable commitment of funding to ensure long-term stability.

Bangladesh Workshop Summary

The Bangladesh HMIS Stakeholder workshop was facilitated by Progress Inc. and Bangladesh University of Health Sciences and attended by 43 stakeholder participants in Dhaka, Bangladesh on September 27, 2023.

The management, implementation and ownership of DHIS2 belongs to the MIS department under the Directorate General of Health Services (DGHS), Ministry of Health and Family Welfare. HISP Bangladesh has a long history with the government MIS department and plays an important role in supporting maintenance, hosting servers, managing system updates and configuring the platform. HISP Bangladesh does not currently have an active contract or MOU with the government MIS unit but receives funding from global partners and implementing agencies and recently started work supporting the National Urban Health System funded by the Asian Development Bank.

The use of DHIS2 in Bangladesh represents the largest implementation of the platform in the world, with approximately 35,000 users from over 15,000 government, NGO and private sector facilities. In addition to aggregate data collection and reporting, Bangladesh was one of the first use cases that led to the development of Tracker for case-based individual data in DHIS2. The system is also used for campaign management, microplanning, surveillance, EPI stock reporting and underwent significant expansion for Covid use cases (laboratory testing, results, vaccination certification, epidemiological analysis and dashboards). Tracker is used for maternal health child immunization, HIV/AIDS, urban health, and Covid. A notable achievement of this large system is the availability of real-time data input from community level facilities. In addition to DHIS2, HRIS, OpenMSR, OpenSRP, Asset Management and eLMIS are also used to manage national health data.

At the **national or central level** program data and system reporting in DHIS2 is monitored by MIS and disease programs and used for informed decision- and policy-making. However there is no monitoring or deeper understanding on data use throughout the system. High employee turnover presents challenges to maintain capacity and skills required to sustain implementation.

At the **district or subnational level**, DHIS2 is used for monitoring, reporting and EPI stock management as well as

other disease program tracking. The use of the platform and data is restricted in a vertical program structure involving higher officials and few field-level staff with no system or capabilities to monitor how data is used. Server maintenance and sufficient capabilities to customize the system is not available at the subnational level. Although data use does occur, it is restricted to a few priority datasets. Duplication of some patient profiles causes challenges. There are many vacant HMIS positions and a lack of skilled personnel to maintain the system.

At the **facility or point-of-service level**, community health workers use tablets and e-Tracker to collect data that feeds into DHIS2. There is stable internet connection in most areas and staff are trained to use DHIS2. However, data quality suffers from human error and individual patient records are duplicated at different levels of service delivery (outpatient and inpatient services, e.g.). Some specific data fields cause confusion and data quality issues. A user-friendly manual is needed to standardize data definitions and use of DHIS2 between the very large number of facilities and users in Bangladesh. Private sector facilities and NGO services are not contributing data into the national system.

In general, stakeholders expressed pride and a sense of accomplishment with the wide-scale and comprehensive deployment of DHIS2 in the country. However, there remains some important challenges and gaps:

- Lack of coordinated **capacity building** efforts and many **vacant positions** in HMIS units
- The ever **increasing system and infrastructure requirements** create a need for more specialized skills in data exchange and interoperability
- Fragmentation between **different branches of the government MOH** that are not equally contributing, connected and sharing data in DHIS2 (DGHS and DGFP)
- Lack of **coordination meetings** at the national level to discuss and resolve specific HMIS issues - these happened regularly in the past but were not continued when donor-funded support for the meetings ended
- Some data is collected but not used; there is a lack of coordination with technical partners on how and when to archive **unnecessary datasets**
- **Private sector** facilities are largely excluded from reporting, leaving gaps in the completeness of data for decision-making
- Lack of **data use culture** and motivation at subnational levels
- **Donor-funded short-term projects** involving the platform do not contribute to the long term sustainability of the core system

Suggestions and recommendations discussed during the workshop centered around creating a national operational plan to guide and coordinate donor and government initiatives involving the HMIS and for donors to channel all funds through government structures. It would be helpful for global partners and donors to coordinate initiatives and orient the relevant ministers and government officials about intended projects to facilitate and speed up approval and implementation of activities. There is also a need to develop a system to monitor data use at all levels and strengthen a bottom-up approach to data quality improvement. Strengthening and increasing University collaborations and training opportunities for MIS department staff can help create incentives for more stable employment and capacity building as well as spread the general skills building and appreciation for the HMIS.

HISP Bangladesh faces challenges related to their small staff and unpredictable funding levels. They have difficulty securing regular contracts with the government, which are often open tender contracts awarded to the lowest bidder, even for lower quality work. There is a history of some strain in the relationship between HISP and the government MIS unit and a sense of frustration over ownership and control. There is no doubt that the work of HISP with the government MIS team has helped the country achieve great strides with the large deployment of DHIS2.

Mali Workshop Summary

The Mali workshop was attended by 30 stakeholder participants on September 28, 2023 in Bamako, Mali.

Implementation of DHIS2 in Mali is supported by the core team at HISP WCA in Togo which conducts and leads the work. Two local HISP members in Mali support the local implementation and are undergoing the process of being formally registered in the country. HISP in Mali works under contracts from the Health System Strengthening Implementation Unit (UMRSS) under activity coordination from the relevant government health departments. Most of this funding to support their work comes from Global Fund

DHIS2 in Mali is used for Aggregate data collection and reporting and for logistics management (eSIGL). Tracker is implemented for Covid use cases, antenatal care and vaccination with new functionality for TB and HIV under development. CPS (Cellule de planification et de statistique) is the department in the Ministry of Health (Direction Générale de la Santé et de l'Hygiène Publique - DGHSP) responsible for the national HMIS and DHIS2.

At the **national level**, DHIS2 aggregate data is used for data analysis, decision-making, advocacy and national reporting requirements. Tracker is able to generate COVID reports and COVID travel passes. The HMIS unit is responsible for providing key national health indicators for disease specific programs. System administrators at the central level are able to customize and deploy the system but still require support to manage new applications and new system functionalities. There is high staff turnover and challenges around maintaining regular coordination meetings and coordinated decision-making.

At the **district level**, DHIS2 is employed for epidemiological disease surveillance, decision support and data analysis. Training of trainers has helped to support the staff and train new users responsible for data entry. Those health centers without internet or electricity bring their data to the district or regional level for entry into the system. All data from health facilities in the catchment area are collected and analyzed. There is also the challenge of trained staff turnover at the district level, leaving gaps in capacity to manage data analysis. Insecurity, poor infrastructure, power and internet coverage also present challenges to the system.

At the **facility or centre de sante level**, the nurses in charge of data management are trained to compile data from registers and patient records in different programs and to enter data into the system on a monthly basis. There are some parallel

reporting systems depending on the implementing partner, creating some confusion and lack of harmonization. Internet access and unstable power is a challenge and creates problems with data completeness and timeliness of reporting.

In addition to the challenges presented at each level above, the workshop participants discussed gaps and concerns related to the DHIS2 system:

- **Basic computer training** at some service delivery locations - when the system was first introduced it was the first time using a computer for some staff members
- **Data analysis and use** is lacking - training has lacked emphasis on how to use data for decision-making
- **Uncertain funding** from partners threatens the long-term stability and use of DHIS2; the implementation to date has depended on partner funding without any national mechanism or plan to sustain operational costs and equipment maintenance
- Concern over **updating the system** to newer versions of DHIS2 and how this can be managed and institutionalized
- System data is currently stored on a **cloud server** and paid for by global partners - concern over the long-term sustainability of this arrangement and also some concern with **storage of data outside the country**

In order to address these challenges, recommendations centered around the need for stronger government leadership and coordination to maintain the advances and progress made to date. This includes a plan for retaining trained staff and strengthening ownership in the system for end users. There is a need to negotiate data rates with national service providers to reduce the cost of SMS messages with support from the Department of Communications and Digital Technologies. There is an urgent need for other donors to support DHIS2 activities in Mali to reduce the sole reliance on the Global Fund.

The HISP presence in Mali has faced challenges of being called to support unplanned activities with short notice and a lack of documentation for the system, users and program needs. Although the support from Global Fund has helped deliver activities on time, some funding levels are not in line with the level of work required.

With DHIS2 used throughout the country, stakeholders agree that the platform has brought significant improvements in data collection, processing, analysis, availability and quality in Mali. Notification of suspected disease outbreaks and the ability to archive and monitor data quality are especially important. The use of an interoperable eLMIS solution has strengthened the product supply chain with computerized management of inventories and stock. There is a strong commitment from stakeholders to support a single HMIS.

Annex D: Resources and Documents included in the Review

HISP Centre Strategy Update, 2023-2025 LINK

A Gavi, The Vaccine Alliance Look Back and Forward; District Health Information Software 2 (DHIS2) for Immunisation, June 2021 LINK

An Interim Review of the Health Information Systems Programme - University of Oslo - with Recommendations for Future Action. PATH, June 2016 LINK