Technical Guidance Note:

Using HMIS Data in MEAL for Health and Rights Programming

June 2023
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CanWaCH
Canadian Partnership for Women and Children's Health

ABOUT

The Canadian Partnership for Women and Children's Health (CanWaCH) is a membership of more 100 nongovernmental organizations (NGOs), civil society organizations (CSOs), academic institutions, health professional associations and private companies committed to advancing the health and rights of women, children and adolescents globally. Learn more at CanWaCH.ca.

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ACKNOWLEDGEMENTS & DISCLAIMER

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This guidance note was produced under the "***Amplifying the Impact of Gender Transformative Health Programming***" project, an initiative supported by Global Affairs Canada. The decision to develop it is rooted in CanWaCH's aim to ultimately support more effective programming and stronger results reporting of CanWaCH members' and partners' programmatic activities towards supporting health and rights around the world.

Through this guide, our hope is to provide the global health sector with key, relevant technical guidance on best practices in Monitoring, Evaluation, Accountability and Learning (MEAL) for health and rights programming, such as the use of Health Management Information System (HMIS) data. It is based on needs identified throughout interactions and consultations with colleagues from CanWaCH member and partner organizations.

As you read and refer to this note, please keep in mind that it is a first edition, "evergreen" document with potential to continue improving and evolving from our collective learning. As such, this note is under active review and consultation, and recommendations are encouraged. Please contact CanWaCH at info@CanWaCH.ca to participate in this process.

A note on Methodology: The consultancy team conducted rigorous desk research on HMIS data and its integration into, and use with, MEAL frameworks and measurement processes. Such research included a review of data and documents provided by the CanWaCH Secretariat Metrics team, an external literature review of academic and non-academic literature on HIS and HMIS data, qualitative data collection and light synthesis culminating in this final guidance note. Qualitative data collection and synthesis was primarily focused on interviews of CanWaCH Case Study partners and the integration of commentary from meetings with the CanWaCH Metrics Working Group members.

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ACRONYMS

CanWaCH	Canadian Partnership for Women and Children's Health
CHW	Community Health Worker
CRVS	Civil Registration Vital Statistics
CRC	Canadian Red Cross
CSO	Civil Society Organization
DDU	Data, Demand and Use
DHIS2	District Health Information Software 2
DHMT	District Health Management Team
DHS	Demographic Health Survey
DRC	Democratic Republic of the Congo
FIAP	Feminist International Assistance Policy
GAC	Global Affairs Canada
HIC	High-Income Country
HIS	Health Information System
HISSM	Health Information Systems Strengthening Model
HMIS	Health Management Information System
IAFM	Inter-Agency Field Manual on Reproductive Health in Humanitarian Settings
IAWG	Inter-Agency Working Group on Reproductive Health in Crises
KPI	Key Performance Indicator
LMIC	Low and Middle-Income Country
MEAL	Monitoring, Evaluation, Accountability and Learning
M&E	Monitoring and Evaluation
MICS	Multiple Indicator Cluster Survey
MISP	Minimal Initial Service Package

ACRONYMS

MNCH	Maternal, Newborn and Child Health
MoH	Ministry of Health
NGO	Non-Governmental Organization
PMF	Performance Measurement Framework
SDGs	Sustainable Development Goals
SRHR	Sexual and Reproductive Health and Rights
USAID	United States Agency for International Development
U of O	University of Ottawa
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

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1. INTRODUCTION

1.1. WHY THIS GUIDANCE, AND WHY NOW?

One of the most decisive and yet challenging moments in the development of any M&E/MEAL plan for a given project or program is selecting the right **indicators and related data sources** to measure progress [1].

> *"Choose performance indicators that provide the best possible measurement of the outcomes achieved within the budget available and **wherever possible use existing data sources** and collection methods."* [2]

In **global health** practice, a large proportion of the work aims to enhance the right to health and support health systems strengthening efforts in Low-and Middle-Income Countries (LMICs), including the delivery, availability, and utilization of health services. Indeed, these play a key role in making the right to health a reality, especially for women and girls. When it comes to making health services universally available, including those related to sexual and reproductive health, "host country" governments play a crucial role. They are considered "duty bearers" responsible for ensuring the right to health for all. As such, these governments own the process and have their own monitoring and evaluation systems, resulting in unique Health Management Information Systems (HMIS).

In this context:

- It is relevant for implementing/partner organizations to use this data as part of their MEAL activities to help understand the impact of the work they are supporting. Using HMIS data plays a key role in supporting local ownership, as highlighted in the recent *Accountability Framework for Canada's 10-year Commitment to Global Health and Rights* [3], especially for data related to **service utilization**.
- Even when it is not the primary focus of a project, using HMIS data can pave the way for strenghthening data systems and can be seen as an essential principle of global development efforts. This is especially true in the context of health and rights, where "*people build the system and the system will eventually build the people*" [4]. Current contextual factors, such as reassessing the implementation of global health efforts, concerns about decolonization and consideration of power dynamics, also encourage the use of HMIS data in MEAL.
- While the use of "existing country systems for monitoring", including national HMIS data, is increasingly recommended to support aid effectiveness (considering the Paris, Accra and Busan high level forums and focus on country ownership) [2] [3], a number of **barriers** may prevent this data from being incorporated by implementing partners into the M&E process. These include a lack of understanding of specific contexts, issues with data quality, or a lack of desired data disaggregation, among others.
- A **literature review** reveals that there is limited guidance is available to support this process. Clear recommendations to use HMIS data appropriately, contextually, and effectively is relatively elusive, with available guidance more focused on "fixing" the data than on the process of collecting, analyzing, interpreting and learning from the data. This guidance note aims to fill a gap in the literature regarding access to and the appropriate use of HMIS data in MEAL for health and rights programming.

1.2. WHO IS THIS GUIDANCE FOR?

This guidance note was developed to support implementing organizations that partner with international donors and host country governments in their efforts to improve the health and rights of populations, particularly women and girls. More specifically, it is intended for all those involved in project and program monitoring, evaluation, accountability and learning (MEAL) processes during the life cycle of any initiative, including MEAL practitioners, as well as program and project managers. Funding and government agencies constitute a secondary audience, as they may find this guide helpful in their own work. It can also be shared with partners in implementation countries to support discussions of key issues in data collaboration.

2. HMIS DATA FOR MEAL: A PRIMER

NOTE: *Health Information System (HIS) and Health Management Information System (HMIS) are often used interchangeably.*

2.1. UNDERSTANDING HMIS DATA IN CONTEXT

While this guidance note focuses on the use of data, it is essential to consider a few general elements about HMIS/ HIS, as the source of the indicators and data considered used in MEAL.

A Health Information System (HIS) is the overarching system that serves the information needs of the health sector in a given country and has been identified by the World Health Organization (WHO) as one of six health system building blocks (see Figure 1 below). An HIS consists of **both routine and non-routine health data** that is collected from various sources, at different levels (e.g., national, regional, local) of a health system. An HIS serves a **decision-making function**, as it provides up-to-date, accurate information that supports evidence-based decisions on health programming and policy development, ultimately leading to better health outcomes. It is also critical in the planning and implementation of a country's national health strategy and reporting on progress towards global commitments (e.g., health-related SDGs).

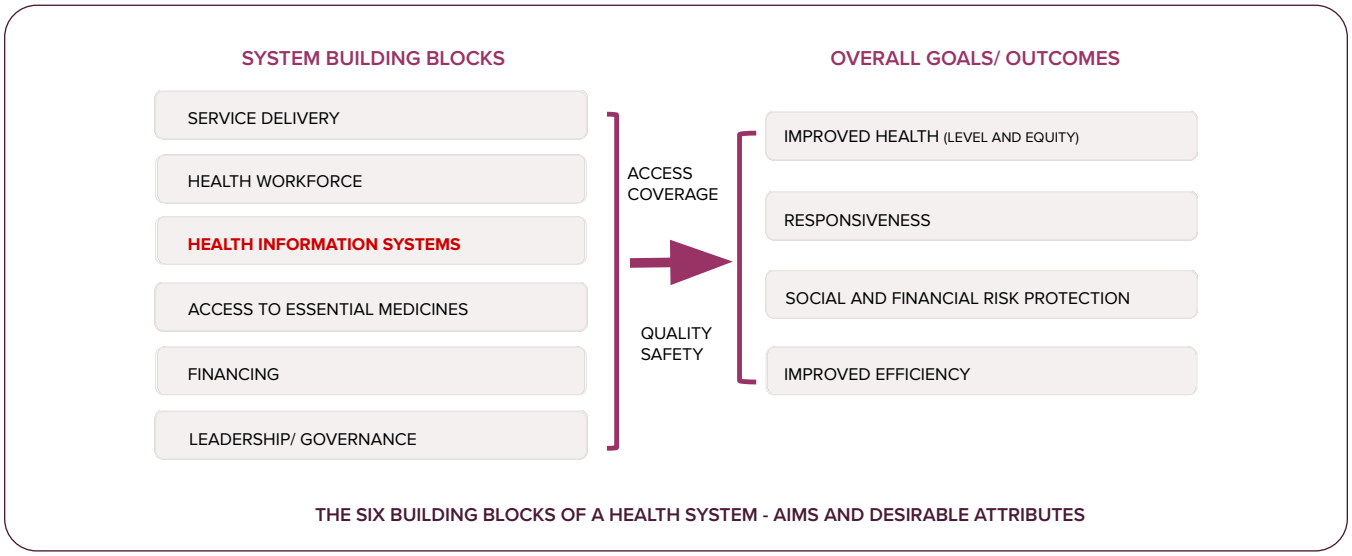
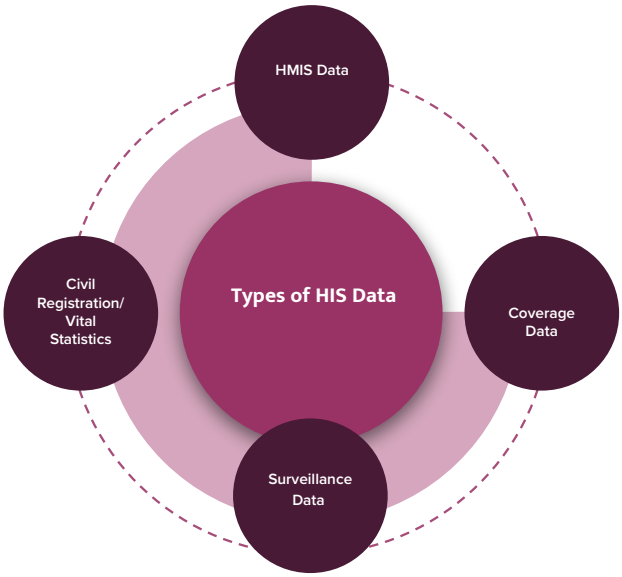


FIGURE 1: The Six Building Blocks of Health Systems (WHO Framework)

Several types of data exist within an HIS, including health facility/HMIS data, civil registration/vital statistics, coverage data and surveillance data. Note that this list is not exhaustive. For the purposes of this guidance note, we will focus on how to make the best use of routine HMIS data, which is typically found collected within health facilities, and measures health service utilization.



Health Management Information System (HMIS): Data that is collected routinely at health facilities and institutions, and at community-level healthcare posts and clinics.

Coverage: Data that is collected in order to determine health outcomes.

Civil Regristration/Vital Statistics (CRVS): Data specifically tracking births and deaths. CRVS institutions issue birth and death certificates, and compile vital statistics such as cau-seof-death information.

Surveillance: Systematic data typically collected nationally on the incidence, prevalence, and control of disease. It supports public health policies and practices and disease monitoring.

FIGURE 2: Types of HIS Data

HMIS data is used for the recording, storing, and processing of administrative data collected routinely by health systems. In many contexts, including across Africa, the prevalent HMIS software used is the District Health Information Software 2 (DHIS2).

BOX 1: DISTRICT HEALTH INFORMATION SOFTWARE 2 (DHIS2)

A software project initially funded by the Norwegian Agency for Development Cooperation, the University of Oslo and the Research Council of Norway, to strengthen health systems in the Global South.

DHIS2 is an open-source software platform provided without licensing fees, and has become the world's largest HMIS platform. DHIS2 is in use across 76 LMICs today, including nearly all African countries, where it serves as the national HMIS platform.

For more information see: https://dhis2.org/

Although one size does not fit all, HMIS data is often collected and processed through similar pathways across national contexts. Data are input at the peripheral level of a system (i.e., at the district level or equivalent) which is responsible for gathering data from the sub-district level (including health facilities), where data is initially received from communities. Data then travel to more centralized institutions at the regional and provincial levels before reaching national institutions. The box below provides a brief summary of how HMIS data are transmitted and processed within a national health system.

BOX 2: UNDERSTANDING THE GENERAL FLOW OF HMIS DATA WITHIN A NATIONAL HEALTH SYSTEM

PROVINCIAL/REGIONAL/(INTERMEDIATE LEVEL) & NATIONAL ⟶ Data have been cleaned and validated and are available to be used by decision-makers to inform planning and policy development, as well as to monitor and evaluate public health indicators, such as population health status, service provision, coverage, drug stocks and consumption rates.

↑

DISTRICT (OR EQUIVALENT) HEALTH OFFICES (PERIPHERAL LEVEL) ⟶ Statistical clerks/HMIS officers review reports and enter them into the HMIS platform (in cases where record-keeping is paper-based at lower levels). With the data they receive from the lower levels, they can determine things like potential overloads at health facilities (i.e., through the registration of patients' information), human resource allocations, rates of drug distribution, and can monitor trends related to health service delivery. Information received from the lower levels also informs district health strategic plans and immunization plans.

↑

PRIMARY HEALTH CARE FACILITIES ⟶ Nurses, clinical officers, and data clerks maintain different facility-based registers that measure things like registration of patients (visits, admissions, discharges, results of diagnostics tests, etc.). At this level, data is combined from facility-based registers and from the community level into reports that are shared at the district level; someone is often designated at the health facility level to authenticate results before reports are forwarded to the district level.

↑

COMMUNITY/VILLAGE LEVEL ⟶ Community health workers/health surveillance assistants collect and report on information at the point of service delivery in registers, and use this data to track and manage patient care.

TIP: *It is important to **understand the context** in which you are working, including how the health system is structured, and in the case of the HMIS, who collects what data, when and how.*

2.2. UNDERSTANDING STRENGTHS AND LIMITATIONS OF HMIS DATA

When an HIS is functioning properly, it can ensure that the right information is provided to the right stakeholders within a health system, in a timely manner, supporting policymakers, health facility managers and service providers in making evidence-based decisions related to health policies, budgets, and programming.

The MEASURE Evaluation project was funded by USAID to improve global health through training, investments in data collection, data quality and data use, as well as information dissemination in low-resource settings. Over the past two decades, this work has led to the creation of a validated Health Information Systems Strengthening Model (HISSM). **Figure 3** below is an adaptation of the model which describes how health information systems can be optimally designed, developed and implemented in LMIC contexts to amplify strengths. It also describes how in which these systems improve long-term health outcomes with the appropriate supports [6].

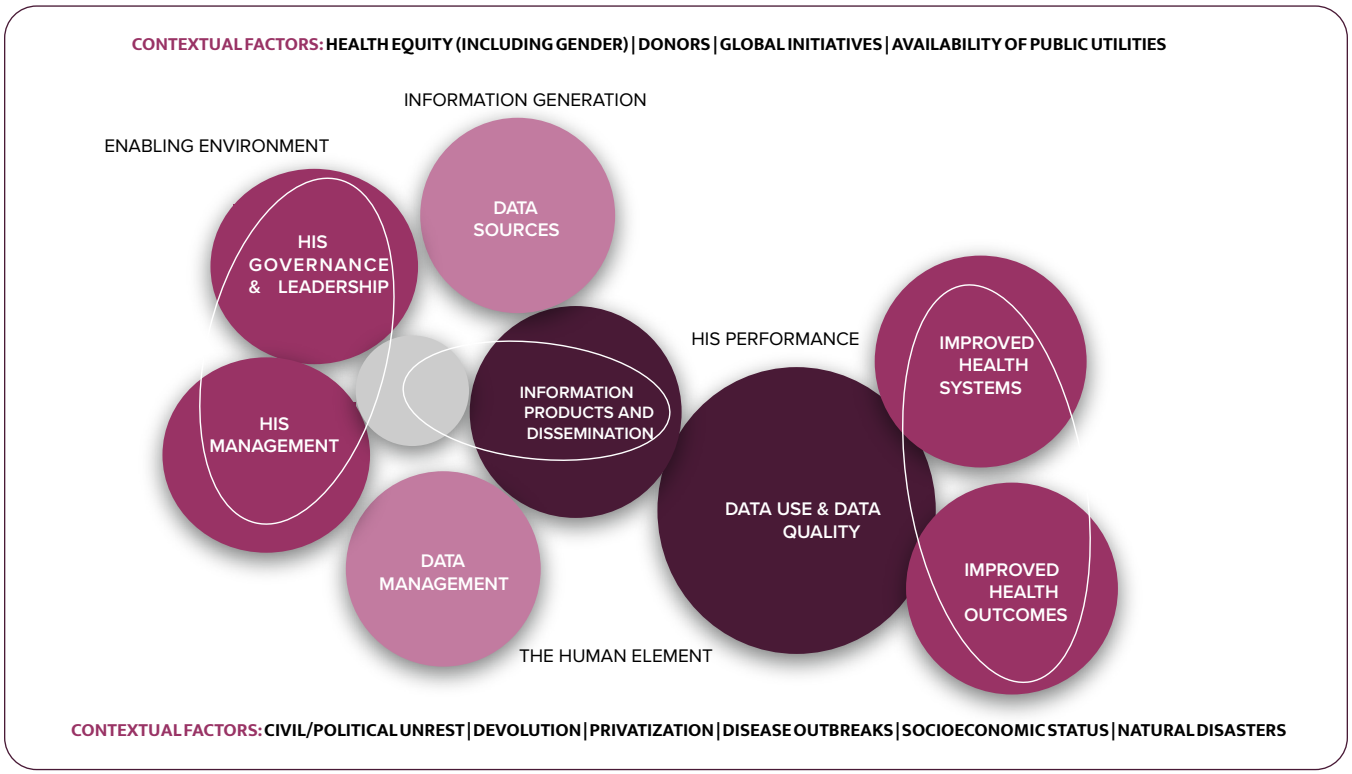


FIGURE 3: MEASURE Evaluation's Health Information System Strengthening Model (HISSM) (adapted)

Within the HISSM, **data use and quality** are essential elements of a strong functioning HIS. Table 1 below summarizes the **eight key domains of assessment** and lists some key questions within each domain. A tool like this can be useful when first taking stock of the national health context, and specifically, the HIS context in which you will be working.

TABLE 1: Summary of the MEASURE Evaluation Tool for Assessing HIS Performance [7]

DOMAINS	SAMPLE ASSESSMENT QUESTIONS
1: HIS Governance and Leadership	Is there an up-to-date national health strategy?
2: HIS Management	Are there specific management bodies in place to oversee implementation of an HIS policy?
3: Data Management	Is there an electronic software for aggregating routine facility and community-based service data?
4: Data Sources	What is the availability of data sources that should be captured in an HIS? Examples include a population census conducted in the past 10 years and national health surveys, such as Demographic Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS).

DOMAINS	SAMPLE ASSESSMENT QUESTIONS
5: Information Products and Dissemination	Does the country's MoH have an updated website?
6: Data Quality	Is there core data that all facilities report on, in a prescribed time frame and format? To what extent are facilities actually entering data into an HMIS?
7: Data Use	Which stakeholders (e.g. MoH, district managers, NGOs, etc.) and what proportion of them in a health system using HIS data for what decisions (e.g. target setting, monitoring, etc.)?
8: HIS Performance	Is the HIS able to report on the number of institutional deliveries, by district, in the past year?

Even with known system models and tools for strengthening HISs in LMICs, **limitations** exist, including:

- Inaccurate collection of data
- Incomplete recording of health data (missing data)
- Social and geographic variables
- Incomplete and/or late reporting of data
- Lack of staff capacity for data collection and reporting
- Limited training of/resources for staff responsible for data collection and reporting
- Unclear roles and responsibilities when it comes to the collection, management and dissemination of health data [8]

Additionally, many people in LMICs have limited access to public services, including health care, for a variety of reasons (i.e., socio-cultural barriers, long distances). Because of this, facility-based data might not always be representative of the population of a given area [8].

Regardless of these challenges, organizations implementing health and rights programs should strive to engage with the national HIS in a given programming context for their project's reporting and measurement needs.

⟶ Refer to Case Study 1 where the Canadian Red Cross used HMIS data in Mali to support in conducting a project endline evaluation.

3. USING HMIS DATA FOR MEAL

3.1. WHEN TO USE HMIS DATA

This guidance recommends using HMIS data whenever feasible when working with national health partners, Ministries of Health, and local health systems. Because health programming is highly contextual, data should originate from and reinforce national and subnational knowledge and reporting systems.

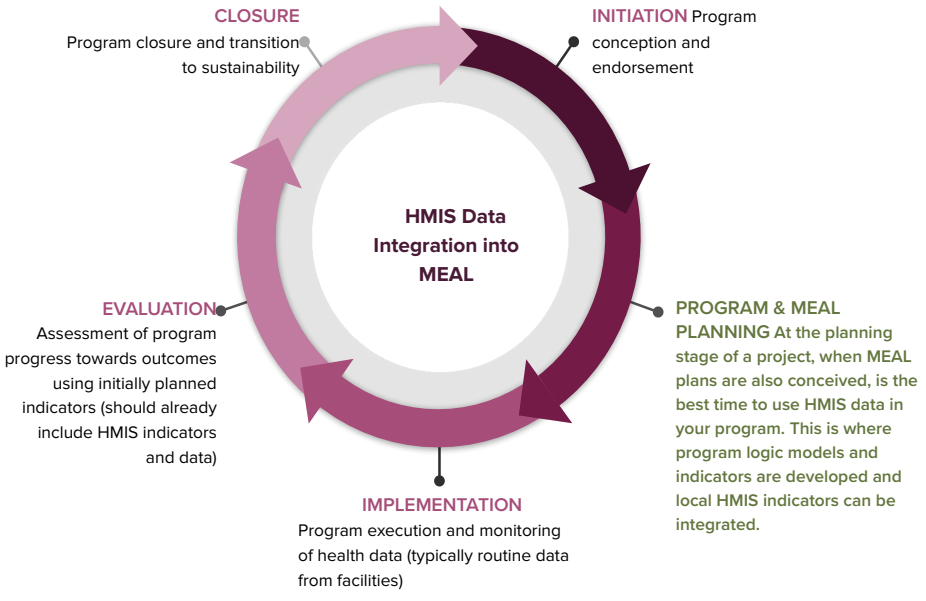
HMIS data is essential for understanding service delivery trends, coverage, health system performance, and changes over time. When used well, it supports evidence-informed decision-making based on routine, government-owned data. However, HMIS data may have limitations in completeness, timeliness, quality, and level of detail. It should therefore be complemented with other sources such as project monitoring data, facility assessments, population surveys, and community feedback to build a more comprehensive and accurate picture of program outcomes.

In the contemporary Monitoring, Evaluation, Accountability and Learning (MEAL) practice, HMIS data is treated as one component of a broader adaptive learning system. Rather than using HMIS as a static dataset, programs increasingly integrate HMIS indicators into dynamic dashboards that combine routine health system data with project data, community insights, and contextual information. This integrated approach supports real-time analysis, continuous reflection, and timely adjustments to strengthen the quality, equity, and effectiveness of services.

> *"It is important to **leverage data that is already available** to include in your M&E plan when feasible and appropriate. This may mean considering "existing indicators tracked by "host" governments or other stakeholders" when defining appropriate indicators that could be used to measure program/project expected outcomes."* [1]

The use and integration of HMIS data should always begin **at the conception of an intervention**, when program design is underway and program models are being developed. Borrowing from GAC's Results-Based Management Framework (PMF), a set of activities feeds into a predefined set of outputs, as well as immediate and intermediate outcomes. Performance indicators are added to each level of change to measure the outputs and results (outcomes) [2].

Program implementation organizations and partners have historically constructed and defined indicators in the absence of a thorough examination of national HMIS data and existing indicators in health programming contexts. Furthermore, indicators are often **duplications** resulting in parallel data collection systems and undermining local health administrative processes and efforts [9].



At the planning stage of a project, when MEAL plans are also conceived, is the best time to use HMIS data in your program. This is where program logic models and indicators are developed and local HMIS indicators can be integrated.

Project indicators are often duplications of national key performance measures which creates parallel data collection systems and undermines local health administrative processes and efforts.

FIGURE 4: HMIS Data Integration into MEAL

TIP: *At the onset of designing the MEAL plan for a project or program and its **performance measurement framework (PMF)**, ensure the indicators you select reflect not only what is most relevant to the project, but those indicators that are already being used by the local HMIS.*

TIP: *The duplication of local efforts, especially with data collection, is unfortunately very common and should be avoided. In instances where gaps in data are found, organizations are encouraged to use tools such as **advocacy** to have data properly incorporated into national registries.*

BOX 3: A NOTE ABOUT DHS AND MICS COVERAGE DATA AND DUPLICATION

A considerable amount of time and resources are often invested by NGOs in collecting data needed to measure indicator changes (or coverage data on a project's progression towards outcomes). DHS, MICS and other survey-based data collection is also undertaken in communities where data related to health and social indicators may already exist.

Again, this type of data collection duplication should be avoided. While the use of existing DHS and MICS data is often useful for contextual analysis, target setting, and trends analysis, there is a catch. The limitation is often the timing of DHS and MICS data collection versus the project's data collection timeline, as well as the geographies relevant for these surveys versus the implementation sites of a project. Additionally, DHS is being phased out and it is unclear at this point what the future of it will be. As a result, DHS/MICS is most useful for baseline data and setting targets, and cCareful analysis should be used to determine whether additional data collection is warranted [9].

HMIS is primarily used for tracking **health facility data**; therefore, ***when a project or intervention requires the use of data from a health facility or institution, HMIS data should be utilized.***

Table 2 provides a summary of when to use HMIS data based on specific types of information.

TABLE 2: Summary of When to Use HMIS Data [10]

TYPE OF INFORMATION/HMIS SYSTEM	WHEN TO USE HMIS DATA
Individual Health Records	• Health service utilization
Facility-Based Registry Systems	• Health service coverage • Health service performance • Health facility infrastructure and equipment
Community-Level Record Systems	• Community care follow-up and management • Community health education reach • Community health promotion program output
Regional and National Systems	• Monitoring of disease trends over time

Depending on the context, the use of HMIS data will look different. For instance, the Collecting Data on Sexual and Reproductive Health in Humanitarian Settings Lab, led by the University of Ottawa (U of O), a project supported under the 2018-2020 Canadian Collaborative for Global Health initiative, set out to examine national HMIS data across several countries in order to determine standard measurements that could be applied across emergency situations globally (see Case Study 4 below). This project exemplifies the crucial role of HMIS data in responding to humanitarian crises and saving lives. The U of O partnered with the World Health Organization to identify 30 globally mandated indicators for humanitarian response in SRH programming. In this case, HMIS data collection is not necessarily contextualized and data points are non-negotiable.

3.2. POWER DYNAMICS AND THE USE OF HMIS DATA

In considering the full integration of HMIS data in MEAL and more broadly in health and rights programming, inequities must be identified and addressed to establish a proper context for HMIS data collection, management, and reporting. First, when taking a global perspective, there are notable differences in access to health research and program funding when looking at health professionals in higher income countries (HICs) and LMICs. Such resource gaps and power dynamics tend to spill over into health programming and implementation efforts as large international NGOs also rely on health data collection in LMICs to support their funding agreements [4].

Nationally-based funding and budget sustainability often determine how HMIS data is owned and whether its collection and use at the health facility level are feasible in the long-term.

Even with such successes, studies show that South Asian and sub-Saharan African countries on average contribute 0.65 per cent of their gross domestic product to health data collection and health programs in many LMICs are not sustainable due to period-based, program-centered funding from international NGOs, private donors and bilateral agreements where conditions change [4].

BOX 4: A NOTE ABOUT HMIS DATA INFORMATION DISSEMINATION

A culture of information dissemination and collaboration, or the lack thereof, often factors in through power and privilege and impacts the access to, and use of, HMIS data in certain country contexts. National level policy changes on data collection requirements and the revision of standards on national health indicators often do not reach health facilities or community health centres in a timely manner.

For example, during a health intervention program in Nepal being implemented by HealthBridge, national requirements on prenatal visits increased from 4 to 8. Only some health facilities were able to make the necessary adjustments to HMIS indicators in a timely manner and were monitoring accordingly (see Case Study 2 below for further information).

3.3. HOW TO ACCESS AND USE HMIS DATA

Responsible use of HMIS data requires alignment with national data governance systems. Implementing partners must follow Ministry of Health procedures, respect data ownership and confidentiality, and strengthen existing national reporting structures rather than duplicating them. While specific processes vary by country, common practices include working closely with district and provincial health authorities, participating in routine data quality reviews, and jointly interpreting data with government and community stakeholders.

Access to HMIS data is typically regulated by national health authorities. Users should follow country-level data sharing agreements, ethical standards, and data privacy requirements. As digital data systems expand, data ethics and cybersecurity have become essential considerations. The 2025 guidance emphasizes the responsible use of data, drawing on the WHO's Data Governance Framework and international AI principles that highlight transparency, accountability, and safeguards against bias. Digital consent, secure data storage, and interoperable systems are encouraged to protect privacy and ensure ethical use of health information.

The guidance also reinforces feminist and decolonial approaches to data governance. Capacity strengthening is framed as a shared process in which national and local actors co-lead data interpretation, visualization, and decision-making. Local data sovereignty, equitable credit, and community ownership of insights are core principles.

The Case Studies in Section 4 demonstrate practical examples of how these practices have been applied to strengthen data quality, improve access to HMIS data, and integrate it into adaptive learning in ethical and context-responsive ways.

Key considerations when accessing and using HMIS Data

- **Local Context:** Understanding how HMIS data is generated, validated, and utilized at the local level is essential. This includes awareness of reporting flows, staff capacity, incentives, and contextual factors that may influence data accuracy and interpretation.
- **Protocols and Processes:** Although specific approval systems vary, access to HMIS data typically follows formal Ministry of Health procedures. Figure 5 outlines common steps observed across CanWaCH partner case studies for requesting access, ensuring compliance, and integrating HMIS data into ongoing monitoring and learning practices.

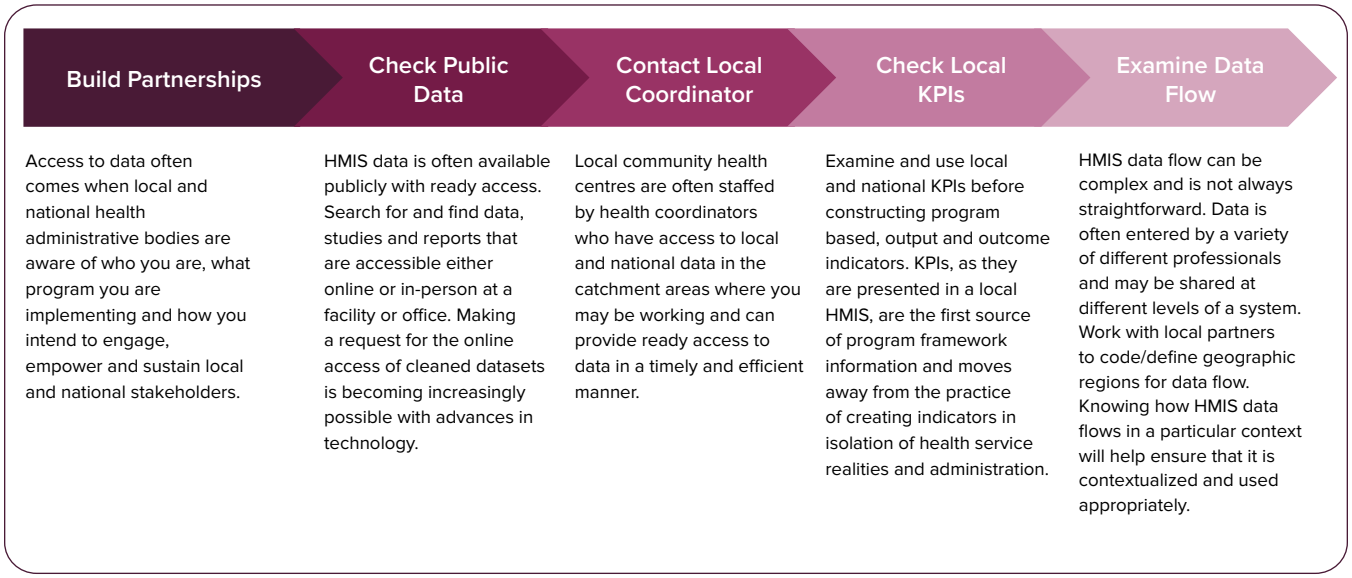


FIGURE 5: Protocols and Process for Accessing HMIS Data

TIP: *Use HMIS data after its vetted, validated and published by the Ministry of Health or relevant authority, especially if you will be using the data for reporting purposes. Validation processes can be lengthy and involved, however following national processes, even in the event of time lags is a recommended practice.*

Ethical Considerations in HMIS Data Collection and Use

Data collection is, by nature, an extractive and intrusive process which, if not conducted carefully, can cross ethical lines. “Helicopter” data collection, or the process of flying in, collecting local data, and leaving to analyze, synthesize, and report on it outside of a country context, without involving partners, still occurs when collecting HMIS data. Recognizing local professionals as partners in the program process and ultimate owners of national health information encourages meaningful collaboration and use of HMIS data in a way that is beneficial. The countries in which we work also often have well-articulated national ethical protocols that should be sought out, carefully reviewed, and respected when considering the access, collection, and use of HMIS data.

3.4. SUPPORTING THE USE OF HMIS DATA

Supporting the use of HMIS data can take several forms:

- In contexts where the health information system is functioning well and data are digitized, implementing partners may simply request routine access and regularly incorporate HMIS data into program monitoring and decision making.
- Implementing organizations may conduct periodic data quality reviews and provide training to local staff on data collection, cleaning, and reporting to strengthen data reliability and promote sustained use.
- Users should review HMIS data for completeness, consistency, and accuracy before applying it for analysis or reporting.

AI-assisted data quality tools, such as anomaly detection and predictive imputation, can help identify missing or irregular values and generate alerts. When combined with participatory verification involving district health authorities and community stakeholders, these approaches help ensure both technical accuracy and contextual

> **NOTE:** *With the assumption that **use builds capacity** and vice versa, the continued reliance on, and use of HMIS in a stronger or weaker system will increase its viability* [11].

MEASURE Evaluation's **Data Demand and Use (DDU) strategy** is another example of the symbiotic relationship between using data and subsequently promoting and supporting more use of that same data. More specifically, data collection, analysis, availability, interpretation and use continuously generate more demand for and sustained use of data, which leads to improved accountability and stronger health decision making. The DDU specifically references a series of eight interventions/activities that improve the demand for and use of HMIS data [12].

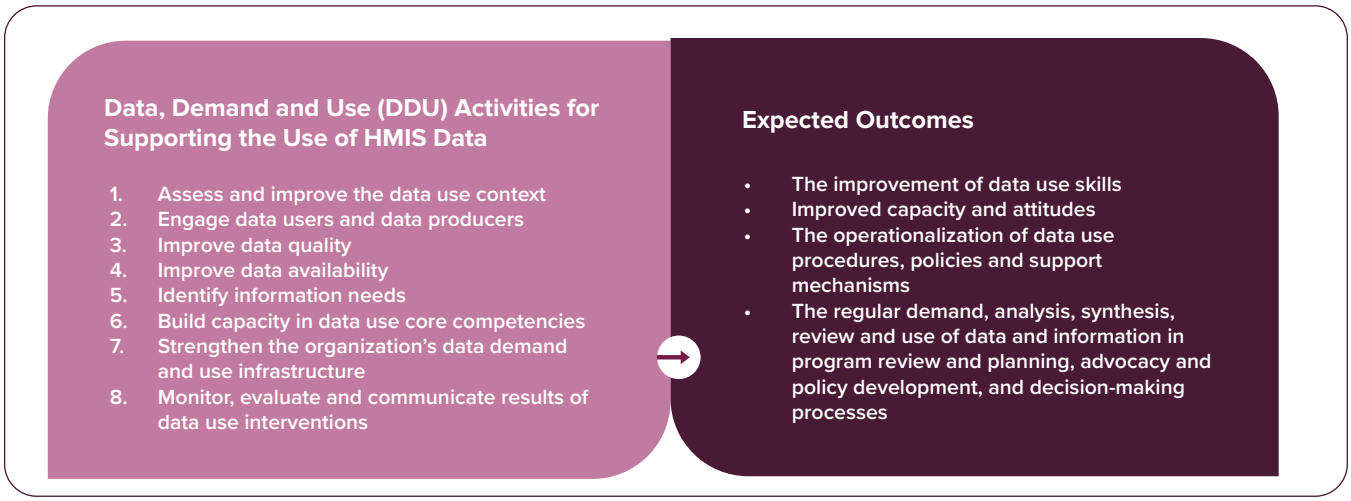


FIGURE 6: DDU Activities for Supporting the use of HMIS Data

3.5. ANALYSIS, SENSEMAKING AND LEARNING

Analyzing HMIS data within health and rights programs requires deliberate and collaborative processes. Data mapping, triangulation, validation, reconciliation, and dissemination are critical components of **data analysis, sensemaking[1], and learning processes** that are critical to using HMIS data appropriately and effectively. When conducted with national and local stakeholders, these processes reinforce data ownership and strengthen institutional autonomy.

HMIS data should directly inform adaptive management decisions, including planning, resource allocation, and continuous performance improvement. Real-time dashboards are increasingly used to support decision-making across administrative levels. By visualizing HMIS indicators alongside geospatial, climate, and gender data, practitioners can identify inequities, anticipate risks, and adjust interventions in a timely manner. Predictive analytics tools are also being used to forecast service demand and identify potential system constraints.

1 **Sensemaking** is a broadly used term and takes on many different meanings depending on the context, sector and professionals that are speaking to it. For the purposes of this guidance note, sensemaking refers to: "*creating space for listening, reflection and the exploration of meaning beyond the usual boundaries, allowing different framings, stories and viewpoints to be shared and collectively explored.*" This kind of collective "thinking through" is meant to take place within the bounds of data examination and consideration [13]. Additionally, Appendix B will provide guidance on good practices when including government health partners in the analysis and sensemaking of HMIS data.

To promote the equitable and context-grounded use of evidence, participatory data interpretation approaches, such as community data dialogues, reflection workshops, and co-analysis sessions, are encouraged. These practices promote transparency, accountability, and empowerment, while incorporating a feminist and rights-based approach to learning and decision-making.

The following chart summarizes some of the most salient points in each category.

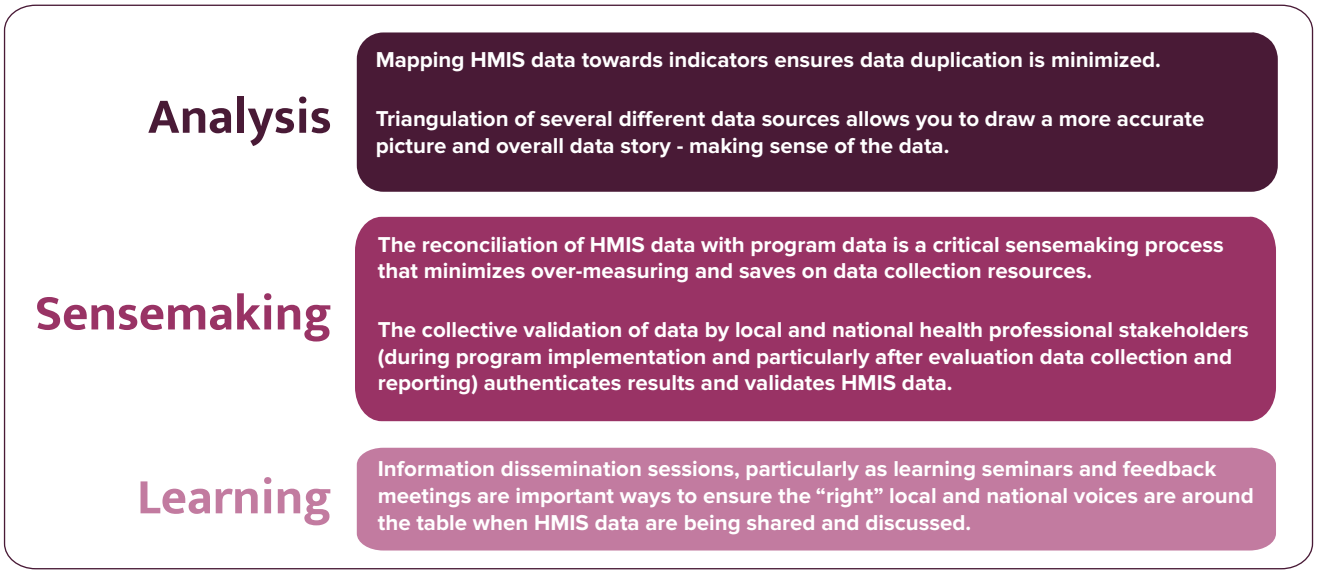


FIGURE 7: Analysis, Sensemaking, Learning and HMIS Data

TIP: *Creating a sensemaking and learning space is not always an intuitive exercise and engaging key health stakeholders in national contexts requires intention and care. USAID provides a series of tips and resources to support context-driven adaptation in programming, one of which applies specifically to collective engagement: "Tips on Collective Sensemaking"* [14].

Further consideration:

The 2012 Global Evaluation found that 50 per cent of humanitarian organizations did not collect any information on abortion, which was in violation of global guidance. Funding agencies and implementing partners are complicit in giving organizations leeway not to collect "sensitive" or "controversial" data. So, there are cases where extensive national abortion care is being provided, but there is no data to substantiate these efforts. To this end, the U of O had a number of recommendations for implementing partners moving forward:

RECOMMENDATION #1: It is important that data is collected against all 30 humanitarian indicators, even if there is no data or values are zero.

Collecting information gives attention to an issue and tells a different story than ignoring data altogether which can mask vital humanitarian work and impair our ability to improve services. “Controversial” and “sensitive” issues, including **rape or abortion**, require special attention for these reasons. These issues cannot be ignored.

RECOMMENDATION #2: Upstream advocacy needs to take place with bilateral funders. The WHO is using the opportunity to mandate data collection in humanitarian emergencies through bilateral donors by enforcing the use of indicators in IAFM.

RECOMMENDATION #3: Where possible, hold other agencies accountable for collecting critical data. There are clear global guidelines for humanitarian action that countries are required to follow in a humanitarian crisis. All stakeholders are obligated to provide a set of SRH services irrespective of local laws and standards. Countries sign on to these commitments and are required to deliver on them and so, are to be held accountable to them.

4. SHORT CASE STUDIES IN MEAL

4.1. CASE STUDY 1: IMPROVING MATERNAL, NEWBORN AND CHILD HEALTH IN MALI (CANADIAN RED CROSS)

Canadian Red Cross

The Maternal, Newborn, and Child Health Initiative was a 10-year (2010-2020), Global Affairs Canada-funded project that sought to improve the health of women and children in the world's most vulnerable regions. The project focused on three key pillars: strengthening health systems, preventing and treating diseases, and promoting nutritional practices for mothers, newborns and children under five.

The Canadian Red Cross (CRC) was funded by GAC to implement a project in Mali under this initiative between 2016 and 2020, focused on maternal, newborn and child health (MNCH) with an emphasis on promoting gender equality. Under this project, the CRC worked in six health districts, providing support to 750 rural communities, 160 primary health care clinics, and six district hospitals. In total, 550,000 beneficiaries were reached. CRC's partner in Mali was the Malian Red Cross.

The project's interventions included raising community awareness of MNCH practices, newborn surveillance, family planning counselling and distribution of contraceptives, along with providing support to clinics through clinical training, water, sanitation and hygiene (WASH), and energy supply to rural maternity homes. In GAC's original call for proposals, two specific outcomes and related indicators presented to partners, with a third outcome area offered as optional. The CRC chose for a third outcome focused on strengthening the capacity of community health workers (CHWs) and health clinics in data collection and management, improving data quality and completeness, and enhancing data analysis and utilization for decision-making. This was the first project for the CRC that included an outcome dedicated to supporting the country's HIS.

During the project timefram MoH in Mali moved from DHIS1 as the national HMIS software, to DHIS2, which enables uploading data from the primary health clinic level. Partners, including CRC, were called on by the MoH to support this transition through training and capacity building on the updated system, in addition to supporting HIS data completion and quality. The CRC supported the training on DHIS2 across the health clinics it supported. Following the training, the project requested the supervisors at the district health departments to assess the completion and quality levels of the data uploaded by the clinics into DHIS2 in their quarterly supervision visits. The MoH in Mali provided the Malian Red Cross with its own username and password to access the national database.

It was not until the project's final evaluation, which coincided with the start of the COVID-19 pandemic, that the CRC team decided to use the HMIS for its own results reporting purposes. Instead of conducting an end-line coverage survey, CRC developed an alternative evaluation method that included a qualitative study with stakeholders by phone, a survey among the community health workers (CHWs) implementing the project controlled for COVID-19 and in-depth analyses of monitoring data by CHWs on project activities. A meta review was conducted to triangulate the findings from these methods using the HMIS. Data of 30 indicators relevant to the project were downloaded from DHIS2 for 170 primary health clinics and six district hospitals in the project areas during 2016-2020 grouped into four themes: antenatal care, birth experience, child health and family planning. After conducting two quality tests, 22 indicators were considered in the evaluation. Annual estimates of population figures from the Ministry of Health were used to generate rates per 1000 population enabling comparison between the districts. This HMIS data served as a proxy for MNCH practices examining if there has been improvement in the project areas and if the improvement can be reasonably attributed to the work of the project. It enabled having credible findings at a challenging time.

4.2. CASE STUDY 2: HEALTHBRIDGE CANADA IN NEPAL

The HealthBridge Foundation of Canada is an international NGO that has worked across countries in Asia, Africa, and the Americas since 1982, with the aim of improving the health of vulnerable communities. In 2021, HealthBridge began implementing a four-year, GAC-funded, multi-country project, in Son La Province, Vietnam, and in Khadachakra Municipality, Nepal, focused on improving reproductive health and gender equality among adolescent girls and women, as well as reducing the incidence of child, early forced marriage and unions in target communities.

About to enter its third year, the project team has completed its project implementation plan and kick-off meetings with stakeholders established the project's baseline and integrated performance indicators that correlate with HMIS indicators in each country context within their results-based management tools (eight in the case of Nepal and six in the case of Vietnam). The selected indicators were based on a set of global health KPIs shared by GAC, which are rooted in global health frameworks and commitments.

Examples: Selected Project Performance indicators with HMIS Indicators in Nepal

- #/% of family planning services in the past year
- #/% of antenatal care services (at least once) in the past year
- #/% of four antenatal care visits as per protocol in the past year
- #/% of women who delivered their last child in a health institution
- #/% of women who received ANC incentive
- #/% of women who received delivery incentive
- # of at least one postnatal care services in the past year
- #/% of women/adolescent girls who utilized three PNC visits as per protocol in the past year

When conducting the project's baseline survey in Nepal, the team reached out to the Municipal Health Coordinator who was able to extract relevant data from the HMIS. While accessing the relevant data was relatively easy, the HealthBridge team has encountered other challenges in using HMIS data in Nepal.

In Nepal, HealthBridge is working in one municipality, Khadachakra Municipality (located in Kalikot district, in Karnali province). The project's catchment area includes a district-level hospital which serves as a referral centre for all municipalities in the district, and whose data is also captured in the HMIS. The challenge this causes is that the aggregated data available represents a larger service coverage area than the project's actual intervention area, which can lead to overreporting. This issue was brought o the attention of the donor and both HealthBridge and GAC are working on developing a mitigation strategy.

After completing the baseline exercise, the Government of Nepal introduced **updated standards** when it comes to the recommended number of antenatal care visits pregnant women attend, from four visits to eight. This triggered a change in the relevant HMIS indicator ("*#/% of four antenatal care visits as per protocol in the past year*") and required the HealthBridge team to re-collect the data on this indicator for their baseline. The change in national standards and resulting impact on the baseline were communicated to the donor, and the two parties agreed to gather new data and revise the baseline accordingly.

Finally, another major challenge noted by the HealthBridge team is the **underreporting of data**, especially at the lower-level health facilities, largely due to a lack of training in HMIS data collection and reporting, as well as insufficient staff.

From their experience in Nepal, HealthBridge have a number of **lessons learned** to share on the use of HMIS data in MEAL:

LESSON #1: ASSESS DONOR-RECOMMENDED KPIS WITHIN A NATIONAL HMIS CONTEXT

While GAC presented a set of KPIs to be incorporated in the project's M&E, it is critical for a project team to **include a step around determining the applicability of the donor's KPI** in a given country context, and understand how that KPI is defined, measured, and the type of data collected (i.e., disaggregated based on sex, age, disability status).

Partnering with teams in the country of implementation to support in this exercise is an effective step. If applicability is questionable, partners should feel empowered to go back to the donor and discuss alternatives or modifications.

LESSON #2: DON'T RUSH HMIS DATA RETRIEVAL

When it comes to a project's MEAL activities, including those that require data collected on a monthly basis for monitoring purposes, the **quality** of the data is going to be better when you have given the HMIS officer (or the Municipal Health Coordinator in the case of HealthBridge in Nepal) **time** to compile and clean the

This needs to be ***factored into the project's work plan***.

LESSON #3: INVEST IN AN HMIS SUPPORT ROLE

While it's important to have an **M&E focal point** to oversee all project-specific MEAL activities and deliverables, it is also recommended to have an **M&E staff member** responsible for the engagement and support of government focal points in charge of HMIS. This is especially helpful to address the issue of underreporting shared above.

APPENDIX A: HMIS DATA STEP-BY-STEP GUIDE (SUMMARY)

1. Understand the HIS/HMIS in a given programming context

- Identify key stakeholders, as well as their roles and responsibilities
- Identify/consult relevant HIS policies and protocols

TOOL: Guiding contextual analysis questions

Is there a National HIS policy? What are its main priorities? How does HMIS data flow from the different levels of the health care system?

Within your programming context, whose responsibility is it to enter data into the HMIS at the community, facility and district levels?

What are the HMIS reporting timeframes at community, facility and district levels?

Who is the ultimate custodian of the HMIS? (usually a directorate within the MoH)

Are there MoH protocols related to HMIS data, access and use, including ethical considerations and protocols? Have these been integrated into the project's operations? Is the HMIS publicly accessible, or does it require permission?

If permission is required to access the HMIS, what is the permission request process? How long does the permission request process take?

2. Build and leverage key partnerships

From the context analysis and the key HIS stakeholders identified, set up an initial meeting(s) to introduce your project, and invite relevant in-country programming counterparts to this meeting.

During this initial meeting, ask any clarifying questions about the HIS, including the indicators being measured in relation to public health programming, whether data is disaggregated, and how.

Discuss limitations and challenges of the HIS, as well as potential areas for collaboration/support from the project team to address those challenges.

3. Assess HMIS data in your programming context

- During the initial meeting with HIS stakeholders, identify challenges as well as potential areas for collaboration/ support from the project team
- Identify formal data quality assessments recently conducted
- If no formal data quality assessments were recently conducted, consult with the MoH for any assessment tools and inform them of any plans to conduct an assessment
- If there are concerns related to data quality, inform the donor of these concerns and potential implications on reporting and results measurement
- Determine a solution, including collaborating with national counterparts on how the project could feasibly address some of these challenges through specific project interventions

TOOLS: Guiding questions

Identify and refer to the standard HMIS templates produced by the MoH. Are these templates being used within your project's areas of intervention?

Have relevant roles and responsibilities within the HMIS been clearly articulated and understood?

Are there clear data review/quality assurance and validation checks occurring regularly, at the different stages of the health system?

TOOLS:

Data quality assessments recently conducted.

4. Align your project's results and MEAL frameworks to the national HIS

- Select indicators that are relevant to your project's anticipated outcomes and outputs.
- Check for applicability of your project's indicators to your programming context, and as much as possible, select indicators for which data is already being collected by the national HIS.
- Consider how the indicator is phrased and how data is disaggregated (if by age for instance, what are the various age ranges? Is data disaggregated beyond age and sex?).
- In cases where data is disaggregated but not within the categories originally envisioned by the project team, inform the donor and see whether the project can report on indicators the same way they are being reported on in the national HIS. If not, discuss an appropriate mitigation with your national counterparts and the donor.

5. Digital readiness and data governance

Before initiating the usage of HMIS into the project's MEAL activities, programs should assess organizational digital capacity, interoperability readiness, and data protection frameworks. This includes mapping existing digital systems, identifying integration gaps, and developing joint data-sharing protocols aligned with FAIR (FAIR principles means data should be Findable, Accessible, Interoperable, and Reusable) and CARE (CARE principles stands for Collective benefit, Authority to control, Responsibility, and Ethics) principles.

Tools such as data-flow mapping, system architecture diagrams, and risk-assessment matrices can help visualize how data move from collection points to dashboards and reports. Integrating these tools ensures transparency and supports alignment with national data standards and open-data policies.

6. Engagement with the HIS throughout project implementation

Seek permission from the MoH to access HMIS data during the inception phase of the project.

Ensure program team(s) are aware of HIS protocols. Conduct training/refreshers if needed and involve HMIS focal points in government to lead these trainings.

Plan/align monitoring and reporting activities with HMIS reporting timelines as is feasible.

APPENDIX B: HMIS DATA CHALLENGES AND SOLUTIONS FOR USE

NOTE: ADAPTED FROM: [15].
(Mekonnen, Z.A. (2022). Lessons and Implementation Challenges of Community Health Information System in LMICs: A Scoping Review of Literature. Online Journal of Public Health Informatics. 14(1): e5)

HMIS DATA CHALLENGE	PROPOSED SOLUTION
Incomplete Data: There are health facilities that do not report HMIS data, or have missing values in data that is reported and aggregated. This is often due to a lack of human resource capacity or the skills of data management staff. [Infrastructure may also affect data completeness and reporting and is addressed below.]	Examine the health facilities structure and resources (human and monetary) to determine whether capacity is an issue or whether there are knowledge/skills gaps in data collection and management. Engage in training and capacity building activities with local and national partners in your health program.
Inaccurate Data: Inaccuracies can happen during data transfer from paper to system to an electronic one or when inconsistent data entry practices are being used.	Engage in training and capacity building activities with local and national partners in your health program. Find ways to support additional data cleaning efforts and frame inaccuracies appropriately and respectfully, adding disclaimers on data accuracy where possible.
Double Counting of Data: Health facility output results may sometimes overlap with other facilities. For instance, a regional facility and community facility located in the same district may receive patients for the same health concerns with no unique identifiers that allow for distinction between patients.	Advocate for an HMIS data coordinator or manager to be hired locally at the district level to take on data analysis, synthesis and reporting responsibilities. This type of position will help troubleshoot for data duplication and, if supported by the district, regional or national MoH, will also be sustainable over the long-term.
Lack of Data Disaggregation: Critical parameters for data such as age and sex are not captured and when they are, furthermore complex disaggregation is also missing, e.g., age levels (0-5 years, 6-9, 10-15, 16-19).	Through relationships with HMIS data management personnel, supervisors, ministers, etc., request modifications to current data collection tools to include recognized data disaggregation such as age and sex.

Non-Standardization of Tools: Across communities and districts, different tools are sometimes used to collect routine HMIS data.	Convene local data collection stakeholders to determine the best tool for the context through reflection and learning exercises.
Differentiated Reporting Cycles: Timeliness for local data entry, review and reporting, and publication may not always align with program plans and performance measurement schedules.	Find unique points of intersection on timelines where possible and minimize unnecessary data collection by aligning program expectations with national realities.
Paper-Based HMIS Data: Physical forms are still being used in a number of contexts to capture health data, which is not consistently available or able to be delivered to centralized health centers.	Using mobile technology (e.g., simple-feature phones) is feasible and viable for the provision of real-time community-based health information to all levels of the healthcare system. Mobile data collection can be both user-friendly and efficient. Products such as mHealth can reduce the complexity of community-based data collection.
Health Facility Infrastructure: Data quality is often affected by infrastructural issues such as electricity, internet access and equipment provision. Specifically, facilities without ready access to electricity or the internet are hampered by the use of paper-based systems.	Examine health facilities to determine what type of infrastructural issues are at play (electricity, equipment or internet access), and to what extent the issue is affecting data collection: • Is the facility missing a computer or two? • Does the region lack a steady power supply altogether? Determine whether, and at what level, investments into infrastructure can be made by local and national governments and advocate for those changes. Similarly, determine what appropriate, sustainable investments you as a health implementation partner can make to support health facility infrastructure and determine how these investments align with local and national health investment strategies. For example, can you purchase a fleet of computers for long-term use? Does this conflict with a MoH plan to outfit the same area you are working in?
Political Interference: In some countries data is manipulated for political purposes, such as reporting upscaling performance on national health indicators.	Triangulate and validate data with local authorities as much as possible to ensure data accuracy amid potential political tampering.

Small Project Scope (working with a small number of health facilities): Program implementation partners may manage a portfolio with a handful of health facilities where small numbers pose problems for data aggregation and role up if there are issues with the HMIS data to begin with.	The use of HMIS should not wholly be dismissed in these circumstances. Instead, action should be taken to try to address data challenges and improve its quality for use. The introduction of mobile data collection has been shown to help significantly in improving HMIS quality by ensuring consistency, completeness and timeliness of data collection. RapidPro and mHealth are two platforms for consideration.
Digital Governance and Cybersecurity Risk: Programs that rely on digital HMIS platforms, dashboards, and automated analytics are exposed to risks such as data breaches, unauthorized access, algorithmic bias, interoperability failures, over-reliance on automated decision tools, and gaps in digital and data literacy among health workers. These risks may compromise data privacy, reduce confidence in HMIS systems, reinforce inequities, or disrupt program continuity if digital infrastructure is weak or underfunded.	Apply recognized cybersecurity and data governance frameworks such as ISO 27001 and WHO Data Governance guidance. Use role-based access controls, encryption, audit trails, anonymization protocols, and secure data storage. Conduct interoperability and system integration testing before scale-up. Establish an incident response plan with designated focal points. Provide continuous capacity strengthening on digital data use, critical interpretation of automated outputs, and responsible analytics. Include digital infrastructure and maintenance costs in program budgets. Promote participatory data interpretation to ensure that automated insights are contextualized and equity considerations are retained in decision-making.

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ADDITIONAL RESOURCES:

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