

# **Integrating Rehabilitation Data into Ethiopia’s Routine Health Information System**

Lessons Learned and Recommendations

Final Report  
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## Overview

The World Health Organization (WHO) defines rehabilitation as “a set of interventions designed to optimize functioning and reduce disability in individuals with health conditions, in interaction with their environment.”<sup>i</sup> Alongside promotive, preventive, curative, and palliative care, rehabilitation services are a core component of Universal Health Coverage (UHC) and are essential to ensuring continuity of care, improving quality of life and increasing productivity.<sup>ii,iii</sup> One third of the world's population are living with health conditions that could benefit from rehabilitation,<sup>iv</sup> and this need is expected to increase due to aging populations, surging non-communicable diseases (NCDs), and persisting conflict-induced injuries. The WHO’s Rehabilitation 2030 initiative is drawing attention to the unmet rehabilitation need, which often results from under-prioritization in countries’ health systems and UHC strategies, and especially so in low- and middle-income countries.

In recent years, the Ministry of Health of Ethiopia (MOH) has made significant progress prioritizing rehabilitation at the national level to increase access to rehabilitation services in response to the rising demand from an aging population, high rates of road traffic incidents, instances of internal conflict, and an influx of injured refugees from neighboring conflict-affected countries. In Ethiopia, NCDs and injuries are estimated to account for 52% of all deaths.<sup>v</sup> As such, the MOH included rehabilitation in the Health Sector Transformation Plan II as a key component of the continuum of comprehensive care and developed a five-year National Rehabilitation and Assistive Technology Strategic Plan to strengthen rehabilitation within various components of the health system.

The operationalization of this strategic plan requires extensive planning and decision-making at the national level that should be informed by quality rehabilitation data and information that reflects the status of rehabilitation services in Ethiopia. However, the current existing health facility data does not show actual rehabilitation service volume, quality, and coverage. To address this gap, the MOH, with the support from the Health Systems Strengthening Accelerator (Accelerator), piloted a new rehabilitation data set within the routine health information system (RHIS). This initiative aimed to gather reliable, routine data on service delivery to be used for improving the quality of rehabilitation services available to the population and support the national strategic plan’s goals.

As part of the health management information system (HMIS), Ethiopia utilizes the District Health Information System 2 (DHIS2) software platform for routine collection and analysis of health data. The goal of the pilot was to establish systematic rehabilitation data collection and reporting practices within five pilot rehabilitation facilities and integrate the collected data within the existing DHIS2 platform. The rehabilitation data set used was adapted from the WHO’s [Guidance on the analysis and use of RHIS - Rehabilitation Module](#).<sup>vi</sup> The Accelerator supported the process to defining a set of standard rehabilitation and assistive technology (AT) indicators, developing and validating data collection tools (registers, reporting formats, and tally sheets), training rehabilitation workers, providing ongoing mentorship, and customizing the DHIS2 platform for the rehabilitation indicators.

This report summarizes the overall objectives, approach, methodology, and lessons learned from piloting the newly developed rehabilitation indicators and data reporting tools within Ethiopia’s RHIS.

## Objectives

The objectives of the pilot were to:

1. Develop a standardized health information system for rehabilitation that could be integrated into the existing HMIS
2. Pilot the integration of rehabilitation information into the existing HMIS in five selected health facilities
3. Generate lessons and guidance to facilitate the use of rehabilitation information for decision-making.

## Methodology

### Approach to co-creating pilot implementation plan

#### Stakeholder partnerships

In 2022, the MOH and the Accelerator began to co-create a concept note and implementation plan to pilot the integration of rehabilitation data into the HMIS. To ensure the feasibility of the plan and buy-in from the necessary stakeholders, the conceptualization phase incorporated input from multiple directorates within the MOH and external partners, such as Regional Health Bureaus (RHBs), rehabilitation facilities (rehabilitation centers and hospitals), and other technical partners. The primary MOH stakeholders were the Clinical Services Directorate (CSD) and the Policy, Planning, Monitoring, and Evaluation Directorate (PPMED). After the MOH’s restructuring in 2023, these units were later converted to the Rehabilitation, Specialty and Sub-specialty Service Desk and Strategic Affairs Executive Office, respectively. The Accelerator ensured the continuity of the pilot throughout the restructuring process within the MOH. The Accelerator also established a necessary partnership with the WHO Rehabilitation Program, which provided global guidance on rehabilitation indicators<sup>vii</sup> and experience from piloting the RHIS-Rehabilitation Module in other contexts. This expertise was instrumental in assessing the practical feasibility of integrating rehabilitation into Ethiopia’s RHIS.

## Pilot facility selection process

The MOH established selection criteria for both hospitals and rehabilitation centers to be included in the pilot. For hospitals, the criteria included (1) the capacity to provide comprehensive rehabilitation services, and (2) the existence of an HMIS unit and DHIS2 platform in place. For rehabilitation centers, criteria included (1) to be government-owned, (2) to have the capacity to deliver prosthesis and orthosis services which were of particular interest to the MOH to track and (3) to be geographically accessible for regular supervision from Addis Ababa. Based on these criteria, the following facilities were selected: Tikur Anbessa Specialized Hospital (TASH), ALERT Comprehensive Specialized Hospital, Ethiopian Prosthesis and Orthosis Service (EPOS), Arbaminch Physical Rehabilitation Center, and Assela Medical Rehabilitation Center.

## Rapid readiness assessments

**Table 1. Selected pilot facilities**

Site	Location
Assela Medical Rehabilitation Center	Oromia Region Arsi Zone Asela Town
Arbaminch Physical Rehabilitation Center	SNNPR Gamgofa zone Arbaminch Town
Ethiopian Prosthetic and Orthotic Service (EPOS)	Addis Ababa, MikiliaInd area
Tikur Anbessa Specialized Hospital (TASH)	Addis Ababa, Lideta s/city
ALERT Comprehensive Specialized Hospital	Addis Ababa

With support from the Accelerator, the MOH conducted rapid readiness assessments in the five pilot rehabilitation facilities to establish a baseline understanding of each facility's capacity to collect and report on rehabilitation data and identify gaps to be addressed before initiating manual and electronic data collection. Conducted in May 2022, the assessment utilized a structured questionnaire administered by five teams composed of individuals from the CSD and PPMED. A virtual briefing on the questionnaire was provided to all teams before the assessment.

### Rapid readiness assessment findings

Overall, the hospitals were better equipped for integration of rehabilitation information into the DHIS2 compared to the rehabilitation centers (Arbaminch, Assela, and EPOS), which had no uniform data reporting tools or management practices. Arbaminch had an electronic database for internal use, but the centers largely used paper-based tools to report to the RHBs. There was no clear reporting line and a shortage of human resources—both rehabilitation and data personnel. An exception was EPOS, a new institution at the time of the assessment, that was in the process of hiring personnel

to satisfy the intended staffing structure. Data use for decision-making was relatively poor among the centers, unlike in the hospitals assessed.

The two hospitals (ALERT and TASH) had better systems for data collection and use, and the HMIS units were well-staffed and capable of data analysis and visualization as demonstrated by the performance of other programs in the facilities. Since there were no rehabilitation indicators to be tracked, the hospitals did not monitor the performance of the rehabilitation units. However, the hospitals were well-equipped in electronic equipment, including strong internet connectivity required for the rehabilitation data set in the DHIS2.

Furthermore, the rapid readiness assessments highlighted the need for equipping rehabilitation centers with the infrastructure requirements to implement electronic data collection and reporting as mandated by the MOH for secure use of the DHIS2 platform.

### Development and selection of rehabilitation indicators and data collection and reporting materials

With Accelerator support, the MOH conducted an iterative consultative process to develop and validate the final set of six rehabilitation and AT service indicators for integration into the DHIS2. Throughout this process, the MOH hosted several workshops with key rehabilitation stakeholders from multiple MOH teams, rehabilitation facilities, professional associations, and partner organizations. Input from these workshops was complemented by ongoing technical guidance from the WHO Rehabilitation Program and DHIS2 experts from Oslo University. The prioritization process followed the standard MOH indicator prioritization procedures and considered national guidelines, strategic documents, and available WHO guidance to identify potential indicators for rehabilitation and AT services.

To prioritize the indicators, the MOH and the Accelerator first compiled an extensive list of indicators from Ethiopia’s National Rehabilitation and AT Service Guidelines, and WHO’s Rehabilitation Indicator Menu and later the standard facility indicators for rehabilitation (RHIS – Rehabilitation module)<sup>viii</sup>. Then, through a series of consultative workshops, the team prioritized six indicators from this list. Key considerations for prioritization included feasibility of implementing the indicators in Ethiopia, the ability to measure outcomes rather than inputs, and local rehabilitation service context and current status. The technical team then defined the data elements, or the numerator and denominators, that would be used to calculate the final indicators. The final list of indicators is shown in Table 2, with more comprehensive details listed in Annex 1.

**Table 2. Final prioritized list of indicators and definitions**

Indicator	Definition
AT service access	Percentage of rehabilitation service users receiving assistive products among those who sought assistive product provision, categorized by the five categories of assistive products listed in the Ethiopia Assistive Product Priority List (Mobility, Cognition, Communication, Vision, and Hearing)

Waiting time for assistive product (AP) provision	Average of days waiting for assistive product provision, for inpatients and outpatients (from the time of first contact with the AP provider to the provision of the product)
Rehabilitation service utilization	Number of cases utilizing rehabilitation services per 10,000 population, categorized by health condition group
Rehabilitation referral	Percentage of new cases accessing the facility referred in for rehabilitation from another level of health care (regardless of the source)
Rehabilitation reporting completeness	Percentage of facilities designated to report on rehabilitation that routinely collect the required rehabilitation information and report within the DHIS2
Rehabilitation service client satisfaction	Number of clients considered satisfied with rehabilitation services received using a scale of satisfied, neutral, and unsatisfied (client considered satisfied with rating of satisfied or neutral)

### Manual data collection

As a next step, the DHIS2 platform needed to be customized to integrate the prioritized rehabilitation data elements and indicators. However, the indicators were not integrated immediately due to insufficient server space and potential risk of instability, and because the MOH had already finalized their broader health indicator revision process. Thus, the MOH decided to initiate manual data collection and reporting using Excel instead until the pre-planned upgrading of the DHIS2 platform could support integration of the rehabilitation indicators within the DHIS2 server. This manual data collection lasted for a year (February 2023-January 2024) and allowed time to test the rehabilitation and AT indicators and obtain an initial understanding of rehabilitation service delivery while facilities secured the necessary infrastructure requirements and the MOH resolved issues with server capacity.

With support from the Accelerator, the MOH conducted trainings to support rehabilitation facility workers to use the indicators, reporting formats, and Excel template for manual reporting. Ongoing support for troubleshooting for data collection practices was provided virtually and through in-person mentorship visits to pilot facilities. Learnings from this manual data collection period helped to revise the data elements based on the needs of the facilities, which helped facilitate final endorsement of indicators. The reporting tools (registers, tally sheets) were also refined during this period and endorsed for wider use beyond the pilot facilities.

### Integration of indicators into the DHIS2 and electronic data collection

The Accelerator worked with the MOH to prepare the rehabilitation indicators’ metadata and data set to enable integration of rehabilitation within the upgraded DHIS2 platform. This process required the following:

- Creating organizational units for 30 facilities that provide—or could potentially provide—rehabilitation services (including the five pilot sites) within one data set in the DHIS2. These facilities included seven hospitals and 23 rehabilitation centers (17 government facilities and 13 NGO facilities).

- Creating five indicators with nine data elements that could be disaggregated on the DHIS2 staging server.
- Developing a routine data entry template for aggregate data, four validation rules, and one requirement rule included for data entry format.
- Organizing the indicators and data elements within one data set named “Rehabilitation Service”.
- Testing the data entry form and validation rule by entering two months of data for the 30 rehabilitation organizational units (facilities).
- Generating reports from the data outputs, testing the data visualization, and testing the six indicators for completeness and timeliness of reporting.
- Developing the DHIS2 rehabilitation dashboard.

After the DHIS2 platform was upgraded and customized to include the rehabilitation data set, the Accelerator helped secure a donation of computers for the three pilot rehabilitation centers through coordination with the USAID Digital Health Activity. The Accelerator also procured the additional materials needed in the centers such as shelves, chairs, and printers, securing necessary equipment (computers, printers, furniture, etc.) for the pilot facilities. Next, the MOH conducted trainings on the DHIS2 platform for data experts and managers from the pilot facilities in addition to virtual technical support for data reporting and analysis. The team also verified the pilot facilities previously collected manual data and entered it into the DHIS2 to incorporate additional information in subsequent data analyses.

## Pilot Outcomes

The pilot resulted in a tested and validated rehabilitation data set approved by the MOH and integrated within the upgraded DHIS2 platform in Ethiopia. In total, 25 providers working in the five pilot facilities (five from each facility) were trained to use the DHIS2. Since February 2024, these facilities are independently using the DHIS2 for rehabilitation data entry, analysis, and use with minimal need for ongoing technical support (See Figure 1 and Annex 2). The facilities are beginning to use the collected rehabilitation data for internal decision-making and in performance review meetings.

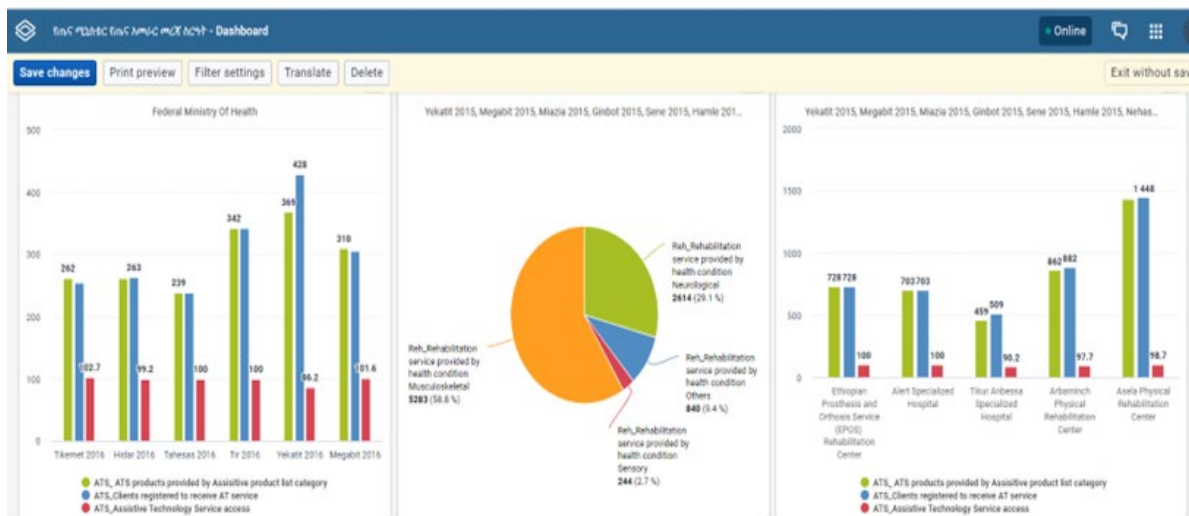


Figure 1: Rehabilitation dashboard sample visualizations

In addition to the five pilot facilities, the MOH provided manual rehabilitation data reporting and analysis tools to the remaining rehabilitation facilities and trained at least four experts from each of the eight other rehabilitation centers to use them. This manual data collection is ongoing while the rehabilitation centers await the procurement of the necessary equipment to utilize the DHIS2. Content on rehabilitation data collection is now integrated in the DHIS2 training materials and is planned to be cascaded to the remaining health facilities by the end of 2024.

## Recommendations for Ethiopia

The development of rehabilitation indicators and their integration into the DHIS2 in five facilities was a positive start to elevating rehabilitation data within the country's HMIS and generated important lessons for national scale-up. It is necessary for the MOH and other stakeholders to capitalize on this progress and expand the reach and utility of this data to inform regional and national priorities for planning rehabilitative care in Ethiopia. A few recommendations are listed below:

1. **Maintain implementation of the rehabilitation data set in the DHIS2.** The integration of the rehabilitation indicators and their use in the DHIS2 in the five pilot facilities is a promising development in increasing the MOH's access to reliable information on rehabilitation service delivery for evidence-based decision-making. It will be essential to maintain the routine rehabilitation data collection and reporting by integrating rehabilitation facilities within the existing district, zone or regional structures so they can provide them with oversight and technical and/or financial support.
2. **Expand rehabilitation data collection in the DHIS2 to all rehabilitation facilities in the country.** While infrastructure needs and administrative processes are a pre-requisite for this expansion, data from all rehabilitation facilities is essential



for obtaining a comprehensive understanding of the rehabilitation sector's capacity and performance throughout the country.

3. **Integrate analysis of rehabilitation data collected in the DHIS2 into routine health planning processes at the MOH.** Data use for decision-making is a priority across all health areas; however, rehabilitation data—and the overall rehabilitation program—still needs to be integrated into routine health planning processes rather than operated as a siloed health service. Such integration could facilitate improved resource allocation to meet the increasing population need for rehabilitation in Ethiopia.
4. **Use the data collected for evidence-based decision-making to improve rehabilitation service delivery and resource planning at the facility level.** While standardized data collection in rehabilitation facilities is still nascent and not yet fully utilized at the national level, rehabilitation facilities can use the DHIS2 to analyze their patient demographics and key service delivery outcomes. These metrics are currently assessed in regular performance review meetings conducted by the MOH, where they review progress towards targets, identify opportunities, challenges, and solutions, and share successes, best practices, and lessons learned with other facilities and relevant stakeholders. However, the metrics can also be used for ongoing resource planning by rehabilitation managers. Training and ongoing mentorship of rehabilitation workers will be central to capacity-building for data analysis and use in facilities.

## Key Learnings from the Pilot Process

Ethiopia's development of rehabilitation indicators and pilot of the rehabilitation data set in the DHIS2 demonstrated pioneering work in developing HMIS for rehabilitation and key learnings for implementation of a DHIS2 data set in low-resource contexts. The following takeaways from the overall process can be considered for future efforts in developing RHIS for rehabilitation:

**Integration of rehabilitation into the HMIS requires multi-stakeholder coordination across government institutions, at the national and sub-national levels, and with facilities managers and rehabilitation workers.**

Rehabilitation is a multi-disciplinary health service, and the development of health information systems requires input and buy-in from a cross-cutting group of stakeholders. As such, the process for piloting a rehabilitation data set in the DHIS2 in Ethiopia involved a wide array of stakeholders. Within the MOH, developing rehabilitation and AT service indicators and ensuring readiness of the DHIS2 platform for the rehabilitation data set required extensive coordination between multiple departments managing the rehabilitation program, broader health planning policies and decision-making, and the health information system in Ethiopia. Furthermore, input from RHBs, providers and professional associations, and rehabilitation facilities was essential for ensuring technical acceptability and feasibility of implementation on the ground.

**Global normative guidance should be applied and contextualized to local settings to accommodate local policy priorities and resource realities.**

The process of integrating rehabilitation and AT indicators in Ethiopia’s HMIS was an iterative one, that relied on global guidance (WHO) and adapted it to the local context. Numerous components of the HMIS—including the prioritized list of indicators, their definitions, and measurement practices—were adapted in accordance with Ethiopian policy priorities, HMIS guidelines, and facility contexts. As a result, the piloted indicators align well with MOH policy and program priorities, can be realistically implemented beyond Accelerator project support and can, over time, be expanded to become a comprehensive resource for national policymaking.

**Infrastructure limitations are a key barrier to overcome for integration of rehabilitation data in low-resource settings.**

Since most rehabilitation centers in Ethiopia had not been included in the health sector until 2020, many lack the necessary electronic equipment and facility standards (e.g., computers, printers, and specific furniture) required to utilize the DHIS2 platform. Other issues may include limited capacity of servers and lack of reliable internet connectivity. While such limitations can be bypassed through manual data collection and reporting with centralized uploading of data into the DHIS2 (as was done in the initial manual data collection phase of the pilot in Ethiopia), this method does not fully integrate rehabilitation data into the HMIS as other areas of health data. MOHs and technical partners should work to mobilize resources to support rehabilitation facilities to meet the basic standards for operating an electronic health information system in order to observe sustained collection, analysis, and use of rehabilitation data.

## Conclusion

The pilot of the rehabilitation data set in the DHIS2 in Ethiopia provided a successful proof of concept for scaling up rehabilitation and AT service data collection to the 30 rehabilitation facilities across the country. Lessons learned may also inform other countries looking to improve their HMIS for rehabilitation, and for technical partners supporting these goals. Ongoing support is needed to bolster the health information system for rehabilitation, including mentorship and supervision of rehabilitation workers using the DHIS2 platform, troubleshooting for infrastructure challenges, and reassessment of useful rehabilitation indicators for planning and resource allocation within the health sector. With the routine analysis and use of this newly collected rehabilitation data, Ethiopia is on the path towards increased evidence-based decision-making to improve rehabilitation services for the population in need.

## Annex 1: Comprehensive final list of indicators

Indicator Name	Definition	Formula	Disaggregation	Source	Reporting Level & Frequency
<b>AT service access</b>	Percentage of rehabilitation service users receiving assistive products among those who sought assistive product provision, categorized by the five categories of assistive products listed in the Ethiopia Assistive Product Priority List (Mobility, Cognition, Communication, Vision, and Hearing)	Total number of clients received assistive products)/ Total number of clients registered to receive AT service *100	Five categories of the Ethiopia APL (Mobility, Vision, Hearing, Communication, and Cognition) Age group (<15 yrs; >15 yrs) Sex	ATS Register and Tally Sheets	Rehabilitation centers and hospitals, Monthly
<b>Waiting time for assistive product provision</b>	Average of days waiting for assistive product provision, for inpatients and outpatients (from the time of first contact with the AP provider to the provision of the product)	Total number of days waiting for assistive product provision, in the reporting period/ # of assistive products provided, in the reporting period *100	Facility type (administrative level of care), Five categories of the Ethiopia APL,	ATS Register and Tally sheet	Rehabilitation centers and hospitals, Monthly
<b>Rehabilitation service utilization</b>	Number of cases utilizing rehabilitation services per 10,000 population, categorized by health condition group	Number of cases that receive rehabilitation services in the facility, in the reporting period/ Catchment Population of the rehabilitation facility/geographic area *100,000	health condition group, sex, age group, IPD/OPD/OR	Rehabilitation register, Tally sheet	Rehabilitation centers and hospitals, Monthly
<b>Rehabilitation referral (referral in)</b>	Percentage of new cases accessing the facility referred in for rehabilitation from another level of health care (regardless of the source)	# of new cases accessing the facility referred for rehabilitation from another level of health care, over the reporting period/ # of	Disaggregated by service provision department (OPD, IPD)	Rehabilitation register	Rehabilitation centers and hospitals, Monthly

		new cases accessing the facility, over the reporting period.			
<b>Rehabilitation reporting completeness</b>	Percentage of facilities designated to report on rehabilitation that routinely collect the required rehabilitation information and report within the DHIS2, which collates and synthesizes data from across health facilities and programs in the district	# of facilities timely reported in the District Health Management Information System/ # of facilities a required rehabilitation data set each month and including it in the District Health Management Information System. *100	None	Rehabilitation registers and tally sheet	Rehabilitation centers and hospitals, Monthly
<b>Rehabilitation service client satisfaction</b>	Number of clients considered satisfied with rehabilitation services received using a scale of satisfied, neutral, and unsatisfied (client considered satisfied with rating of satisfied or neutral)	Satisfaction score with Neutral and Satisfied /Total survey respondents *100	None	Facility survey (Admin report)	Rehabilitation centers, Quarterly

## Annex 2: Rehabilitation dashboard sample visualizations



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- <sup>viii</sup> Guidance for the analysis and use of Routine Health Information Systems - Rehabilitation Module. Geneva: World Health Organization; 2022. License: CC BY-NC-SA 3.0 IGO. Rehabilitation indicator menu: a tool accompanying the Framework for Rehabilitation Monitoring and Evaluation (FRAME), second edition. Geneva: World Health Organization; 2023. Licence: CC BY-NC-SA 3.0 IGO.