

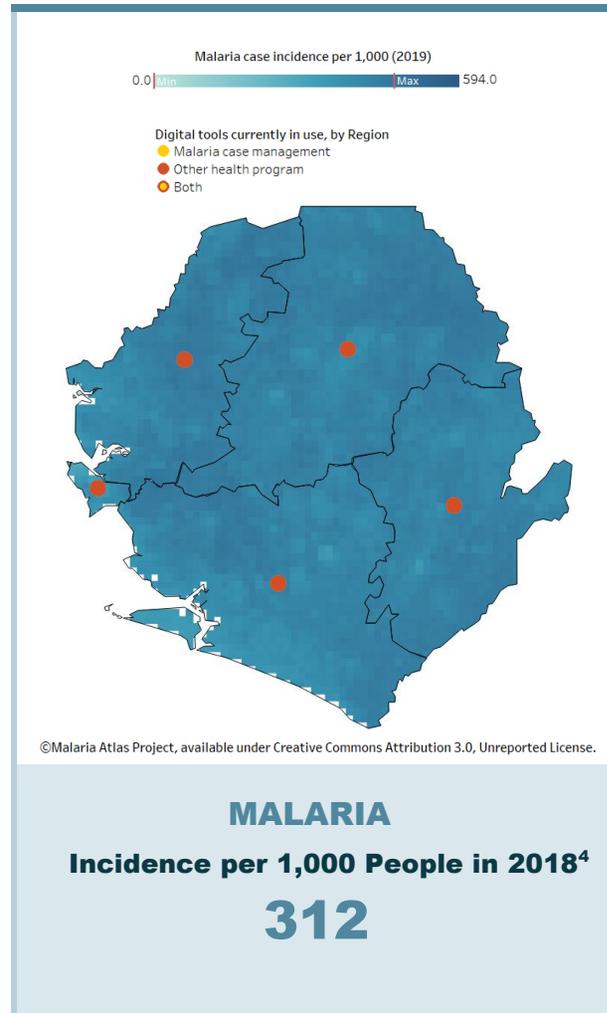
SIERRA LEONE

Executive Summary

Malaria is the leading cause of death in Sierra Leone, despite significant investments in malaria control. Community health workers (CHWs) provide frontline diagnosis and treatment services in villages throughout the country, but malaria incidence remains high.¹

The Ministry of Health and Sanitation (MoHS) introduced a National Digital Health Strategy in 2018 seeking to build the architecture and enabling environment needed to support improved service delivery via digital health. However, neither this plan nor the new National Community Health Worker Strategic Plan includes the introduction of digital tools, and few digital health initiatives have been introduced at the community level. Small pilot projects targeting CHWs and CHW supervisors have not yet been brought to scale or integrated into national data systems. Limited financial resources and weak electrical and network infrastructure in rural areas provide further challenges.²

This profile includes recommendations to improve service delivery for malaria through an increased capacity to collect and use data, unified policies and increased coordination on digital technology, and digital tools that are fit for purpose to support community health in line with government priorities.



MALARIA

Incidence per 1,000 People in 2018⁴

312

PEOPLE

Community Health Worker (CHW)



8,700 CHWs

19 per 10,000 people

GOVERNANCE

National Digital Health Strategy



YES

SYSTEMS

Digital Health Index³



SCORE: 2



Recommended Actions

PEOPLE



Community health workers and other decision-makers

Build MoHS digital health capacity

Support the MoHS in developing and implementing a digital health capacity-building plan, including an assessment of digital training needs at all levels and the development of a training plan and curriculum to build skills in data collection, data for decision-making, and the use of digital tools.

Devolve decision-making for community health to the district level

Support the CHW Hub in developing and implementing a plan to transfer responsibilities for CHW management, particularly those relating to data oversight and feedback, to district level officials, which is needed to streamline and accelerate the decision-making process for community health. Identify responsibilities that can be devolved to the district-level CHW focal person and other key District Health Management Team (DHMT) actors; their capacity to carry out these new duties, given bandwidth constraints; and the specific skills and training they will need, in alignment with the digital health capacity-building plan.

Grow MoHS in-house technical support staff

Support the MoHS in assessing information technology support needs for current and upcoming projects at the central and district levels and develop a costed, sustainable plan

GOVERNANCE



Strategies and policies

Harmonize MoHS digital and monitoring and evaluation (M&E) policies, including for malaria

Support the MoHS in reviewing and harmonizing digital health and M&E policies to provide unified guidance and standards for the collection and management of health data and ensure these policies include guidance and standards for community health data. With the M&E policy for managing digital health projects and digital data collection currently in development, ensuring consistency across different policies is needed to streamline procedures and avoid parallel systems.

Pursue diversified funding for digital health

Support the MoHS in conducting a stakeholder mapping exercise to identify potential funding partners for digital health beyond traditional donors, including from public-private partnerships and social enterprises. After identifying potential partners, develop a roadmap to diversify funding, including domestic funding commitments for priority areas, such as CHW incentives. This roadmap can also include funding strategies for the enabling infrastructure needed to support digital health, such as solar panels and generators.

Improve digital tool coordination and prioritization

Support the National eHealth Coordination Hub in developing a strategic plan and

SYSTEMS



Processes and digital tools

Develop standardized metrics to assess CHW digital tool pilots

Support the MoHS, CHW Hub, and Directorate of Policy, Planning and Information (DPPI) in drafting comprehensive user requirements for CHW digital tools. These user requirements are intended to provide a common framework for measuring how well existing and future tools align with identified needs in terms of functionalities, user experience, and interoperability, among other factors.

to increase its information technology staff. Although the number of digital health initiatives is growing, the MoHS does not have sufficient personnel to maintain current systems and provide technical support. By building internal capacity and reducing reliance on outside consultants and partners, the MoHS will be better equipped to take ownership of digital tools and sustainably scale up successful pilots.

implementation strategy for the coordinated introduction of digital tools across health programs, including for community health. Although a National Digital Health Strategy was introduced in 2018, the existing strategy focuses on the governance and architecture necessary to support digital health rather than the strategic introduction and rollout of digital tools themselves. This strategic plan will support better coordination among implementing partners and greater alignment with government priorities for digital health.

Identify opportunities for digital health knowledge partnerships

Support the MoHS in developing a partnership plan to support digital health efforts by carrying out a technical gap assessment to identify needed technical expertise and mapping specific partners who could provide support in each identified area. This plan can be developed in alignment with the diversified funding plan to benefit from complementarities among potential funding and technical partners.

Methodology

The Sierra Leone country profile was developed through the following process: conducting a desk review; deploying an online survey focused on the digital tool landscape; executing key informant interviews with experts in digital health, community health, and malaria; and establishing a workshop to validate findings and prioritize recommended actions. Due to COVID-19, most interviews were conducted virtually, and the workshop was conducted in a hybrid format (socially distanced in-person participants), coupled with virtual access for an online attendee. (Consult Appendix C for a list of key informants interviewed and workshop participants. Consult Appendix D for detailed information on the online digital tool survey results.)



Information collected through the methods described above was categorized according to key components within three domains: people, governance, and systems. These domains and their underlying components were informed by an [existing maturity model](#) and adapted to incorporate malaria-specific content. The components include personnel, training, and technical support (“People”); policies, strategies and governance structures, and their implementation (“Governance”); and data flow, digital tool structures, functionalities, and use (“Systems”). Together, these components describe the *desired state* for CHW use of digital tools for malaria case management, a state in which community health programs can leverage digital tools to generate and use data that improve malaria programming with the ultimate aim of decreasing the local malaria burden.

PEOPLE 

People highlights the CHWs, supervisors, information technology support staff, and other decision-makers that contribute to effective use of digital tools and data in malaria community health programs.

GOVERNANCE 

Governance describes the national strategies and policies that provide the framework for community health programs’ use of digital tools for malaria, and their implementation.

SYSTEMS 

Systems describes the processes and digital tools that enable community health platforms to effectively use digital technology and data to strengthen malaria and other health programs.

People



CHWs in Sierra Leone work in the catchment area surrounding community health facilities, known as Peripheral Health Units (PHUs). As part of a standardized package of services, they administer rapid diagnostic tests, treat positive cases with artemisinin-based combination therapy, and distribute insecticide-treated bed nets during annual campaigns. CHWs refer pregnant women to health facilities for intermittent preventive treatment of pregnant women and, in some cases, provide sulfadoxine-pyrimethamine directly. While all CHWs test and treat malaria in people of all ages according to the national CHW training protocol, only CHWs in hard-to-reach areas (primarily those greater than 5 km from a PHU) provide integrated community case management to assess and treat pneumonia, malaria, and diarrhea in children between the ages of 2 and 59 months. CHWs are supervised by peer supervisors located at the PHU. Partners supporting CHWs' malaria activities include the U.S. President's Malaria Initiative (PMI), the Global Fund, Gavi, and the World Bank.

The CHW Hub, under the direction of the Directorate of Primary Health Care (DPHC), is responsible for coordinating all CHW activities. The CHW Hub, along with DHMTs (including CHW focal persons), plan, coordinate, and implement community health programs at the district level. Approximately 15,000 CHWs are currently active; however, this number will be reduced to 8,700 under the new CHW policy, which should be launched in 2021. At that time, a new recruitment process will go into effect, and all current CHWs will have to meet new recruitment criteria and undergo updated training to maintain their position. Per government policy, CHWs are considered volunteers however some receive a small monthly stipend (payment varies by cadre), as well as reimbursement for some training expenses.

Community health worker digital readiness

CHWs typically have low levels of education and limited experience using technology. Although previous recruitment criteria only required CHWs be able to read and write, the new CHW policy sets minimum education standards. Nevertheless, digital tools need to be designed to take into account CHWs' current skill level. The preservice training curriculum is standardized and includes 20 days of classroom training, followed by 5 days of field training, along with refresher training scheduled every two years. Despite demonstrated need, no regular refresher training is provided for data collection and compilation. No training on digital tools or electronic data collection is included in preservice training requirements for CHWs; however, training on digital health tools has been provided for small numbers of CHWs and supervisors as part of pilot projects. The MoHS does not have enough technical staff to develop and maintain current health data systems and, as a result, relies heavily on local partners and outside consultants. All staff providing technical support for the District Health Information System 2 (DHIS2) and other tools are located at the central level, though district-level M&E officers are trained to use DHIS2.

8,700 Community health workers in country	Compensation Policy: VOLUNTEER
8,700 Providing malaria community case management	Compensation Policy: VOLUNTEER

Data-driven decisions at each level of health system

The DPPI coordinates data collection and analysis at the central level, and manages Sierra Leone’s Health Management Information System, DHIS2, where disease surveillance, health program, and service delivery data are collected and aggregated. Most analysis and use of data for decision-making occur at the central level, and in-depth analysis of community data is rare. Monitoring and evaluation of the community health program is uncoordinated and irregular.

NATIONAL LEVEL	National-level decisions are based on data stored in DHIS2, which is used by national programs, including malaria, and the DPPI. Program M&E officers, program managers, directors, and other senior officers at the DPPI and the different health programs and directorates have access to DHIS2 and use data to make decisions on topics such as coverage and address data gaps at the district or community level. Data review meetings should take place quarterly, but in practice the frequency of these meetings depends on the availability of funding.
DISTRICT LEVEL	During monthly meetings, DHMTs and partners analyze and share data for decision-making at the district, PHU, and community levels. Decisions related to integrated community case management made at the district level relate to the coverage of communities, types of cases encountered, and ways to respond to implementation challenges. This information can indicate the need for immediate supervision or refresher trainings, which are usually led by the national-level team. DHMT district medical officers, M&E officers, and surveillance officers have direct access to DHIS2, and districts review community and PHU data before they are entered in DHIS2. District pharmacies collect commodity orders from PHUs for centralized orders to the National Medical Supply Agency.
HEALTH FACILITY LEVEL	Facility-level decisions are made at the PHU during monthly meetings with the facility staff, peer supervisors, CHWs, and the CHW Focal Person, who is based at the district office and works with the CHW Hub to coordinate CHW activities in the district. They meet to integrate and analyze data, identify needs, and solve problems together. Typical decisions at this level involve determining population coverage, identifying catchments with higher rates of malaria, and following up on areas that have been poorly covered. The PHU also orders commodities based on local population, as well as on consumption data received from CHWs.
COMMUNITY LEVEL	Community structures support the PHU in-charge and CHWs to make decisions at the community level. Village Development Committees work with the PHU in-charge and CHWs to identify and implement village health priorities, while Facility Management Committees oversee local health facilities, particularly in regard to commodity oversight. Decisions such as which cases to follow up and which catchments to visit are made by CHWs. No formal data quality and validation processes exist at the community level.

Governance



	DIGITAL	COMMUNITY HEALTH	MALARIA
Name	Sierra Leone National Digital Health Strategy	National Community Health Workers' Policy	Sierra Leone Malaria Control Strategic Plan
Current strategy dates	2018–2023	2021 <i>currently being finalized</i>	2016–2020
Coordinating body	Sierra Leone National eHealth Coordination Hub	CHW Hub	National Malaria Control Program (NMCP)
Funding strategy	Yes	Planned	Yes

The National eHealth Coordination Hub, an interministerial body hosted at the DPPI, coordinates and regulates digital health deployment in Sierra Leone. The DPPI hosts all data systems within the MoHS and coordinates digital tool implementation at all levels. Sierra Leone’s current National Digital Health Strategy focuses on building systems and infrastructure for digital health—including governance, standards, policy and legislation, and funding strategies—rather than specific digital tools or program areas. As such, no specific community health or malaria initiatives are mentioned, but CHWs are explicitly included as stakeholders in the implementation plan. An M&E policy is currently under development to guide the digital tool development process for community health.

The CHW Hub, which is part of the DPHC, manages community health implementation. Though some responsibilities have been decentralized to the district level, most decisions on community health programs are still concentrated at the central level. The MoHS, DPHC, and CHW Hub are currently finalizing the new CHW policy, which will update recruitment criteria, standardize program activities, and reduce the total number of CHWs. While the new policy mentions the importance of data and technology to improve health care delivery at the community level, no specific digital health tools or activities are addressed. Both the NMCP and DPPI are on the CHW Hub steering committee to promote coordinated policy on malaria control and digital health.

Community health and CHWs are a core component of Sierra Leone’s most recent Malaria Control Strategic Plan. One objective of the plan focuses on improving malaria reporting through strategies such as improving malaria data collection through DHIS2 and strengthening capacity to use data for decision-making; however, no specific strategies for improving data collection and use by CHWs are proposed, and the plan does not include the use of digital tools.

GOVERNANCE

Policies define digital health and health data governance roles, responsibilities, and structures.

The National eHealth Coordination Hub provides regulatory and operational guidance for digital health in Sierra Leone and manages implementation of the National Digital Health Strategy. Standard operating procedures for the National eHealth Coordination Hub define procedures for approval, deployment, and scaling of digital health projects, as well as its governing structure. An eHealth working group includes representatives from the different directorates and programs, including malaria, and can set up technical working groups or subcommittees to address specific issues, as needed.

DATA MANAGEMENT

Policies provide specifications for data access, privacy, security, and confidentiality and outline stipulations for data sharing.

No law currently exists for the protection of personal data or data security (storage, transmission, use). In addition, there are no protocols, policies, frameworks, or accepted processes governing the clinical and patient care use of connected medical devices and digital health services (e.g., telemedicine, applications).

STANDARDS AND INTEROPERABILITY

Policies describe an enterprise architecture, normative standards—such as health information standards—and digital identity.

No enterprise architecture or standards related to interoperability currently exist. However, the 2018–2023 National Digital Health Strategy includes plans to develop architecture, standards, and other documentation to support interoperability. Standard operating procedures and data-sharing guidelines define what processes must be followed by implementing partners and the Government of Sierra Leone when introducing digital tools. The 2018 Health Management Information System roadmap also committed MoHS and partners to making DHIS2 the common platform for digital tools.

INFRASTRUCTURE

Policies define data hosting and storage (e.g., local or cloud), mobile device management, and telecommunications access.

No plan has been articulated to support digital health infrastructure (including equipment such as computers, tablets, phones, software, etc.), provision, and maintenance.

WORKFORCE

Policies describe workforce job structures and descriptions, plans for training, digital literacy expectations, and incentives for digital adoption.

The DHMT maintains a database of all active CHWs in the district and the trainings they have undertaken, and the revised 2021 CHW policy outlines requirements for CHWs and their scope of work. The MoHS Human Resources Directorate manages the integrated Human Resource Information System (iHRIS), which currently includes basic information for more than 80 percent of the health workforce.



Data flow

At the community level CHWs collect data using paper registers. CHW peer supervisors collate and verify the data, which are then submitted to the PHU in-charge at monthly meetings. The PHU in-charge submits the paper reports to the CHW Focal Person on the DHMT, who checks data quality. After review, the data are entered in DHIS2 by the district-level M&E officer. The electronic data in DHIS2 are available for government officials at both the district and national levels who have appropriate access credentials, but officials at the PHU do not have access. The NMCP has access to malaria data via DHIS2, which has a customized malaria module and uses a national integrated supervisory checklist. Although CHWs do not receive feedback on their data consistently, when this process happens, it involves PHU in-charges' receiving feedback from the DHMT at monthly meetings and then passing feedback along to peer supervisors, who share the information with CHWs to improve their interventions in the community.

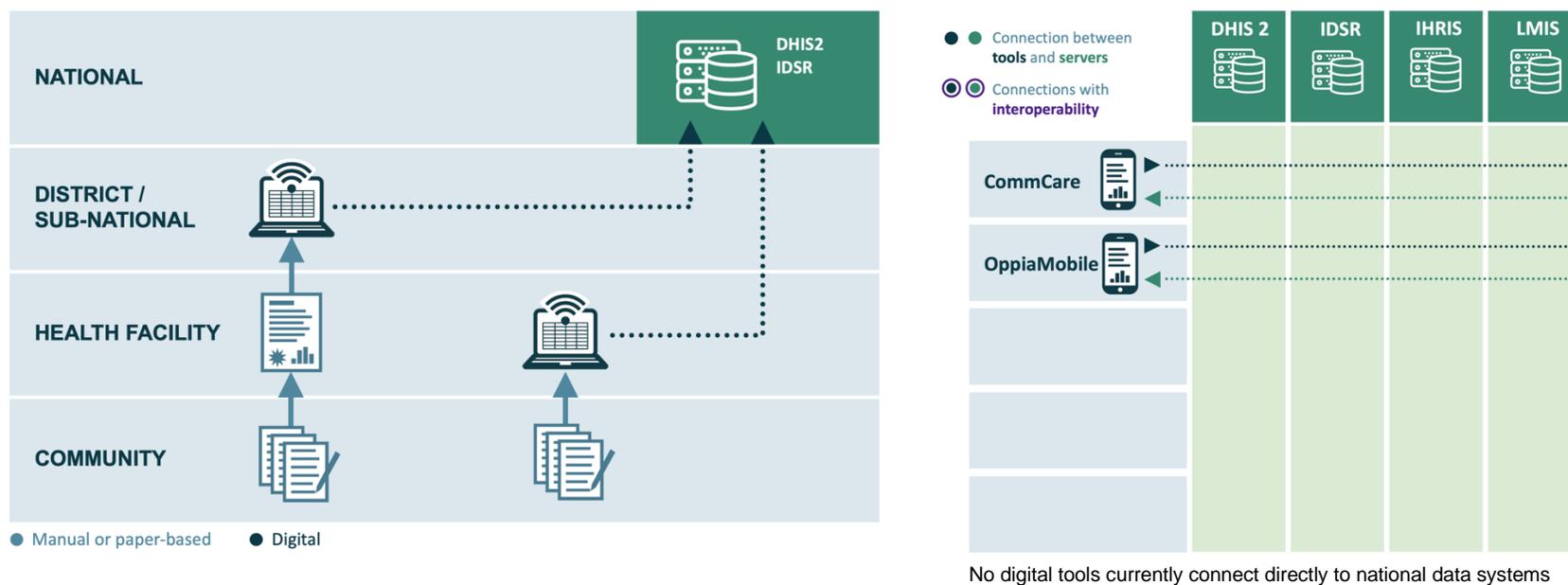
Surveillance data are collected via a separate process. The electronic Integrated Disease Surveillance and Response system (eIDSR) is available in almost 80 percent of all health facilities so that facility in-charges can input data directly into the system via tablets. The eIDSR is mostly used for disease surveillance, including for malaria, while DHIS2 collects broader health program and service delivery data. Staff at the DPPI and district M&E and surveillance officers have access to eIDSR. District officers check eIDSR data weekly and contact the PHU when actions are needed in response to the surveillance data reported. The eIDSR flows automatically to DHIS2, with malaria case counts available on a weekly basis in DHIS2. Even though surveillance data in DHIS2 should be identical to data from eIDSR, data reported from the two sources are often different.

Partners operating within districts are supposed to submit reports to the district facility so that their data can be incorporated into the national system via DHIS2. In practice, however, data from implementing partners often get reported vertically to national officials. For example, some partners that have piloted digital data collection tools maintain their own databases, analyze these data internally, and then report their data directly to national bodies as their tools are not interoperable with DHIS2.

The lack of widespread electronic data collection at the community level impacts data quality in a variety of ways. It provides opportunities for human error in the compilation and aggregation of CHWs' paper forms. Frequent delays in electronic data entry impact the timeliness of data reporting, as district M&E staff have competing priorities and may enter data late. Data security also cannot be maintained as paper records pass through many hands.

Data are collected by CHWs in paper registers. CHWs compile data in paper reports that are shared with the health facility. CHW reports are collated at the health facility level, and the paper report is shared with the district. These reports are entered into DHIS2 at the district level, and the data flow to the national level electronically via DHIS2. Surveillance data are entered into eIDSR at the facility level and flow to the district and national levels electronically. No digital tools introduced for community health programs have been interoperable with national systems. Data collected via digital tools by CHWs or supervisors are stored in siloed databases and shared directly with national programs outside the official system.

While multiple data systems are operational in Sierra Leone—including DHIS2, eIDSR, iHRIS, and electronic logistics management information system—these tools are not currently interoperable.



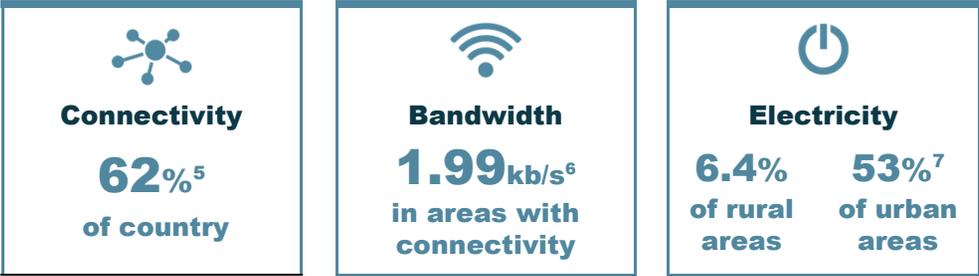
Abbreviations: DHIS2, District Health Information System 2; IDSR, Integrated Disease Surveillance and Response; iHRIS, integrated Human Resource Information System; LMIS, logistics management information system.

Digitally enabling infrastructure

Access to electricity is severely limited in Sierra Leone, particularly in rural areas where over half of the population lives.⁸ As of 2018, 26 percent of the total population had access to electricity, including only 6 percent of the rural population.⁹ Lack of a sustainable power supply is a significant challenge in almost all health facilities. More than half of PHUs have access to solar-generated power but only for the refrigerators that store vaccines.

Although the total number of mobile cellular subscription equaled 88 percent of the population as of 2019,¹⁰ the actual number of subscribers is lower, as many individuals have multiple

subscriptions on different networks. Orange has the widest network coverage in the country, but overall network coverage is poor, and only 62 percent of the population lived in an area covered by a 3G network in 2020.¹¹ Additionally, only 25 percent of the population (1.99 million) used the Internet in 2020, primarily via mobile devices.¹² Digital tools for community health programs need to be designed to accommodate these network limitations.



Digital health tools in use and functionality

Sierra Leone has an emerging landscape of digital tools to assist both health workers and their managers in improving their health skills and data collection methods. Digital tools introduced for community health include CHW training tools, CHW data capture tools, and supervision tools. CommCare, active in Kono and Tonkolili Districts, is the only comprehensive tool to support CHWs in decision-making, referrals, and follow-up. It is used not by CHWs but by peer supervisors, who use tablets to enter data collected by CHWs on paper. Other prominent tools for community health include OppiaMobile, the CHW Community Health Academy digital tool which is currently in the process of development and is implemented by Last Mile Health, and the PowerBI Dashboard, launched by Save the Children, which has been piloted in Kailahun and Pujehun regions.

A major challenge with tools introduced thus far is their lack of alignment with the existing national data system. The Government of Sierra Leone strongly promotes a digital health ecosystem centered on DHIS2, with all tools introduced for community health feeding into this system. To ensure government buy-in and the sustainability of digital tools following tool handover, interoperability with DHIS2 needs to be a primary consideration in tool selection and design.

USE CASE(S)	OppiaMobile ¹³	COMMCARE
Providing malaria community case management	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tracking malaria proactive and reactive case detection	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Tracking malaria screening with referral	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Transmitting messages to community on malaria	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Training health workers	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

USE CASE(S)	OppiaMobile ¹³	COMMCARE
Tracking routine LLIN distribution during ANC or EPI visits	<input type="checkbox"/>	<input checked="" type="checkbox"/>

■ = Current use ■ = Possible, but not currently in use □ = Does not meet use case

CASE MANAGEMENT FUNCTIONALITIES	Oppia Mobil	COMMCARE
Aggregate case reporting and analytics Tool collects aggregate case data and has data analytic functions in tool or online	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Individual case entry and analytics (<i>important in low-burden or elimination settings</i>) Tool collects individual case data and has data analytic functions in tool or online	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Case geolocation (<i>important in low-burden or elimination settings</i>) Tool allows collection or use of geospatial data for individual cases	<input type="checkbox"/>	<input type="checkbox"/>
Interoperability with HMIS Tool sends information to the official national health information system	<input type="checkbox"/>	<input type="checkbox"/>
Offline capability Tool functions, at least partially, offline	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

MANAGEMENT & SUPERVISION FUNCTIONALITIES	OppiaMobil	COMMCARE
CHW identification Tool uniquely identifies CHWs	<input type="checkbox"/>	<input type="checkbox"/>
CHW catchment location Tool identifies CHWs associated position in org unit hierarchy/ link to health facility/system	<input type="checkbox"/>	<input type="checkbox"/>
CHW performance analytics Tool has analytic functions (data validation, graphs, charts) that support data quality, quality of care, or other performance issues	<input type="checkbox"/>	<input type="checkbox"/>

MANAGEMENT & SUPERVISION FUNCTIONALITIES

OppiaMobil

COMMCARE

Communication

Tool allows two-way communication between peer groups, associated health facilities, or supervisors



= Current functionality = Possible, but functionality not currently in use = Does not have functionality

Abbreviations: ANC, antenatal care; CHW, community health worker; EPI, Expanded Program on Immunization; HMIS, Health Management Information System; LLIN, long-lasting insecticidal net.

Appendices

APPENDIX A ► **References**

APPENDIX B ► **Abbreviations**

APPENDIX C ► **Contributors**

APPENDIX D ► **Community digital health tools**

APPENDIX E ► **Next-generation tool functionalities for malaria case management**



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APPENDIX A

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APPENDIX B

Abbreviations

ANC	antenatal care
CHW	community health worker
DHIS2	District Health Information System 2
DHMT	District Health Management Team
DPHC	Directorate of Primary Health Care
DPPI	Directorate of Policy, Planning and Information
eIDSR	electronic Integrated Disease Surveillance and Response
EPI	Expanded Program on Immunization
HIV	human immunodeficiency virus
HMIS	Health Management Information System
iHRIS	integrated Human Resource Information System
LLIN	long-lasting insecticidal net
LMIS	logistics management information system
M&E	monitoring and evaluation
MoHS	Ministry of Health and Sanitation
NGO	Non- Governmental Organizations
NMCP	National Malaria Control Program
PHU	Peripheral Health Unit
PMI	U.S. President's Malaria Initiative
UNICEF	United Nations Children's Fund

APPENDIX C

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Community Health Access and Financing – Sierra Leone

DPHC / CHW Hub

International Rescue Committee

DPHC / CHW Hub

Global Fund

DPHC / CHW Hub

Ministry of Health and Sanitation (MoHS) – Tuberculosis

World Health Organization

Directorate of Science, Technology, and Innovation

DPHC/MoHS

DPHC/MoHS

DPHC / CHW Hub

District Medical Officer, District Health Management Team / MoHS, Kailahun District

World Vision International

Centers for Disease Control and Prevention

BBC Media Action

Population Services International – IMPACT Malaria

DPHC/MoHS

UNICEF

Catholic Relief Services

Monitoring and Evaluation Specialist, Directorate of Policy, Planning and Information, MoHS

African Field Epidemiology Network

DPHC/MoHS

District Medical Officer, District Health Management Team – MoHS, Bonthe District

Last Mile Health

PM-HIV/AIDS, MoHS

DPHC/CHW Hub

DPHC/CHW Hub

DPHC/CHW Hub

FOCUS 1000

National Malaria Control Program (NMCP/ MoHS)

Mr. Andrew Tholley
Mr. Samuel B. Tommy
Mr. Patrick Trye
Mr. Albert Vandy
Dr. Alie Wurie

Concern Worldwide
NMCP/ MoHS
Save the Children International
DPHC/CHW Hub
DPHC/MoHS

APPENDIX D

Community digital health tools*

Name of Tool	Type of Digital Health Intervention†	Implementer (Funder)	Scale	Malaria Use Case
Oppia Mobile Community - Health Academy Digital App	<p>2.8 Healthcare provider training</p> <p>3.1 Human resource management</p>	Ministry of Health and Sanitation, Last Mile Health (Last Mile Health)	National Level 5,000 users	Training of health workers
CommCare	<p>1.1 Targeted client communication</p> <p>2.1 Client identification and registration</p> <p>2.3 Healthcare provider decision support</p> <p>2.5 Healthcare provider communication</p> <p>2.8 Healthcare provider training</p>	World Vision, Ministry of Health and Sanitation (World Vision International, European Union, Irish Aid)	Subnational 1,011 users 7 districts	<p>Malaria screening with referral</p> <p>Routine LLIN distribution during antenatal care (ANC) or Expanded Program on Immunization (EPI) visits</p> <p>Malaria active or reactive case detection (visiting communities to find additional cases)</p> <p>Communication/messaging to community on malaria</p> <p>Training of health workers</p>

*Data that come from the survey have not been independently validated aside from tools featured within the profile.

†See: World Health Organization (WHO). [Classification of Digital Health Interventions v1.0](#), Geneva: WHO; 2018.

APPENDIX E

Next-generation digital health tool functionalities for malaria case management

CASE MANAGEMENT FUNCTIONALITIES	OppiaMobile	COMMCARE
Notifications Tool sends and receives notifications	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Stock reporting & analytics Tool collects stock data and has analytic functions to support stock and logistics data analysis and decision-making	<input type="checkbox"/>	<input type="checkbox"/>
Interoperability with other national health systems Tool sends information to other national systems (iHRIS, LMIS, etc.)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Referral coordination Tool allows CHW to notify local health facility of referrals and track them	<input type="checkbox"/>	<input type="checkbox"/>
Scheduling & work planning Tool allows CHW to plan and schedule key activities in the community	<input type="checkbox"/>	<input type="checkbox"/>
MANAGEMENT & SUPERVISION FUNCTIONALITIES	OppiaMobile	COMMCARE
Decision support Tool provides algorithms or checklists to guide CHW service provision	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Training materials & resources Tool provides access to training materials, policies, or other useful reference documents	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
CHW geolocation Tool allows collection or use of CHW geolocation data for monitoring and planning distribution	<input type="checkbox"/>	<input type="checkbox"/>
Supervision Tool can be used by supervisors to assess CHW skills and capacity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

= Current functionality
 = Possible, but functionality currently not in use
 = Does not have functionality

Abbreviations: CHW, community health worker; iHRIS, integrated Human Resource Information System; LMIS, logistics management information system

