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Maternal and Child
Survival Program

Africa Regional Workshop on Improving Routine Data for Child Health in National Health Information Systems Workshop Report



MCSP is a global USAID initiative to introduce and support high-impact health interventions in 25 priority countries to help prevent child and maternal deaths. MCSP supports programming in maternal, newborn, and child health, immunization, family planning and reproductive health, nutrition, health systems strengthening, water/sanitation/hygiene, malaria, prevention of mother-to-child transmission of HIV, and pediatric HIV care and treatment. MCSP will tackle these issues through approaches that also focus on household and community mobilization, gender integration, and digital health, among others.

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Acronyms

APE	Polyvalent Elementary Agent
CHIS	Community Health Information System
CHW	Community Health Worker
DHIS2	District Health Information System 2
DRC	Democratic Republic of Congo
HDC	Health Data Collaborative
HIS	Health Information System
HMIS	Health Management Information System
HNQIS	Health Network Quality Improvement System
HRIS	Human Resource Information System
iCCM	Integrated Community Case Management
IMCI	Integrated Management of Childhood Illness
LMIS	Logistics Management Information System
MCS	Malaria Case Surveillance
MCSP	Maternal and Child Survival Program
M&E	Monitoring and Evaluation
MOH	Ministry of Health
MONITOR	Mother and Newborn Information for Tracking Outcomes and Results
NHMIS	National Health Management Information System (Nigeria)
OpenSRP	Open Smart Register Platform
RMNCAH	Reproductive, Maternal, Newborn, Child and Adolescent Health
SDGs	Sustainable Development Goals
SIS-MA	Sistema de Informação para Saúde de Monitoria e Avaliação (Health Information System for Monitoring and Evaluation – Mozambique’s HMIS)
SMS	Short Message Service
USAID	United States Agency for International Development
VHT	Village Health Team
WHO	World Health Organization

Key Takeaways

In September 2017, USAID, in collaboration with the Maternal Child Survival Program (MCSP), convened the **Africa Regional Workshop on Improving Routine Data for Child Health in National Health Information Systems** to advance the availability, accessibility, quality, and use of child health and nutrition data within national health information systems. More than 90 participants from 15 countries gathered in Johannesburg, South Africa, to reflect on the current state of routine child health and nutrition data systems, share lessons learned, and identify recommendations to scale up successful models and approaches.

Participants (including government officials, researchers, donors, and implementing partners) outlined **nine key takeaways** from the workshop.

1. Norm-setting international actors, including WHO, large donors, and/or global initiatives (such as Mother and Newborn Information for Tracking Outcomes and Results [MONITOR]) should develop **global guidance on routine child health and nutrition indicators, definitions, and data sources** for national decision-makers to develop more effective and efficient health information systems. Indicators must be aligned with [pediatric quality of care standards and indicators, launched in April 2018](#).
2. The **selection of child health and nutrition indicators** within national health information systems should be harmonized across the health sector to reduce reporting burden and avoid duplication of efforts. New indicators may be required for international reporting and tracking in the era of Sustainable Development Goals (SDGs) and emerging interventions.
3. An effective **national health information system (HIS)** requires governance, leadership, management and coordination, human resource capacity-building, and integration and interoperability of systems. Each of these factors should be addressed by any national or international institution- or capacity-building program.
4. Countries should ensure that electronic and paper-based HISs are **interoperable and integrated** with each other.
5. Country HISs should use innovative and available **digital technology solutions** to reduce fragmentation and the burden of data collection. Digital systems can evolve more quickly and efficiently than paper-based systems to changes in indicators or clinical protocols.
6. National programs, with donor support, need to make **investments in people and standardized procedures**, without which HISs cannot succeed. These investments should include salaries, ongoing training, and support to follow standard operating procedures and should focus on increasing not just the production of quality data, but its analysis and use for program improvement at national and subnational level.
7. Country leaders should use **data scorecards and other dashboards to monitor child health and nutrition program** performance and engage political leaders.
8. Complex and diverse **community-based health programming** poses opportunities and challenges unique to each country context. Integration of community **health data into the national HIS** requires government ownership of community health information systems, strengthening community engagement, managing reporting burden, and building capacity of community health workers (CHWs).
9. Community health data should be an **integral part of any national HIS**. Governments need to be fully involved in community HIS design and implementation and in community engagement. Program managers need to **balance the reporting burden and motivate and build the capacity of CHWs**. Community data should be fed back to facilities and communities on an ongoing basis for analysis and use.

Overview

To deliver high-quality facility- and community-based child health and nutrition services, robust HISs are necessary to routinely collect data, monitor and evaluate progress, and make program management decisions. Although household and facility surveys provide essential information, they are typically only conducted every few years, making routinely collected data critical to the ability of health managers and providers to continuously plan, manage, and track health services at the facility and community levels.

Box 1: Global Landscape of Child Health Programming in the SDG Era

Significant reductions in under-five mortality were achieved during the Millennium Development era by targeting the major causes of child deaths, such as diarrhea, malaria, measles, and pneumonia. Despite this success, the agenda to end preventable deaths is unfinished, especially in the Africa region. The need to strategically use routine data is ever growing, moreover, as the child health landscape shifts during this era of the Sustainable Development Goals (SDGs) and the epidemiology and evidence for child health continue to evolve. Issues such as child nutrition (both undernutrition and overnutrition), early childhood development, and non-communicable causes of death are also emerging as priorities.

The SDGs expand this earlier focus on child survival to encompass a broader “Survive, Thrive, and Transform” agenda, which includes the health and well-being of children (thrive), the ability to expand enabling environments (transform), and the needs of children older than five years of age. In this new SDG era, programs will need to use life-course, equitable, and multisectorial approaches, supported by timely, quality data, to ensure that all children reach their full potential.

For more information on the global landscape of child health, please see [WHO's presentation](#).

In the SDG era, the global landscape of child health programs is shifting to ensure that children are able to survive, thrive, and transform (Box 1). [United States Government investments, for example, have focused on reducing child mortality, expanding equitable access to quality care, and laying the groundwork for healthy growth and development](#), as well as on using holistic, systems-based, and often integrated approaches to best serve this need. These health investments link with other USAID global health areas and with other sectors that advance thriving and transformation. Numerous other [global initiatives exist to coordinate global and country efforts to reduce child mortality and improve child health and nutrition](#), including the expansion of the iCCM Task Force into a broader Child Health Task Force. [There are also many efforts to strengthen child health and nutrition data](#), such as the [Health Data Collaborative \(HDC\)](#) and the MONITOR network. The shifting child health agenda and renewed emphasis on measurement provided an opportune time for country and global experts to converge in September 2017 at the **Africa Regional Workshop on Improving Routine Data for Child Health in National Health Information Systems** in Johannesburg, South Africa, to exchange experiences and further advance learning.

This workshop brought together over 90 participants from 15 countries (see Annex A for participant list) to discuss how countries can ensure that ***child health and nutrition data are available, accessible, of high quality, and used for real-time program management***. Throughout three-and-a-half days of presentations, discussions, and working group meetings, participants identified gaps in country systems, explored approaches to address those gaps, and developed a common vision for a fully realized national HIS that can achieve this goal (Box 2). This report presents country experiences and suggestions to accelerate progress toward strengthening routine national health information systems across the **three key themes** of the workshop: 1) indicators and data elements; 2) HIS strengthening; and 3) community health information systems. Country delegations from the Democratic Republic of Congo (DRC), Ethiopia, Mozambique, Nigeria, Uganda, and Zimbabwe also developed country-specific action plans that articulated priorities across these three thematic areas, as well as digital solutions, and defined actions and resources

Our work this week with country delegations has been especially helpful, revealing concrete partnership opportunities to support countries in moving their action plans forward.

-Nefra Faltas (USAID Washington)

needed to respond to these priorities (Annex B). All workshop materials are available at <http://ccmcentral.com/child-health-routine-data-workshop-2017/>.



Box 2: Ideal features of a national HIS where child health and nutrition data are available, accessible, of high quality, and used for decision-making

- Appropriate child health and nutrition indicators are defined and collected in national systems.
- Indicators are harmonized across community, facility, and other information systems.
- Sufficient resources for infrastructure, training, and ongoing support are committed to national HIS.
- Facility-based reporting systems are operational* and fully deployed at all levels** of the health system and in all geographic areas of the country.
- Community-based reporting systems are operational,* fully deployed in all geographic areas of the country, and integrated into the national HIS.
- Other systems, such as a logistics management information system (LMIS), are fully deployed.
- Standardized procedures are in place to ensure data completeness and quality.
- One-time data entry (as opposed to duplicative or multiplicative).
- Up-to-date inventory of country eHealth systems maintained.
- Policies and standard practices of eGovernance system developed.
- Data generated as byproduct of effective, client-centered digital solutions.
- Data-sharing and feedback mechanisms facilitated by interoperability between information systems, such as community and facility HMIS, LMIS, and the Human Resource Information System (HRIS).
- Data provided, analyzed, and acted on at national level.
- Data provided, analyzed, and acted on at subnational level.
- Data provided, analyzed, and acted on at community level.
- Data from private sector integrated into national systems.

**Operational includes training and capacity-building of staff and health workers, standard operating procedures, data software, and management procedures defined.*

***Capturing data from primary, secondary, and tertiary health facilities.*

Child Health and Nutrition Indicators and Data Elements

To improve data availability, accessibility, quality, and use, country program leaders must first identify what they want to achieve by collecting child health and nutrition indicators. Specific data elements must be collected to calculate standard indicators that are used to improve the delivery and monitor the quality of services, make management decisions, and measure progress toward goals at the subnational and national levels. Monitoring at the global level requires well-defined standard indicators to ensure that global initiatives can consistently monitor progress across countries.

Global guidance and efforts for child health and nutrition data and indicator definitions

There is global guidance on indicators specific to child health and nutrition. However, many of the child health indicators require household or facility surveys, and very few are amenable to collection through routine HIS. Denominators for the standard indicators for the management of child illness (such as *proportion of children with diarrhea receiving oral rehydration solution (ORS)*, or *proportion of children with suspected pneumonia taken to an appropriate health care provider*) are challenging to calculate because, unlike surveys, routine HIS cannot capture the population of sick children in a given period. Many of the interventions essential to achieve the World Health Assembly nutrition targets could be tracked using routine HIS. However, limited global guidance currently exists for standard indicator definitions or data collection methods for routine monitoring of child health and nutrition services.

Global initiatives such as the HDC (under the leadership of WHO) are working to improve the quality of child health and nutrition data available through routine HIS. WHO is also developing a training tool for the analysis and use of facility data, including a reproductive, maternal, newborn, child, and adolescent health (RMNCAH) module. Additionally, [the MONITOR group at WHO](#) is mapping existing indicators for maternal and newborn health; developing a framework for collection and measurement; and identifying gaps in measurement. MONITOR aims to provide strategic advice to global and country teams engaged in maternal and newborn measurement and accountability. [UNICEF is developing global guidance for standardized routine nutrition indicators](#) that will ideally be integrated into existing HMIS tools, programmed into District Health Information System 2 (DHIS2) modules, and visualized using standard templates.

We probably had not tracked the number of child health indicators we are reporting on. If you had asked me how many indicators for child health Uganda tracks, I would not have that figure available. The presentations showed there are so many indicators being tracked by different groups, but we have been asked to seriously consider how those indicators relate to what we are trying to achieve as a nation, and how are they contributing to the global agenda. This is one area we want to take back home and prioritize.

-Dr. Sarah Naikoba (MCSP Uganda)

This workshop was important to bring people who know data and people who know child health and nutrition programs together and ask, what is it that you really need from a routine HIS? What do you hope to get out of a routine HIS that will help to improve the care of the child and the program itself? What is feasible?

-Dr. Theresa Diaz (WHO)

Country-level considerations for child health and nutrition data and indicator definitions

Countries have selected different indicators and data elements to include in their systems. A USAID/MCSP-supported [review of data elements in the HMIS in 24 countries found that key newborn data elements](#)—such as use of chlorhexidine, immediate skin-to-skin contact, neonatal resuscitation, Kangaroo Mother Care, and sepsis management—are not included in many countries’ national HMIS. Preliminary results also revealed that [treatment for child illnesses, such as diarrhea and pneumonia, are not always included in national HMIS](#) or collected in a standardized manner at facility and community levels.

Although there is a need for well-defined and standardized indicators, caution must be taken when adding more indicators to already over-burdened systems. Health workers in many countries [already spend too much time on reporting](#), which takes them away from providing clinical services. Therefore, a balance must be struck between the need for additional indicators and the need to limit the reporting burden, especially in (human) resource-poor settings. [An example from Malawi](#) highlighted an HDC-supported process in which stakeholders worked to harmonize the national monitoring and evaluation (M&E) framework and had selected national health indicators separate from donor-driven program level indicators. Other case studies discussed during the workshop illustrated the tendency to have too many indicators—often several times what is feasible. [An example from Indonesia highlighted the open smart register platform \(OpenSRP\) digital solution](#), which is used across different cadres of health workers and has allowed for reductions in the number of duplicative data elements collected by health workers (Box 3).

Recommendations to accelerate progress

- ***Country leaders and task forces should align indicators and data elements with global guidance.*** In the era of the SDGs, new global initiatives, and emerging interventions (such as management of possible severe bacterial infections in newborns), new indicators may be required for international reporting and tracking.
- ***Countries should review and harmonize collected data elements to reduce the reporting burden on health workers.*** In systems with duplication of efforts, there are opportunities to prioritize indicators (e.g., those used for decision-making) and to eliminate or de-prioritize less actionable indicators. The involvement of health workers in developing and harmonizing indicators creates greater buy-in. Digital solutions, such as OpenSRP, provide opportunities to reduce the reporting burden by only collecting data elements once.
- ***Donors should strive to refine their respective reporting requirements*** to improve alignment with countries’ own data reporting needs in order to minimize duplication of efforts and added reporting burden.
- ***International norm-setting partners, such as WHO, should ensure clear global guidance for routine child health and nutrition indicators.*** The development of this guidance must take into consideration the feasibility, reliability, and validity of indicators, as well as the complexities of determining appropriate denominators. The creation of a MONITOR-type group for child health could provide global guidance on standard indicators and data sources for child data at all levels. These efforts should complement ongoing work to establish pediatric quality-of-care standards and indicators.

Box 3: Reduced Data Collection Burden for Health Workers in OpenSRP in Indonesia

Examples of data elements collected once and shared across the OpenSRP system include:

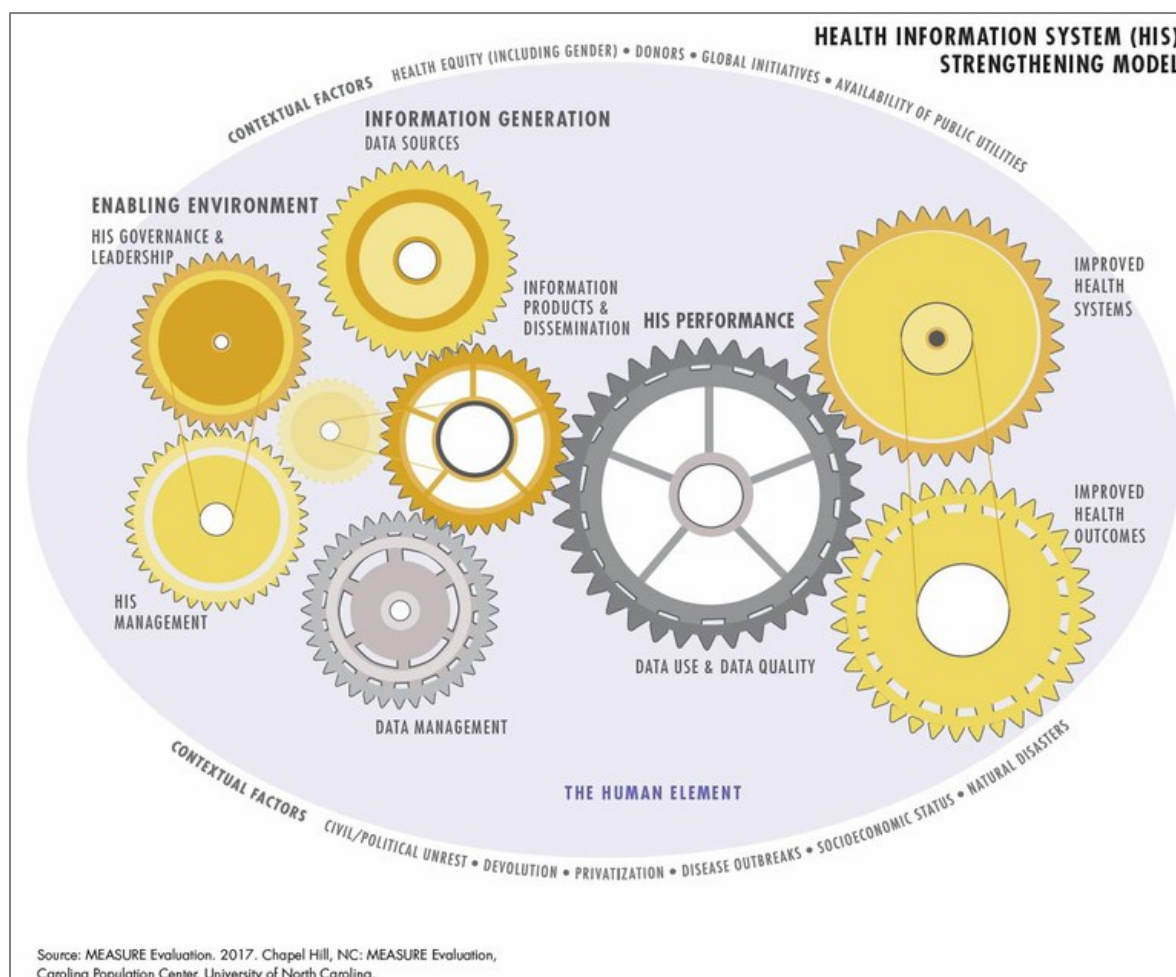
- Mother ID number
- Mother name
- Mother date of birth
- Child ID number
- Child name
- Child date of birth
- Child gender
- Village

Strengthening Health Information Systems to Improve Child Health and Nutrition Data and Programming

Routine child health and nutrition data originate from national HISs that are often complex, fragmented, and require substantial strengthening. Strengthening these systems can help ensure that high-quality data are available and used to make decisions to improve the overall health system and the health of children.

[The HIS-strengthening model that MEASURE presented during the workshop](#) guided the workshop’s learning and discussions related to national HIS (Figure 1).¹ Strong governance and leadership, as well as overall HIS management and coordination, are essential foundations of a strong HIS. Data sources, management, and the human element are vital to ensuring high-quality data so that the data are used. [The South African National HIS Division shared their country’s best practices across the framework’s components](#), highlighting governance and coordination structures, as well as the institutionalization of routine data management, analysis, and use through standard operating procedures and quarterly and annual reports, reviews, and meetings.

Figure 1. Health information system (HIS) strengthening model



¹ Additional resources and information on overall HIS strengthening are available at <https://www.measureevaluation.org/his-strengthening-resource-center>

Enabling environments: From fragmentation to integration

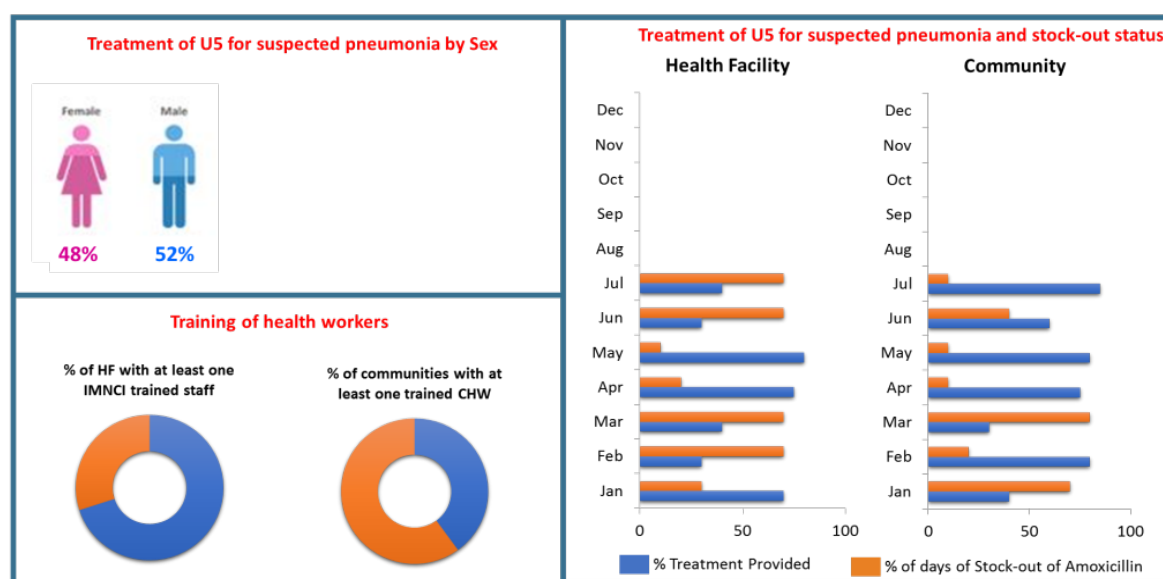
Workshop discussions confirmed that the *proliferation of systems and fragmentation of HIS is a universal problem* that all countries struggle to address. For example, some countries use different, incompatible systems for data related to child health services, logistics, civil registration, malaria services, etc. Implementing partners are often drivers of fragmentation because they require data for their constituents (donors or governments) that may or may not be within the national HIS. Donors may also drive fragmentation. Participants from Nigeria and Uganda raised the challenge and importance of including the private sector in the national HIS. For example, in Nigeria the latest Multiple Indicator Cluster Survey indicates that over 40% of treatments for childhood illness (such as ORS, zinc, or antibiotics) are obtained in the private sector, but these treatment data from the private sector are not captured in the national HMIS.

An overarching theme of the workshop was the need to [better integrate systems and move toward the interoperability](#) of different data systems and structures within the national HIS (Box 4). In child health programs, data exchange across multiple systems can better inform decision-making at the national, subnational, and facility levels. For example, analyzing a combination of human resource, service delivery, and health commodity logistics data could highlight gaps in terms of stock-outs or non-availability of trained health staff to explain low service numbers, and thus help identify corrective actions (see Figure 2 for an example of a dashboard that draws data from the HMIS, HRIS, and LMIS). Additionally, interoperability can help improve continuity of care by improving health worker access to records of the child across programs, such as immunizations, nutrition, and treatments.

Box 4: Interoperability

Interoperability is the ability to communicate and exchange data accurately, effectively, securely, and consistently across different information technology systems, software applications, and networks in various settings.

Figure 2. Hypothetical example of district-level dashboard that combines child health-related data from different data sources to support management and decision-making



Representatives from Tanzania [highlighted recent progress in improving the interoperability of their national HIS](#), which has had 128 siloed, fragmented, and poorly coordinated systems and digital interventions. The first step in moving toward interoperability and data sharing across systems was adopting a government-led eHealth strategy (2013-2018), which includes a commitment to eHealth standards and development of a conceptual model for Health Information Exchange (HIE). The HIE model in Tanzania has been helpful in setting a common vision for the health system and for partners to support the development of electronic health information systems. The Ministry of Health (MOH) has formalized the governance structure

responsible for reviewing implementation of any new applications in the country, and for coordinating multiple stakeholders and partners.

There was excitement among participants that countries are making progress on data integration, for example, with the eHealth strategy in Tanzania and eGovernance strategy in Uganda. This progress provides opportunities for cross-country cooperation and learning. Proliferation of multiple systems may be hard to avoid, but fragmentation can be reduced if the systems are digitized and interoperable. Donors and implementing partners indicated technical assistance to advance integration and interoperability in countries as a key area for investment.

Highlight: Digital solutions within the HIS

Health providers need access to commodities, training, clinical guidelines, and information about a child's medical history in order to provide effective and efficient health care. Health system managers need data about the children seen at household and facility levels to monitor and manage programs. To meet these needs, health systems must move from siloed, duplicative paper systems focused on data collection to an environment where data are entered once, shared across locations and domains, and provided to the right people at the right time. This will allow frontline health workers to focus on providing critical services to clients, and allow managers to make proactive decisions (e.g., to effectively allocate resources) based on current data.

Throughout the workshop, participants discussed [digitization and digital solutions](#), especially those designed to overcome challenges related to fragmentation, burden of data collection, data use, and changes in indicators or clinical protocols. Similar to other HIS initiatives, the [development and deployment of digital solutions must take into consideration](#) partnerships, user-centered design, scale, resource needs, and ultimately ownership and use of data.

During the workshop's Digital Health Circuit, MOHs and NGOs demonstrated specific digital tools and shared their experiences in designing and developing these tools. In addition to collecting, reporting, and analyzing child health and nutrition data, these digital solutions aim to improve quality of care, supervision, and commodity management. Many of the featured tools guide health workers step-by-step through the nationally approved protocols for provision of care to sick children at the community and facility levels. These systems also have the ability to share data across service points, from health workers to supervisors to national-level reporting systems.

The workshop stimulated discussions within country delegations, many of which then included exploring or rationalizing digital solutions within their action plans.



Participants attend the Digital Health Circuit to hear about new digital platforms and resources. Photo: Siphelele Sigabi/MCSP

Digital circuit

- Living Goods (Medic Mobile platform; multicountry)
- World Vision (CommCare platform; multicountry)
- MOH Malawi (cStock & CCM)
- upSCALE (CommCare/Malaria Consortium; Mozambique)
- OpenSRP (Zambia/Indonesia)
- leDA (CommCare/Terre des Hommes; Burkina Faso)
- HNQIS/Malaria Case Surv App (PSI; multicountry)

Annex C provides descriptions of these digital solutions.

The need for strong government leadership and better coordination was a consistent theme throughout the workshop, and is especially important for moving from fragmentation to integration. Central, government-led coordination mechanisms can reduce fragmentation and facilitate partners' alignment with the government's strategic framework. Frameworks for governance, data sharing, and accountability are critical in the process of developing national HIS architectures. The RMNCH scorecards, discussed below, are one tool to strengthen government leadership and ownership of data. Some approaches to strengthening HIS governance are context specific, for example, the DRC delegation prioritized decentralizing HIS roles in their action plan related to governance.

A first step, in moving from fragmentation to integration, and included in some examples and countries' action plans, is the mapping of information systems to inform eGovernance structures. In their action plans, all countries cited building upon or strengthening existing platforms or task forces to better coordinate the government and partners' efforts in deploying and strengthening HIS elements as a priority.

Information generation: Data sources and management

Producing useful child health and nutrition data requires sources of data (such as paper-based or digital patient records, registers, and summary forms) and adequate data management and quality assurance mechanisms. At the workshop, countries presented and discussed their experiences in strengthening systems across these components of information generation.

- [Mozambique](#) demonstrated the development and testing of new registers that include robust preventive and curative child health and nutrition data and indicators. They plan to include these data in the national HMIS and reinforce quality assurance and analysis mechanisms.
- [In Zimbabwe](#), the MOH, with support from Maternal and Child Health Integrated Program, developed and adopted a register that follows the Integrated Management of Childhood Illness (IMCI) algorithms. The register captures child health data, and serves as a clinical job aide and quality improvement tool for case management of sick children.
- [In Burkina Faso](#), an IMCI digital job aide and register, programmed on a tablet, is used at health facilities to capture patient records and consultation history; aggregate data at higher levels is used for program management. This system attracted positive attention from the country delegations as a digital solution because it feeds into the government's HIS and covers a large proportion of the country.

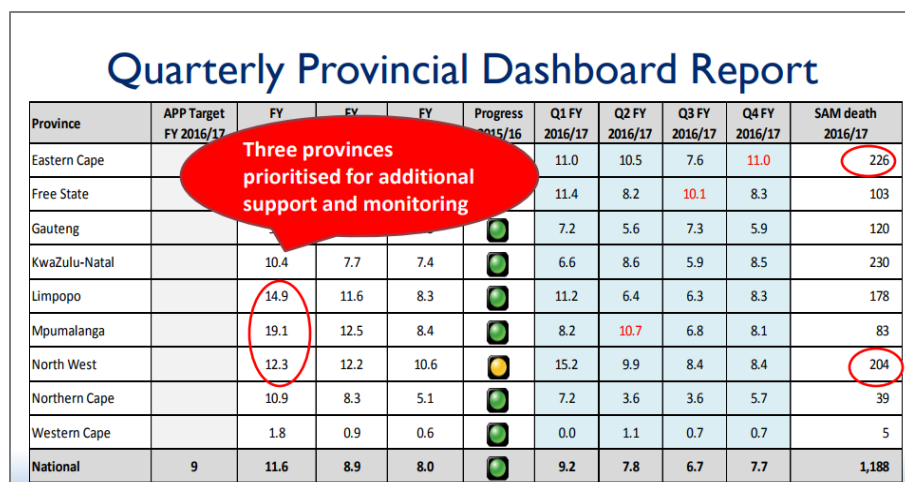
Many countries have made significant progress in rolling out DHIS2 as their data management platform, although some still face challenges in ensuring that the data are captured accurately in a timely manner. The [DRC delegation highlighted the government's process of introducing DHIS2](#) as the country's HMIS management software in a large and decentralized country. After opting to implement DHIS2 in 2013, the government of DRC started progressive implementation of DHIS2 in 2014 and made many improvements to their processes over time based on trial and error. In 2017, 80% of provinces had over 80% completeness of reporting for basic services. [Nigeria emphasized the operating procedures](#) the government put in place in 2014 to ensure that high-quality data are captured in DHIS2 in a timely manner. Both countries, as well as others in attendance, struggle with insufficient investments in infrastructure, lack of trained human resources, and ongoing reliance on donor and partner support. DRC, Nigeria, and other countries are now focusing on strengthening their systems to ensure that data are complete, accurate, reported in a timely manner, and used.

Data use for decision-making

Another key theme throughout the workshop was the need to improve the ownership and use of data for management and decision-making, regardless of whether paper or electronic systems are used. Presenters and participants discussed the challenges in analyzing and using data for management and decision-making at different levels of the health system. Major challenges identified included gaps in collected data elements and poor data quality.

[Mozambique](#) and [Nigeria](#) shared examples of child health and nutrition indicators included in their national HIS, and how these indicators are used at different levels of the health system. In [South Africa](#), institutionalized dashboards track the case fatality rate for severe acute malnutrition; provinces with higher rates are targeted for additional monitoring and support (Figure 3). WHO shared [ongoing work at the global level on a package of tools for analyzing and using facility-level RMNCH data within DHIS2](#).

Figure 3. Screenshot of South Africa's Provincial Dashboard Report

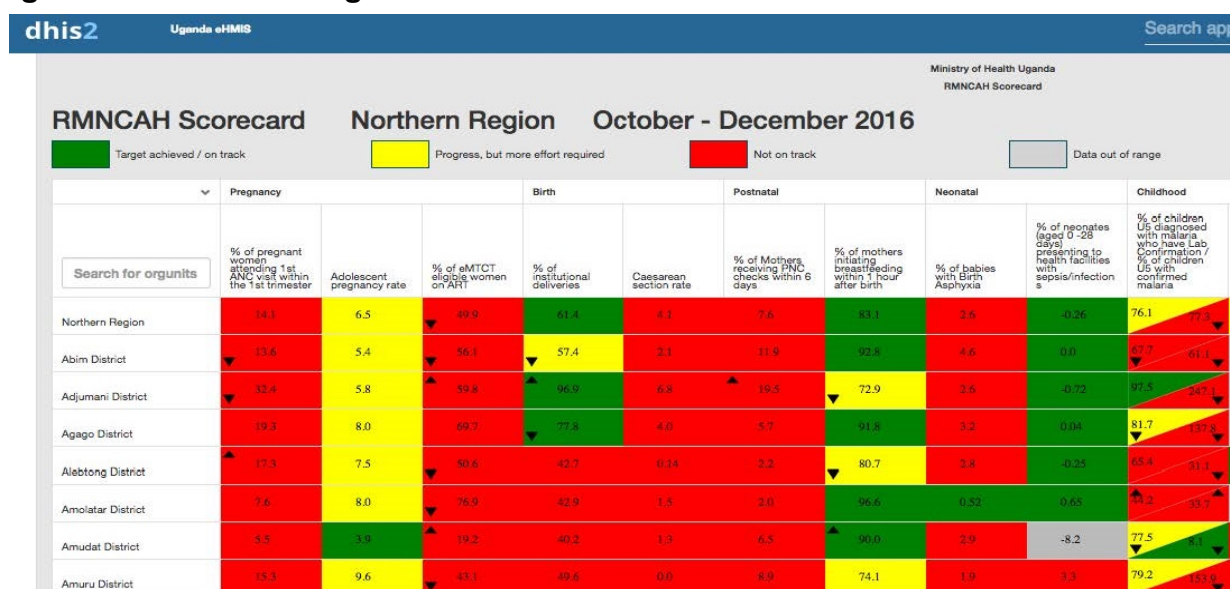


Province	APP Target FY 2016/17	FY	FY	FY	Progress 2015/16	Q1 FY 2016/17	Q2 FY 2016/17	Q3 FY 2016/17	Q4 FY 2016/17	SAM death 2016/17
Eastern Cape						11.0	10.5	7.6	11.0	226
Free State						11.4	8.2	10.1	8.3	103
Gauteng						7.2	5.6	7.3	5.9	120
KwaZulu-Natal		10.4	7.7	7.4		6.6	8.6	5.9	8.5	230
Limpopo		14.9	11.6	8.3		11.2	6.4	6.3	8.3	178
Mpumalanga		19.1	12.5	8.4		8.2	10.7	6.8	8.1	83
North West		12.3	12.2	10.6		15.2	9.9	8.4	8.4	204
Northern Cape		10.9	8.3	5.1		7.2	3.6	3.6	5.7	39
Western Cape		1.8	0.9	0.6		0.0	1.1	0.7	0.7	5
National	9	11.6	8.9	8.0		9.2	7.8	6.7	7.7	1,188

The use of [reproductive, maternal, newborn, child, and adolescent health \(RMNCAH\) scorecards](#) can improve high-level accountability and action by political leadership through simple data visualization (Figure 3). The use of routine HIS data in scorecards allows for comparison of selected indicators across regions or districts. Several countries have used indicators related to child health and nutrition in their scorecards, such as human resources, logistics, service availability, service delivery, and distribution (e.g., insecticide-treated nets distributed per targeted children). Although important, service delivery indicators related to child illness treatment are difficult to include in a scorecard because they can lack clear directionality (i.e., prevention efforts aim to reduce numbers of cases, while treatment efforts aim to increase the number of children treated).

- Representatives from [Ethiopia](#) highlighted elements that have been essential to their country's success, since 2012, with using RMNCAH scorecards, including leadership commitment from the regional and national levels, the participation of key stakeholders in design and development, integration of scorecards into existing systems, awareness creation, and capacity-building for both technical and political users.
- Representatives from [Uganda](#) shared their experiences using district-level dashboards based on the DHIS2 platform, which since 2015 have increased accountability and data use in management at the district level (Figure 4).

Figure 4: Screenshot of Uganda's District-level RMNCAH Scorecard in DHIS2



Recommendations to accelerate progress

- Ensure strong government leadership and enhanced partner coordination to strengthen HIS for routine child health and nutrition data.** Approaches to enhance government leadership and partner coordination will vary within the country context and should build on existing structures.
- Prioritize integration and interoperability of elements within national HIS for child health and nutrition data and beyond.** Information systems related to service delivery, commodity logistics, birth registration, vertical programs, and others that relate to child health and nutrition data must be integrated and/or interoperable. Integration and communication across services and the continuum of care (e.g., maternal, newborn, child, tuberculosis, HIV, malaria, etc.) should also be a priority. If clients and communities are to be seen as holistic entities, rather than fragments within individual programs, global leadership needs to reconsider how current funding siloes, donor organizations, and programs are established.
- Support countries' efforts to move toward digitization as they strengthen their national HIS.** Technical and financial resources should move toward collecting data as a byproduct of service delivery, rather than overburdening those delivering services with data collection. Landscape analyses of existing digital solutions and eGovernance policies are a first step. Depending on each country context, resources and expertise may be required from MCSP and other stakeholders to support MOHs to develop and achieve their national vision.
- Prioritize standard data collection tools, and standard data management and quality assurance procedures.** Institutionalizing tools and mechanisms are a necessary first step to ensure that timely and accurate data are collected.

One thing we can take away from this workshop is that the government must invest in data and we must use the data we collected. Data are of no use if we do not use them. Data collected will matter when we make decisions. We must advocate that our governments invest in data because data can ensure measurement of interventions and accountability.

-Dr. Emmanuel Meribole (FMOH Nigeria)

We also learned that the use of different tools can improve the system, such as digital tools, to help collect data at the individual and community level where unskilled people are often collecting data. This represents a major proportion of data that we use to make decisions. It is important to improve the quality of data from the community and facility levels to make the right decisions.

-Dr. Betuel Sigauque (MCSP Mozambique)

- ***Ensure sufficient financial and technical resources to support the infrastructure and human resources capabilities for ongoing HIS strengthening.*** Countries and partners need to ensure that the necessary infrastructure (computers, internet connection, paper forms, etc.) are available for ongoing functioning of the national HIS. Countries need support to build their capacity in data collection, reporting, analysis, and use at the lowest levels of the health system. This includes on-the-job training, supervision and mentorship of health workers and data quality audits as illustrated in several country action plans which focused on training, supervision, and developing and disseminating norms and guidelines. These activities require sufficient resources and are commonly underbudgeted.
- ***Accelerate efforts to improve data use for decision-making at all levels of the health system.*** Countries and partners should ensure the availability of necessary tools (such as job aids) at all levels of the system, build capacity, and realign incentives for data users at the national, subnational, and community levels to encourage data use.
- ***Strengthen the processes for increasing data use.*** Functionalities in the DHIS2 platform need to be strengthened to enable easier manipulation of data and informative visualizations. The discussions and partnership between measurement experts and child health and nutrition experts fostered during the workshop should continue in working to assist with the “how” of improving data use. These discussions should also include reaching out to other related programs (e.g., malaria, HIV, and immunization) to ensure that collected data will be used to better inform program decisions.

Child Health and Nutrition Data from Community Health Information Systems

Health and nutrition services delivered at the community level, most often through trained CHWs, account for a significant portion of services provided to children in underserved, rural, and remote areas where caregivers cannot easily access health facilities. Timely and valid data from community-based services are necessary to manage these programs effectively, and to advocate for investments in these services by quantifying the contribution of CHWs and community-based services. Many countries have not fully integrated community-level child health and nutrition data into their national HIS; they use parallel information systems at the community level, aggregate community data with facility-based data, or exclude community-level data altogether. Countries at all stages of implementing a community health information system (CHIS) struggle to ensure that community-based indicators are comparable to the facility-based indicators, and that high-quality community-level data are collected, analyzed, and used to inform decisions.

With child health programs, we must go out into the households. We must get the communities involved, because health facilities can only do so much. Many of the child health outcomes are dependent on what happens in the household.

-Dr. Nonhlanhla Dlamini (NDH South Africa)

Complexities in community programming lead to challenges in design and strengthening CHIS

Community-based child health and nutrition programming is complex and heterogeneous across countries. [Community programs](#) can have many different types of community delivery platforms, community health providers, and community action or support groups, and can cover many technical areas that relate to child health and nutrition. Community child health and nutrition packages can range from solely promotion and prevention activities to varying levels of integrated treatment interventions. CHWs in different countries have varying levels of training and skills (from a few days or weeks of in-service training to more professional pre-service training) and varying levels of incentives (from community-selected volunteers to salaried health workers who are assigned to a community and officially recognized and integrated into the health system).

There is no standard CHIS. The complexities and diversity of community health programs lead to challenges in designing and strengthening a CHIS, as each must be adapted to the country's unique community programming. Based on the HIS-strengthening model, however, there are key themes for strengthening a CHIS as identified through a [community model developed by MEASURE](#).

Presenters and participants discussed universal challenges in designing and strengthening a CHIS for child health and nutrition data that are similar to broader HIS-strengthening challenges, but often intensified by the characteristics of community programs (Table 1).

- [An example from Mozambique](#) highlighted opportunities and challenges with nutrition data collection and use through the CHIS. Polyvalent Elementary Agents (APEs) provide nutrition outreach services, and the community data demonstrate the APEs' valuable contributions in vitamin A supplementation, deworming, nutrition screening, and health education. However, these data are reported through a parallel database.
- [In Uganda](#), volunteer Village Health Team (VHT) members summarize community data and submit the summary reports to health facilities. The facilities in turn compile and submit the VHT summary reports to the district for entry into the national HMIS/DHIS2, along with their facility summary reports. Reporting rates and disaggregated indicators for the VHTs can be calculated through the national HMIS/DHIS2, but reporting rates remain very low, especially in areas with less partner support. The

health facility is expected to analyze, review, and act on the data collected in collaboration with the VHTs, yet this rarely happens.

- Malawi recently added thousands of health surveillance assistants as separate organization units under health facilities in their DHIS2 to be able to analyze community- and facility-level data in the same platform.

Table 1. Unique characteristics and challenges of community data

Domain	Characteristics of community programs	Related community data challenges
Scale	<ul style="list-style-type: none"> • Large numbers of CHWs and communities (usually thousands) compared with health facilities (usually hundreds) 	<ul style="list-style-type: none"> • Difficulties in scalability and sustainability • Inadequate supportive supervision for CHWs
Complexity and technical diversity	<ul style="list-style-type: none"> • Wider range of technical programs/services often covering more than one sector • Sometimes different CHWs work for different programs • Programs vary by area • Variable linkages with formal health system 	<ul style="list-style-type: none"> • Complex data needs and forms, with different data definitions possible across technical programs • Fragmentation and parallel data collection systems • Lack of guidance for prioritizing indicators and data elements • Lack of standardization across community and facility data • Difficulties in prescribing data flow hierarchy and organizational units in database
CHWs' skills and capacity	<ul style="list-style-type: none"> • CHW cadres range from well-educated to illiterate • Multiple projects with varying incentives for CHWs 	<ul style="list-style-type: none"> • Lack of skills and literacy required to collect and manage data among less professionalized CHW cadres • Large burden of collecting and reporting data to different stakeholders/programs with limited or mixed incentives • Range of incentives for CHW cadres and for data collection, reporting, and use • Burden on families/households if visited for different programs and data
Stakeholders	<ul style="list-style-type: none"> • Wider group of stakeholders interested in community-level data such as CHWs, civil society, and the communities themselves, in addition to the formal health system 	<ul style="list-style-type: none"> • More complex systems for data management, protection, analysis • Various potential reporting structures • More diverse data needs, with potential for more types of data analysis and use
Infrastructure	<ul style="list-style-type: none"> • Poor accessibility on limited road/transport networks in remote areas • Constraints in access to electricity, internet, and communications 	<ul style="list-style-type: none"> • Difficulties in maintaining adequate supplies (e.g., forms) and collecting and reporting data in timely manner • Limits on use of digital technology

Table adapted from [Special considerations for community level data presentation](#) by Jeanne Koepsell, Tanya Guenther and Gail Snetro-Plewman.

Strengthening the CHIS and use of community data

[General recommendations presented during the workshop](#) to overcome some of the myriad challenges related to community data included: (1) promoting government ownership, (2) strengthening community engagement, (3) balancing the reporting burden of CHWs with other activities, and (4) strengthening the capacity of CHWs and the teams that support them.

The use of community data, especially by communities themselves, is a challenge shared by all countries. Feedback mechanisms to CHWs and communities are often absent. Simple data visualization tools, such as picture cards and community health bulletin boards (such as My Village, My Home for immunization), can help communities understand the data and act to improve their health.

- In Malawi, capacity-building and supervision of CHWs and the provision of wall charts in communities led to more data-based decision-making.
- An [example from Ethiopia's](#) national CHIS illustrated how data recorded in family folders and integrated community case management (iCCM) registers are analyzed and reviewed every two months by health extension workers with their supervisors and community representatives.
- An example from Kenya demonstrates the importance of political and community will. During a monthly Community Action Day, communities come together to review visual health data and develop action plans to address identified challenges. At the next meeting, communities review progress of previously developed action plans and discuss challenges faced in reaching their goals.
- The Uganda delegation suggested that additional support at district and subdistrict levels would strengthen ownership of regular reporting and utilization of community health data by health facilities.

There are so many community-based interventions taking place, but there is no way to link data collected from communities into the “mainstream” so that data are examined in the government data platforms. It gives me impetus to go back and look at why we have not been able link community data to the system and to identify which key community indicators we can track and visualize for different purposes, including for advocacy and training.

-Andrew Mbewe (WHO Nigeria)

Recommendations to accelerate progress

- **Coordinate partners.** Partner coordination, with MOH leadership, can harmonize practices related to incentives and practices at community level. In Zimbabwe, collaboration between the MOH and partners led to an agreed-upon single community data collection form.
- **Engage MOH and other political leadership at all levels.** Strong leadership is necessary, as community programming often spans different ministries and technical areas.
- **Engage communities.** The support of the community's leadership and community members, with engagement from the health system, is imperative to ensure that actors see their role in this system and are willing to work together to improve services to the community as a whole.
- **Include CHIS in HIS-strengthening activities, especially digitalization and interoperability efforts.** Community-level workers are often not included in national DHIS2 instances, leading to incompatible facility and community systems or to the aggregation of community and facility data, which makes using data for management and supervision challenging. Annex C shows a variety of tools currently used at the community level to improve service delivery and case management. Data from these tools are often not yet integrated or interoperable with national DHIS2 instances.

We are going to ensure that child health and nutrition data are well-captured within the community HIS. We will also work to ensure that community data makes its way to the national level so that governments can use it to make informed decisions at the national, state and community levels.

-Emmanuel Meribole (FMOH, Nigeria)

- ***Move digitalization of data collection, management, and use of community data beyond pilots toward national scale.*** Digital data solutions can also include decision support applications to improve the quality of child and nutrition services at the community level.
- ***Harmonize and rationalize data elements collected at the community level based on their benefit and stakeholder needs.*** Data elements that are not used or valued could potentially be dropped. Rationalizing indicators and reducing the burden of data collection in the community can improve the quality and use of the data. Additionally, simplified tools could facilitate monitoring and utilization of community data at the community level and health facilities.
- ***Programs must provide ongoing support for CHWs, community-based actors, and others working with community-based programming.*** CHWs require ongoing capacity- building and support, such as supervision and mentoring, to be able to maintain the skills to perform their duties, including collecting, reporting, and using high-quality data.
- ***Realign incentives for CHWs and communities.*** There is a need to create stronger data feedback loops and reward efforts to collect, report, and use data to strengthen service delivery. Participants discussed many different types of incentives for CHWs, such as learning visits, in-kind incentives (bicycles, watches, solar panels, etc.), recognition of high performance through acknowledgements (badges, certificates) and competitions, the creation of formally paid cadres of CHWs, and using result-based financing as compensation. There was no consensus among workshop participants because the best and most feasible combination of incentives is context specific.
- ***Global and regional actors should advocate for the importance of community-level data, and display and use the data,*** especially given the changing child health landscape in the SDG and Every Woman Every Child era.
- ***Guidance should be developed for community-level indicators related to child health and nutrition promotion and illness prevention and management.*** Although iCCM indicator guidance exists, guidance about the suitability of indicators to monitor other community-based promotion, prevention, and curative child and nutrition services does not exist and is needed. Any identified or newly defined indicators could be included in the DHIS2 community module.
- ***Document and widely share emerging best practices for cross-country learning.*** Examples from Ethiopia and Malawi where communities use data could be synthesized and complemented by other case studies.

Annex A: List of Participants

	Final Participant List, CH Regional Workshop, September 2017	
	Title	Organization/Affiliation
DRC Delegation		
Fidele Ilunga	Director of the National Program of Acute Respiratory Infection	DRC MOH: D10
Moise Kakule	Division Chief	DRC MOH: D5
Jocelyne Kibunga	National Measurement, Monitoring, Evaluation, and Learning Advisor	MCSP/DRC
Papy Luntadila	National Child Health Advisor	MCSP/DRC
Audry Mulumba	Director of the National Directorate for Primary Health Care Development	DRC MOH: D5
Lina Piripiri	MCH Program Management Specialist	USAID/DRC
Salomon Salumu	Division Chief, HMIS/SNIS	DRC MOH: D5
Ethiopia Delegation		
Hilina Dejene Desalegn	M&E Expert	Ethiopia MOH/Policy and Planning Directorate
Mengesha Hidigo	M&E Expert	Ethiopia MOH/Policy and Planning Directorate
Kebede Mengistu	Nutrition Expert	Ethiopia MOH/MCH Directorate
Yirdachew Semu	Child Health Technical Advisor	Ethiopia MOH/MCH Directorate
Efrem Tefer	Child Health and Development Advisor	TRANSFORM PHCU Project/Ethiopia
Mozambique Delegation		
Arla Alfândega	Child Health Officer	Mozambique MOH/Child Health
James (Jamie) Browder	Health, Food Security, and Nutrition Linkages Advisor	USAID/Mozambique
Marta Chemane	National Child Health Advisor	MCSP/Mozambique
Michel Congo	M&E Advisor	MCSP/Mozambique
Luisa Maringue	Nutritionist	Mozambique MOH/Nutrition Department
Claudio Muianga	Data Analyst, M&E Services	WHO/Mozambique
Fidel Paizone	M&E Senior Advisor of Maternal and Child Health	Mozambique MOH
Betuel Sigauque	Technical Director	MCSP/Mozambique
Leonor Victor	Nutrition Team Leader	MCSP/Mozambique

	Final Participant List, CH Regional Workshop, September 2017	
	Title	Organization/Affiliation
Nigeria Delegation		
Yakubu Cherima	Senior Maternal and Child Health Program Manager	USAID/Nigeria
Gbenga Ishola	M&E Director	MCSP/Nigeria
Andrew Mbewe	Medical Officer	WHO/Nigeria
Emmanuel Meribole	M&E Head	Nigeria FMOH
Bello Olatunji	Health Manager	IRC/Nigeria
Abimbola Olayemi	Senior Manager, Monitoring and Evaluation and Learning	MCSP/Nigeria
Omokore Oluseyi	ICCM/IMCI Focal Person	Nigeria FMOH
Nkeiru Onuekwusi	Child Health Team Lead	MCSP/Nigeria
South Africa Delegation		
Lesley Bamford	Child Health Specialist	South Africa NDOH
Nonhlanhla Dlamini	Chief Director: Child, Adolescent & School Health, South Africa National Dept. of Health	South Africa NDOH
Munyaradzi Ganyaupfu	Technical Advisor	MEASURE Evaluation/ South Africa
John Groarke	Mission Chief	USAID/South Africa
Floyd Jacques	National Health Information Manager	South Africa NDOH
Derek Kunaka	Senior HIS Advisor	MEASURE Evaluation/ South Africa
Hilda Manzana	M&E Advisor	MEASURE Evaluation/ South Africa
Lipontseng Matsaseng	Data Analyst	MEASURE Evaluation/ South Africa
Christine Mulinder	Project Development Specialist (HMIS and SI)	USAID/South Africa
Thabiso Nothana	National Health Information Manager	South Africa NDOH
Leslie Stuart	Administrative Assistant	MEASURE Evaluation/ South Africa
Michelle Wakefield	Office Operations Specialist	MEASURE Evaluation/ South Africa
Uganda Delegation		
Robert Byabasheja	Child Health MEL Advisor	MCSP/Uganda
Christine Mugasha	Project Management Specialist (MCH)	USAID/Uganda
Kenneth Mugumya	Director of Government Relations and Advocacy (Uganda)	Living Goods/Uganda
Sarah Naikoba	Child Health Team Lead	MCSP/Uganda
Zimbabwe Delegation		
Mkhokheli Ngwenya	Deputy Director Child Care	Zimbabwe Ministry of Health and Child Care (MoHCC)
Leocadia Mangwanya	Senior Child Health Technical Officer	MCHIP AA/Zimbabwe

	Final Participant List, CH Regional Workshop, September 2017	
	Title	Organization/Affiliation
Other Participants		
Andrew Agongo	MNCH Senior Advisor	World Vision
Liliana Carvajal	Statistics and Monitoring Specialist (MNCH)	UNICEF/New York
Clifford Dedza	Pharmacy Tech	Malawi MOH
Theresa Diaz	Coordinator	WHO/Geneva
Vikas Dwivedi	Senior Health Information System Advisor	MCSP/Washington
Leah Ewald	Immunization Program Coordinator	MCSP/Washington
Nefra Faltas	Child Health Advisor	USAID/Washington
Guillaume Foutry	Project Director leDA	Terre des Hommes/Burkina Faso
Kate Gilroy	MMEL Advisor, Child Health Team	MCSP/Washington
Carolyn Gulas	Project Manager, Open Smart Register Platform (OpenSRP), Ona (based in Nairobi, Kenya)	OpenSRP/Zambia
Emmanuel d'Harcourt	Consultant	Facilitator, Consultant
Chika Hayashi	Senior Advisor, Statistics and Monitoring (Nutrition)	UNICEF/New York
Debra Jackson	Senior Health Specialist	UNICEF/New York
Patricia Jodrey	Child Health Senior Advisor/Team Lead	USAID/Washington
Karin Kallander	Senior Research Advisor	Malaria Consortium
Dyness Kasungami	Child Health Advisor	MCSP/Washington
Jeanne Koepsell	CCM Advisor/Innovations and Digital Health Lead	Save the Children/Washington
Cristina Lussiana	Malaria and Child Survival Monitoring Advisor	PSI
Caroline Mbindyo	Director of Technology and Innovation (Kenya)	Living Goods
Yordi Molla	M&E Senior Specialist	MCSP/Washington
Maureen Momanyi	Child Health and Community Platforms	UNICEF/ESARO
Maganizo Monawe	Health Information Systems Technical Advisor	Malawi: M&E Division (CMED)
Remy Mwamba	Statistics and Monitoring Specialist	UNICEF/New York
Hamis Msengi Mwendo	MOHCDGEC Acting Assistant Director Private and Public Health Facilities	Tanzania MOHCDGEC
Marcos Mzeru	MOHCDGEC Information Communication Technology Officer	Tanzania MOHCDGEC
Bennett (Ben) Nemser	Consultant, M&E	WHO/Geneva
Humphreys Nsona	Program Manager	Malawi MOH
Edwin Nyella	MCSP Health Information System Advisor	MCSP/Tanzania
Andrew Ogongo	ICT4D Program Manager	World Vision
Steve Ollis	Senior Digital Health Advisor	MCSP/Washington
Adebayo Olufunso	M&E Director, FHI 360	FHI 360/South Africa
Michel Pacqué	Child Health Team Lead	MCSP/Washington
John Quinley	Senior Monitoring Officer	UNICEF/New York

	Final Participant List, CH Regional Workshop, September 2017	
	Title	Organization/Affiliation
Barbara Rawlins	M&E Team Lead	MCSP/Washington
Charlene Reynolds	Communications Team Lead	MCSP/Washington
Magali Romedenne	Community Health Specialist	UNICEF/WCARO
Alfonso Rosales	MNCH Senior Advisor	World Vision
Ashley Schmidt	Child Health Senior Program Officer	MCSP/Washington
Anuraj Shankar	Senior Research Scientist, Department of Nutrition, Harvard School of Public Health & Summit Institute of Development Lombok, Indonesia (based in MA, USA)	OpenSRP/Indonesia
Pat Taylor	Director of Country Programs	MCSP/Washington
Daisy Trovoda	Medical Officer Child and Adolescent Health	WHO/AFRO
Dawne Walker	Senior M&E/CBIS Advisor	MEASURE Evaluation & Palladium
William (Bill) Weiss	Senior M&E Advisor	USAID/Washington
Nkem Wellington	Communications Director	JSI/Washington
Wilson Were	Medical Officer	WHO/Geneva
Tim Williams	Senior Strategic Information Advisor	SPRING
Sara Zizzo	Health Program Advisor	USAID/Washington

Annex B: Country Action Plans to Strengthen Child Health and Nutrition Data from National Health Information Systems

Each of the country delegations was asked to identify their key priorities and determine actions and any necessary resources to achieve those priorities in the three thematic areas of the workshop: (1) data elements and indicators, (2) national and subnational HIS strengthening, and (3) digital solutions and community data. These action plans were presented in poster format on the last day of the conference (see photos below). The following pages present summaries of the countries' action plans emerging from the workshop.



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DRC Country Action Plan

Context

Ongoing Work:

- National policies including National Health Development Plan 2016–2020 and HMIS Strategic Support Plan 2017–2020
- HMIS coordinating bodies at central level
- Harmonization of indicators
- Total country coverage of DHIS2
- Progressive integration of programs in DHIS2

Challenges:

- Poor data quality
- Low use of data, especially at the community level
- Lack of separate module on community data (some community data collected at facility level)
- Existence of parallel data collection systems



Country delegation:
Fidele Ilunga (MOH),
Moise Kakule (MOH),
Audry Mulumba (MOH),
Salomon Salumu (MOH),
Lina Piripiri (USAID-DRD),
Jocelyne Kibungu (MCSP),
Papy Luntadila (MCSP)

Priorities

Proposed Actions

Improve the use of data at the source

- Train provincial managers and providers on data use
- Strengthen post-training follow-up
- Strengthen supportive supervision
- Support data monitoring meetings
- Update and expand standards, guidelines, and instructions as needed

Improve quality of child health and nutrition data

- Ensure the availability of data collection and transmission tools
- Use routine data quality assessment (RDQA) to contribute to data quality assurance
- Improve retention of trained personnel
- Conduct external evaluations, with the help of the Data Quality Review toolkit

Strengthen HIS governance by decentralizing certain functions

- Identify responsible actors and structures
- Define their roles and responsibilities
- Update their Terms of Reference

Review existing systems

- Review design specifications, including articulating guidance on where data are stored, who has access to data and at what levels, which system (platform) the country prefers, and what considerations should be accounted for when planning for other systems that may be later set up in-country (interoperability)

Improve accountability and ownership for data collection and utilization at the community level

- Assess the current status of community ownership and accountability in existing pilot zones: data flow, multiplicity of collection mechanisms, tools, etc.
- Identify capacity-building approaches and recommendations for digital solutions for pilots in certain areas
- Pilot digital solutions in three areas, comparing their feasibility, cost, and acceptability with larger paper-based solutions

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Maternal and Child
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Ethiopia Country Action Plan

Context

Ongoing Work:

- Roll out of DHIS2 and designed E-CHIS
- Ethiopian Health Data Analytics Platform (EHDAP)
- Promoting the culture of data use
- Implementing the national M&E costing strategic plan

Challenges:

- Fragmentation of data
- Lack of data use for decision-making and lack of knowledge or training on data analysis and visualization
- Difficulty estimating denominators of indicators
- Poor data quality



Country delegation:
Hilina Dejene Desalegn (MOH),
Mengesha Hidigo (MOH),
Kebede Mengistu (MOH),
Yirdachew Semu (MOH),
Efrem Tefer (TRANFORM
PHCU)

Priorities

Ways to capture and analyze data from different sources

Data discrepancy between routine HMIS and facility survey

Denominators estimation problem

Child health indicators were not analyzed and used for decision-making

CHIS-based integrated family health card includes little child health-related information

Inadequate referral linkage and feedback system among facilities providing child health services

Poor data quality, accuracy, completeness, and timeliness of community data

Lack of capacity on data visualization (preparation, interpretation of data visualization)

Proposed Actions

- Roll out of DHIS2 and EHDAP

- Uphold the implementation of lot quality assurance sampling (LQAS) at all levels
- Make the Program Management Team (PMT) functional at all levels

- Use the Ethiopia Demographic and Health Survey (EDHS) and other survey data
- Strengthen research and surveys on childhood illness, including malnutrition

- Ensure the implementation of the information revolution agenda of the Health Sector Transformation Plan (HSTP)
- Strengthen the capacity of PMT at all levels and promote the implementation of LQAS
- Strengthen supportive supervision and mentorship at all levels
- Implement eGovernance

- Scale up the community based CHIS to the electronic version

- Develop standardized referral forms
- Promote registration of referral and feedback mechanism on health card
- Take the issue as discussion agenda on Primary Health Care Unit (PHCU)-level Performance Review and Clinical Mentoring Meeting (PRCMM)

- Strengthen Kebele command post, monthly review meeting, and supervision of health post by health centers
- Ensure the implementation of the information revolution of the HSTP agenda

- Strengthen capacity-building and mentorships by local universities on data management

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Mozambique Country Action Plan

Context

Ongoing Work:

- Developed and piloted new child health registers integrating nutrition data elements
- Recent introduction of DHIS2 Sistema de Informação para Saúde de Monitoria e Avaliação (SIS-MA) (Health Information System for Monitoring and Evaluation)
- National health promotion strategy, policy, and defined structure (with government-supported CHWs or APEs) to provide health care at the community level
- Expanding digitalized logistics system (SIGLUS)

Challenges:

- New child health registers require approval, reproduction, and scale-up of health worker training
- Lack of child health and nutrition indicators in SIS-MA
- No digital platforms endorsed by the MOH for child health at the facility or in the community
- Community data are not disaggregated from health facility data in SIS-MA
- Lack of implementation of the National Strategic Plan for HIS and M&E
- Existing standardized tools collect data in a parallel system (not in DHIS2)



Country delegation:
Arla Alfândega (MOH),
Luisa Maringue (MOH),
Fidel Paizone (MOH),
Claudio Muianga (WHO-Moz),
James Browder (USAID-Moz),
Marta Chemane (MCSP),
Michel Congolo (MCSP),
Betuel Sigauque (MCSP),
Leonor Victor (MCSP)

Priorities

Approve, print, and distribute child health registers; train health workers in register use

Disseminate the national HIS and M&E strategy

Approval of guidelines for data analysis and use at the health facility and community levels

Improve data quality and use

Proposed Actions

- Creation of task force for child health indicators; carry out data discussion
- Integration into SIS-MA of child health/nutrition revised indicators for health facilities and community

- Disseminate National M&E Plan and distribute to provinces and districts
- Perform on-the-job training for SIS-MA users

- Strengthen mentoring and on-the-job training to the health care providers (health workers and APEs)
- Strengthen supportive supervision of health care providers

- Strengthen mentoring and on-the-job training to the health care providers (health workers and APEs)
- Strengthen supportive supervision of health care providers

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Maternal and Child
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Nigeria Country Action Plan

Context

Ongoing Work:

- Inclusion of relevant child health and nutrition indicators in line with global document (Every Newborn Action Plan [ENAP], SDG, draft RMNCAH+N strategy, etc.)
- Efforts and discussion to use RMNCAH+N scorecard as exemplified by MCSP in some states
- Review and harmonization of RMNCAH+N indicators to be in line with global indicators
- Ongoing efforts to get community data into the Nigeria Health Management Information System (NHMIS)
- Approval secured to pilot the community tools for integration into the NHMIS

Challenges:

- Child health and nutrition information management system is fragmented with parallel tools existing for most of the programs.
- The system does not adequately capture community health data (context and content). Community data are not aligned with NHMIS.
- The NHMIS tool captures services only, leaving out the critical aspect of health services such as logistics management, financial, and human resources.
- The methods of data collection, processing, and transmission are suboptimal.



Country delegation:
Emmanuel Meribole (FMOH),
Omokore Oluseyi (FMOH),
Andrew Mbeve (WHO),
Yakubu Cherima (USAID-
Nigeria),
Gbenga Ishola (MCSP),
Abimbola Olayemi (MCSP),
Nkeiru Onuekwusi (MCSP),
Bello Olatunji (International
Rescue Committee)

Priorities

Finalize the review and harmonization of data elements and indicators for child health and nutrition

Indicator compendium

Set up scorecard (development, training, and pilot)

Map the entire data software platform

Agree on indicator set for visualization for child health and nutrition

Review, harmonize, and finalize community HMIS tools

Institutionalize a system of data use for community child health and nutrition data

Proposed Actions

- Complete indicator mapping
- Identify gaps in national child health and indicator tools
- Categorize indicators according to input, process, outcome, and impact

- Indicator dictionary

- Develop a concept note
- Receive the Honourable Minister of Health's approval
- Workshop to get the indicators
- Receive technical assistance
- Achieve buy-in of key stakeholders

- Agree on indicator set for visualization

- Build capacity at subnational level

- Review existing community HMIS tools in line with best practices
- Conclude pilot
- Activate community health management information system (CHMIS) module in the DHIS2
- Engage a consultant with clear terms of reference

- Strengthen ongoing quarterly local government area (LGA) meetings on child health and nutrition; integrate with health management information teams at both state and local level
- Ensure inclusion of CHMIS child health and nutrition data into their meeting agenda
- Produce information products, e.g., community bulletins for ward development committees and village health committees

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Maternal and Child
Survival Program

Uganda Country Action Plan

Context

Ongoing Work:

- Registers at community and facility level with harmonized indicators and aligned to country strategies and plans
- The 2016 District Planning Guidelines include the use of already-existing DHIS2 Scorecards and Bottleneck Analysis tools as part of the Quarterly Planning Meetings. This was scaled to all 116 districts earlier this year; support is now being provided to districts on proper usage of these decision support tools.
- Costed e-policy and updating of inventory of digital applications
- Community level taken into consideration in DHIS2

Challenges:

- Current DHIS2 lacks process-of-care indicators; e.g., appropriateness of treatment provided to cases; timeliness of care; assessments done except for malaria
- Consistent and complete reporting and entering of nutrition and community health data into DHIS2, especially where there is no partner support
- Quality of data analysis and interpretation
- Indicators for quality of care missing in HIS
- Linkage of community and health facility reporting still a challenge
- Data usage by in-charges and program focal points at the district and facility level

(Note: Due to the lack of MOH representation on the Uganda delegation, the Uganda action plan was more tentative than other action plans.)



Country delegation:
Robert Byabasheja (MCSP),
Christine Mugasha (USAID-Uganda),
Sarah Naikoba (MCSP),
Kenneth Mugumya (Living Goods)

Priorities

Harmonize indicators in order to track progress in child health

Improve data use quality at all levels of the health sector, which is important to sustain improvement in quality, timeliness, and outcomes

Build capacity at all levels of planning, including national, district, health subdistrict, and community

Proposed Actions

- Facilitate indicator mapping against required national and global reporting

- Share community-related lessons at the iCCM task force meeting

- Explore need for country data collaborative with technical assistance from global partners

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Maternal and Child
Survival Program

Zimbabwe Country Action Plan

Context

Ongoing Work:

- On-line DHIS2 rolled out to all districts (including admitting hospitals), cities, and central hospitals in Oct. 2013, leading to greater capacity for data analysis and information-sharing and real-time availability of data/information for decision-making
- Integration of some reporting systems
- Pilot of mobile electronic health records in one district

Challenges:

- Too many paper registers
- Small and fragmented electronic systems (unable to share information)
- Inability to effectively track patients
- No assistance in treating/caring/managing patients
- Too much time taken to: Complete paper registers, duplicate data capturing, and compile reports at the end of each reporting period



Country delegation:
Mkhokheli Ngwenya (Ministry
of Health and Child Care
[MOHCC]),
Leocadia Mangwanya (MCSP)

Priorities

Indicators not harmonized across departments in the ministry

Current tools not capturing all child health indicators routinely

Zimbabwe has not adopted community management of pneumonia (CMP)

Ministry has RMNCH Scorecard but missing some important child health indicators

Recording and reporting for Integrated Management of Neonatal and Childhood Illnesses (IMNCI) is paper based

Data elements and indicators for CHIS are not comprehensive enough (missing key information on patient management)

No recent comprehensive assessment of national HIS and CHIS

Lack of comprehensive standardized tools for community health workers

Currently, community recording and reporting systems are paper based

Proposed Actions

- Harmonize indicators

- Revision of data collection tools and summary forms to capture important child health indicators routinely

- Advocate for CMP and develop guidelines and indicators

- Review scorecard and strengthen use at all levels

- Develop module for IMNCI in the electronic health record

- Review data collection tools and align to reporting forms and DHIS2

- Conduct NHIS and CHIS situational analysis using MEASURE models

- Scale up use of community register that was piloted in one province (Manicaland)

- Pilot use of digital systems to strengthen CHIS

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Annex C: Descriptions of Digital Solutions Featured at the Workshop

Digital Circuit Presentations

Brief Systems and Tools Descriptions

Living Goods: Medic Mobile SmartHealth™ App

Living Goods partnered with Medic Mobile to develop an open source SmartHealth™ app that allows CHWs to register and track pregnancies, diagnose and treat childhood illnesses on site, and follow-up with customers. The platform integrates a performance management system that helps CHWs track their performance against targets and enables supervisors to use real-time data to track CHW performance. The Living Goods SmartHealth™ app is proven:

- **For CHWs:** Increases treatment accuracy and improves quality. Living Goods smartphones offer menu-guided iCCM assessment, dosage guidelines, automated treatment and pregnancy follow-up reminders, and household registration. The SmartHealth™ app also flags danger signs and high-risk cases for referral.
- **For supervisors:** Mobile dashboards improve performance and monitoring. Dashboards show field staff how CHWs are performing in real time, track instances of illnesses, and identify CHWs who need support.
- **For customers:** Health education delivered by short message service (SMS). After CHWs register a treatment, their client receives free automated treatment adherence reminders. Pregnant women receive automated stage- and age-appropriate SMS messages to promote healthy pregnancy and safe delivery. This free SMS improves health impact and helps community health providers build stronger customer relationships.

Points of Contact: Alfred Wise, awise@livinggoods.org, Caroline Mbindyo, cmbindyo@livinggoods.org, and Kenneth Mugumya, kmugumya@livinggoods.org

World Vision: CommCare

Leveraging the CommCare solution, World Vision in collaboration with Dimagi created various applications based on standard CHW program models and approaches. World Vision's flagship application was created to facilitate case management for antenatal, postnatal, and newborn care, and was implemented in Afghanistan in 2008. Additional applications for Timed & Targeted Counseling–MNCH (ttC), Integrated Community Case Management (iCCM), Positive Deviance/Hearth, Growth Monitoring & Promotion, and Community Management of Acute Malnutrition, were subsequently designed globally, then locally configured, and were implemented in numerous countries across Africa, Asia, and Latin America starting in 2013. This overall suite of solutions provides functionality to facilitate behavior change communication, data collection and reporting, registries and vital-events tracking, electronic health records, electronic decision support, and provider-to-provider communication.

Point of Contact: Andrew Ogongo, Andrew.Ogongo@wvi.org

Malawi MOH: cStock

cStock is an automated digital information system that includes transmission of logistics information via mobile phone text messaging (SMS) to a computer application that: responds with information for product resupply, displays product information on a web-based dashboard, and produces reports that can be

used to monitor health surveillance assistants (CHWs), product availability, and supply chain performance in CCM programs.

Point of Contact: Humphreys Nsona, hsona@gmail.com, and Clifford Dedza, cdedza@gmail.com

Malaria Consortium: upSCALE

In Mozambique, CHWs (locally referred to as APEs) provide comprehensive health services at community level. In order to link APEs with the national health information system, Malaria Consortium worked in collaboration with the MOH and UNICEF to develop the upSCALE platform—a digital strategy to strengthen health systems and community health delivery. upSCALE integrates the entire APE curriculum into one platform: an interactive mobile phone application that covers all community health services, guiding them through patient registration, routine health checks, diagnosis, treatment, referral, and follow-up. The upSCALE platform also has a tablet-based application for supervisors which enables them to improve APEs' performance and strengthen communication and feedback to APEs. upSCALE integrates APE-level indicators into Mozambique's DHIS2 platform, enabling access to and visualization of real-time community data, allowing for data-driven decision-making around investments for APE programs, surveillance, and responses to infectious diseases, including malaria, and early detection of disease outbreaks. The upSCALE platform is currently being implemented in the provinces of Inhambane, Cabo Delgado, and soon Zambezia, with government commitment to scale up to all provinces to create a national mHealth system led by the MOH.

Point of Contact: Karin Kallander, Karin.Kallander@ki.se

Ona: OpenSRP

OpenSRP is an open source Android application that allows frontline health workers to electronically register and track the health care services of all women and children in their communities, and to coordinate their work through information sharing. OpenSRP fits readily into existing national-level health information systems, including DHIS2, and replaces legacy paper systems used by health workers. With OpenSRP, health workers' data become accessible and actionable, leading to better performance, and giving national-level and local officials the information they need to improve health outcomes.

Point of Contacts: Dr. Anuraj Shankar, ashankar@bspb.harvard.edu and Ms. Carolyn Gulas, cgulas@ona.io

Terre des Hommes: leDA

Since 2013 Terre des Hommes partners with the MOH in Burkina Faso to implement the leDA program (Integrated e-Diagnostic Approach) aimed at improving the quality of child care, providing visibility to managers and users on performance, and supporting quality improvement processes. Tablet devices with a job aid for the Integrated Management of Childhood Illness (IMCI) protocol are used in more than 398 facilities. To date, 2,651 health care workers have used the tool in 1,173,868 consultations to children under five, with a high adherence to using the tool. Interim results from the evaluation study show an improvement of health care workers' performance and high acceptability by health care workers and district managers.

Point of Contact: Guillaume Foutry, guillaume.foutry@tdh.ch

PSI: HNQIS

PSI has developed the Health Network Quality Improvement System (HNQIS), which is used by Quality Assurance Officers (QAOs) as their daily management tool to assess, improve, and monitor health workers' skills and knowledge on provision of health services, including family planning, postabortion care, HIV, tuberculosis, hypertension, IMCI, and malaria. The app works offline and serves as a job aid and helps QAOs plan supervision routes by prioritizing visits to health workers with low quality scores and a high client

volume to target resources where they have the greatest health impact. HNQIS is an Android open source app in sync with DHIS2 that helps managers to more effectively manage large networks of health workers. HNQIS has been adapted to monitor quality in diverse groups of health workers, such as drug sellers, social franchise workers, private clinicians, pharmacists, and mobile malaria workers, and it is currently used in 4,400 outlets in 12 countries.

Point of Contact: Cristina Lussiana, clussiana@psi.org

PSI: MCS app

Simple and user-centric, the Malaria Case Surveillance (MCS) app is built to replace paper-based reporting forms from health workers to report malaria cases. The MCS app is presented in the local language and its clear visuals and intuitive interface guides the health worker through an eight-step data collection process: test result, gender, age, malaria species, treatment administered, occupation, local vs. imported transmission, previous history of travel and phone number. Data is transmitted in real time into DHIS2 to support project managers, and public health officers use surveillance data for planning case surveillance activities. As an open source, “plug and play” tool, the MCS app is available to stakeholders in malaria burden reduction and elimination settings and is easily adaptable to other health contexts.

Point of Contact: Cristina Lussiana, clussiana@psi.org