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COUNTRY HEALTH INFORMATION SYSTEMS AND DATA USE

Digital Approaches to Supportive Supervision

Guidance Framework

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Digital Approaches to Supportive Supervision Guidance Framework

The Country Health Information Systems and Data Use (CHISU) program is the USAID's flagship data and information system project to strengthen host country capacity and leadership to manage and use high quality health information systems to improve evidence-based decision-making.

Photo credit: Alemitu Assefa - Health Extension Worker at Arsi Zone Diglu and Tijo Woreda, Shebeka Welkity Health Center

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CONTENTS

BACKGROUND

Supervision can help health workers improve their performance through pre-evaluation, self-evaluation, and teamwork. Like monitoring and training, supervision is a strategy aimed at reinforcing competencies of health workers. WHO defines supportive supervision as "A special type of supervision which is formative and involves on-the-job transfer of knowledge, attitude and sills between the supervisor and supervisee."[1]

While the concept of supportive supervision was first introduced for immunization services several decades ago and quickly spread to other health program areas, it has not realized its full potential. Inadequate supportive supervision can compromise quality of care.[2] Common gaps in supportive supervision include lack of feedback to health providers, tracking and follow up on issues, and use of data in decision making. This document is intended to highlight various ways that digital approaches to supportive supervision tools can mitigate these challenges, and ultimately strengthen the health system by improving the information available to managers, supervisors, and supervisees. Moreover, as supervision is improved, this has a direct impact on the service user to ensure they are receiving optimum quality of care and treatment. As many facility and community-based systems are digitized, we have an excellent opportunity to strengthen supportive supervision, ensuring that this process is data driven and supports all who are involved.

The Country Health Information Systems and Data Use (CHISU) program is USAID's flagship data and health information systems project working to support strong, interoperable health systems where stakeholders at every level have access to high quality, actionable data for decision making. This work supports the project's Strategic Objective 2: Increased availability and interoperability of quality health data and information systems; and 3: Increased demand and use of health data and information to address health priorities, gaps, and challenges.

Who is this document for?

This document is intended for a variety of stakeholders including ministry of health staff, implementing partners, and technology firms that may be designing digital supportive supervision tools.

What is the purpose of this document?

This document seeks to define how digital tools can enhance supportive supervision and provide a common way to describe these functionalities. Stakeholders can then use these definitions in planning for and designing digital tools for supportive supervision

1 Module 16: Supportive supervision by EPI managers. Geneva: World Health Organization; 2017 https://www.afro.who.int/sites/default/files/2018-03/block%207%20module%2016%20-%20web.pdf

2 Classification of digital health interventions. Geneva: World Health Organization; 2018(WHO/RHR/18.06) https://apps.who.int/iris/bitstream/handle/10665/260480/WHO-RHR-18.06-eng.pdf

Which questions will the framework help users answer?

- How can I plan/design a digital supportive supervision tool?
- How can I plan/design a digital supportive supervision tool?
- How can I assess my existing supportive supervision system (analog or digital) and identify opportunities to digitalize various components and/or optimize what already exists in country?
- How can I improve or refine a previously developed digital supportive supervision intervention?
- How can I design a digital tool for health providers that can leverage supportive supervision and improve quality of care?
- How can the framework support the development of a national supervision strategy in an environment which has yet to digitize supportive supervision?
- How can digitalizing certain aspects of supportive supervision promote data use as part of supportive supervision?
- How can supportive supervision data be used to inform other health programmes for multi-sectoral system strengthening?

How to use the framework, and steps for getting started

This framework is intended to guide intervention planning, decision making, and design and consists of 14 digital components. Every country and health program has some of these pieces in place and lacks others. A country's supervision systems may be many and fragmented, with each program area managing supervision separately. There may be an integrated supportive supervision checklist, but which data are captured may differ from region to region.

Whatever the starting point, the framework may help stakeholders with:

» Definition and alignment: understand a common definition of what is included in a supportive supervision system.

» Assessment and review: inventory the current digital supportive supervision ecosystem in the country and explore how it can support adaptations to improve and enhance what already exists.

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» Visioning and mapping: define what digitalization of supportive supervision is desirable and feasible in a given time frame to build a roadmap and a vision for a system that includes one or many digital components.

While not exhaustive, these questions can help you start using this framework:

1. What is the scope of the supportive supervision system? Is it for the entire country? For one health program area? One cadre?

2. What is the state of the supportive supervision system for this country/health area/ project/NGO? What are some of its challenges?

3. Which health cadres have the roles of the three personas listed in the framework? Who fills the role of managers, supervisors, and health workers?

4. What are the phases of the supportive supervision cycle in your context? How do they align with the six phases of this framework?

5. Which digital components are present in your system? Review all 13 components and identify small- or large-scale digital tools that have been developed or deployed.

6. What other digital systems could provide relevant data for supportive supervision components? These could include aggregate systems like health or logistics management information, or individual-level systems like an electronic medical or a digital client record.

7. Which data do supervisors use to plan their visits?

8. Which data do supervisors collect during their visits?

9. Which data do managers access to assess whether supervision programs are working?

10. How is health worker performance assessed (e.g., targets)?

11. What digital devices/connectivity are available to each of the personas?

GAPS AND JUSTIFICATION

Challenges of supportive supervision

Supportive supervision has been shown to improve health workforce performance, productivity, quality of care, motivation, and retention.[3] Global public health services have adopted the vision of collaborative performance management and quality improvement through supportive supervision, but many gaps in its execution remain. There are no global standards for supportive supervision systems integrated across all health areas, which leads to variable implementation of parallel systems. Lacks of continuity, communication, and skills, and logistical and financial barriers are all noted challenges.[4]

3 Nkomazana, O. (2016). How to create more supportive supervision for primary healthcare: lessons from Ngamiland district of Botswana: co-operative inquiry group. Global Health Action, 9(1), p.31263. doi:10.3402/gha.v9.31263.

4 USAID (2019) Enhanced Supervision Approaches: Landscape Analysis. Available at: https://hrh2030program.org/enhanced supervision-landscape-analysis/

Moving from traditional, hierarchical supervision systems to those that are more supportive requires innovative thinking, national buy-in, and time to change attitudes, perceptions, and practices. Ways to facilitate adoption of a new approach include understanding the country context and mobilizing appropriate political will, national support, making supervisors part of the original training process, improving the planning phase of supportive supervision, keeping health workers and supervisors motivated, and ensuring system sustainability.[5] Other gaps in supportive supervision include inadequate supervisory skills, lack of transport for providers and supervisors, and lack of support from major national institutions like the ministry of health.[6]

Another challenge to achieving the full potential of supportive supervision is when supervisors do not conduct required visits and/or complete supervision checklists without having actually visited a facility or observed a community health worker in the field. This leads to mistrust of system accuracy and a lack of accountability.[7] Moreover, there is a lack of performance incentives for supervision visits. This is not always financially feasible in some contexts, but for countries where digital tools are being used to track performance of the health workforce, then remuneration packages can be a consideration to motivate. Absence of visits is a major problem, but a lack of communication and feedback after supportive supervision also seems to lessen intended quality improvement effects. The written feedback reinforces information shared during supportive supervision, but this follow up can be impossible if there is no funding to execute some action plans, especially those that require monetary investments.[8] Feedback is also a two-way process between supervisors and supervisees in an ideal scenario. In some countries, resources for supervision are constrained, with fiscal responsibilities being put on regions or districts. Performance challenges arise due to high workloads, inefficient processes, large geographic areas to cover, limited access to resources, and lack of community trust. High health worker turnover and absenteeism also compromise continuity of services and overall health facility and community primary health care performance.[9]

Digital approaches are a key component of strong, data-driven supportive supervision systems

Supportive supervision should be data driven and support the supervisee, the supervisor, and the manager, and digital tools can improve interactions between these actors and drive quality of service delivery received by the client. Plans and actions should be recorded, referred to, and tracked, given the effort that is put into identifying and

5 PATH (2003) Guidelines for Implementing Supportive Supervision: A Step-by-Step Guide with Tools to Support Immunization.

6 Nkomazana, O. (2016). How to create more supportive supervision for primary healthcare: lessons from Ngamiland district of Botswana: co-operative inquiry group. Global Health Action, 9(1), p.31263. doi:10.3402/gha.v9.31263.

7 shola, A. (2022) Thesis, The Role of Digital Tools in Supportive Supervision of Community Health Workers in Liberia. The Harvard T.H. Chan School of Public Health.

8 Lutwama, G.W. (2022). Health services supervision in a protracted crisis: A qualitative study into supportive supervision practices in South Sudan. Research Square. doi:10.21203/rs.3.rs-1593872/v1.

9 USAID (2019) Enhanced Supervision Approaches: Landscape Analysis, https://hrh2030program.org/enhanced-supervision landscape-analysis/.

solving problems during these visits. Combining this longitudinal supervision record with data about service delivery and populations served, effective digital approaches to supportive supervision can help in improving quality of care and patient experience. Similar initiatives focused on strengthening mentorship and performance management through digital tools are ongoing[10], and in some cases these have significant overlap with the concepts described in this document.

Supportive supervision has been considered an important component of health programs for many years but is often a secondary component of the design and implementation of digital tools for frontline health workers. Understandably, more effort has been put into tools for providing care to clients than into the supervisory components of the systems. As digital tools become more widespread and there are more sources of data readily available for health workers, supervisors, and health systems managers, there is an opportunity to present a framework for how digital approaches can optimize supportive supervision. Components of supportive supervision are captured in WHO Classification of Digital Health Interventions 2.5.2 Communication and Performance Feedback to Healthcare Providers; 3.1.2 Monitor Performance of Healthcare Providers; and 3.7.2 Assess Health Facilities.[11]

Previous literature and gaps of digital approaches to supervision

A literature review revealed numerous digital interventions in the supportive supervision space and their corresponding challenges and gaps. In a landscape analysis conducted by HRH2030, smartphones were a key input in 22 percent of the cases reviewed. Digital tools can capture and display performance data to inform visit priorities, as well as provide standard technical resources and job aids for performance and quality improvement. Digital data integration and interoperability can facilitate timely multi-level feedback on performance and reduce the burden on the supervisor. Connections to health management information systems such as DHIS2 can inform supervision priorities, and help allocate and improve equitable distribution of resources.10 To mitigate the accountability challenge of analog supportive supervision, a digital intervention using GIS tracking can ensure that supervisory visits are happening. An intervention like this can also be used for monitoring inequitable distribution of supervision.[12]

Our review included papers that discussed how specific tools and digital approaches improve supportive supervision. For example, the e-TIQH tool in Mali showed its reliability was perceived to be higher than that of the analog system, and was considered more user-friendly compared to the paper-based assessment. Health workers stated that the tool was more adequate and constructive when providing results and feedback.

10 USAID (2019) Enhanced Supervision Approaches: Landscape Analysis, https://hrh2030program.org/enhanced-supervision landscape-analysis/.

11 Classification of digital health interventions. Geneva: World Health Organization; 2018(WHO/RHR/18.06) https://apps.who.int/iris/bitstream/handle/10665/260480/WHO-RHR-18.06-eng.pdf

12 Ishola, A. (2022) Thesis, The Role of Digital Tools in Supportive Supervision of Community Health Workers in Liberia. The Harvard T.H. Chan School of Public Health.

The immediate availability of initial analyses because of the digital format of the assessment improved reporting and feedback timeliness and accessibility of data. The electronic tool increased data completeness, legibility, timeliness, accessibility, security and meaningfulness.[13] In some cases, mobile technology has produced data that are available for action at the national and district levels on the day that supervision takes place in health facilities.[14] These mobile applications and digital health interventions may also increase adherence to case management guidelines, increasing the timeliness of care from now-available data.

Many of these digital interventions have implementation challenges, including the need for better alignment with overall strategy and interoperability with local infrastructure. Poor accessibility of user interfaces may limit the benefits of digital approaches with health information systems, and has been cited as a source of medical and user errors. The burden of technological education and use can also lead to health worker burnout.[15]

Digital tools can help fill a gap in continuing education among health workers, but they still place the educational burden on the user.

Electronic features can be challenging because they need to be updated continuously, whereas changes can be hand-written on paper-based versions.[16] However, the benefit of electronic tools is that they can be updated remotely which is more challenging to do with paper tools in use at scale.

The notable gap in digital interventions is that while there is a lot of potential for improvement in supervision, there is no comprehensive framework for digital approaches. Ad hoc studies and tools have been developed and shown promise, but a larger guiding framework is needed to direct efforts, steer digital tool development, and standardize the digitalization of the supervision process. The following guidance can be used for further innovation of tools and systems related to supportive supervision.

13 Renggli, S. (2018). Towards improved health service quality in Tanzania: An approach to increase efficiency and effectiveness of routine supportive supervision. PLOS ONE, 13(9), p.e0202735. doi:10.1371/journal.pone.0202735.

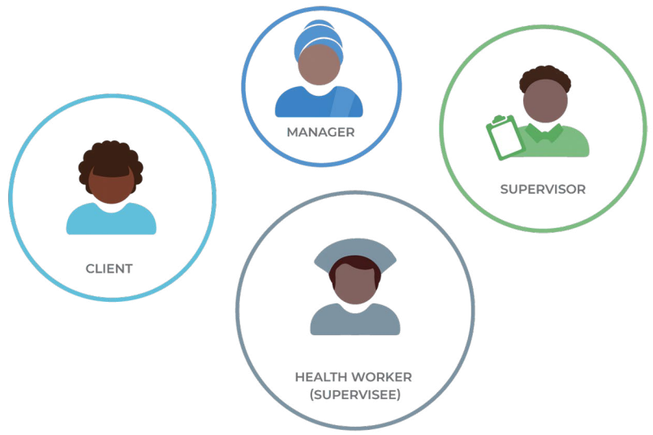
14 Tegegne, S.G.. (2018). The role of supportive supervision using mobile technology in monitoring and guiding program performance: a case study in Nigeria, 2015–2016. BMC Public Health, 18(S4). doi:10.1186/s12889-018-6189-8.

15 Yang, Jane E (2021). Effect of mobile application user interface improvements on minimum expected home visit coverage by community health workers in Mali: a randomised controlled trial. BMJ Global Health. November 2021.

16 Ishola, A. (2022) Thesis, The Role of Digital Tools in Supportive Supervision of Community Health Workers in Liberia. The Harvard T.H. Chan School of Public Health

ROLES/PERSONAS

Figure 1. Supportive Supervision Personas



At the foundation of the supportive supervision framework are four distinct personas or roles. At the center is the client, who is a recipient of quality care delivered by the health worker, next is the health worker themselves, or supervisee, who provides clinical and public health care to people in health facilities and communities. This role directly interacts with clients, and is supported by the manager and supervisor. Supportive supervision is designed to strengthen health workers' capacity, and ensure that they deliver high-quality care. The level of this health worker is purposefully unspecified: it could be a community health worker or a health worker at a primary- or higher-level facility.

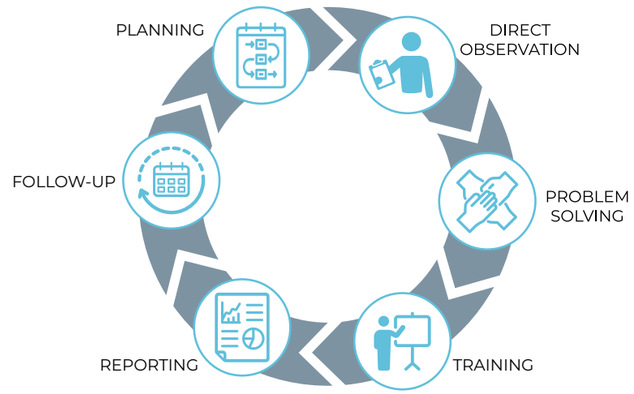
The next role is the health worker supervisor. This may be the health worker's direct manager (e.g., a health facility manager or in-charge), but may also be a dedicated supervisory cadre based at the district or regional level. Again, the framework is intentionally non-specific. This persona engages in health worker supervision and performance management. Often, the supervisor performs supervisory site visits

evaluating the health workers' performance and is up to date with the clinical data and health delivery status of the clinic and surrounding community catchment areas. The supervisor can be responsible for multiple health workers at multiple locations.

At the highest level, the manager oversees the supportive supervision process at the district, regional, or national level (there is likely a manager at each of these levels). The manager is usually responsible for a health program area and is given a report from the supervisor about the health workers' performance. This persona likely manages multiple supervisors, and ensures that they perform their supervisory visits and complete performance management checklist and other tasks. A manager may have or need access to a wide range of data to oversee the supervision process, including health worker and supervisor performance, client feedback and tracking all tasks and training opportunities.

THE SUPPORTIVE SUPERVISION CYCLE

Figure 2. Supportive Supervision Cycle



Based on our review, we identified the following six main phases of a comprehensive supportive supervision system: 1) preparation, planning, and budgeting; 2) direct observation of care, inspection, interviews; 3) problem solving, feedback, coaching, consensus; 4) training; 5) reporting; and 6) follow up.[17],[18] Amongst these six phases, stewardship throughout each stage should be incorporated and practiced by the supervisor and cascaded down to the supervisee in order to embed a sense of

responsibility to support the population they serve in their communities and guide the health system. Stewardship is defined by the WHO as the careful and responsible management of the health and well-being of the population the health system serves and therefore this should also be the responsibility of decentralized health personnel at the sub-national level who provide front line health care services to instill ownership and accountability of health care provision.

1. Preparation, planning, and budgeting

The preparation phase includes identifying time, place, people, budget, length of visit, what will be evaluated, and applicable preliminary tasks. In instances of limited resources or availability, the supervision team should prioritize facilities and health workers that have had the most challenges in service delivery in the past. All roles related to supervision should prepare for the process, and there should be clear communication between the personas about expectations and procedures.[19] Expectations can be

17 The Republic of Uganda Ministry of Health Department of Quality Assurance (2000) National Supervision Guidelines for Health Services.

18 Module 16: Supportive supervision by EPI managers. Geneva: World Health Organization; 2017 https://www.afro.who.int/sites/default/files/2018-03/block%207%20module%2016%20-%20web.pdf

19 Kapoor, N.,Kumar,D.,Thakur, N.I (2014) Core attributes of stewardship; foundation of health system. International Journal Health Policy Management. 3(1) pg 5-6.

formed by developing clear objectives for the visits. This could include revisiting past supervisory visits and data, reviewing annual plans and performance, reading relevant publications like policy documents and site reports, and thinking of training that has or will need to be provided later in the process. Site visit tools will be developed in this stage. Another important consideration is preparing supervisors through their own tailored training packages. This can be done in this phase of the cycle for adequate preparation before supervision visits commence.

2. Direct observation of care, inspection, interviews

At the time of the supervisory visit, the health worker and supervisor go over the plan made in the previous step to ensure clear communication. They have an overview discussion about the health facility or community catchment and context of care and review issues or training from previous visits. The supervisor uses checklists and other tools developed in the planning process to identify strengths, weaknesses, and quality gaps through direct observation and/or inspections.

Furthermore, direct observation of the client experience and/or client interviews are important to collect information on their perceived quality of care delivered by their health worker. Such interviews can be conducted at the health facility or at the household level by the supervisor as part of an 'exit' interview process, or directly reaching out to clients via mobile device where applicable.

Tracking performance of supervisees based upon multiple feedback sources can be done using dynamic dashboards that can be accessed by multiple stakeholders. This can be achieved through visualizations made available to digital devices to monitor progress and against historical longitudinal supervision visits.

3. Problem solving, feedback, coaching, consensus

In accordance with the collaborative approach of supportive supervision, this phase is meant to foster participation in filling jointly identified gaps. It is important that the supervisor give the health worker/supervisee feedback based on observations during the visit, data captured through checklists, and by reviewing indicators, milestones, and performance targets with the health worker.[20] A problem-solving approach de-emphasizes completing rigid checklists and encourages taking active steps to improve health services at the service delivery point through proactive planning, teamwork, and two-way communication.[21] The site visit should focus on facilitating discussion and solving problems consensually, as opposed to finding fault and blaming health workers.[22]

20 The Republic of Uganda Ministry of Health Department of Quality Assurance (2000) National Supervision Guidelines for Health Services.

21 Module 16: Supportive supervision by EPI managers. Geneva: World Health Organization; 2017 https://www.afro.who.int/sites/default/files/2018-03/block%207%20module%2016%20-%20web.pdf

22 Nkomazana, O. (2016). How to create more supportive supervision for primary healthcare: lessons from Ngamiland district of Botswana: co-operative inquiry group. Global Health Action, 9(1), p.31263. doi:10.3402/gha.v9.31263

4. Training

In this phase, the supervisor demonstrates correct procedures or on-the-job training where weaknesses and gaps are identified. S/he then asks health workers to repeat the demonstration until they can do it themselves. Issues uncovered during visits can indicate which additional and/or refresher trainings health workers need, and supervisors and managers can arrange for additional on-the-job training or to send supervisees for formal trainings/certifications where necessary. Supervision visits allow supervisors to tailor training packages and materials. Continued training and education can fortify health workers and facilities with skills that can be appreciated in following supervision visits.[23] Linking training with supportive supervision helps maintain and improve health worker and supervisor performance. Training motivates staff and indicates that their supervisors support them. Supervisors and managers can also develop training curriculum following supervision visits to address the issues with the highest impact and priority.[24]

Another approach to providing additional training to health workers at facilities or community sites would be the use of 'champions'. A champion health worker would be assigned to an identified health worker who requires additional training in a 'twinning' system. This could be particularly useful in an environment whereby a supervisor is constrained by time, resources or geographical barriers to provide extra physical observational visits. This method is useful in very decentralized areas, particularly at the community primary health level.

5. Reporting

Collecting information through checklists and direct observation or discussion is not the sole purpose of supportive supervision. Overall impressions, outcomes, findings, recommendations, and other data can be used for quality improvement. Moreover, the client experience and their feedback is an important component of reporting during an observational visit or retrospectively in order to clarify if clients are satisfied with the care and how it is delivered meets their needs. The reporting phase links direct site visit observation with the follow-up phase. Supervision findings and actionable steps can be recorded at the facility in both informal and formal reports before the team leaves, or after the visit. Data from supervision visits can be aggregated for further use in quality improvement. Reports should be disseminated to the relevant levels of management and staff and include positive and negative findings, actions to be taken, and recommendations for other interventions.[25] Areas of strengths and weaknesses can be discussed to provide constructive feedback, and causes of poor performance or service delivery and ways to overcome them suggested. Previous findings and data can be reviewed to identify trends and suggest ways to continue or interrupt them.

23 PATH (2003) Guidelines for Implementing Supportive Supervision: A Step-by-Step Guide with Tools to Support Immunization

24 The Republic of Uganda Ministry of Health Department of Quality Assurance (2000) National Supervision Guidelines for Health Services.

25 Module 16: Supportive supervision by EPI managers. Geneva: World Health Organization; 2017 https://www.afro.who.int/sites/default/files/2018-03/block%207%20module%2016%20-%20web.pdf

If needed, new realistic goals and targets can be developed.[26] If the checklists were formatted to show findings over time, they can be included in the report.

6. Follow up

Follow up is defined as the implementation of recommendations made during a visit. These actions occur after a supervisory visit and may be the responsibility of the supervisor, the supervisee, or both, depending on what was agreed during the visit. In the analog supervision format, it is in the follow-up phase that the supervisee receives results of the checklist/report filled completed by the supervisor. Below, we discuss how digitally enabled supportive supervision systems can make these reports and feedback available to supervisees in real time.

Figure 3. Supportive Supervision Framework

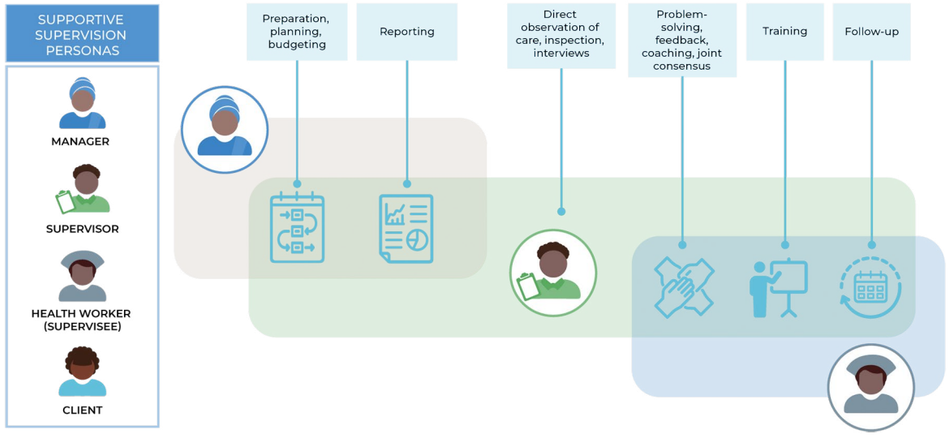


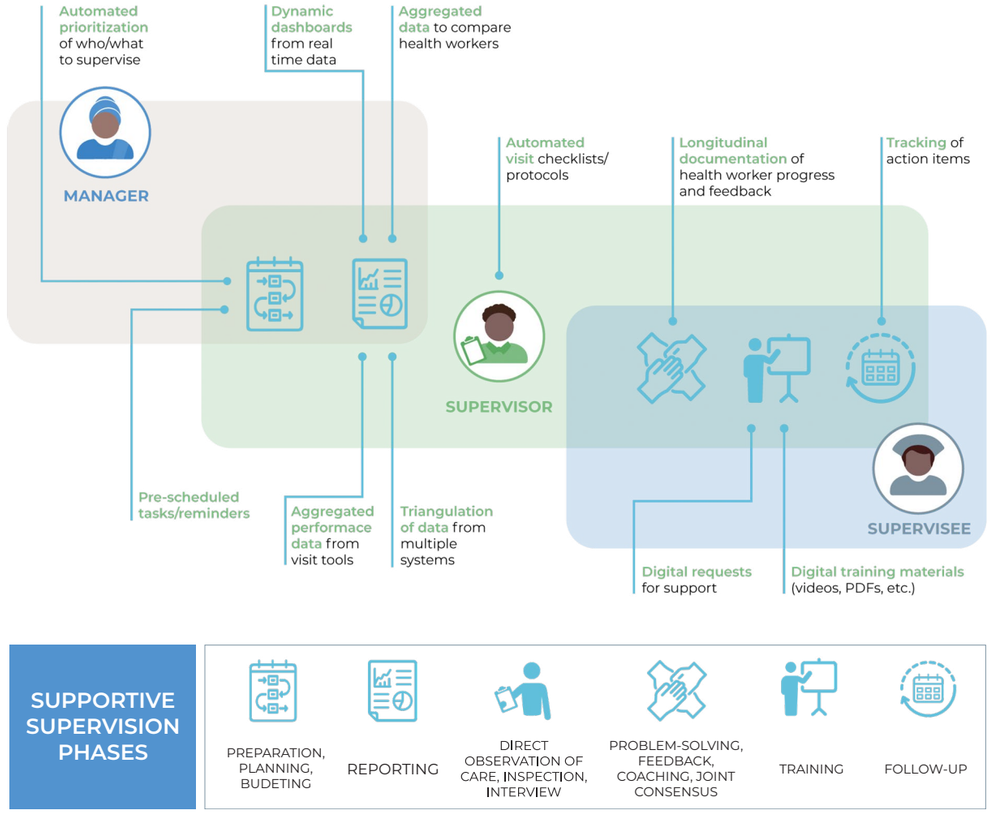
Figure 3 combines the personas with the supportive supervision cycle into an integrated framework. This illustrates which roles are responsible for different parts of the supportive supervision cycle, with managers and supervisors working together on preparation, planning, budgeting, and reporting, while supervisors collaborate with their supervisees on problem solving, feedback, coaching, consensus, training, and follow up. The supervisor is solely responsible for direct observation of care, inspection, and interviews, although the health worker is also an active participant in this component.

26 The Republic of Uganda Ministry of Health Department of Quality Assurance (2000) National Supervision Guidelines for Health Services.

DIGITAL SUPPORTIVE SUPERVISION FRAMEWORK

The Digital Approaches to Supportive Supervision Framework includes 14 digital components, or functionalities, that can support data-driven supportive supervision. Figure 4 illustrates the phases in which the digital components can strengthen supportive supervision,. Each digital component is highlighted in green, with lines connecting to the phases of the supportive supervision cycle that it is likely to support.

Figure 4: Digital approaches to supportive supervision



HOW CAN DIGITAL COMPONENTS STRENGTHEN DATA-DRIVEN SUPERVISION?

Each digital component is shown in the table below, with an indication of the phases of the supervision cycle it is most likely to support, and detailed in text below.

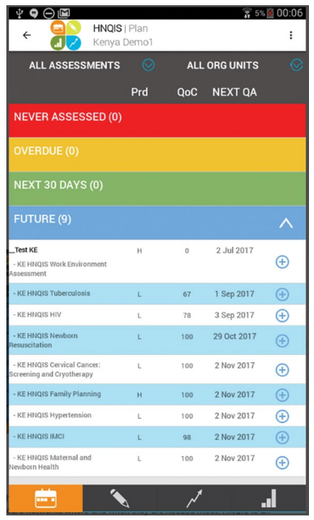
Table 1. Digital Supportive Supervision Components

DIGITAL COMPONENT	SUPERVISION STEPS
Automated prioritization of who/what to supervise	
Pre-scheduled tasks/reminders	
Aggregated performance data from visit tools	
Dynamic dashboards from real time data	
Aggregated data to compare health workers	
Triangulation of data from multiple systems	
Longitudinal performance tracking of supervisee	
Digitalized visit checklists and protocols	
Digital requests for support from all levels	
Digital tracking of action items	
Digital training materials	
Digitalized mobile-based self assessment	
Tools for audio/video calls	
Digital client feedback exit interviews	

Preparation, planning, and budgeting

Digital tools can help supervisors and program managers prepare for supervisory visits, including routine planning and budgeting. These tools are generally web-based and often display data in varying formats. Dynamic dashboards of health service delivery statistics, logistics management data, and health outcomes or recent data from supervision visits can inform decisions about where, when, and on what topics supervision is needed. Up

to-date maps pulling from a master registry can show the locations of facilities that require supervision and how much time has passed since their last visit. Digital systems can even provide automated prioritization of who and what to supervise based on previous performance or service delivery indicators. This can help ensure that supervision coverage is equitable and does not leave out hard-to-reach facilities.



Tool examples

Population Services International developed the **Health Network Quality Improvement System (HNQIS)** app to improve supportive supervision in many contexts. HNQIS is composed of four modules: 1) plan supervision visits to health workers; 2) assess and report health worker performance; 3) improve health workers' knowledge through training; and 4) monitor health workers' performance over time. This landing page shows health facility assessment status.

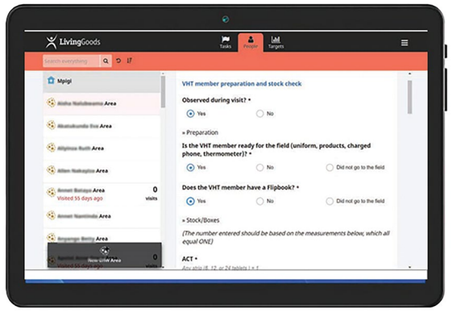
Direct observation of care, inspection, interviews; problem solving, feedback, coaching, and consensus; training

The supervisory visit itself includes direct observation of care, inspections, and interviews with the health worker. It then can transition to problem solving, feedback, coaching, consensus, and on-the-job training. A variety of digital tools can support supervisors during these visits. The most common are **automated visit checklists and protocols** that guide supervisors through interview questions, or remind them of what to check for during direct observation of care, all while facilitating data entry by auto-filling prior data about the facility/supervisee, and through skip logic, multiple choice selections, and data validation. In their most basic form, these checklists can be a survey that captures a moment in time and relieves supervisors from entering paper checklists into a reporting system. They can also be built into case management systems, allowing **longitudinal tracking of performance and action item data** from one visit to the next. In this type of tool, a supervisor will select the facility or health worker from a pre-populated list within her device, which then displays information about that "case" that can help the supervisor frame the observation of care and feedback. This can include

scoring/feedback generated in the last supervision visit, performance data based on service delivery statistics, or health worker performance as logged on a digital job aid application. Digital tools can support data-driven feedback and coaching. **Dynamic dashboards** accessible via mobile device can allow the supervisor to compare health workers' performance in comparison to their colleagues, targets, and past performance. Users can look at **triangulated data from multiple systems** such as service delivery and logistics to discuss challenges and possible solutions. Supervisees should also be able to provide feedback to their supervisor, and report issues independently from their supervisors at each phase of the supervision process from planning to follow up. This creates a two-way feedback mechanism with reporting up as well as down. Supervision data can also be used cross-sectoral and bidirectionally. For example supervision data collected can be pushed into other information systems and vice versa to inform other national programmes and health sectors. Lastly, monthly dashboards of health worker performance could also be digitized in order to track performance of a health worker cluster, or across a jurisdiction in order to engage and motivate supervisors.

The automated checklists that supervisors use during their interviews, inspections, and direct observations can generate real-time scoring and be used to create a dashboard visual, with a selected number of indicators to show feedback for health workers on areas of strength and weakness. Based on the areas of weakness identified, supervisors can pull up **multimedia training materials** (videos, PDFs, etc.) that can be used for immediate refresher training or to facilitate discussion with the supervisee. One set of resources that can be leveraged for this type of embedded multimedia is available on the ORB website, a site populated with content vetted by subject matter experts. The digital case file can also prompt the supervisor to review action items generated in previous sessions.

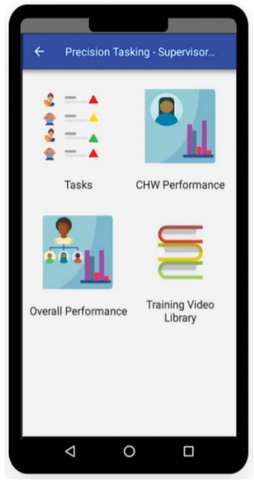
In addition to supervisors, health workers can complete **self-assessment** forms on mobile devices or computers. These can be used to strengthen connections when supervisors are unable to travel to the supervisee due to geographic barriers, insecurity, or pandemics.



Tool examples

The **SmartHealth app** from Living Goods provides a digital dashboard with daily performance data that motivates health workers to work toward their goals. This direct observation feedback informs the need for training and follow up. This image shows the supervisor priority task list, left, and the supervisory visit checklist, at right.

Dimagi's Precision Supervision initiative includes the **CommCare-based Supervisor Tasking Reference Application**, which has many useful modules in line with this framework. One is designed to assign training tasks to health workers depending on topics the supervisor has identified. It also makes it easy to share training videos and materials.

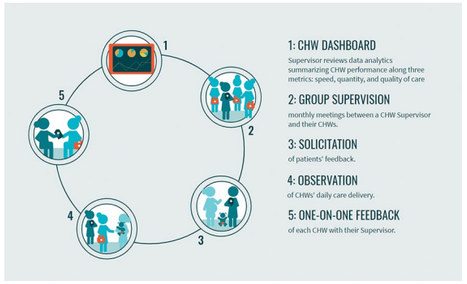


Reporting and follow up

After a visit to a facility or supervisee, digital tools can support reporting and follow-up. Entering data into **digital checklists** allows **aggregated data on health worker performance** and report compilation. This lets managers track supervisor performance (e.g., if they complete visits on time), and can alleviate the reporting burden on supervisors. Once data from a series of supervision visits are loaded into the system, supervisors can **compare health worker** performance to look for patterns and trends.

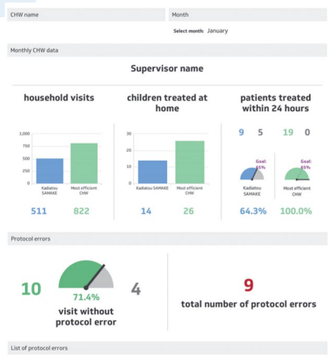
If information is collected in a digital system after each supervision visit, whether from a **digitized checklist** used during the visit or through data entry upon return to the district office, digital planning dashboards or reports can provide **longitudinal documentation of supervision action items** and feedback. Logging these action items and tasks during and after each supervision visit can enable the system to generate automated reminders of follow-up tasks that need to be completed as supervisors prepare for future visits. These reminders can also be generated by requests sent by supervisees through text messages, email, mobile phone, or web- based applications.

Digital tools can support follow-up between visits. Supervisors can send documentation of visit and performance data to supervisees so they can review and track their own performance. Digital systems can send supervisors and other program experts (e.g., supply chain) reminders of action items noted during visits. Supervisors can send **follow-up training resources** (e.g., videos, PDFs) to supervisees. Health workers can send **digital requests for support** through text or WhatsApp messages, or dedicated portals in a more sophisticated digital system.



Tool examples

Muso Health's **360 Supervision** framework emphasizes the importance of data analytics and summarizes health worker performance across multiple sources. Its reporting functions facilitate other steps of supportive supervision and inform training and follow up needs.



The **Community Health Toolkit** is a framework to develop digital health tools. The incorporated dashboards allow summary statistics that highlight areas of improvement during the follow up phase. The "Targets" tab offers supervisors actionable items and identifies which health workers to follow with additional training and performance management.

TECHNICAL AND IMPLEMENTATION CONSIDERATIONS

Technical considerations

The following sections summarize some technical considerations to take into account when planning for, designing, and implementing digital tools for supportive supervision.

Platform selection

Choose your platform based on the phases/components of the supportive supervision system selected for priority digitalization, and the vision of the final scope for the digital approaches. Begin with a review of the required key functionalities of your context and requirement. Does the tool need to collect and display data, record/display locations, allow for one- or two-way messaging, or work offline? These are just some possible examples. Then review the existing digital health ecosystem in a country, what already exists? What are the current challenges or gaps? Identify the political appetite, policies and the planned enterprise architecture and strategy. Is there an off the shelf tool that could be customized? Or do you need to consider a new build? A useful resource for platform selection is the Digital Implementation Investment Guide, particularly Chapters 4, 5, and 6.

External data sets and interoperability

For some of the digital components discussed to be most useful to managers, supervisors, and supervisees, they must incorporate up-to-date information from various external sources within the national health information system. To do this, there must be routine exchange of data between the supervision and external systems. What other health programmes would benefit from access to supervision data? Identify data sources and their requisite systems before developing a supervision tool, to identify digital governance structures and data standards that will facilitate this exchange. This may include digital client records and mLearning/eLearning tools; and supply chain reporting and resupply, aggregate data reporting, human resources management information, and registration/certification systems.

Data security considerations

Supervision systems require access to data disaggregated to the individual health care provider level. Therefore, it is especially important to safeguard privacy and system security. This includes technical considerations in the architecture, design, and hosting, and administrator training and audits and user security training to prevent breaches. If a system is going to collect data, there are also security concerns for data stored on a device before transmission, while in transit, and while on the server.

Implementation Considerations

The following sections summarize some implementation considerations to take into account when planning for, designing, and implementing digital tools for supportive supervision.

Governance and ownership

Having a strong supportive supervision governance structure is critical to the success of any digital tools used to support supervision. A governance structure should have clear roles and responsibilities, catalyzing strong ownership and institutionalization that can drive long term sustainability of investments. Governance frameworks should be clear to determine where supportive supervision investments are best housed with identified champions to advocate and ensure momentum and clear lines of decision.

Digital literacy

Health workers have varying levels of experience and comfort with digital tools. These levels of digital literacy must be considered when designing training and creating troubleshooting and support networks for users.

Building a culture of data use

Digital systems are only helpful if people use them and make decisions based on the data and information they provide. For many years, supervision data have been filed on paper checklists. With digital systems making data more easily available for use, it is important to update guidelines and performance targets to ensure that supervision requires data use. Data can be used during review meetings to help supervisors assess supervisee performance, and to help managers determine whether supervision is effective. Visible use of data can create a virtuous cycle whereby the quality of data improves as people supplying it see that it is being used, and the value of providing timely, complete, and accurate data.

Device selection and management

Different sites and users require access to digital tools through different types of devices. Supervisors who spend much of their time at various facilities need to use a mobile phone or tablet during their visits. Managers are more likely to view web based dashboards and reports on a desktop or laptop computer. Some supervisors, depending on their level within the health system hierarchy, can access reports and dashboards on a web-based format when at their desk. It is important to identify and select appropriate devices for each system user. It is also important to have a plan for device replacement and repair.

Physical infrastructure: charging and connectivity

Different system users will have different access to connectivity and electricity. Those at health facilities or district/regional offices who have desktop computers will not have access to their systems any time the power is out. Laptops or tablets can hold a charge and work with intermittent access to power. If facilities do not have access to power at all, solar chargers may be necessary for users who have mobile devices. Additionally,

certain digital components, such as digitalized visit checklists, longitudinal tracking of action items and performance, and training materials, should have offline functionality if they are going to be used in areas with sporadic internet connectivity, which is certainly more prevalent at the community and primary levels of a health system.

Gender considerations

Digital approaches to supportive supervision systems need to consider gender in a variety of ways, particularly because the majority of frontline health workers and supervisors at lower levels of the health system are women.

Gender should be factored into the design of the system. While it is always important to take a user-centered approach to software development, it is especially so for tools that health care workers use. Too often only national-level experts and users are consulted about the requirements of various systems. It is important to gather requirements and conduct user acceptance testing with a range of users, including those at the lowest levels of the health system.

Similarly, it is important to consider gender when reviewing supervision data across a variety of axes. Who is receiving consistent supervision? Who is left out of supervision? Is there a distinction by gender? Who has stronger performance? Is stronger performance linked to more opportunities for professional development/training? If so, are there changes that can ensure that weaker performers receive more supervision?

Gender is also relevant when supervisors review individual facility and provider service delivery data. Is there a pattern or gender dynamic among children who are seen or diagnosed with various conditions? Within categories of treatment that serve both genders (i.e., beyond maternal health and family planning), who are health workers serving? Are they reaching men? Do they provide some services to men but not women? Can these metrics be integrated into the way performance is evaluated?

ANNEX 1. CONSULTATIONS

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ANNEX 2. DOCUMENTS REVIEWED

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ANNEX 3. RELEVANT TOOLS

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
COMMUNITY HEALTH TOOLKIT	he Community Health Toolkit is a collection of open-source technologies and open-access resources developed by a community focused on global health equity.Community Health Toolkit (CHT) Applications are digital health tools built using the CHT Core Framework. The Core Framework provides a foundation on which custom CHT Applications are built. Since all CHT Applications share the same foundation, they also share capabilities and attributes. For example, all CHT Applications share a similar user-interface and share the same look-and-feel. All CHT Applications can be built to scale, can run across a variety of devices, support Offline First experiences, and support most languages. These baseline capabilities are foundational across all CHT Applications.	• Medic	Community Health Toolkit	Multiple	Com-munity Health	Provider	Supervisor	• Automated prioritization of who/ what to supervise • Pre-scheduled tasks/ reminders • Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Longitudinal documentation of health worker progress and feedback • Digital tracking of action items	https://docs.communityhealthtoolkit.org/

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
SMARTHEALTH APP	Living Goods and Medic have collaborated to create a powerful set of mobile and web tools to support the Community Health Workers (CHW's) assisted by Living Goods.Built on Community Health Toolkit Framework core, the open-source Smart Health app is used by CHWs to support delivery of high quality and integrated primary health care services, including common childhood diseases such as malaria, diarrhea and pneumonia; maternal and neonatal care,family planning and immunization referral services. Although Living Goods independently configured its immunization and COVID-19 workflows, it still actively collaborates with Medic for ongoing technical support, including needs assessments, technology strategy and upgrades. This application also has a supervisor dashboard that enables the real-time remote management of CHW's, also helps manage effective stocking of medical commodities, and is being used to provide the government with critical data to better plan and budget for community-level interventions. Comprehensive monitoring and supervision of CHWs is an essential component of effective community health programs. Because the app immediately captures every patient touchpoint—providing names, mobile numbers, GPS locations, and timestamps—any manager or government official can see CHW or regional metrics plotted against targets in real-time. User-friendly dashboards automatically flag low- and high-performing CHWs and regions. Learn More about our approach to performance management.	• Living Goods • Medic	Community Health Toolkit	Kenya, Uganda	PHC/Out-patient	Provider	Supervisor	• Automated prioritization of who/ what to supervise • Pre-scheduled tasks/ reminders • Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Triangulation of data from multiple systems • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols • Digital tracking of action items	https://livinggoods.org/what-we-do/mhealth/

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
HQNIS	The Health Network Quality Improvement System (HNQIS), an electronic tablet-based application used to improve quality of health services and effectively reach health impact at scale. The HNQIS is composed of four modules that support healthcare supervisors to (i) plan supervision visits, thanks to a prioritization matrix that reckons quality scores and patient volume, (ii) assess providers' quality of care against clinical standards, (iii) improve providers' quality of care through tailored feedback, and (iv) monitor quality improvement over time. As of 2018, HNQIS is implemented in Angola, Benin, Burundi, Cambodia, Cameroon, Cote d'Ivoire, DRC, Guatemala, Kenya, Laos, Madagascar, Malawi, Mali, Mozambique, Nigeria, Tanzania, Thailand, Uganda, and Zimbabwe.	· PSI	DHIS2	Multiple	Com-munity Health	Supervisor	Provider	· dynamic dashboards, Aggregated performance data from visit tools · Dynamic dashboards from real time data · Aggregated data to compare health workers · Longitudinal documentation of health worker progress and feedback · Digitalized visit checklists and protocols · Digital training materials	https://hrh2030program.org/wp-content/uploads/2019/07/Annex-D_Case-Study-on-HNQIS.pdf
MHERO	This tool uses mobile based communication between MOHs and CHWs to collect critical information that supports resilient health systems, including stock levels, routine formal and informal indicators, one-time assessments, and validation of health worker and facility data. Its supports surveillance systems for real time reporting on active cases and potential outbreaks and to reinforce health workers' skills—part of a country's solution for Integrated Disease Surveillance and Response (IDSR).	· Intrahealth	Rapid Pro	Multiple	Com-munity Health	Provider	Manager	· pre-scheduled tasks/ reminders · digital training materials	https://fpdigitalsolution.org/case-study/mhero/
360 SUPERVISION CHW PERFORMANCE DASHBOARD	This dashboard is part of the larger 360 Supervision model by Muso Health. The Dashboard displays an individual CHW's quantity, timeliness, and quality of care indicators from the previous month, using absolute numbers, percentages, and visual graphics, alongside those of the highest performing CHW.	· Muso Health	CHT	Multiple	Com-munity Health	Provider	Supervisor	· Aggregated performance data from visit tools · Dynamic dashboards from real time data · Aggregated data to compare health workers	https://www.musohealth.org/the-muso-model

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
PRECISION SUPERVISION: TASKING REFERENCE FRAMEWORK	The Supervisor Tasking Reference Application includes functionality and interfaces for the CHW Supervisors. The CommCare app is designed to help supervisors manage their CHWs, analogous to and linked directly to how the CHW Tasking Reference Application helps a CHW manage their clients. The supervisor app is oriented around a list of tasks, where each task directs the supervisor to discuss a certain topic with one of their CHWs or to call an end client if needed (Eg emergency follow ups).	· Dimagi	CommCare	Multiple	Com-munity Health	Supervisor	Provider	· Pre-scheduled tasks/ reminders · Aggregated performance data from visit tools · Dynamic dashboards from real time data · Aggregated data to compare health workers · Triangulation of data from multiple systems · Longitudinal documentation of health worker progress and feedback · Digitalized visit checklists and protocols · Digital tracking of action items Digital training materials	https://confluence.dimagi.com/display/commcare-public/Enabling+Precision+Supervision%3A+Tasking+Reference+Framework+in+CommCare

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
INTEGRATED SUPPORTIVE SUPERVISION (ISS) TOOLKIT (ONSE PROJECT)	The tool supports programme supervision for health facilities at the various levels of care. Kit consists of a mobile app for district health managers (CommCare based) and PowerBI dashboard used at district and national level. ISS is an electronic checklist used for supervision during active case search and routine immunization	• Village Reach • Management Sciences for Health • Dimagi • Overseas Strategic Consulting • Development Innovations Group • Banja La Mtsogolo	CommCare PowerBI ODK	Malawi	Immuiza-tion	Supervisor	Provider	• Aggregated performance data from visit tools • Dynamic dashboards from real time data Triangulation of data from multiple systems • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols • Digital tracking of action items	DHA entry: https://www.digitalhealthatlas.org/en/-/projects/43/published Link to application: (need access): https://www.commcarehq.org/a/onse-iss/dashboard/project/ ONSE 2019 Q3 report (pg 66): https://pdf.usaid.gov/pdf_docs/PA00W646.pdf
MTIKA BANGLADESH	mTika is an interactive Android-device based immunization optimization solution that aims to remove the barriers in achieving timely & high immunization coverage in rural Bangladesh through infant & pregnant mother enumeration & registration, vaccination record-keeping & SMS reminders. When patients (mother or child) visit a vaccination camp, they are registered first via the mTika app. Using the app, "Vaccination schedules", can be created on the basis of which health workers can take targeted interventions. The app also allows frontline Health Workers to send reminder and on-demand messages to beneficiaries via bulk SMS on camp day for vaccination. Health workers can view which beneficiaries have vaccines due through color coded flags & this results in proactive engagement & increased timely vaccination rate in rural Bangladesh.	• Gates • UNICEF • WHO • DGHS under the Ministry of Health and Family Welfare • John Hopkins University	OpenSRP	Bangla-desh	Immuiza-tion	Provider	Supervisor	• Pre-scheduled tasks/ reminders • Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Triangulation of data from multiple systems • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols • Digital tracking of action items	https://www.odess.io/en/initiative/mtika/

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
THRIVE	Open Smart Register Platform or known as OpenSRP is an integrated electronic health information system to enhance maternal and neonatal health outcomes. This digital system is aimed to provide an integrated health platform to improve frontline workforce efficiencies, data quality, and timeliness of RMNCH interventions to enhance maternal and neonatal health outcomes. SID has run the OpenSRP program through the THRIVE project since 2014. This program has successfully been implemented in five districts in Indonesia with 116 users and benefits more than 120.000 pregnant women, neonatal babies and children under five-year old.	• Qualcomm Wireless Reach • Harvard T.H Chan School of Public Health • Oxford University • WHO • West Nusa Tenggara Government • West Pasaman Government • Banggai Government • Magelang Government • Politeknik Kesehatan Kemenkes Magelang	OpenSRP	Multiple	MNCH	Provider	Supervisor	• Digital training materials	https://sid-indonesia.org/thrive-indonesia/

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
INTEGRATED E-DIAGNOSTIC APPROACH (IEDA)	The IeDA project has two main objectives: 1) digitizing the WHO IMCI (Integrated Management of Childhood Illness) guidelines to improve healthcare workers adherence, diagnosis accuracy and treatment efficiency. The interface is the Commcare application run on Samsung tablets. 2) providing feedback and teaching to healthcare workers using a network of coaches and using the data collected with the digital platform. We are also developing eLearning modules relevant to IMCI consultations. Through e-learning and digital assisted supervisions, IeDA also develops the competences of local staff in rural areas	• Doctors for You • Dimagi • Jharkhand state health department • Tdh and the Ministry of Health in Burkina Faso	Commcare	Multiple	MNCH	Provider	Supervisor	• Pre-scheduled tasks/ reminders • Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Triangulation of data from multiple systems • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols • Digital tracking of action items	https://www.tdh.ch/en/ieda
KENYA HEALTH & EMPOWERMENT	The project uses asynchronous telemedicine to drive quality improvement in rural health settings and create equal access to digital health innovations for frontline health workers in Kenya. Local providers are given free access to a telemedicine platform and a global network of volunteer physicians who assist in the care of patients remotely and in less than 12 hours. The Addis Clinic staff in Kenya coordinate quality improvement through remote physician support, technology training and technical assistance, and continuing medical education.	• Addis Clinic	Collegium Telemedicus	Kenya	Com-munity Health	Provider	Supervisor	• Digital training materials • Tools for audio/video calls	https://www.addisclinic.org/

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
FAMILY PLANNING DIGITAL HEALTH SYSTEM FOR COMMUNITY HEALTH WORKERS - SHINYANGA REGION	Community-based family planning program which support CHWs providing FP services in the community, following the Balanced Counseling Strategy Plus and Tanzania guidelines. Comprehensive dashboards, including government reports, discontinuation tracking and other indicators are available. CHW supervisors have a mobile app which allows them to send messages to CHWs about outreach events and method stock levels.	• Pathfinder International • D-tree International • Ministry of Health	Mangologic	Tanzania	Family Planning	Supervisor	Provider	• Dynamic dashboards from real time data • Aggregated data to compare health workers"	https://www.packard.org/awardee/m-health-improve-quality-family-planning-services-tanzania/
UPSCALE	The upSCALE platform consists of an interactive smart phone application that guides community health workers (CHWs) through patient registration, routine health checks, diagnosis, treatment, referral, and follow up. The app automatically collates data for the CHWs' monthly reports, which they can submit to their supervisors from their phones. A complementary tablet-based application for supervisors enables them to improve CHWs' performance and feedback. Nationwide scale-up anticipated by 2020.	• Mozambique Ministry of Health • UNICEF • Dimagi • Saudigitus • Inhambane Provincial Health Authority • Cabo Delgado Provincial Health Authority	CommCare	Mozam-bique	Com-munity Health	Provider	Supervisor	• Pre-scheduled tasks/ reminders • Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Triangulation of data from multiple systems • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols • Digital tracking of action items "	https://www.malaria-consortium.org/media-downloads/1532/upSCALE:%20Strengthening%20mobile%20health%20in%20Mozambique

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
TANZANIA RMNCH MHEALTH APP	The mobile tool guides CHWs through the algorithm step-by-step and prevents skipping over critical questions and information during counseling. Additionally, it allows for immediate collection and digitization of the data, and it facilitates easier data use across different levels of the health system. To motivate CHWs and hold them accountable for completing their work, a pay-for- performance system was implemented that provides additional mobile phone minutes to CHW stipends for meeting targets for registering a minimum number of new clients each month and completing 75% or more of scheduled follow-up visits. A custom supervisory application was developed for supervisors at health facilities that allows them to review CHW performance in real time, communicate about family planning outreach services and method stock, and view aggregate government reports.	• FHI 360 • Pathfinder International • D-tree International • USAID	CommCare	Tanzania	Com-munity Health	Provider	Supervisor	• Digitalized visit checklists and protocols	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4982253/

TOOL NAME	TOOL DESCRIPTION	IMPLEMENTING PARTNER	SOFTWARE PLATFORM	COUNTRY	HEALTH AREA	PRIMARY END USER	SECONDARY END USER	DIGITAL COMPONENTS LIST	LINK(S)
COMMCARE NUTRITION EXPERTS SUPERVISORY TOOL IN INDIA	India: The district supervisor reviews the reports the community nutrition experts submit on child health status, discusses issues that the community nutrition experts have faced in the field, and develops a roadmap for the next 15 days. There is general acknowledgment of the community nutrition experts who have performed well for that period. The district supervisor also gives specific acknowledgment to community nutrition experts when they excel in the group environment to motivate other community nutrition experts to improve their performance. The district supervisor also accompanies the community nutrition experts on home visits to monitor performance. She spends the entire day with the community nutrition expert covering the households she visits and monitors the community nutrition expert's work closely. She provides individual feedback/ support at this time, which includes supporting community nutrition experts to motivate households that are resistant to admitting their child to the nutrition rehabilitation centers and supervising reporting (ie, reviewing how the data are entered on CommCare or their paper-based form. 5 districts, 600 villages.	• Real Medicine Foundation (RMF)	CommCare	India	Nutrition	Supervisor	Provider	• Aggregated data to compare health workers	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5177738/

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ZAMBIA CHMIS MOBILE PLATFORM FOR CASE MANAGEMENT	The C-HMIS mobile platform was used by CHWs providing integrated community case management (iCCM) services and their supervisors to address challenges of frequent stock-outs and inadequate supportive supervision of iCCM-trained CHWs. The platform used simple feature mobile phones on which were loaded the District Health Information System version 2 (DHIS2) software and Java 2 platform micro edition (J2ME) aggregation and tracker applications. This project was implemented in Chipata and Chadiza districts, which supported previous mHealth programs and had cellular coverage from all 3 major network carriers in Zambia. A total of 40 CHWs and 20 CHW supervisors received mobile phones with data bundles and training in the mobile application, after which they implemented the program over a period of 5.5 months, from February to mid-July 2016. CHWs used the mobile phones to submit data on iCCM cases seen, managed, and referred, as well as iCCM medical and diagnostic supplies received and dispensed. Using their mobile phones, the supervisors tracked CHWs' reported cases with medicine consumption, sent CHWs feedback on their referrals, and received SMS reminders to set up mentorship sessions.The intervention used mHealth-enhanced inventory management and supportive supervision and mentorship. A total of 80 CHWs were trained under the cluster RCT, 60 from Chipata (30 intervention, 30 control) and 20 from Chadiza (10 intervention, 10 control).The automated monthly SMS recurrent supervisory activities—routine quarterly supportive supervision that combines iCCM and all other health-related supervision of CHWs.	• Zambia Centre for Applied Health Research and Development - Boston University	DHIS 2	Zambia	Com-munity Health	Supervisor	Provider	• Pre-scheduled tasks/ reminders • Longitudinal documentation of health worker progress and feedback • Digital tracking of action items	https://pubmed.ncbi.nlm.nih.gov/28855233/

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COMMUNITY HEALTH ACADEMY	OppiaMobile is an open source mobile learning platform specifically designed for delivering learning content, multimedia and quizzes in low-connectivity settings and primarily used for health worker training.	• Last Mile Health • Digital Campus	Open Data Kit, OppiaMobile	Liberia	Com-munity Health	Provider	Supervisor	• Digital training materials • Digitalized mobile-based self assessment "	https://forum.getodk.org/t/case-study-last-mile-health-liberia/16352
AFYASS (AFYA SUPPORTIVE SUPERVISION TOOL)	This is a national tool for planning, conducting and following up on Facility Supportive Supervision across health domains. AfyaSS was developed under The Data Use Partnership (DUP) a government-led initiative that is improving the national health care system through better use of health information. The initiative is under the Ministry of Health, Community Development, Gender, Elders and Children (MoHCDGEC) and President's Office Regional Administration and Local Government offices (PORALG) and supported by Bill and Melinda Gates Foundation (BMGF) under supervision of PATH Tanzania as implementing partner. AfyaSS uses a single dashboard to consolidate supervisory checklists, feedback forms, recommendations, and action plans across all health areas. AfyaSS is an electronic platform targeting to facilitate Health Facilities Supervision processes, before, during and after the supervision visit, and to manage and facilitate the use of facility supervision data for evidence based planning, management and decision making.	• PATH Tanzania • MoHCDGEC • PORALG	DHIS 2, Angular Technology, Flutter Mobile	Tanzania	PHC/Out-patient	Supervisor	Provider	• Pre-scheduled tasks/ reminders • Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Triangulation of data from multiple systems • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols • Digital requests for support • Digital tracking of action items	https://www.youtube.com/playlist?list=PL3LwjN8EFUG5b8lSCYLfB5fRkG2OH1-ej https://play.google.com/store/apps/details?id=tz.go.moh.supervision&hl=en_US&gl=US&pli=1

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MEDIC CHW DASHBOARD USED FOR SUPERVISION	The CHW Performance Dashboard was a graphic display of a CHW's performance along three indicators defined as follows: (i) "Quantity" of care: the number of homes visited during the month; (ii) "Timeliness" of care: the percentage of sick children under five treated within 24 hours of symptom onset during the month (during proactive case-finding home visits, CHWs recorded the date and time of day of the visit—morning, noon, evening, and night. Based on the parent/guardian's recall of the time of day of symptom onset (ie, today, over the course of the night, yesterday morning, yesterday evening, day before yesterday morning, day before yesterday evening, three days ago, or more than three days ago), a dichotomous variable was created to indicate if the visit took place within 24 hours of symptom onset); (iii) "Quality" of care: the percentage of sick children under five treated without protocol error among 23 potential errors during the month	• Medic	Medic	Multiple	Com-munity Health	Supervisor	Provider	• Dynamic dashboards from real time data	https://jogh.org/documents/issue201802/jogh-08-020418.pdf

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GO.DATA	Go.Data is a platform for outbreak response developed by the World Health Organization (WHO) in collaboration with partners in the Global Outbreak Alert and Response Network (GOARN) and informed by years of WHO and GOARN partner experience in outbreak response. Field-based users such as field epidemiologists, contact tracing teams and laboratory staff can register cases, contacts and their related data, including laboratory samples and hospitalizations. Go.Data dynamically generates outputs and analyses – such as contact follow-up lists and chains of transmission – to help responders target local response efforts in real time.	• WHO • GOARN Partner Institutions	WHO	Multiple	HIV/TB/ Malaria	Provider	Supervisor	• Pre-scheduled tasks/ reminders • Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols • Digital tracking of action items	https://www.who.int/tools/godata; https://community-godata.who.int/; https://apps.who.int/iris/handle/10665/352606; https://worldhealthorganization.github.io/godata/

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INTEGRATED SUPPORTIVE SUPERVISION ANALYTICS (ISSA)	Digital Integrated Supportive Supervision Analytics (ISSA) is an open-source web-based mobile-enabled platform for quick collection, analysis and management of data generated through supportive supervision.	• Federal Ministry of Health (FMoH) • eHealth4everyone	DHIS 2	Nigeria	Community Health	Supervisor	Provider	• Automated prioritization of who/what to supervise • Pre-scheduled tasks/reminders • Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols • Digital tracking of action items	https://iss.fmohconnect.gov.ng/accounts/login/?next=/ https://ehealth4everyone.com/issa/#:~:text=Integrated%20Supportive%20Supervision%20and%20Analytics%20(ISSA)%20is%20an%20open%2Ddata%20generated%20through%20supportive%20supervisions

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MSANTE	A supportive supervisory component was included in the tool to assess several metrics such as the completeness of each form, the time requested to fill each form, the number of new customers enrolled in the system, the number of infants immunized or the numbers of postpartum women visited during a week. Using these metrics, a weekly SMS was sent to the group composed of all the community health workers (CHW) in the selected health facility which informed them of the leading CHW per indicator.	• Pathfinder under the project SSQH	CommCare	Haiti	MNCH	Supervisor	Provider	• Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Triangulation of data from multiple systems • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols	https://pdf.usaid.gov/pdf_docs/PA00M69V.pdf
MALARIA SERVICES DATA QUALITY IMPROVEMENT (MSDQI)	Is a tool used to assess the performance of malaria indicators at health facilities in Tanzania. It has six checklist which as follows; Logistics, mRDT,Microscope,Outpatient Department (OPD), Inpatient Department (IPD),and Reproductive and Health services (RCH) Each tool has the set of question to I.e., to check the consistency, patient satisfaction, adherence of guidelines, etc. The score is assigned in 3 categories based on response to each question > 75, 50 - 75, and < 50 Moreover, each tool has a separate data quality assurance (DQA) module and Quality Improvement (QIP) module, where interviewee and interviewer plan for areas for improvement This supervision tool is linked to the DHIS2 , where you can visualize the results and score of the supervisions	• Impact Malaria • RTI international (TA)	DHIS2 and DHIS2 APP(HISP Tanzania)	Tanzania	HIV/TB/Malaria	Provider	Manager	• Aggregated performance data from visit tools • Dynamic dashboards from real time data • Aggregated data to compare health workers • Triangulation of data from multiple systems • Longitudinal documentation of health worker progress and feedback • Digitalized visit checklists and protocols • Digital tracking of action items	https://www.pmi.gov/pmi-supported-application-adopted-by-tanzania-nmcp-as-national-malaria-supervision-platform/

www.chisuprogram.org

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