Human resources & community health systems

Application of the PtD supply chain management theory of change in Liberia

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Photo credit: Last Mile Health

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Cover image
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Acronyms

ANC	Antenatal care
CHA	Community health assistant
CHC	Community health committee
CHO	County health officer
CHSS	Community health services supervisor
CHT	County health team
CHW	Community health worker
FGD	Focus group discussion
HR4SCM	Human resources for supply chain management
ICCM	Integrated community case management
LMIC	Low- and middle-income countries
MoH	Ministry of Health
NGO	Non-governmental organisation
OIC	Officer in charge
ORS	Oral rehydration salts
PPE	Personal protective equipment
PtD	People that Deliver
RDT	Rapid diagnostic test
SC	Supply chain
SCM	Supply chain management
SC4CCM	Improving Supply Chains for Community Case Management of Pneumonia and Other Common Diseases of Childhood Project
SCMU	Supply Chain Management Unit
TNA	Training needs analysis
ToC	Theory of Change
USAID	United States Agency for International Development

Executive summary

The aim of a supply chain management system is to ensure that products are available to the end user at the right time, in the right quantities, at the right quality and at the right price. This requires a professional, competent and motivated workforce at all levels of the supply chain, including at the community level. Community health workers (CHWs) and their supervisors are an integral part of the health supply chain workforce.

The purpose of this diagnostic is to explore barriers related to staffing, skills, motivation and working conditions from the perspective of CHWs and their supervisors in Liberia. This diagnostic was conducted by People that Deliver (PtD) and supported by the United States Agency for International Development (USAID). It marks the first time that the PtD Theory of Change (ToC) has been used to examine CHWs in their capacity as members of the supply chain workforce.

Findings

Both community health assistants (CHAs, as CHWs are called in Liberia) and their supervisors (community health service supervisors - CHSSs) are contracted by NGOs. They do not have access to benefits such as medical insurance or leave and therefore assume a substantial amount of risk as they undertake their work. In addition, many CHAs are responsible for up to four times the number of households designated in the Liberian National Community Health Services policy (60 households). Despite inflation, monthly stipends provided to CHAs have remained the same since inception of the national CHA program in 2016.

CHAs and CHSSs undergo extensive training prior to commencing their roles. By all accounts, CHAs have the knowledge and skills necessary to deliver health services in their communities, provided they have access to all necessary supplies. Most CHAs, however, lack the supplies necessary to fulfil their roles, including personal protective equipment (PPE). Likewise, the availability of essential medication remains a persistent challenge at community level, resulting in referrals to the facility, many of which are not taken up due to distance and cost. Pride and respect are key motivators for CHAs, as is a desire to promote community health. A lack of commodities at community level erodes community confidence in the CHA.

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Recommendations

ToC pathway 1: Staffing

Some CHAs are responsible for up to four times the number of households designated in the National Community Health Services policy. Moving forward, community census and demographic shifts should inform staffing ratios: **each CHA should be responsible for a maximum of 60 households**. Given the low proportion of female CHAs in Liberia, we also encourage communities to nominate female CHA candidates.

ToC pathway 2: Skills

According to both CHAs and CHSSs, CHAs demonstrate the skills necessary to provide quality health care services in their communities. This indicates that training and mentoring has been successful. Given that six years have passed since the inception of the programme, it would be advisable to **conduct an updated training needs analysis** (TNA) to determine whether any skills gaps remain owing to changes in clinical guidelines and/or burden of disease. Such an undertaking will inform the revision of the CHA learning materials currently underway and identify areas that may deserve attention in future refresher training sessions.

ToC pathway 3: Working conditions

CHAs and CHSSs are only able to fulfil their roles if they are healthy and safe. **An adequate supply of essential supplies – especially those necessary to prevent infection such as gloves and sharps containers – should therefore be provided to CHAs**. For CHAs who have no means of communicating with their CHSS in the event of an emergency, **the provision of a mobile device with SMS capability should be considered**. Likewise, CHSSs should be allocated sufficient funds for fuel and other expenses they incur in order to conduct supervisory visits.

Given the direct and indirect consequences of stockouts identified during this diagnostic, **it is imperative to explore strategies to ensure the sufficient supply of health commodities at community level.** The provision of CHA kits through a project led by VillageReach is one such strategy. Additional strategies suggested by participants include increasing the proportion of medications allotted for community use above the current threshold of 20 percent and allocating medication based upon catchment population and/or supply chain data collected via data collection tools, rather than providing a fixed amount to each CHSS. It does appear that CHSSs may be better placed than CHAs to affect stockout issues, given their direct link to the facility.

To reduce the reporting burden, **it is recommended that each CHA be provided with a data collection tool** (which may also serve as a digital job aid). Implementing partners may also wish to reconsider the requirement that CHAs input community-level data in two separate formats (digital and paper-based).

ToC pathway 4: Motivation

Pride and respect are powerful motivators and the provision of constructive feedback to CHAs in private – rather than public – is advised. Given the expressed desire of both CHAs and CHSSs for continuous learning and development opportunities, **it is recommended that stakeholders also consider appropriate career pathway options for both cadres**. Given the risks highlighted by the CHSSs, **we also recommend that health insurance coverage and leave be provided to all**, regardless of contracting mechanism.

It is essential that CHAs receive their monthly stipends on time and in the correct amount. Decision-makers may also wish to consider adjusting the figure to account for the inflation that has taken place since 2016.

See Annex C: People that Deliver Theory of Change: Basket of Interventions for actions associated with each of the four pathways, including those relevant to community health workers.

Background

Community health workers

Community health workers (CHWs) are individuals selected to provide health services at the community level. CHWs often live in the same communities in which they serve and are therefore well-versed in local culture, language, customs and social norms[1]. CHWs undergo training to gain the knowledge and develop the skills necessary to deliver culturally appropriate services within their scope of work. CHWs engage community members during household visits, at which time they conduct health assessments and screenings, promote health and provide referrals to the health facility, as indicated in Figure 1. In some countries, CHWs also diagnose and treat infectious diseases among children under five and provide family planning commodities such as contraceptives to women of childbearing age. According to Perry et al (2014), "When CHWs are appropriately selected, trained, and supervised, and when they are provided with appropriate supplies, medicines, and equipment, CHWs can improve key health-related behaviours, extend the accessibility of key services, and strengthen linkages between communities and health services."[2]

In many settings, community-level stockouts remain a persistent challenge and impede the ability of CHWs to deliver health services. A recent systematic review of stockouts in low- and middle-income countries (LMICs) found that CHWs were out of stock nearly one third of the time[3]. Findings from the Improving supply chains for community case management of pneumonia and other common diseases of childhood project (SC4CCM) implemented by John Snow International (JSI) Research & Training Institute, Inc. suggest that the availability of health commodities at community level depends on consistent availability at national level, and the efficient movement of community commodities to resupply points across all levels of the supply chain system[4].

Figure 1:
Role of the community health worker
(Liberia Malaria EUV Report, the Global Fund, 2022)
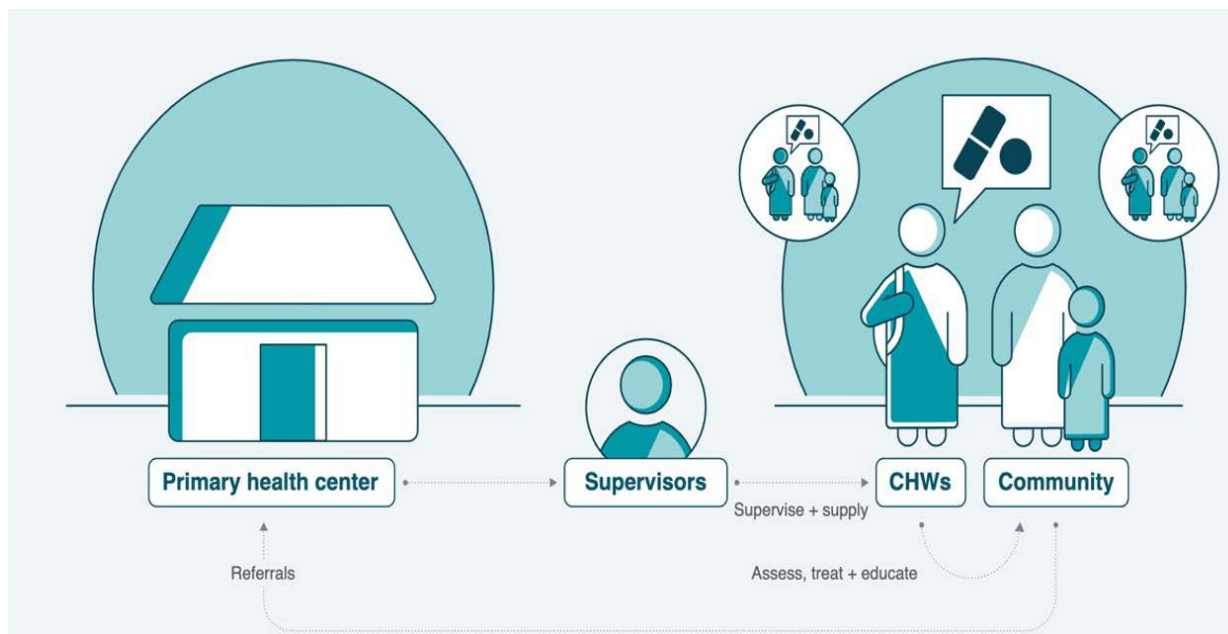
1 Olaniran, A., Smith, H., Unkels, R., Bar-Zeev, S., & van den Broek, N. (2017). Who is a community health worker?–a systematic review of definitions. Global health action, 10(1), 127222.

2 Perry, H. B., Zulliger, R., & Rogers, M. M. (2014). Community health workers in low-, middle-, and high-income countries: an overview of their history, recent evolution, and current effectiveness. Annual review of public health, 35, 399-421.

3 Olaniran, A., Briggs, J., Pradhan, A., Bogue, E., Schreiber, B., Dini, H. S., ... & Ballard, M. (2022). Stock-outs of essential medicines among community health workers (CHWs) in low-and middle-income countries (LMICs): a systematic literature review of the extent, reasons, and consequences. Human resources for health, 20(1), 1-10.

4 JSI (2014). Strengthening Supply Chains at the Community Level: Findings from the SC4CCM Project in Malawi, Rwanda and Ethiopia.

Community health workers in Liberia

The National Community Health Assistant (CHA) Program was launched in Liberia in 2016, following an Ebola virus disease outbreak that highlighted the crucial role that CHWs play in the provision of primary health care services in low-resource settings. Prior to 2016, government and non-governmental actors supported CHWs through a range of unstandardised, parallel programmes[5]. CHAs are formally recognised as members of the health system in Liberia. CHAs are selected by members of their own communities, to whom they are also held accountable. The National Community Health Services policy (2016-2021) endorsed by the Liberia Ministry of Health (MoH), stipulates that CHAs must be permanent residents of the communities in which they serve. CHAs must also be Liberian citizens, demonstrate the ability to read and write in English, and speak the local dialect[6].

CHAs serve in communities located more than five kilometres from the nearest health facility. Unlike previous cadres of community workers in Liberia, CHAs receive a monthly financial stipend and undergo standardised training prior to commencing their duties. Upon completion of the training programme, CHAs return to their communities to provide integrated primary health services with an emphasis on diagnosis and treatment of malaria, diarrhoea and pneumonia among children under five, as well as reproductive health commodities to women of reproductive age (for more detail, see Annex A: Community health worker (CHW) service package). Each CHA is supervised by a CHSS, a clinician who has undergone specific training for his or her position[7]. In addition to supervisory duties, CHSS' spend 20 percent of their time working in the health facility, where they are supervised by the officer-in-charge (OIC). Each CHSS receives the same allotment of medication, regardless of the number of CHAs supervised. CHSSs are responsible for providing medication to their supervisees, usually during supervisory visits, at which time the CHSS reviews the medication consumed since the last supervisory visit and then restocks the CHA's supplies. CHAs receive their supplies through the same network that serve health care facilities. Supplies are transported from the central warehouse to the county health depot and then to the health facility. As a result, the supply chain challenges that affect the health system at large, for instance inventory management, distribution and lack of storage space, also impact CHAs and impede their ability to deliver services in the community[8]. As shown in Figure 2, stockouts of essential medications (such as the antimalarials reported) remain a persistent challenge, especially at community health level as denoted by the number of clinics visited during this review period.

5 Exemplars in Global Health: Community Health Workers in Liberia. Accessed 15 October 2022. https://www.exemplars.health/ topics/community-health-workers/liberia.

6 Liberia Ministry of Health (2015). Revised National Community Health Services Policy 2016–2021.

7 Exemplars in Global Health: Community Health Workers in Liberia. Accessed 15 October 2022. https://www.exemplars.health/ topics/community-health-workers/liberia.

8 Healey, J., Wiah, S. O., Horace, J. M., Majekodunmi, D. B., & Duokie, D. S. (2021). Liberia's community health assistant program: scale, quality, and resilience. Global Health: Science and Practice, 9 (Supplement 1), S18-S24.

Stock Management

The confidence and precision parameters hold for all service delivery point indicators where the number of observations (n) is greater than 63. For indicators with fewer observations-- such as where the n decreases because sites do not have updated stock monitoring tools-- the margin of error will be wider than +/- 10%. In this instance, results would become less representative of the population and only representative of the sites visited.

Figure 1a. % service delivery points (SDPs) stocked out on the day of visit | **Figure 2a. Average stockout duration and % SDPs with updated stock cards** | **Figure 3a. % SDPs with accurate stock monitoring tools**

Category	% of facilities stocked out on the day of visit	# of facilities visited required to manage the product (n)	Average # of days stocked out in the last 3 months	# of facilities with updated stock card (n)	% of facilities with an updated stock card	# of facilities visited actively managing the product (n)	% of facilities with accurate data on the stock monitoring tool
ACTs							
AL 6x1 (6 disp. tabs)	50%	73	27.6	51	67%	71	70%
AL 6x2 (12 disp. tabs)	49%	73	23.6	55	73%	71	77%
AL 6x3 (18 tabs)	38%	73	20.9	56	73%	71	75%
AL 6x4 (24 tabs)	73%	73	30.3	56	72%	65	84%
ASAQ 25/67.5 mg (3 tabs)	73%	73	16.6	51	60%	59	82%
ASAQ 50/135 mg (3 tabs)	89%	73	32.3	54	68%	64	81%
ASAQ 100/270 mg (3 tabs)	87%	73	17.5	46	65%	56	84%
ASAQ 100/270 mg (6 tabs)	89%	73	18.1	51	69%	60	87%
Severe Malaria Medicines							
Artesunate 60 mg inj. (vial)	77%	16	13.4	11	69%	11	100%
Artesunate 120 mg inj. (vial)	88%	16	8.3	3	23%	4	88%
Other Pharma							
Quinine DiHCL 600mg/2ml inj. (amp)	55%	16	10.1	9	69%	9	100%
Quinine sulfate 300 mg (tab)	32%	73	19.6	57	72%	67	80%
SP 500/25 mg (tab)	7%	73	13.4	61	83%	72	85%
Other Non-Pharma							
RDTs (test)	8%	73	7.0	53	68%	72	70%
LLINs (piece)	12%	73	7.4	30	37%	68	40%

Figure 2 and 3 definition notes: A facility is considered to have an **updated** stock card for a particular product when the stock card was available and the ending balance on the card matched the physical count on the day of visit and/or data was entered on the stock card in the previous seven calendar days. The stock card is considered **accurate** only if the physical count matches the ending balance.
The review period (previous three months) for this report is February 1, 2022 to April 30, 2022.

Number of service delivery points visited, by type

Facility Type	# of facilities visited
Hospital	7
Health Center	9
Clinic	57
Total	**73**

Notes on service delivery point types and product management

There were no variations noticed in product management at the depots on the day of visit.

Figure 2:
Stockouts at health service delivery points in Liberia, May 2022
(End Use Verification - Malaria, U.S. President's Malaria Initiative, 2022)

Purpose of the diagnostic

CHWs are an integral part of the health supply chain workforce. Their needs as they relate to staffing, skills, motivation and working conditions may differ from workers at other levels of the supply chain. Further examination is necessary to uncover the underlying causes of supply chain bottlenecks at the last mile and help define the role of CHWs and CHSSs within the broader health supply chain system. The purpose of this diagnostic was to explore barriers related to staffing, skills, motivation and working conditions from the perspective of CHWs and CHSSs.

Liberia was selected because it has a large, well-established cadre of CHWs. In addition, PtD coalition partner VillageReach has a presence in Liberia through its collaboration with Last Mile Health. The findings of this diagnostic detail potential interventions to address the highlighted barriers and strengthen the capacity of the community health workforce to manage supply chain activities. To our knowledge, this is the first time a diagnostic to assess human resources for supply chain management has been conducted at the community level.

Methodology

This diagnostic was conducted using a qualitative, interpretive approach. Focus group discussion (FGD) guides developed for this diagnostic draw upon the PtD Building human resources for supply chain management Theory of Change (ToC), which describes the conditions necessary to ensure that workers at every level perform optimally, to fulfil all necessary functions of an effective supply chain (SC) system. The ToC illustrates the relationship between factors that affect health supply chain workforce development. It enables supply chain practitioners to visualise the pathway of change that connects interventions in human resources (HR) to health supply chain performance improvement and, ultimately, to improved health outcomes. As such, it provides a structure that may be used to prioritise the workforce interventions required to make the improvements or changes necessary to strengthen health supply chains. This diagnostic marks the first time that the ToC has been used to examine CHWs in their capacity as members of the SC workforce.

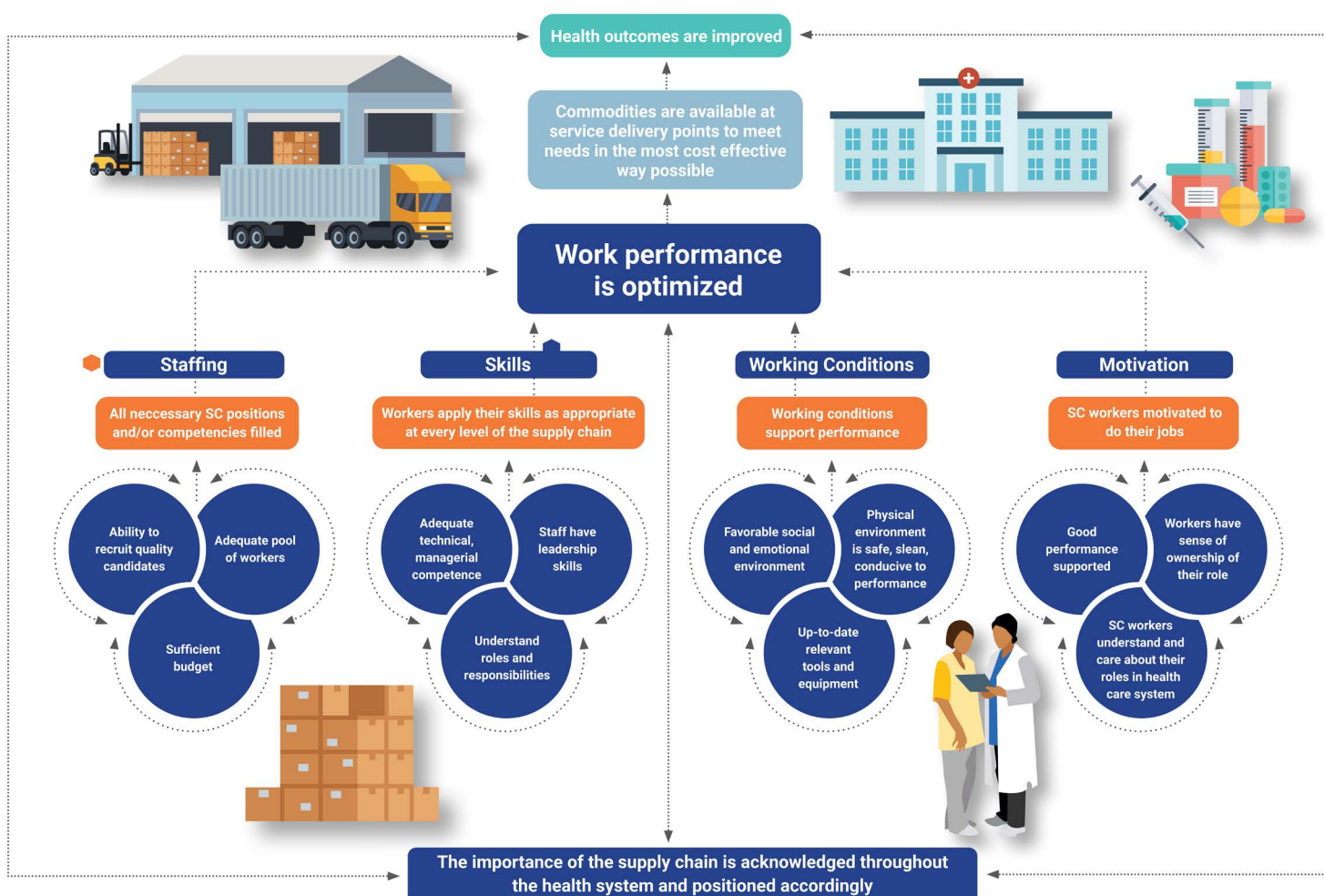*To learn more about the HR4SCM ToC, visit the [PtD website](#).*

Figure 3:
People that Deliver's human resources for supply chain management Theory of Change

Data collection

Introductory meetings were conducted with key stakeholders from the Ministry of Health, USAID and implementing partner organisations (see Annex B: Key stakeholders). A purposive sample of CHA and CHSS participants was then selected by the community health focal persons in Margibi, Grand Bassa and Bong counties, in collaboration with the corresponding county health officers (CHO). Of note, each selected county is supported by a different implementing partner (Plan International, Last Mile Health and IRC, respectively). Implementing partners employ CHSSs, provide monthly stipends to CHAs, conduct training activities and disseminate resources and materials, such as reporting forms. CHA and CHSS discussions were conducted separately to promote frank discourse. Two FGDs were conducted per county, with a total of six FGDs. Participants included 24 CHAs and 24 CHSSs currently serving within the three selected counties.

Findings

Self-perception

CHAs perceive themselves as an essential part of the Liberian health system. According to participants, CHAs serve as a bridge between the community and the health facility; some CHAs also described themselves as the "eyeball" of the community, the clinic and the Ministry of Health. Self-reported contributions include: reduction in infant, child, and maternal mortality through rapid diagnosis and treatment of preventable illness such as malaria; the generation of health information and data; early detection of infectious disease outbreaks via community-level surveillance, and decreased burden on the health facility. As one participant stated, "The more we work at a community level, there will be no cases at the health facility. The cases [sic] load will drop on the nurses."

When CHAs provide correct and timely treatment to sick children, community confidence in their capacity remains high. Such confidence is evidenced by the fact that CHAs

are often referred to as "small doctor" by community members. This title imparts a sense of pride among CHAs and affirms their ability to establish mutual trust and deliver health services at community-level. As one CHA explains, "Any problem or sickness, people run to me straight. That makes me proud... I feel so happy, yes, I'm a CHA." Likewise, CHSSs describe their position in largely positive terms, especially in their role as coaches and mentors. Several CHSSs also note that community-level exposure has increased their understanding of the social determinants of health and the origins of conditions previously observed in the clinical setting.

ToC pathway 1: Staffing

i. Catchment area

Many CHAs serve more than the 40-60 households as stipulated in the Community Health Services policy. Through the FGDs, CHAs reported figures ranging from 42 to 182 households. Likewise, one CHSS reported that some supervisees serve in excess of 250 households owing to population change over time.

ii. Incentive

CHAs are entitled to a monthly stipend of $70, a figure that has remained the same since the inception of the programme in 2016. Some CHAs report delays in receipt of the monthly stipend, as well as variability in the amount received (for instance, some months CHAs receive $60 or $65). Participants also highlight that trained traditional midwives, community health committee members and health facility development committee members receive no incentives, financial or otherwise, resulting in low participation in joint meetings.

iii.   Contracts

As indicated above, CHAs are selected by members of their own communities. As such, they do not undergo a formal recruitment process. In contrast, CHSSs are formally recruited. Successful candidates are then offered positions as contractors. CHSSs across

all three counties identified the contractual nature of their employment as a key challenge. Of particular concern is the absence of benefits such as health insurance, leave and professional development opportunities for both CHSSs and CHAs.

ToC pathway 2: Skills

i. Training

CHA pre-service training comprises four modules. Upon completion of each module, CHAs return to their communities to undergo four to eight weeks of field practice[9]. CHAs are required to demonstrate proficiency in module content and skills prior to proceeding to the next module. Training is facilitated by CHSSs using a training-of-trainers approach. Training provided to the CHSS prior to commencing the role is facilitated by master trainers. Although the Community Health Services policy calls for periodic refresher training to address identified knowledge and skill gaps, such refreshers rarely take place. CHAs report that they have never administered some of the medications referenced during their pre-service training (for instance injectable contraceptives and artesunate suppositories), owing to lack of availability. Of note, job aids have been identified as particularly helpful tools upon which the CHAs rely during household visits.

ii.   Capacity

By all accounts CHAs have the knowledge and skills necessary to deliver health services in their communities, provided they have access to the necessary supplies. According to one CHA, "If I have everything that I need in my box, if I have everything, I do my job with confidence, and know my limitations." CHSSs also report confidence in their roles, a sentiment echoed by most CHA participants, although some CHAs highlighted areas of improvement with regard to interpersonal communication (discussed further in the section below). Both CHAs and CHSSs report confidence in their ability to complete tasks related to supply chain, such as completion of tracking forms and maintenance of commodities, which are stored in a box within each CHA's place of residence. CHAs report that they can do little more than notify their CHSSs in the event of stockout or low stock. Given that CHSSs spend a portion of their time in the facility and are supervised by the OIC, they may have more agency to take action to address stockouts. The CHSS' position as non-governmental contractors may, however, limit the degree to which their efforts are perceived and addressed.

Photo credit: Last Mile Health

9 Exemplars in Global Health: Community Health Workers in Liberia. Accessed 15 October 2022. https://www.exemplars.health/ topics/commu-nity-health-workers/Liberia

ToC pathway 3: Working conditions

i. Health and safety

Participants representing all three counties stated that CHAs lack the supplies necessary to fulfil their roles. Absence of rain gear, flashlights and personal protective equipment (PPE) places CHAs and CHSSs at increased risk of injury and illness. Some CHAs reported having no gloves or sharps containers. Both CHAs and CHSSs highlighted that they assume personal risk when undertaking their work, since they do not receive health insurance. As one CHSS remarked, "The motorbike you see outside there is insured; the man riding it is not insured."

ii. Essential medicines

Persistent stockouts in Liberia make restocking essential medicines at community level a major challenge. Participants reported that in facilities affiliated with a CHA, twenty percent of essential medicines are earmarked for community use (however this does not always occur in practice). CHSS participants across all three counties reported that they receive insufficient commodities with which to restock CHAs. For instance, one CHSS stated that while rapid diagnostic tests (RDT) for the detection of malaria are available, the treatment (Artemisinin-Based Combination Therapy or ACT) is not. The provision of ACT falls within the CHA service package, as it is one component of the integrated community case management (iCCM), the common strategy now to train, support and supply CHWs. Of note, a fellow CHSS described a situation in which the reverse situation takes place (RDT is available, but ACT is not).

Fixed distribution of a small number of medicines poses practical challenges, as illustrated by an example provided by one CHSS: "I have 15 CHA. So that 15 CHA, when you do the breakdown, you'll be looking at one CHA carrying three strips or two strips…At least I have something to report on." CHSSs also describe feeling pressure to "leave something in the box" when they conduct supervisory visits, even if only one strip of medication.

Asked to describe which commodities they currently have on hand, several CHAs responded that their boxes are empty: "Sometimes two, three months: no drugs… Sometimes the supply we receive is for only two children…so how can I work effectively?" Some long-serving CHAs reported having not received paracetamol or zinc for years. Participants also indicate that medication designated for community use is often close to its expiry date. Stockouts result in poorer health outcomes and limit the ability of CHAs to perform their duties. Additional consequences of stockouts will be discussed in greater detail in a subsequent section of this report.

iii. Boundaries

CHAs live in the communities in which they serve; they know and are known by their clients, which has both advantages and disadvantages. They have established mutual trust with many of the people in their communities. CHAs speak the same language as their fellow community members and are familiar with local health beliefs and practices. CHAs are called to attend emergencies in the middle of the night. For some male CHAs (the vast majority of CHAs in Liberia are male), challenges arise when they speak about or provide family planning services to a female community member, especially without the knowledge of her partner.

iv. Reporting

CHAs describe a complex reporting process that includes no fewer than seven data collection ledgers, as well as a commodity tracking form, on which CHAs document consumption on a monthly basis. This holds true for both CHAs who rely upon paper-based reporting and those who have been provided with a mobile Data Collection Tool (DCT) application, as they are required to enter all data into both paper-based and electronic tools. Of the CHAs who participated in this diagnostic, only those in Grand Bassa use DCTs. According to some CHAs, reporting forms are sometimes unavailable. When this occurs, forms are subsequently requested from the respective NGO implementing partner.

v. CHSS out of pocket expenses

CHSSs identified a number of work-related expenses for which they must pay out of pocket, namely accommodation and food during community site visits, and gasoline for their motorbikes, should they run out prior to restock. One CHSS also stated that she is required to pay someone to accompany her when she goes for supervisory visits, as a safety precaution. These expenses are in addition to any fees that must be paid as a result of workplace injuries, as indicated earlier.

Toc pathway 4: Motivation

i. Pride and respect

CHAs identified pride and respect as key motivators: "I came back in my community to serve my people. I can feel proud of myself." CHAs feel particularly proud of themselves when they are able to successfully treat a sick child in the community, especially given the long distances between communities and

facilities, which often results in poor uptake of referrals. CHAs consider themselves an added value to the communities they serve, which enables them to gain the respect of their fellow community members. Medicine availability also impacts the degree to which CHAs feel respected or disrespected, as illustrated in the following example:

> *We face serious problems when it comes to the drugs issue. The people, when you do your routine visit, passing around there, they are making fun of us, "Who are you working for? No medicine?" It brings serious embarrassment to us.*

ii. Community health

Several CHAs identified the desire to serve their communities and decrease maternal and child mortality as key motivators. Contributing to the reduction of preventable illness and death in their communities motivates CHAs to continue working, in spite of the challenges they face.

Photo credit: Last Mile Health

iii. Supervision

CHAs are also motivated by supportive supervision. According to one CHA, "As long as we have drugs in the box and the boss lady [CHSS] is very strong, you will be – I don't care how rain falling – you will be into it." On the contrary, CHAs who receive public reprimands from their supervisors report feelings of demotivation:

Some [CHSSs] talk to you rough… Like, if you did any treatment and you missed any of the treatment, instead of them to guide you in the process, they will talk to you…right in front of your people there. You feel like you are not doing anything…You will feel like, let me just leave the job now.

iv. Career pathway

Some CHAs identified the desire to develop new skills, "To be somebody tomorrow," and become a clinician such as a doctor or nurse as a key motivator. CHSSs also express a desire to advance their skills through professional development and formal educational opportunities. Although career pathways are referenced in the National Community Health Services policy, no formal pathways have been established to date for CHAs or CHSSs.

v. Incentives and benefits

Timely payment of the CHA's monthly stipend is another motivator identified by both CHAs and CHSSs. As one CHSS explains, "When you are working in the community and you leave your farm work to do routine household visit, to go and give health talk in the community, at the end of the day, [when] you're not getting any incentive… definitely you take your bag and go back." CHA's monthly incentive (which is a fixed monthly stipend) – which has not been adjusted for inflation since the inception of the programme in 2016 – remains a concern. It is also a demotivator for CHAs who believe it is insufficient to sustain their families. The lack of benefits, including health insurance, identified earlier, leads to similar feelings of demotivation, especially amongst CHSSs.

Impact of stockouts

Stockouts at community level have implications for all four pathways identified in the PtD Theory of Change. It is therefore important to examine this issue in further detail.

i. Referrals

In the absence of essential medicines to treat malaria, diarrhoea and pneumonia, CHAs must refer patients to the health facility. Nearly all CHA and CHSS participants highlight distance from the community to the health facility as an impediment to referral and timely treatment. There are additional reasons why people are reluctant to go to the facility: community members inform their CHAs that they will walk a long distance to reach a facility, only to find that medication is out of stock. Some patients are even instructed to purchase PPE for the clinicians, prior to consultation:

Someone will walk five hours, six hours to go. They will spend whole day at the facility. At end of the day they getting only paper to go and buy, because no medicine. Then, when they want to treat them, they ask them to go buy gloves...before they can check on them. So, at time when they come home, when you ask them, they say, "I will not go there".

Community members also cite poor service provision on the part of facility staff as a disincentive. Examples of poor service delivery include distraction and negligence (for instance, a nurse using her phone during a consultation) and shouting at patients.

ii. Treatment

CHAs are trained to refer patients requiring an advanced level of care. In the case of severe malaria, CHAs are instructed to provide the first dose of ACT prior to referral. As one CHA explains, unavailability of ACT may have serious consequences:

> *On Friday we refer one child… from my community to the facility, a six-hour walk. Before they could reach to the clinic, the child died. If medicine were in the community, in our hand, I think he would be alive.*

If CHAs do not have all required medications at their disposal, the resulting treatment may be incomplete or less effective. For instance, zinc may be administered to a child with diarrhoea without the accompanying oral rehydration salts (ORS). Likewise, when CHAs do not have the commodities necessary to provide treatment, community members often seek medication from unqualified salespeople known locally as "black baggers" or "buckets," whose commodities are of unknown origin and quality. Items purchased from the black baggers may be also inappropriate and/or expired, and therefore may result in adverse health outcomes.

iii. Reputation

Stockouts affect CHAs' reputation within their communities. CHAs report that when medication is not available, community members lose confidence in them. In addition, when provided with low stock that subsequently runs out, CHAs have been accused of "picking and choosing" which children to treat.

iv. Health education

Diminished community trust and respect for the CHAs also results in low attendance at community health education events. As one CHSS explains:

> *We used to call for health education. They used to come from different distances, they were so excited. But for these past days, we noticed that because the drugs is [sic] not forthcoming, so the health education is low.*

Photo credit: Last Mile Health

Conclusion

As essential members of the health supply chain workforce, CHAs improve the health of their communities, in particular children under five and women of reproductive age. When all necessary equipment and medicines are available, CHAs deliver quality health care services including early detection, diagnosis and treatment of infectious diseases. The consequences of stockouts include delayed treatment, use of unapproved medications, loss of community confidence and trust, and missed opportunities to promote health education. It is therefore imperative to explore and enact strategies to ensure that each CHA and CHSS has the supplies needed to serve their communities. As one CHSS asserts:

When CHAs get all these materials needed in the community, one thing is patient load at the health facility will reduce. Sicknesses in the community will reduce gradually. Family planning coverage will increase. Maternal death will reduce...So when [the] CHA get all those materials listed from all of us here, we will get a very healthy nation.

Photo credit: Last Mile Health

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Annexes

Annex A: Community Health Worker (CHW) Service Package

Community health workers shall be supervised to deliver an integrated and standardised service delivery package, which includes preventive, curative, promotive, rehabilitative and palliative services to households located more than one hour walk (more than 5km) from the nearest health facility.

Part one: Core services (core package)

1. General services

i. Routine household visits, ensuring each household in the catchment area is visited at least once a month.
ii. Health promotion including infection prevention and control; information, education and communication (IEC) and behaviour change and communication (BCC).
iii. Community engagement, coordination and mobilisation for all areas listed in service package.

2. Integrated disease surveillance and response (IDSR) and disease prevention and control (DPC)

i. Build relationships, communicate and coordinate with other community key informants, resource persons and existing formal and informal networks for information dissemination and reporting.
ii. Community mapping and population registration including birth recording.
iii. Community death recording with special emphasis on maternal and neonatal death.
iv. Identify priority diseases and event triggers as they occur in the community (CEBS), including early case detection through active case finding.
v. IPC Standard practices.

3. Reproductive, maternal, newborn and child health

A. Reproductive health
i. Family planning promotion, counseling, distribution and dispensing of family planning commodities; referral for family planning services where needed.

B. Maternal and neonatal health
i. Antenatal care (ANC).
a. ANC education and promotion and referral to health facilities for ANC visits.
b. Identification of danger signs in pregnancy and referral to health facilities.
c. Referral to facilities for deworming tabs, pre-natal vitamins and insecticide-treated nets (ITNs).
d. Birth planning and preparedness, including education on items needed for delivery and birth spacing.
e. Awareness on elimination of maternal-to-child health transmission of HIV (eMTCT) and referral to facilities for identified HIV positive mothers (collaborate with HIV/eMTCT officers where available).
f. Treatment of malaria.
ii. Home-based maternal and newborn care.
a. Immediate and subsequent post-partum home visits.
b. Well-being check for mother and newborn.
c. Identification and referral for maternal danger signs including excessive bleeding, headache, fits, fever, feeling very weak, breathing difficulties, foul smelling discharge, painful urination, severe abdominal or perianal pain.
d. Identification and referral for neonatal danger signs including not feeding well, reduced activity, difficult breathing, fever or feels cold, fits or convulsions.
e. Counsel about danger signs for mother and newborn, the need for prompt recognition and care-seeking, and advise on where to seek early care when needed.

f. Promotion of essential care of the newborn and essential nutrition actions, including exclusive breastfeeding, Supportive counseling and troubleshooting of breastfeeding problems, referral when needed.
g. Promote hygienic umbilical cord care, including chlorhexidine application, and skin care.
h. Support for Kangaroo Mother Care (KMC) application.
i. Identify and support newborns who need additional care (e.g. low birth weight, sick, HIV positive mother).
j. Provide birth spacing and family planning counseling.
k. Promote birth registration and timely vaccination.

C. Child health

i. Integrated community case management (iCCM) of:
a. diarrhoea including provision of ORS and zinc.
b. Pneumonia including provision of Amoxicillin and paediatric paracetamol.
c. Malaria: referral of suspected cases if RDTs are not available; confirmed case management with ACT for children under-5 and pre-referral rectal artemether for severe cases; provision of paediatric paracetamol.
ii. Community-based bi-directional referrals, particularly for newborns, for severe dehydration, malaria, acute respiratory infections (ARIs) and other emergency cases.
iii. Integrated outreach services including:
a. Vaccination drop out tracing for all under-fives;
b. Under-5 vitamin A administration and de-worming during campaigns.

D. Nutrition

i. Mid-upper arm circumference (MUAC) screening and referrals for malnourished children.
ii. Nutrition education for caregivers and households, including: optimal nutrition for women, exclusive breastfeeding up to 6 months for infants, optimal complementary feeding starting at 6 months with continued breastfeeding to 2 years of age and beyond, nutritional care for the sick and malnourished.

Part two: Additional services (full package)

1. First aid and basic lifesaving skills (BLSS)

i. Principles of first aid including prevention and basic response
ii. Basic lifesaving skills

2. Communicable diseases

i. HIV/AIDS education and prevention messaging.
ii. Tuberculosis education and prevention messaging, counseling for treatment adherence.
iii. Leprosy education, counseling and referral.
iv. Awareness on stigma and discrimination.

3. Mental health

i. Identification, referral and monitoring of patients in the community with signs.

1.   International Rescue Committee (IRC)
2.   Last Mile Health
3.   Liberia Ministry of Health
4.   Plan International
5.   USAID
6.   VillageReach

Annex C: People that Deliver Theory of Change: Basket of Interventions
(Interventions relevant to CHWs (in Liberia) highlighted in blue)

Pathway 1 STAFFING

High-level outcome: all critical SC positions and/or competencies are filled
      Precondition 1-1: Ability to recruit quality candidates
      Precondition 1-2: Adequate pool of workers to fill SC roles/positions
      Precondition 1-3: Sufficient budget to fund required positions

1.   Develop an effective transparent recruitment system (develop an appropriate and transparent recruitment system, based on fair and open competition).
2.   Develop a competency-based recruitment system (create the culture to value and support a competency-based recruitment system).
3.   Develop guideline to document recruitment processes (develop clear guidelines on how to document hiring processes).
4.   Train staff in principles of effective recruitment (train staff in competency-based, fair and open recruitment).
5.   Establish a formally recognised SC cadre (develop and establish a formally recognised supply chain cadre).
6.   Review the SC staff structure periodically (arrange for a review of the SC organisational structure to be conducted by senior people within the organisation to ensure that appropriate authority and accountability exist to manage SC end-to-end).
7.   Review the positioning of the SC function within the organogram (advocate to ensure that the organisational structure, within which the SC is positioned, is appropriate and allows adequate authority for effective operation; for example, advocate why a particular department would operate more effectively as a division).
8.   Develop an industry standard job description format (develop a professional format for job descriptions for SC functions for the different levels of the health system. Industry standards stipulate that job descriptions should include the following minimum components: [1] identifiers, e.g., job title, to whom staff report, department in which position exists, and job location; [2] responsibilities; [3] qualifications; [4] terms of employment; and if applicable, [5] special conditions. The standard may need to be adjusted for local contexts and/or within civil service protocols).
9.   Develop professional job descriptions for all SC positions (develop job descriptions for every position using a well-developed, thorough template and identify precise qualifications).
10.   Develop a review process for job descriptions (create a review and approval process for creating and updating job descriptions. Review job descriptions against the local context and adapt/improve as appropriate).
11.   Publish job advertisements in the appropriate forums (widely disseminate effectively-written job advertisements in the appropriate forums).

12.   Evaluate effectiveness of job advertising media (evaluate which outlets, e.g., newspaper, social media, trade publications, schools, referrals, online sites, produce the most applicants who meet qualifications).

13.   Support advocacy for SC HR budgetary needs (support advocacy for SC HR budgetary needs, ensuring that funding is available for an effective SC operation).

14.   Develop a pay scale that links to a career path (ensure that career progression is matched by incremental pay scales).

15.   Link pay scales to required qualifications and competencies (develop a pay scale that links to the required qualifications/competencies, as well as salary market analysis).

16.   Conduct a salary market analysis (conduct salary market analysis, i.e., evaluate market rates for similar positions in similar locations).

17.   Transition non-permanent positions to permanent SC positions (conduct advocacy to transition non-permanent supply chain positions to officially permanent positions; this includes contractors and temporary positions).

18.   Draft and implement a retention strategy (draft and implement a strategy to retain qualified staff).

19.   Promote the SC among students at secondary schools (conduct activities that promote interest in and availability of the pharmaceutical supply chain within secondary schools).

20.   Promote the SC in certificate and degree programmes (conduct activities that promote pharmaceutical supply chain careers among students in supply chain certificate and degree programmes).

Pathway 2 SKILLS

High-level outcome: workers apply their skills as appropriate at every level of the SC
Precondition 2-1: SC workers demonstrate adequate technical and managerial competencies
Precondition 2-2: SC workers have leadership skills within their sphere of operations
Precondition 2-3: SC workers understand their roles and responsibilities in the SC system

1. Develop professional development plans for all SC positions (put in place staff development plans to support desired staff development).
2. Promote continual professional development for all SC staff (ensure that all staff are informed about their individual staff development plans).
3. Conduct annual review of staff development plans (implement a process for annual review of staff development plans).
4. Ensure high completion rates of staff development plans (conduct activities to increase the completion rate of staff development plans by providing opportunities for staff to meet the requirements of their development plans).
5. Provide access to learning resources for SC staff (improve access to and monitoring of tools for SC workers to use and gain skills, such as books, courses and rotations).
6. Develop pre-service training opportunities (create preservice training opportunities for SC personnel in both the public and private sectors).
7. Integrate SC into the curricula of health care degree programmes (integrate SC into the preservice curriculum and include SC coursework in health care degree programmes, e.g., nursing, medicine, laboratory, pharmacy and health policy).
8. Include pharmaceutics in existing SC degree programmes (include pharmaceutical-specific coursework in existing SC degree programmes).
9. Develop SC-specific certificate and degree programmes (develop certificate and degree programmes, specifically focusing on the supply chain).
10. Improve coaching programmes to address skill gaps (improve performance driven coaching programmes, designed to improve the professional's on-the-job performance, typically in the short term, targeting specific skill gaps).
11. Improve mentoring programmes to address competency gaps (improve development-driven mentoring programmes, taking a more holistic approach to career development, addressing identified competency gaps).
12. Link periodic performance appraisal to skills development (ensure that routine performance appraisals lead to the identification of skill gaps).
13. Establish a system for self-assessment of SC competencies (establish a system of self-assessment of staff competencies, in addition to formal performance appraisal, with staff and supervisor involvement).
14. Define a career path that maps all SC positions (define a career path within the organisation that maps low-level to upper-level experience).
15. Adopt a recognised SC professional progression framework (link the SC staff structure to a recognised professional progression framework).
16. Establish a SC licensing and accreditation programme (establish a licensing and accreditation programme for the supply chain).
17. Link professional development with career progression (align continuing professional development/education opportunities with career progression).

Pathway 3 WORKING CONDITIONS

High-level outcome: working conditions support performance
Precondition 3-1: Favourable social and emotional environment
Precondition 3-2: Physical environment is safe, clean and conducive to good performance
Precondition 3-3: SC workers have up-to-date and relevant tools and equipment to perform

10.   Develop policies for occupational safety (develop occupational safety policies for SC staff that contribute to improving the organisational culture).
11.   Familiarise SC staff with occupational safety policies (ensure onboarding or orientation processes to explain and build awareness of existing policies that impact the organisation's culture, including occupational safety).
12.   Establish and maintain a clean and conducive work environment (establish and maintain a clean and conducive work environment).
13.   Establish a staff safety and health management system (establish a system to manage the safety, welfare and health of SC staff).
14.   Develop policies to address anti-harassment (develop anti-harassment policies that contribute to improving organisational culture).
15.   Familiarise staff with anti-harassment policies (ensure onboarding and/or orientation processes to explain and build awareness of existing policies that impact organisation culture, including anti-harassment).
16.   Develop policies to address anti-discrimination (develop anti-discrimination policies that contribute to improving organisational culture).
17.   Familiarise staff with anti-discrimination policies (ensure onboarding and/or orientation processes to explain and build awareness of existing policies that impact organisation culture, including anti-discrimination).
18.   Train supervisors in workplace policy awareness (train supervisors to [1] identify and address harassment and discrimination, [2] follow policies and protocols—including local laws as appropriate—in responding to and reporting harassment/discrimination, [3] establish a zero-tolerance working environment, and [4] mentor their supervisees in all of the above. Note: such training should explain conduct that violates the anti-harassment policy, the seriousness of the policy and the responsibilities of supervisors when they learn of alleged harassment).
19.   Train supervisors in workplace policy enforcement (provide training to supervisors in the skills necessary to implement and enforce workplace policies, including [1] identifying and addressing harassment and discrimination, [2] following policies and protocols—including local laws as appropriate—in responding to and reporting harassment/discrimination, [4] establishing a zero-tolerance working environment, and [5] mentor their supervisees in all of the above. Note: such training should specify conduct that violates the anti-harassment policy, the seriousness of the policy and responsibilities of supervisors when they learn of alleged harassment).
20.   Conduct workplace solution-focused leadership coaching (conduct workplace solution-focused leadership coaching for aspiring SC staff).
21.   Stimulate and reward problem-solving behaviour (implement interventions that reward problem-solving behaviours and outside-the-box approaches).
22.   Assess and improve the organisation's current culture (define and describe the organisation's current culture as it applies to the SC workforce and consider how it can be improved).
23.   Create an optimal emotional and social work environment (identify the optimal emotional and social environment for your organisation and incorporate this vision into management principles or the organisation's values).

24. Task managers with improving social work environment (ensure supervisors and middle management are responsible for building a conducive and improved social working environment).
25. Task managers with improving emotional work environment (ensure supervisors and middle management are responsible for building a conducive and improved emotional working environment).
26. Develop checklist of required tools and equipment (develop list of required tools and equipment for each level and share with all staff).
27. Ensure all tools and equipment are in good condition (introduce and foster a "checking" culture to confirm agreed tools and equipment are available and functional and used correctly).
28. Replace missing or defective tools and equipment (prepare budget request for the tools and equipment required at all levels and advocate for inclusion of these resources in the budgets).

Pathway 4 MOTIVATION

High-level outcome: SC workers are motivated to do their jobs
Precondition 4-1: Good performance is supported within the system
Precondition 4-2: SC workers understand and care about their role in the health care system
Precondition 4-3: SC workers have a sense of ownership of their role

1. Establish a supportive supervision system (establish a supportive supervision system for all SC staff).
2. Improve existing supportive supervision system (improve existing supportive supervision system for SC staff).
3. Establish a performance management system (establish a performance management system for all SC staff).
4. Improve existing performance management system (improve existing performance management system for SC staff).
5. Develop competency-based promotion systems (develop and implement a competency-based promotion system).
6. Train managers in implementing promotion systems (ensure relevant staff members have the skills to implement developed promotion systems).
7. Develop a formal recognition programme for SC staff (develop a formal recognition programme—that is, determine which accomplishments the programme will recognise, e.g., length of service, how often recognition will occur and how employees will be recognised).
8. Build a supportive environment for staff development (build a supportive environment that allows staff to develop competence).
9. Develop or review financial incentives (develop or review financial incentives for SC staff provided through salary and allowances in order to improve staff motivation and satisfaction).
10. Develop or review non-financial incentives (develop or review non-financial incentives for SC staff, such as training opportunities and participation at conferences, in order to improve staff motivation and satisfaction).
11. Develop or improve a progressive disciplinary process (develop or improve a progressive disciplinary process, applicable to SC workers).
12. Ensure supervisors have the authority to take disciplinary action (reform HR policy to ensure supervisors have the authority to take disciplinary action).
13. Ensure the organisational structure enables SC staff to make decisions (ensure the organogram reflects required hierarchy that enables staff to make and implement relevant decisions).
14. Ensure job descriptions include reporting structures (ensure job descriptions include reporting relationships and responsibilities for relevant positions).
15. Ensure job descriptions include decision making duties (ensure job descriptions include decision-making responsibilities for relevant positions).
16. Train managers in delegating decision-making to staff (provide training to managers on adopting management styles that enable workers to make decisions and take ownership of their tasks and successes).
17. Orientate new SC staff on their role in the health system (hold staff orientation and onboarding sessions to explain the health systems and the roles of individuals within that system).