Digital Ecosystem for Family Planning Supply Chain

Workshop Findings

November 30, 2021

Contents

Acronyms

3PL	third-party logistics
B2C	business to consumer
CDC	Catholic Distribution Centers
CHAI	Clinton Health Access Initiative
CHAG	Christian Health Association of Ghana
CHAM	Christian Health Association of Malawi
CHPS	Community-Based Health Planning and Services
CIP	Costed Implementation Plan
CPT	Commodity Procurement Tables
CMS	central medical store
CMST	Central Medical Stores Trust
CYP	couple years of protection
DHA	district health administration
DHMT	district health management teams
DHS	Demographic and Health Survey
E2E	End to End -in reference to a supply chain
eLMIS	Electronic Logistics Management Information System
FASP	forecasting and supply planning
FDA	Food & Drug Authority
FHD	Family Health Division
FP	family planning
GHS	Ghana Health Services
GHSC-PSM	Global Health Supply Chain-Procurement and Supply Management
GFPVAN	Global Family Planning Virtual Analytics Network
GOG	Government of Ghana
GOM	Government of Malawi
HC	health center
HQ	headquarters
HTSS	Health Technical Support Services
ICC/CS	Interagency Coordinating Committee for Commodity Security
IHS	Imperial Health Sciences
LCS	Licensed Chemical Sellers
LMIS	Logistics Management Information System
LMIC	Low- and Middle-Income Countries
KPI	key performance indicator
mCPR	Modern Contraceptive Prevalence rate
MNCH	maternal, newborn, and child health
MOH	Ministry of Health
NACP	National AIDS Control Program
NEML	National Essential Medicines List
NGO	Non-Governmental Organization
NHIA	National Health Insurance Authority
NHIS	National Health Insurance Scheme
NSCA	National Supply Chain Assessment
NFP	Not-for-profit
PMRA	Pharmacy and Medicines Regulatory Authority
PPAG	Planned Parenthood Association of Ghana
PPA	Public Procurement Authority

RHSC	Reproductive Health Supplies Coalition
RHD	Directorate of Reproductive Health
SCMA	Supply Chain Management Association
SCMP	Supply Chain Master Plan
SDP	Service Delivery Point
SMO	Social Marketing Organization
TCMS	Temporary Central Medical Stores
TFHO	Total Family Health Organization
WAHO	West African Health Organization
WHO	World Health Organization

Framework and Methodology

> *Digital ecosystems—the stakeholders, systems, and enabling environments that together empower people and communities to use digital technology to gain access to services, engage with each other, or pursue economic opportunities.[i]*

This activity and analysis are part of a broader initiative by USAID focusing on use of digital platforms and strategies to improve health outcomes. USAID's Digital Strategy has two primary objectives:

- Improve measurable development and humanitarian assistance outcomes through the responsible use of digital technology in USAID's programming; and

- Strengthen the openness, inclusiveness, and security of country-level digital ecosystems.[ii]

USAID's Digital Health Vision further defines the use of technology as a key implementation tactic to achieve sustainable achievements in country and further pursue the journey to self-reliance. It defines "Digital health [as] the systematic application of information and communications technologies, computer science, and data to support informed decision-making by individuals, the health workforce, and health institutions, to strengthen resilience to disease and improve health and wellness for all."[iii]

Other GHSC-PSM initiatives and tools, including the Supply Chain Information System Maturity Model (SCISMM) and the National Supply Chain Assessment (NSCA), are designed to systematically assess and evaluate the current state of digital and digital health strategies in countries and make recommendations for targeted interventions to improve systemic gaps and challenges.

This activity focuses on mapping and analyzing the digital ecosystems in Malawi and Ghana, specifically those that enable the FP supply chain. GHSC-PSM has used a people, data, process, technology framework to structure the questions for this three-phased research approach.

Phase 1: People/Data – Which actors and data contribute to the FP supply ecosystem?

Phase 2: Process/Technology – What processes are currently employed by those actors for information sharing and what aspects are digitized?

Phase 3: Design Workshop – Bringing together key stakeholders to use research from Phase 1 and 2 to design recommendations for future country engagement with the VAN.
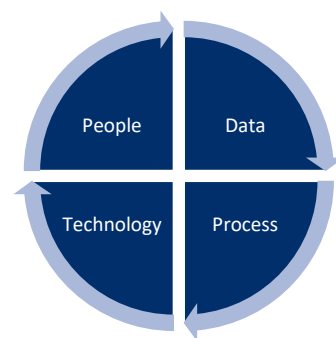
The first phase of research was conducted via a desk review of available literature. It is intended to be a summary analysis of the FP ecosystem in Malawi and Ghana and challenges that arise due to the lack of integration described above. This analysis should supplement and provide context to other resources that conduct in-depth country assessments, surveys, and the like.

The second phase of research was built upon the first, using the research compiled for the *information mapping and flow* analysis to direct and target new inquiries and interviews with key stakeholders across the public and private sector. It is intended to be a summary analysis of the systems, processes, data, and users who support the FP supply chain ecosystem in Malawi and Ghana as well as challenges that arise in the space. It also analyzes the current state of use of the VAN in Malawi and Ghana and the evolution of its use since its implementation.

The third phase of the activity is a series of workshops intended to present these findings and solicit feedback from the global community and in-country PSM Field Office and USAID Mission stakeholders on the additional value the VAN can bring to in-country stakeholders, specifically in Malawi and Ghana.

Workshop Format and Objectives

The workshop series for this activity, titled "VAN: From Global to Local Leveraging the VAN to support in-country health system strengthening," was broken down into four days; the first two days focused on the global perspective of VAN use and opportunities, while the third and fourth days provided unique opportunities for Malawi and Ghana, respectively, to provide feedback on findings, use of the VAN in country, and how it fits into the broader digital strategy for the country. Table 1 below outline the primary objectives and participants for each workshop session. A full list of workshop attendees can be found in Annex A.

Table 1: Workshop Session Overview

Workshop Session	Title	Objectives	Participants
Day 1 – October 18, 2021	Introduction: Digital Ecosystem for Family Planning Supply Chain Malawi and Ghana Landscape Analysis	• Introduce the broader group to the activity and objectives • Present deliverable findings • Field initial feedback on deliverable findings	PSM HSS Team, PSM FTO, RHSC VAN Management Unit, USAID CSL, PSM TO3 Core
Day 2 – October 19, 2021	VAN service offerings to support in-country health system strengthening: Where does the VAN fit into in-country system strengthening?	• Present current state of VAN service offerings • Understand where the VAN fits into systems strengthening in countries • Future state of the VAN	PSM HSS Team, PSM FTO, RHSC VAN Management Unit, USAID CSL (select), PSM TO3 Core
Day 3 – October 20, 2021	The VAN as part of the Malawi digital ecosystem: GFPVAN service offerings in Malawi to support in-country health system strengthening	• Present deliverable findings • Field initial feedback on deliverable findings • Present current state of VAN service offerings • Understand digital priorities in-country • Understand how the VAN can help achieve digital priorities	PSM Malawi FO, USAID Malawi, RHSC VAN Management Unit, PSM HSS Team (select), USAID CSL (select), PSM TO3 Core (select), CooperSmith
Day 4 - November 15, 2021	The VAN as part of the Ghana digital ecosystem: GFPVAN service offerings in Ghana to support in-country health system strengthening	• Present deliverable findings • Field initial feedback on deliverable findings • Present current state of VAN service offerings • Understand current challenges in VAN implementation • Understand how stakeholders and value propositions can increase VAN advocacy	PSM Ghana FO, USAID Ghana, RHSC VAN Management Unit, PSM HSS Team (select), USAID CSL (select), PSM TO3 Core (select), Ghana FHD, S4D Consulting

Workshop Summary

Day 1-2 – VAN service offerings to support in-country health system strengthening: *Where does the VAN fit into in-country system strengthening?*

The Workshop series began with an introductory day where the team presented their findings on the FP digital supply chain ecosystem landscape analysis and sought feedback from participants on the key takeaways. Generally, the analysis covered a broad swath of topics and participant feedback focused on suggestions for future research opportunities; several of these opportunities are listed below.

Research Opportunities

- Exploring the Ghanaian FDA's strategy for improving registration and importation lead times, in order to reduce supply chain inefficiencies and barriers to market entry for wholesalers.

- Role for wholesalers in rural areas – wholesalers using public transportation to deliver pharmaceuticals to rural areas. Breakdown in this process is for cold chain.

- Further exploration and aggregation of research on private sector data offerings, through IQVIA and HP+.

- The opportunity to take advantage of digital systems and electronic inventory records to reasonably predict future consumption, as a proxy for data timeliness and compliance issues.

- How these case studies conform (or do not conform) to findings that the presence of eLMIS systems are a determinant for countries' mCPRs and other FP outcomes.

The second day of the Workshop series focused on participants providing feedback on current use of the VAN and other HSS interventions (QAT, eLMIS, E2E Visibility, etc.) as well as future opportunities for VAN use. To introduce these topics, Julia White, Director of the VAN, provided an overview of current VAN service offerings and use cases across several countries.

Key Opportunities for Collaboration and Action

The global brainstorming session on Day 2 saw participants coalesce around several key findings:

- ***GHSC-PSM work planning can be more strategic to include the VAN where appropriate***
  Participants involved in GHSC-PSM work planning, including PSM HSS teams, agreed that the process of country work planning is siloed between HSS functional teams and cross-functional tools, like the VAN. For example, HSS teams might not collaborate to determine the best overarching digital solution for a country but propose in isolation a best practice for their functional group; or they might not consider how the VAN can be used to bolster HSS activities and bridge gaps and divide across functional practice areas, such as FASP and MIS. As it stands, there is also no process for incorporating VAN enhancements, i.e., moving a country from basic to premium membership, into countries' workplans even after they have expressed interest. Opportunities to establish a regular cadence for evaluation of countries' VAN needs and how it relates to their HSS activities could ensure greater collaboration.

Additionally, USAID Washington participants noted that in reviewing workplans, it can be difficult to understand how individual activities contribute to the broader workplan objectives and strategic vision. Participants suggested an evaluation template might help to aggregate thoughts to better understand how various workplan pieces do or do not fit together.

- *Inclusion of quantifiable results from VAN use in work planning*
On the topic of work planning, participants also noted that for countries looking to upgrade their use of the VAN to a premium membership and integrate their e-LMIS systems with it, as workplans are results-oriented, there is a need to quantify on a country-specific basis how the VAN will be used in conjunction with other processes and systems in country *and* provide means to quantify how use of the VAN contributes to any number of measurable targets (costs, LOE, lead-times, supply chain optimization, etc.).

> "[In workplans] somebody has to make explicit what improvements are to be expected from this system strengthening activity, what's going to be better after we do this, how are we going to perform better once this integration, or system design or build is done? How does that effect my job and my performance in achieving whatever my goal is, whether it's contraceptive security or some other aspect of commodity availability in a given country? So, you can make the use case, but the why needs to be very clear, as well as the how much."
>
> - John Durgavich, GHSC-PSM HSS FASP Senior Technical Advisor

- *Greater collaboration amongst tool-developing partners can reduce redundancies and ensure a unified approach to in-country HSS work*
One workshop objective was to determine if participants could come to a shared understanding of a digital solution set for HSS work such that countries avoid costly piecemeal approaches to address MIS needs. HSS participants noted that when there are overlapping functionalities between existing systems and tools, users balk at duplicative work in multiple tools and feel more comfortable doing their work manually, therefore strengthening the case for a collaborative approach. And while participants do not believe there is *one* digital solution set to address all countries' unique needs, and each approach must be tailored to the specific country's existing systems and data, there was broad consensus that more can be done to coordinate approaches across actors, global and domestic.

> "[We need to] think about a country as the many disparate groups that it is… One of the questions becomes, as we think about the placement of the VAN at the country level is…how do we get agreement on where the good data is? Are we bringing these disparate groups together and doing that process change so they can see the value of a set of data? Or is it still multiple datasets across multiple tools? I think what's going to be really important is building that trust in some of these data sources across groups."
>
> - Julia White, VAN Director

In particular, there were in-depth discussions about FASP processes, the tools that support them, and how collaboration between RHSC and GHSC-PSM FASP team can ensure alignment between the VAN and QAT. Participants agreed that understanding and sharing of roadmaps for each tool was critical; for example, QAT is planning on a forecasting feature in the near future, while the VAN is also working to develop forecasts and given there can be significant differences in forecasts depending on data sources and assumptions,

collaboration on this front is necessary to reduce inconsistencies. There also appears to be overlapping service provisions, where VAN CT analysts have begun providing de facto capacity building in FASP due to a regular cadence of the VAN management team reviewing and cleansing data and advocating for use of the VAN's aggregated data visualizations for decision-making.

In those E2E processes where workshop participants identified overlapping tools and processes, participants should work with one another, across organizations, to collaborate by sharing tool roadmaps and objectives to reduce duplicative work and redundancies in digital platforms.

- ***Prioritization and analysis of good data, what it can do for a country, and its format***
  PSM HSS participants emphasized that instead of focusing on one digital solution set, an analysis of each country's available data, and its quality, can help determine where to focus interventions and digital system use. Countries will have better quality data at some levels of their supply chain than others and identifying that "good" data and finding the best way to provide visibility into it, be it through an eLMIS, DHIS2, the VAN, etc., can be a relatively easy way to tackle "low-hanging fruit" and enable a country to actualize the benefits of increased visibility. More in-depth and longer-term efforts to improve data quality and enhance existing digital infrastructures can then build off the initial data onboarding.

  > "One of the things which has driven work planning piecemeal is the prioritization of what we're needing to focus on within the systems that we're looking at…just this morning, I was looking at data from Malawi, and one of the things that struck me is there is some really good quality data in there and you can use it to do your forecasting and these things, but the difficulty that I found was finding it and recognizing where that is. And when we talk about how do we improve or rejig our tools together, it is in some ways about helping countries recognize where they have good information that they can rely on and have trust in it, and the tools that then can be associated with that. And then where there is weakness in the data, that we are looking at building that in with the other approaches we have to help strengthen those aspects."
  >
  > - Andrew Inglis, GHSC-PSM HSS Data Analytics Lead

- ***Greater understanding of tangential-VAN use cases and engaging non-primary users and stakeholders in a meaningful way***
  Findings from the Ghana and Malawi VAN use cases indicate that each country has a small group of key users who have fully adopted use of the platform and ownership of the data in the VAN; however, there is a sense that while these users represent key MOH stakeholder agencies, there is a lack of understanding broadly within these agencies about the VAN and where it fits in the country's supply chain. At the same time, RHSC management team participants noted that there are already a large number of VAN users, who are not using the VAN for regular operational purposes, whose use case is undefined or unknown. Greater understanding of how these users interact with the VAN may uncover additional use cases for the platform, which can be shared with in-country stakeholders who may find value in direct platform use and expand the reach of the VAN beyond its key users.

  > "One of the things we've struggled with, is we have a handful of user role types that are very specific and have a very defined purpose for being in the VAN…but we have a large number, and in reality a majority of our users, are these users that we don't fully understand why

An exercise to understand in-country stakeholders, like MOH, who have not bought-into available, existing tools and whether or not the VAN can fulfill their needs was also proposed for future research and user identification.

- **The VAN as a driver for best-practices in data management and data-driven decision-making**

Throughout discussions with global participants, it became apparent that due to VAN offerings that include a suite of analytical services and de facto capacity building with country users, access to membership in the VAN not only provides data integrations and an additional layer of visibility, but it also enables more sophisticated data-driven decision-making and thoughtful analysis of available data in country. The RHSC management team, in particular, was able to describe how regularly working with countries onboarding to the VAN and premium memberships has resulted in an increased level of data ownership, process improvement, and incorporation of the VAN into existing collaborative processes.

"I told them, this is your data, and this is what it looks like when everyone else is looking at it, and they have begun to appreciate the fact that it doesn't necessarily look good. I'm not trying to condemn whatever processes they had in country, but…we managed to provide to them an understanding that we could do this better… Since then, I observed that the country team had begun to have those collaborative conversations; everybody comes together to look at things and make decisions. The VAN and the way we have supported the country has helped them see the need to look at, and take ownership

of, their data in a different way."

- Chiedu Ezeadum, RHSC Control Tower Analyst

Day 3 – The VAN as part of the Malawi digital ecosystem:
VAN service offerings in Malawi to support in-country health system strengthening

In-Country Context

Across Malawi's Family Planning supply chain, key processes are enabled by digital management information systems and platforms. Malawi's Health Technical Support Services (HTSS) and Digital Health Division (DHD) manage the operation and strategy for these MOH-run digital systems. Additionally, the FP commodity supply chain is managed specifically by the MOH's Reproductive Health Department (RHD), which maintains separate priorities and objectives. Alignment between health verticals, such as RHD, and functional departments, such as DHD and HTSS, is integral to the success of supply chain digital system integrations. Working groups have been established to coordinate across various MOH stakeholders and develop a digital strategy and implementation roadmap.

One critical aspect of this strategy is integration of systems across supply chain functions. This strategy implementation is underway and began with the creation of an interoperability layer (OpenHIE) to integrate data. Over the course of 2019, OpenHIE was developed between DHIS2 and OpenLMIS to connect the two platforms. Though COVID-19 delayed the training of users in the new system in mid-2020, the functionality to access both inventory and health data in DHIS2 exists.[iv] An integration is also ongoing at present (August 2021) to incorporate VAN data into OpenHIE, with the objective of the VAN pulling stock data for planning purposes. This is to take place at both the central and district levels. At the time of the workshop, there were a series of conferences and discussions held in Malawi between HTSS, DHD, and other digital stakeholders to map Malawi's public health digital architecture and roadmap; in this context, the workshop sought specifically to aggregate GHSC-PSM FO Malawi and USAID Malawi's insights on digital priorities for the short-term and determine where and how the VAN could address these priorities.

Discussion

Malawi's in-country stakeholders, including USAID Malawi and GHSC-PSM Malawi, engaged in discussion of several topics, described in detail below. Generally, the activity and research were well-received, especially given the in-country context and timing of this type of analysis, as Malawi is in the process of more broadly assessing its digital architecture.

Rural Client Outreach

USAID Malawi expressed particular interest in the private sector analysis as this is a gap in USAID Malawi's understanding of the health supply chain in country. On this note, there was discussion about provision of services and products to rural communities in Malawi, who make up 80% of the population, and are traditionally serviced by the NFP sector, but may be a market to which wholesalers can expand. There is an opportunity for more research on how to mobilize around rural communities and identify how to find economies of scale that would appeal to the for-profit private sector.

Benefits of VAN

Following a presentation by VAN Director, Julia White, on the VAN service offerings and use case in Malawi, both USAID Malawi and GHSC-PSM Malawi stated that there were clear benefits to VAN use in Malawi that have been demonstrable since its inception. These benefits include 1) increased

visibility into inbound shipments across multiple procurement agents, the lack of which has previously caused duplicative supply and shipments; 2) increased collaboration across the parallel supply chain as a result of said visibility; and 3) a greater sense of accountability, ownership and transparency for stakeholders and collaborators in the supply chain.

> "Accountability and transparency – from the Mission perspective – we rate that very high. Before the VAN, this used to be a huge problem, as you know because of the parallel supply chains and so many different procurement entities for family planning products, we had a lot of situations where orders were placed for products outside the supply plan and by the time we were noticing or understanding that those shipments were on their way it was too late to make some of the decisions that were made since the VAN came. So, I just wanted to highlight that accountability and transparency aspect, to the Mission, has been important and is one of the main areas we highlight when we're talking about the success of the VAN in the country."
>
> Dennis Chali, USAID Malawi

> "One of the benefits I see, beyond transparency, is that it really encouraged coordination among the donors and the partners working in this space. And today, for instance, we had the RHSC-TWG meeting and one of the agenda [items] was GFPVAN, so it's really encouraging to see that, especially as Rose said…that the Ministry fully owns GFPVAN, and that's good to see."
>
> Daniel Taddesse, GHSC-PSM Malawi Country Director

Digital Priorities in Malawi

Participants were prompted to think through Malawi's digital priorities, either as they're currently outlined today, or as they should exist based on relevant challenges.

1. *Reducing the proliferation of unique digital systems and integrating existing systems*

USAID Malawi and GHSC-PSM Malawi agreed that one of Malawi's largest challenges is the diversity and segmentation of digital platforms across the public health supply chain. Workshop participants noted that in HTSS working groups, strategy discussions focus on creating interoperability between existing systems.

> "Right now, there is recognition that we have way too many systems, not just limited to digital management information systems, but beyond that. And I think the key, in terms of the strategies being developed right now, is focusing on making sure that these systems are interoperable. So…that is the broader goal by the Ministry right now, and…supported by various development partners, is to make sure that these systems are interoperable and able to speak to each other."
>
> Dennis Chali, USAID Malawi

However, USAID Malawi went on to elaborate that simply creating integrations between platforms is not enough, there also needs to be an exercise to determine the appropriate scope for each platform to reduce redundancies in systems and duplication of effort for users:

> "[We must] understand, based on various assessments that have been done…the various digital platforms, [and] what are the strengths, where are the weaknesses, and do we have a concentration of digital platforms in one particular area or a lack of platforms in other areas."
>
> Dennis Chali, USAID Malawi

GHSC-PSM HSS staff highlighted how diversity of systems is a partial result of parallel supply chains across multiple donors and commodity groups:

> "I think there may be issues around information systems/strategies being fragmented by health program, funding restrictions, donor and other stakeholder interests. These need to be made explicit in developing the "clear direction" for strategy."
>
> John Durgavich, GHSC-PSM FASP Senior Technical Advisor

2. *Increasing collaboration and coordination between digital stakeholders*

USAID Malawi emphasized that there is not just one actor solely responsible for establishing digital priorities and strategy for Malawi as the Digital Health Division (DHD) and Health Technical Support Services (HTSS) are responsible for implementation of digital health interventions, yet there is a lack of coordination between the two MOH divisions. GHSC-PSM Malawi described the multitude of stakeholders, strategic plans, and roadmaps in depth:

> "One of the challenges the government is having is that the different departments at the Ministry are not working together. We've been talking about GFPVAN previously with RHD, and RHD seems to take full ownership of the system, but they're not closely working with HTSS, at least, that's not visible. And there's DHD, another directorate, working on related information systems strategy, and parallelly, MOH HTSS organized a steering committee to oversee visibility, which was supposed to meet regularly on a monthly basis, which is not happening, but it seems to have a very clear vision. And we have a supply chain master plan, that's talking about developing two systems, one they call the National Supply Chain Information System (NSCIS) and envision that to cover the warehouse and facility data…and another system, the quality facility supply chain information system (QFSCIS) to monitor stock at facility level and record dispensing. So, there are so many strategies, based on what people think are the issues. Unfortunately, I don't think there is one consolidated list of issues and challenges when it comes to information systems and LMIS in Malawi."
>
> Daniel Taddesse, GHSC-PSM Malawi Country Director

3. *Reducing the burden on the lowest level of the supply chain*

USAID Malawi also described how the burden of primary data entry is placed on health workers at service delivery points. Frequently, there are multiple digital systems in which workers are required to input data given the proliferation of digital platforms. The Mission highlighted that a priority is:

> "To make sure that we do not shift the load in terms of workload, to the lowest point. If you look at the architecture you showed, and show where data is being generated, it's at the lowest level, at the SDP level, so how do we make sure these digital systems do not result in increased workload at those levels?"
>
> Dennis Chali, USAID Malawi

GHSC-PSM staff who travelled to a community hospital in Lilongwe, Malawi, described observation of this workload imbalance firsthand, noting:

> "[The] complaint they had was the amount of effort it takes to take all the paper-based forms and put that data into the system. And sometimes it gets backed up, not because they don't want to do it, but because of connectivity issues, etc. so there are practical challenges on the ground…and this gets to Dennis's point about work being pushed to the lowest levels."
>
> Swaroop Jayaprakash, GHSC-PSM, MIS Subject Matter Specialist

USAID Malawi acknowledged these challenges, noting that in many cases, the physical and digital infrastructure (internet connectivity, lack of barcoding, etc.) do not and cannot support the digital strategies being put in place:

> "[There is] LOE needed to transfer information from paper-based to systems; one of the reasons OpenLMIS is not in all facilities is an infrastructure problem. Strategies are useful, but infrastructure creates huge limitations…[a] big infrastructure investment is needed."
>
> Dennis Chali, USAID Malawi

4. *End to End Visibility*

> "The overarching goal is achieving end to end visibility by making sure that the systems are interoperable."
>
> Dennis Chali, USAID Malawi

USAID Malawi proposed a higher vision for Malawi's digital health strategy, that of achieving end to end visibility (E2E visibility) in the supply chain, while GHSC-PSM Malawi raised the thought-provoking point that E2E visibility doesn't have one definition, depending on the stakeholder:

> "E2E visibility means different things for different people, so here it's juts from the central warehouse to the last end user or service delivery points because we have very siloed systems that never speak to each other and miss many components that make up the entire system of E2E visibility. Actually, with the GFPVAN introduction, that will create the bigger E2E visibility from manufacturer to end user…Having said this, I think there is a will and need for systems to be integrated, but it lacks the bigger picture. What do we need to build to have this system in place? What do we have now, what do we miss? And how do we implement or reach it in the form of a roadmap?"
>
> Abera Mengistu, GHSC-PSM Malawi MIS & Digital Architecture Director

Opportunities for future use of the VAN

Following the discussion on current digital priorities and challenges, participants were asked to think about future opportunities for the VAN in Malawi; the themes that emerged from the discussion are listed below:

1. *The VAN as an in-country platform for non-FP commodity groups*

USAID Malawi raised the point of expanding the VAN to include access to non-FP commodity groups as a natural expansion that has arisen in in-country discussions and noted that to advocate for the VAN's further use in Malawi could lead to further silos of digital platforms across commodity groups *unless* the VAN could contribute to integration by bringing other commodities onboard.

> "[The] VAN has been very successful in Malawi so far, [so] you get the question of whether the VAN can be expanded to other products. I think some of the reasons for the multiple systems, is because the systems [are for] specific programs, specific products. This is within the interagency, we have systems focusing on specific areas, and we've tried to look at, how do we make sure we don't contribute to multiple supply chain system…[We] took stock of all systems supported by interagency (CDC, USAID, etc.) and tried to determine what is duplicative and where integrations can be made."
>
> Dennis Chali, USAID Malawi

Julia White, Director of the VAN, noted that this is a common request and one that the VAN management team has been working to flesh out from a technology and governance perspective. She described that while there are no technology limitations to expanding Malawi's use of the VAN to other product groups, and treating the VAN as a data hub, there are fundamental questions about the business processes and collaboration necessary *outside* of the VAN to make the technology implementation a success:

> "How does it work in practice to expand to other commodities? On the business process side, once the data is there, who's going to use it? Who is collaborating and working together to use that data and make those decisions? Who's going to use the maternal health products and for what business process?"
>
> Julia White, VAN Director

USAID Malawi did note that the VAN use case for the expansion to non-FP commodity groups, like HIV and Malaria, of the VAN in Malawi is *less* focused on increasing Malawi-specific collaboration, as this is less of a pain point for these other programmed commodities, but rather that the use case would be focused more on upstream visibility and global collaboration, as they believed that there were use cases for other commodities in the VAN to provide greater global visibility for shipment transfers and global planning.

> "One of the key differences between FP programming and others, HIV, Malawi, is the number of players. For Malaria, it's PMI and TGF, and for HIV it's TGF and PEPFAR. For me, one of the biggest challenges the VAN address is the upstream visibility. But it's less of a problem because there's only two players managing these programs…If the addition of other [commodities] requires significant investments because of the mandate that the VAN has, I'm not sure how easily we can get to that."
>
> Dennis Chali, USAID Malawi

2. *Expansion of data in the VAN via interoperability integrations*

CooperSmith, responsible for the VAN integration to Malawi's OpenHIE, provided a short, medium, and long-term roadmap for Malawi's integration with the VAN (in Figure 1). This roadmap was developed in conjunction with the DHD and as a way to address the fragmented digital ecosystem in Malawi's public health supply chain.

> "[The integration with the VAN] has to be such that it can be scaled up and replicated in the sense of, if we want to plug in more solutions beyond just connecting OpenLMIS to the VAN, how are we designing the current architecture to be able to respond to that? As a result…there was a general consensus, that the solution should build on the interoperability layer, of the MOH which is designed around the OpenHIE platform…What that basically means is that in this first phase, we are going to be able to display data around stock that will help with planning from OpenLMIS on the VAN, but going forward, it means other platforms, like those owned by CMST, like the MACs…can easily get plugged in through this interoperability layer and that guarantees sustainability…the information is not only one way from OpenLMIS, or these country-based management systems, to GFPVAN, but the reverse; get some information from the GFPVAN back to the national systems that would help people make decisions especially regarding forecasts."
>
> Simon Ndira, CooperSmith

Figure 1: CooperSmith VAN-Malawi Integration Timeline

PERIOD	ACTIVITY
Short Term	Integrate OpenLMIS and GFPVAN for reporting stock status through the interoperability layer; CMST and CML update stock status records manually on a monthly basis. Order status tracking possible using GFPVAN.
Medium Term	Integrate other systems – CMST, CML etc. through the interoperability layer to allow for automated update of key stock data. Removes the manual step of reporting stock status each month. Order status tracking possible using GFPVAN; less manual intervention.
Long Term	Push global supply data down to national level systems to answer questions like: When will my shipment show up at my door? Order status tracking possible from legacy systems, with GFPVAN pushing data to interoperability tier and it passing it along to other systems (OpenLMIS, CMST, CML, Bollore, etc.) through OpenHIE.

CooperSmith also highlighted that as these integrations occur, there are necessary conversations to be had about the most appropriate portal for use, for different in-country stakeholders and different use cases. The RHSC management team referred to the Ethiopian VAN use case where, like Malawi, Ethiopia integrated VAN data through its data broker enabling the data to flow into their existing logistics management systems. This allowed users to continue to access data through their existing portals and platforms but allowed new VAN data to integrate seamlessly into their datasets. USAID Malawi agreed that linking the VAN to OpenLMIS and CMST would "still provide a huge additional success from what is happening right now."

3. *Greater advocacy across FP supply stakeholders*

Participants agreed that engagement with stakeholders across relevant MOH departments (RHD, HTSS, DHD) was essential to ensuring the success of the VAN and its integration going forward. GHSC-PSM Malawi proposed that the VAN needs to be front and center in its digital strategy work with the MOH, noting that this should occur through existing VAN champions at RHD, HTSS. Given the development of national digital strategies at the time of the workshop, including the VAN in these strategies ensures its sustainability.

> "My suggestion would be, in everything we do, in all our communication with the government, we need to make sure that people understand about the activities that are going on and try to make sure that's standard with the national strategy."
>
> Daniel Taddesse, GHSC-PSM Malawi Country Director

4. *New features and data types*

While participants agreed that some features of the VAN that could be enabled for in-country use, like demand sensing and inventory optimization, were better left for Malawi's own platforms that focused on this data specifically, like OpenLMIS, there were other gaps in existing data and processes that participants felt the VAN could accommodate.

- Inventory adjustments – GHSC-PSM staff conducting research in-country identified a large issue where stock transfers between health facilities occur informally to avert low or overstock situations, but these are not recorded in OpenLMIS. GHSC-PSM Malawi confirmed that adjustments can and should be recorded in OpenLMIS and noted that once OpenLMIS inventory data is available in the VAN, adjustments should be as well.

- Incorporating regulatory data into the supply chain process – GHSC-PSM Malawi noted that gap in data of shipments in the customs process. They suggested that as product registration statuses facilitate port clearance, and the market authorization number of products will be included as attributes in the National Product Catalog (NPC), the addition of this data to the VAN could help facilitate port clearance issues and delays.

Day 4 – The VAN as part of the Ghana digital ecosystem:
VAN service offerings in Ghana to support in-country health system strengthening

In-Country Context

Ghana's public sector supply chain is historically entirely paper-based and lacking in a centralized information system for supply chain data. In a robust undertaking, the GOG is conducting a massive overhaul of this manual system and employing a multi-year, phased implementation of a central LMIS, GhiLMIS. While GhiLMIS aims to replace the multiple manual processes and provide data access and visibility unlike ever before, integration across data sources and training is ongoing and the extent to which GhiLMIS is adopted and its functionalities utilized is to be determined. GhiLMIS also has an integration established with the VAN, by which inventory information flows; however, this integration has highlighted some critical country data quality concerns, which have led some stakeholders, who are less involved with the VAN, to question the data feed Itself. The workshop sought specifically to understand the benefits of the VAN in country, understand the challenges the VAN currently faces and opportunities for its further use. Following the workshop, there was a positive development that many workshop participants actively engaged in stakeholder buy-in activities and were able to alleviate many of the concerns noted above, which is a first step in managing an extended group of stakeholders moving forward.

Discussion

Ghana's in-country stakeholders, including USAID Ghana, GHSC-PSM Ghana, GHS Family Health Division (FHD), and S4D Consulting, engaged in discussion of several topics, described in detail below.

Benefits of VAN in Ghana

Following a presentation by VAN Director, Julia White, on the VAN service offerings and use case in Ghana, workshop participants were first prompted to think through some of the benefits the VAN has provided Ghana; these benefits were highlighted by GHSC-PSM Ghana and included 1) visibility into inbound shipments allowing greater ability to adjust inbound shipments according to stock status in country; and 2) a one-stop shop for E2E visibility due to the integration of the VAN with GhiLMIS.

> "[With] the click of a button, you are able to see everything, you get visibility into when the commodity is coming into country and this helps when taking key decisions, because for instance, if you check your level of stock and realize that you're going to be stocked out, then of course the next thing to do is to check the commodities that are coming in and perhaps you can circle back to the VAN team to see if you can expedite. But with the GhiLMIS, it doesn't come in-country, we are not able to see it [alone]…but with the integration, with the click of a button you are able to get visibility."
>
> Afua Nkumah Aggrey, GHSC-PSM Ghana Family Planning and Public Health Program Officer

VAN Challenges in Ghana

Participants were then prompted to think through some of the challenges that the VAN faces today in Ghana; some of the main themes of the challenges are outlined in-depth below.

1. *Need to expand stakeholder engagement beyond the core group of VAN users*

Participants agreed that Ghana has a small group of engaged stakeholders who operate and use the VAN on a regular basis; however, some stakeholders who have not been engaged with the VAN-GhiLMIS integration have had questions regarding the country data and flow. Generally, aside from a few key users of the VAN, stakeholders do not understand the value of the VAN and the value of the integration with GhiLMIS. Opportunities for outreach and engagement are presented in the section below.

> "I think the challenge comes with stakeholder engagement. I think that's the first thing with every integration everyone has to take into consideration that there are different stakeholders and there are different entities with different interests or there are different stakeholders who contribute differently, so it is important to map out the different stakeholders who play a role and engage them before finalizing an integration or ask them as the integration is going on. Stakeholder engagement is very important to ensure the success, and the smooth use, and timely reporting of data, especially when it comes to data quality. The stakeholder engagement process is also lengthy, it takes a bit of time. Every stakeholder has to come onboard, every stakeholder has to understand the impact and benefits it is going to bring them."
>
> Afua Nkumah Aggrey, GHSC-PSM Ghana Family Planning and Public Health Program Officer

2. *Change Management*

GHSC-PSM Ghana also described how the realities of integrating the VAN with a logistics management system that itself is just being rolled-out presents unique challenges around managing such a massive change.

> "It's a change, and the change management process is not easy. Every stakeholder has to be onboard for them to appreciate the different levels of the data and what each person's responsibility is when it comes to integration."
>
> Afua Nkumah Aggrey, GHSC-PSM Ghana Family Planning and Public Health Program Officer

> "There are two issues I've been hearing that are coming up; One is that there's need for more change management, because when we interface the two systems, one of the advantages we get is that when there are data quality issues, they're prominent and therefore easy to query, but I think what we haven't worked through our various stakeholders is the fact that such situations will be there and when there are differences, documenting the process we take to reconcile and the level of involvement of other stakeholders. I think what I have heard, is more of, when there are differences, people feel like I haven't done my part, therefore I don't like the system because it's monitoring me closely. That's exactly what we want to happen, but what that means is we have to build in some change management so that they know the system might not produce exactly what you like in terms of being monitored closely, but the benefits for the country and globally are beyond the individual interests. The second portion…is that we did agree at the beginning of the VAN that the data we are going to put into the VAN through GhiLMIS interface is not different from what we are sharing manually, but I think as we develop electronic systems, policies guiding data sharing have not been clear…"
>
> Deogratius Kimera, GHSC-PSM Ghana Country Director

3. *GhiLMIS Data Quality*

As GHSC-PSM Ghana mentioned, there are several aspects of data quality that have caused some stakeholders to become uneasy with data sharing. Any integration requires certain data quality for it to work, and so the act of integrating can be an important opportunity to identify and improve

data quality issues. It is no different for the VAN-GhiLMIS integration. It has helped identify some quality issues with GhiLMIS data and as such, some stakeholders have balked at these issues being on display. In turn, the VAN-GhiLMIS integration, as the window into these data quality concerns, has been called into question by some, despite the fact that the integration is actually helping to identify data quality problems and solve them. S4D Consulting, responsible for the implementation of GhiLMIS, described how data quality varies by level:

> "In GhiLMIS, currently we did a little exercise and data quality at the RMSs and central level is about 80% - we looked at the current stock-on-hand as against the GhiLMIS balances and they were about 80% accurate. When it comes to order management functionality in GhiLMIS, that is about 100%, so if it's just at central and regional levels that's yes [there is good data quality]; but, at the facility level, that's where the data accuracy is a bit low."
>
> Cyril Dan Lardy, S4D Consulting

GHSC-PSM Ghana harkened back to the sentiment that the GhiLMIS implementation is still new, and still improving on itself.

> "Because the data is new, and people are now getting used to reporting on a web-based system, it will take a while for you to get a lot of improvements in the data, so getting the initial challenges with implementing a system is there, but as time goes on and people become used to it the then the data quality keeps improving."
>
> Afua Nkumah Aggrey, GHSC-PSM Ghana Family Planning and Public Health Program Officer

Thanks to the leadership of the core VAN users in Ghana, they were able to navigate the data quality conversations and highlight the positive aspects of the integration and now all stakeholders have a better understanding and support the VAN-GhiLMIS integration.

VAN Opportunities in Ghana

As part of the discussion on challenges facing the VAN in Ghana today, participants were also encouraged to think through how stakeholders could be engaged further and other avenues to advocate for the VAN; these themes are detailed below.

1. *Concerted stakeholder engagement and management*

GHSC-PSM Ghana suggested an exercise to map stakeholders and their interests against VAN value in order to present out to stakeholders in an upcoming meeting and seek their buy-in to the VAN-GhiLMIS integration. They were adamant that this engagement and management of stakeholders be done by the Field Office, the GHS Family Health Division, and S4D Consulting.

> "There are different levels of stakeholders; there are those who are a bit close to the VAN, that's people who report data, then there are the levels, so we've come to realize that it's everybody who has influence in the VAN in a certain way, be it in the form of policy, be it in the form of advocacy, be it at the government, so it's not necessarily the users, but everybody who has any stake in it should be involved… Gradually they are all coming on board [stakeholders] and they see the importance of the VAN, so I think if we continue with the stakeholder engagement, every stakeholder will get involved and it will catch like wildfire"
>
> Afua Nkumah Aggrey, GHSC-PSM Ghana Family Planning and Public Health Program Officer

GHSC-PSM Malawi also described how important it is that the impact and benefits are made clear to stakeholders. This engagement also needs to be regular and structured, preferably in the form of a quarterly summary to continuously demonstrate the value the VAN brings to Ghana.

> "When you don't express return on investment, whether its LOE or data sharing, you lose support from the other stakeholders, so my suggestion is that we should have structured feedback on a quarterly basis. On a quarterly basis, we should have a summary report that is consumed by stakeholders beyond the operation team, because for [users], they know the benefit so for them it's automatic, but when we start governing data, it comes from Central Medical Stores, then some from procurement entities, so you find that we've limited our network to the team that is closely working with the system. I think that's what [we] want to address in the upcoming meeting is expanding that network. Beyond meetings, if we can use this structured feedback and keep sharing with them so they know where we are in terms of the benefits, but also issues that are arising, that brings the entire team together to work on this."
>
> Deogratius Kimera, GHSC-PSM Ghana Country Director

2. *Undertake change management efforts to get new users comfortable with data and business processes within the integration*

As described when identifying the change management challenge, despite the GhiLMIS implementation and VAN-GhiLMIS integration, not all new business processes have been clearly defined, especially as it relates to when and how data is accessed and validated. S4D Consulting highlighted how use of both new and existing processes has led to a disconnect on the data itself, leading to misconceptions about data quality, despite data sources being different.

> "One of the issues we are facing is the data from GhiLMIS is not matching with the physical data, but what happens is GhiLMIS gives you real-time information, so when you're picking any data you're getting from the VAN, it's as of today, but probably some constituents would be looking at the end of last month, so these are the kinds of discussions that probably should have taken place before the integration or these are things we can still do and then see how we can rectify it to get the kind of data we need."
>
> Cyril Dan Lardy, S4D Consulting

Ghana Health Services Family Health Division (FHD) agreed, stating change management was a top priority.

> "I think it is very important and in our best interest, for sustainability, to have everyone involved…so I think it's very important that change management is actually put on top."
>
> Claudette Diogo, Family Health Division (GHS)

GHSC-PSM Ghana pointed out that this is an opportunity to identify and improve on data quality concerns as the VAN-GhiLMIS integration will highlight data inconsistencies.

> "Recognize the fact that GhiLMIS is still at rollout stage. As a newly introduced system, we still have some utilization and cleaning challenges…so, because we are integrating while we are also rolling out, bringing out unexpected trends and share with the technical team for further probing would be very relevant whenever there is such data surprises, because as we roll out the system we are also discovering a few things that are happening…we are interfacing while also rolling out, and therefore there are some data quality or data utilization issues that will need discussing as we observe them."
>
> Deogratius Kimera, GHSC-PSM Ghana Country Director

3. *Demonstrate regular use of VAN data for decision-making*

Participants agreed that one of the best ways to demonstrate the ongoing value of the VAN was to incorporate its use in broader forums. GHSC-PSM Ghana proposed that the VAN be a standing agenda item on the quarterly ICC/CS meeting, to which GHS FHD agreed to take on this action.

> "If not already integrated into our ICC/CS…we should put the VAN as a standing agenda item, then that way all the stakeholders that are coming for the commodity security meeting know that just beyond sharing our information on stock levels and so on, we are also sharing the benefits that the VAN brings on board. So, it's more of building stronger coordination and making sure that along the way we don't drop any of the key stakeholders."
>
> Deogratius Kimera, GHSC-PSM Ghana Country Director

> "I think it would be nice, for them [ICC/CS] to see some graphics, and to see how it's moving, the whole thing."
>
> Claudette Diogo, Family Health Division (GHS)

4. *New Features and Integrations*

Participants were also prompted to think through additional features that could add value to the VAN in Ghana; the general

- Enabling full E2E visibility: GHSC-PSM Ghana noted that in order to have full E2E visibility in the VAN-GhiLMIS integration, there needed to be an element for inbound shipments in the VAN to be connected to inventory in GhiLMIS as they are being received directly at the GhiLMIS TCMS location. This connection would close the loop from inbound shipments to inventory that still exists in the integration.

- Demand Sensing – USAID Ghana expressed interest in demand sensing and predictive analytics feature that would enable better forecasts for programmed commodities.

> "Wherever we can link demand planning and looking at routine program data to the forecasting and procurement is going to be helpful…You talk about demand planning and machine learning and trend analysis, very important, and whatever can be done to accelerate that…would be fantastic; it's of high interest and its really quite necessary given that there is pretty solid routine program data through the DHIS that can be triangulated to some of this work as well."
>
> Brad Corner, USAID Ghana

5. *Build VAN best practices*

Finally, participants believed that a critical piece of advocacy for the VAN is understanding its role in other countries and best practices in resolving common issues that many countries might face. They expressed that the brief analysis of how the VAN has been used in other countries during the workshop was already helpful in understanding the global picture. Julia White, VAN Director described a VAN Ambassador program that is being established in order to equip members with tools and resources to advocate for the VAN.

Key Findings

Transparency, Collaboration and Visibility remain significant value drivers for the VAN

Across in-depth brainstorming sessions with both Malawi and Ghana, participants agreed with the VAN value propositions as presented and described in the landscape analysis and pointed to three key VAN value propositions: increased transparency, collaboration and visibility. Stakeholders from both countries described how access to inbound shipment data, aggregated across procurement agents and in one platform, was a novelty that provided transparency of data at a global scale. Additionally, the impact of that transparency led to purposeful collaboration amongst global actors, as well as in-country stakeholders, reducing redundancies in processes and overlapping work and procurements that would have otherwise led to overstocks. Finally, users from Ghana highlighted how VAN integrations with in-country systems helped to achieve E2E visibility from manufacturers down to clients "with the click of a button."

VAN stakeholder engagement must go beyond a small group of key users

In all workshop sessions, participants agreed that despite successful implementations of the VAN in Malawi and Ghana, further engagement of stakeholders not currently active in the VAN is necessary. Despite stakeholder agreement and buy-in early-on in the stories of the VAN in Malawi and Ghana, only a few key users have become champions, while others in their departments and ministries remain uninformed about VAN value. The key champions are often from the Reproductive Health departments of the MOH, as they benefit directly and immediately from the VAN's family planning focus and align it with their internal health vertical workflows. This was an important first step for VAN uptake in countries, but future sustainability will require expansion beyond the health vertical into country MOH supply chain strategies and digital health roadmaps, which requires engagement with those working on integrated service delivery and health system strengthening. RHSC is undertaking an Ambassador program to help these key users engage directly with other stakeholders and the findings from these workshops support this initiative.

Political realities are as important as technical feasibility

Throughout discussions with the broader global community, as well as country-specific participants, an overarching theme emerged that political feasibility is an integral piece to any higher-level of integration with the VAN, and that successfully identifying political roadblocks or stakeholders and addressing and mitigating these political risks is necessary for a successful implementation. Examples discussed include supplier integrations with Ethiopia through the VAN, where political realities are preventing a supplier from integrating as its data does not meet governmental regulations; and VAN integrations with GhiLMIS where questions of *what* data to integrate and *from which sources* have caused a re-thinking of how the VAN will be used in conjunction with GhiLMIS in Ghana.

Perceived value of data visibility and quality impact value perception of the VAN

During key informant interviews and workshop country discussions, we identified varying attitudes toward data, and specifically data quality. For those VAN users where data visibility and transparency presented an *opportunity* for improving data quality, such as identifying the root cause of data issues and seeking process improvement, there was a high-level of value perceived in the VAN platform and its integration with in-country systems (such as Malawi). Rose Chikumbe, from Malawi's RHD, intimated during the Malawi VAN Biweekly Call that Malawi's data integrating with the VAN was an opportunity for Malawi to showcase its data and its use of the platform both in-

country and at a global level. This attitude acknowledges the power of data visibility and the willingness to improve data quality so that this benefit can be realized. Whereas, where increased data visibility caused some country stakeholders to have anxiety over data quality issues, and question the source of the data itself, there was a subsequent questioning of the value of the VAN (such as some stakeholders in Ghana). Stakeholder engagement to improve data ownership and literacy amongst those organizations who do question increase visibility is a critical endeavor to ensure countries can take full advantage of VAN service offerings.

Annex A: Workshop Participants

Day 1 Attendees	Organization	Day 2 Attendees	Organization	Day 3 Attendees	Organization	Day 4 Attendees	Organization
Abi Beaudette	RHSC	Abi Beaudette	RHSC	Abera Mengistu	GHSC-PSM Malawi FO	Abi Beaudette	RHSC
Alan George	GHSC-PSM	Ameya Kamat	E2Open	Alan George	GHSC-PSM	Adrianne Espanet	GHSC-PSM
Andrew Inglis	GHSC-PSM	Andrew Inglis	GHSC-PSM	Bonnie Keith	RHSC	Afua Nkumah Aggrey	GHSC-PSM Ghana FO
Angela Elong	FTO	Angela Elong	FTO	Brian Zuidema	GHSC-PSM	Brad Corner	USAID Ghana
Ashley Smith	USAID	Bonnie Keith	RHSC	Chiedu Ezeadum	RHSC	Chiedu Ezeadum	RHSC
Bonnie Keith	RHSC	Chiedu Ezeadum	RHSC	Daniel Taddesse	GHSC-PSM Malawi FO	Claudette Diogo	GHS FHD
Bridget McHenry	USAID	Clarice Johnson	USAID	Dennis Chali	USAID Malawi	Cyril Dan Lardy	S4D Consulting
Chiedu Ezeadum	RHSC	Denise Harrison	USAID	Flora M Kalimba	GHSC-PSM Malawi FO	Damaris Forson	GHSC-PSM Ghana FO
Clarice Johnson	USAID	Glenn Milano	USAID	Greg Davidson	RHSC	Daniel OwusuAfranie	GHSC-PSM Ghana FO
Dah El Hadj Sidi	FTO	Greg Davidson	RHSC	Jean Miller	GHSC-PSM	Deogratius Kimera	GHSC-PSM Ghana FO
Denise Harrison	USAID	Hayley Traeger	GHSC-PSM	John Durgavich	GHSC-PSM	Eric K Yartey	GHSC-PSM
Greg Davidson	RHSC	Jean Miller	GHSC-PSM	Julia White	RHSC	Gladys Tetteh-Yeboah	USAID Ghana

Hayley Traeger	GHSC-PSM	John Durgavich	GHSC-PSM	Ramy Guirguis	USAID	Greg Davidson	RHSC
Jane Mwangi	USAID	Julia White	RHSC	Rebecca Turner	USAID	Jean Miller	GHSC-PSM
John Durgavich	GHSC-PSM	Maggie Murphy	RHSC	Romina Guevarapineyro	USAID	John Durgavich	GHSC-PSM
Julia White	RHSC	Mina Asghari	UNFPA	Sarah Khederian	GHSC-PSM	Joseph Obi	GHSC-PSM Ghana FO
Kevin Pilz	USAID	Padmini Srinivasan	USAID	Simon Ndira	CooperSmith	Julia White	RHSC
Kimara Nzamubona	GHSC-TA	Patricia Aseminaso	USAID	Stew Stremel	RHSC	Ramy Guirguis	USAID
Maggie Murphy	RHSC	Ramy Guirguis	USAID	Swaroop Jayaprakash	GHSC-PSM	Romina Guevarapineyro	USAID
Mina Asghari	UNFPA	Rebecca Turner	USAID	Thidiane Ndoye	GHSC-PSM	Salamatu (Guest)	USAID Ghana
Nauman Ul Hassan Zaidi	UNFPA	Romina Guevarapineyro	USAID	Trisha Long	RHSC	Sarah Khederian	GHSC-PSM
Patricia Aseminaso	USAID	Sarah Khederian	GHSC-PSM	Tyler Smith	CooperSmith	Stew Stremel	RHSC
Ramy Guirguis	USAID	Stew Stremel	RHSC	Wezi Munthali	USAID	Swaroop Jayaprakash	GHSC-PSM
Rebecca Turner	USAID	Swaroop Jayaprakash	GHSC-PSM	Yoona Michelle Lee	GHSC-PSM	Thidiane Ndoye	GHSC-PSM
Romina Guevarapineyro	USAID	Thidiane Ndoye	GHSC-PSM			Trisha Long	RHSC
Sarah Khederian	GHSC-PSM	Trisha Long	RHSC				
Sharmila Raj	USAID	Winnie Moyo	GHSC-PSM				
Simon Conesa	GHSC-PSM	Yoona Michelle Lee	GHSC-PSM				

Stew Stremel	RHSC
Thidiane Ndoye	GHSC-PSM
Trisha Long	RHSC
Wezi Munthali	USAID
Winnie Moyo	GHSC-PSM
Yoona Michelle Lee	GHSC-PSM

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