USAID GLOBAL HEALTH SUPPLY CHAIN PROGRAM

Procurement and Supply Management

FISCAL YEAR 2018

ANNUAL REPORT

October 1, 2017 to September 30, 2018

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USAID FROM THE AMERICAN PEOPLE

PEPFAR U.S. President's Emergency Plan for AIDS Relief

USAID FROM THE AMERICAN PEOPLE CDC U.S. President's Malaria Initiative

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Contract No. AID-OAA-1-15-00004

The USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project is funded under USAID Contract No. AID-OAA-I-15-0004. GHSC-PSM connects technical solutions and proven commercial processes to promote efficient and cost-effective health supply chains worldwide. Our goal is to ensure uninterrupted supplies of health commodities to save lives and create a healthier future for all. The project purchases and delivers health commodities, offers comprehensive technical assistance to strengthen national supply chain systems, and provides global supply chain leadership.

GHSC-PSM is implemented by Chemonics International, in collaboration with Arbola Inc., Axios International Inc., IDA Foundation, IBM, IntraHealth International, Kuehne + Nagel Inc., McKinsey & Company, Panagora Group, Population Services International, SGS Nederland B.V., and University Research Co., LLC. To learn more, visit ghsupplychain.org

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Acronyms

3PL	third-party logistics
ACT	artemisinin-based combination therapy
ADD	agreed delivery date
ALu	artemether-lumefantrine
API	active pharmaceutical ingredient
ART	antiretroviral therapy
ARTMIS	Automated Requisition Tracking Management Information System
ARV	antiretroviral
ASAQ	artesunate-amodiaquine
CARhs	Coordinated Assistance for Reproductive Health Supplies
CHAI	Clinton Health Access Initiative
CHAS	Coordinated HIV/AIDS Supplies Group
CNFM	National Council of Women of Madagascar
CSP	Coordinated Supply Planning
DHA-PPQ	dihydroartemisinin/piperaquine
DHIS2	District Health Information System Version 2
DMPA-IM	depot-medroxyprogesterone acetate-intramuscular injectable
DRC	Democratic Republic of the Congo
eLMIS	electronic logistics management information system
EUV	end-use verification
FASP	forecasting and supply planning
FP/RH	family planning/reproductive health
FY	fiscal year
GAD	goods available date
GDSN	Global Data Synchronization Network
GHSC-BI&A	Global Health Supply Chain-Business Intelligence and Analytics
GHSC-PSM	Global Health Supply Chain Program-Procurement and Supply Management
GHSC-RTK	Global Health Supply Chain-Rapid Test Kit
GHSC-TA	Global Health Supply Chain-Technical Assistance
Global FP VAN	Global Family Planning Visibility and Analytics Network
IDIQ	indefinite delivery, indefinite quantity
IUD	intrauterine device
IVCC	Innovative Vector Control Consortium
LabEQIP	Laboratory Efficiency and Quality Improvement Planning Tool
LLIN	long-lasting insecticide-treated net
LMD	last-mile distribution
LMIS	logistics management information system
LNG-IUS	levonorgestrel releasing intra-uterine system
M&E	monitoring and evaluation
MCH	maternal and child health
M4ALL	Medicines for All Institute
MNCH	maternal, newborn, and child health
NMCP	National Malaria Control Program
ORS	oral rehydration salts
OTD	on-time delivery
OTIF	on-time, in-full delivery

PA	pyronaridine-artesunate
PBO	piperonyl butoxide
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PFSA	Pharmaceuticals Fund and Supply Agency (Ethiopia)
PipeLine	Pipeline Monitoring and Procurement Planning System
PMI	U.S. President's Malaria Initiative
PPMR	Procurement Planning and Monitoring Report
PPMR-HIV	Procurement Planning and Monitoring Report – HIV/AIDS
PPMRm	Procurement Planning and Monitoring Report – malaria
PPM	Pharmacie Populaire du Mali
PRH	Population and Reproductive Health
PWD	Population Welfare Department (Pakistan)
Q	quarter
QA	quality assurance
QC	quality control
RDC	regional distribution center
RDT	rapid diagnostic test
RHSC	Reproductive Health Supplies Coalition
RHCS	reproductive health commodity security
RTK	rapid test kit
SC-FACT	Supply Chain–Facility-level AIDS Commodity Tracking
S/GAC	Department of State Global AIDS Coordinator
SOP	standard operating procedure
SP	sulphadoxine-pyrimethamine
SPAQ	sulphadoxine-pyrimethamine + amodiaquine
STOP-HIV	Stock Tracking, Oversight, and Planning for HIV
TLD	tenofovir, lamivudine, dolutegravir
TLE	tenofovir/lamivudine/efavirenz
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USSD	unstructured supplementary data service
VL	viral load
VMI	vendor-managed inventory
VMMC	voluntary medical male circumcision
WHO	World Health Organization
WMS	warehouse management system

Key Terms

Third-party logistics (3PL)	This term refers to any of the logistics service providers contracted under GHSC-PSM's fourth-party logistics model. These providers use their own assets or outsource logistics functions, such as carrier, warehousing, and inventory management services.
Automated Requisition Tracking Management Information System (ARTMIS)	ARTMIS is the end-to-end procurement system that GHSC-PSM uses to place, manage, and track orders, as well as manage sourcing and contracts activities.
Backlog	Backlog is the number of line items with an agreed delivery date within the reporting period, within a rolling 12- month period, that are undelivered and late.
Central medical store (CMS)	A supply chain unit supported by ministries of health, responsible to ensure the warehousing, inventory, and supply of health commodities throughout the public health supply chain. In most countries, GHSC-PSM delivers health commodities to the CMS.
Cycle time	The actual observed time that it takes to complete a supply chain process after the process has been completed. In the global supply chain context, overall cycle time for a line item refers to the actual time from Order Entry Date to Actual Delivery Date calculated after the order has been delivered. Cycle times may also be calculated for any step or segment along the order fulfillment and delivery process.
District Health Information System Version 2 (DHIS2)	Mechanism of data collection, transmission, processing, analysis, and information feedback to first- and secondary-level health care facilities. DHIS2 provides baseline data for district planning implementation and monitoring on major indicators of disease pattern, preventive services, and physical resources.
Decentralized procurement	Procurement of eligible commodities managed by an authorized GHSC-PSM field office. Commodities can be procured from eligible local or international sources.
End-use verification (EUV) survey	The EUV survey is used to help assess commodity stock status and case management practices for a variety of health areas, including malaria, FP/RH, and MNCH.
Field office/country program	GHSC-PSM country offices are in countries other than the United States. Each country office is staffed by long-term team members.

Global Health Supply Chain Program	The USAID Global Health Supply Chain Program is a family of projects (Procurement and Supply Management, Rapid Test Kits, Quality Assurance, Business Intelligence and Analytics, Technical Assistance) that supports USAID's, PEPFAR's, and PMI's programs with commodity procurements and supply chain strengthening.
GS1	A neutral, not-for-profit, global organization that develops and maintains the most widely used supply chain standards in the world. These standards facilitate tracking and traceability of products.
Last mile	The furthest point along the supply chain where commodities are dispensed. In public health, the last mile refers to the challenge of distributing health commodities to the destination. In developing countries, rural areas are often accessible only by poor quality road infrastructures. Geographically isolated, such areas represent an additional challenge to the public health national health system for logistics and information.
Line item	A defined quantity of a specified item that has been requested or ordered by a client.
Long-lasting insecticide-treated net (LLIN)	These nets are dip-treated using a synthetic pyrethroid insecticide such as deltamethrin or permethrin, doubling the protection over a non-treated net by killing and repelling mosquitoes. A LLIN is designed to remain effective for multiple years without retreatment.
Logistics Management Information System (LMIS)	The part of supply chain management that plans, implements, and controls the efficient, effective forward, and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption to meet customers' requirements. Logistics management is an integrating function which coordinates and optimizes all logistics activities, as well as integrating logistics activities with other functions including marketing, sales manufacturing, finance, and information technology.
On time delivery (OTD) rate	The number of orders (line items) expected to be delivered in the reporting period that were delivered on time divided by the number of line items with an agreed delivery date during the reporting period. The on-time window is -14/+7 days around the agreed delivery date.
On time, in full delivery (OTIF) rate	The number of line items delivered on time and in full during the reporting period divided by the number of line items delivered in the reporting period. The on-time window is 14/+7 days around the agreed delivery date.
Regional distribution center (RDC)	A supply consolidation point leveraged to manage pooled inventory of HIV/AIDS, malaria, and FP/RH stock to enable the program to resupply country central medical stores based on demand. The most frequently ordered medicines across many countries are stocked at one of three RDCs, placing the commodities closer to the point of demand, reducing delivery lead times, and improving overall commodity availability to the countries. The newly designed GHSC-PSM regional distribution network includes facilities in Belgium, South Africa, and United Arab Emirates.

Supply plan	A schedule of shipments needed to ensure adequate stocks are available to meet a forecast of commodity consumption. Each shipment in the supply plan includes specifics of the product, date to be received, quantity, proposed supplier and funder, and estimated cost based on proposed supplier.
Vendor-managed inventory (VMI)	A business model in which the buyer of a product provides forecasted consumption and specific need information to a supplier, and the supplier takes full responsibility for maintaining an agreed inventory of the product. The VMI solution strategically leverages supplier warehousing capacity, delivering cost efficiencies by reducing transport and warehousing costs associated with maintaining stock at project RDCs.

Executive Summary

The USAID Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project is pleased to present this report to summarize our performance for Fiscal Year (FY) 2018. We describe here our work to provide lifesaving commodities and to build efficient, reliable, and cost-effective health supply chains to deliver health products for the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), the U.S. President's Malaria Initiative (PMI), USAID's programs in voluntary family planning, reproductive health (FP/RH), and maternal and child health (MCH), which equitably share the cost of the project. (For more information on cost sharing, please see page 18.)

GHSC-PSM Results

In this reporting period (October 2017 through September 2018), GHSC-PSM:

- **Procured $888.7 million,** a 33.5 percent increase over FY 2017;
- **Delivered $742.6 million** in health commodities, a 79.1 percent increase over FY 2017;
- Steadily improved on-time delivery (OTD) to **87 percent** in quarter 4 (Q4) (July 1 through September 30, 2018);
- Improved our on-time, in-full (OTIF) delivery to **79 percent** in Q4; and
- Provided long-term, field-based support from 34 field offices in Africa, Asia, Central America and the Caribbean.

Below we summarize the achievements of GHSC-PSM's global supply chain, support for each health area, efforts to strengthen supply chain systems, and global collaboration.

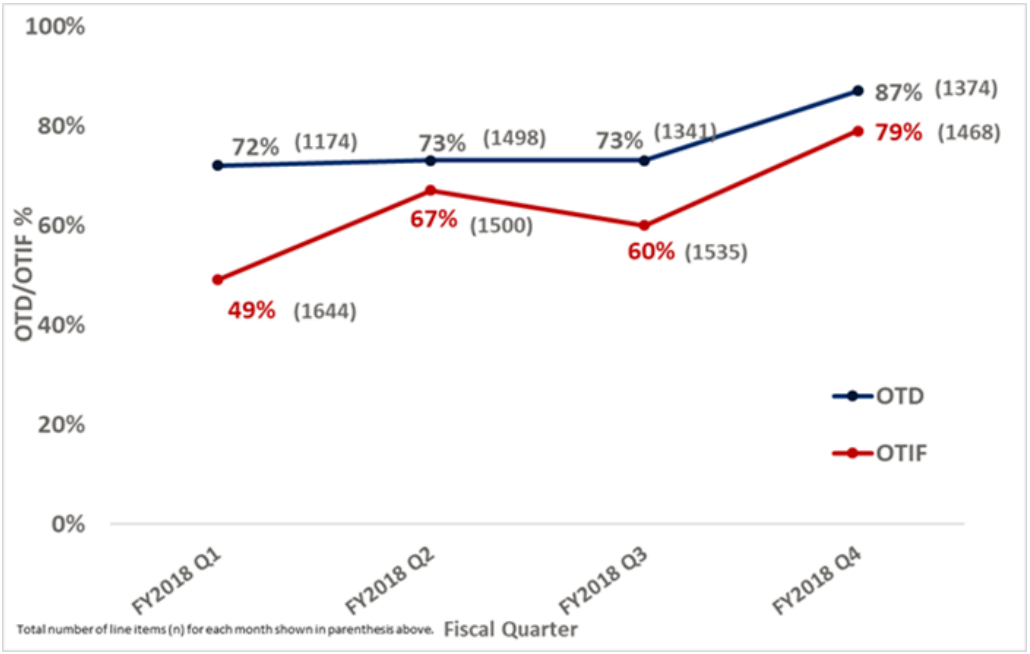
Global Supply Chain

Performance

At the beginning of FY 2018, GHSC-PSM altered the structure of the global supply chain team, re-aligned internal processes, and further developed systems to improve our global procurement and delivery of drugs and medical supplies. As those changes took effect, our OTD and OTIF rates steadily improved, as shown in Exhibit 1. GHSC-PSM's OTD was 87 percent for Q4 and 89 percent for September 2018. September 2018 OTD rates were strong for all health areas: 90 percent for HIV, 83 percent for malaria, 100 percent for FP/RH, and 85 percent for maternal, neonatal, and child health (MNCH). Backlog[1] decreased to two percent of orders, which drove OTIF closer to OTD. (OTIF will hover slightly below OTD if there is any backlog, and if any orders are split into multiple deliveries.)

[1] "Backlog" is the number of line items with an agreed delivery date within the reporting period, within a rolling 12- month period, that are undelivered and late.

Exhibit 1. GHSC-PSM OTD and OTIF by Quarter, FY 2018



Scale

The scale of GHSC-PSM's global procurement and delivery in FY 2018 increased significantly compared to FY 2017, as shown in Exhibit 2.

Exhibit 2: Change in the Value and Volume of Procurements and Deliveries Between FY 2017 and FY 2018

Item	FY 2018	Percent Increase Over FY 2017
Value of commodities procured	$888.7 million	33.5%
Number of line items procured	6,781	40.4%
Value of commodities delivered	$742.6 million	79.1%
Number of line items delivered	6,151	67.1%

As of September 30, 2018, GHSC-PSM had **procured $1.557 billion** in health commodities over the life of the contract so far.

Value to the U.S. Taxpayer and U.S. Government's international Health Programs

GHSC-PSM works to achieve best value for the U.S. taxpayer in all our efforts. In some cases, this means the project is saving money through lower costs. In others, *value* represents a combination of reasonable costs and other important benefits, such as timeliness, diversification of sources to reduce risk, and quality. Examples of excellent value obtained by GHSC-PSM this year appear below.

Cost Savings on Commodities

GHSC-PSM conducts detailed analyses to understand the markets for the medicines and health commodities we procure and brings this knowledge to our negotiations with suppliers. Through

careful evaluation and negotiation of long-term contracts with suppliers, on major health commodities only,[2] GHSC-PSM achieved:

- More than **$67.2 million actual cost savings in FY 2018** on commodity procurements; and
- More than **$80.4 million actual cost savings over the life of the project** on procurements.

To achieve long-term value and sustainability, GHSC-PSM achieved these cost savings while working to ensure a return to suppliers that will maintain their interest in the market, and while expanding the number of suppliers in many commodity categories so the U.S. Government can benefit from a competitive supplier base. (More information on this analysis can be found in Section C1b.)

Cost Savings on Logistics

Fourth party logistics (4PL). GHSC-PSM obtains transportation services through a 4PL model that takes advantage of competition between shipping companies (known as 3PLs) to improve service and reduce costs. GHSC-PSM pooled our purchasing power and scale in competing 510 air, 258 ocean, and 33 land lanes. By competing the lanes in 2016, GHSC-PSM saved more than $1.4 million on actual shipments (a 7.3 percent reduction) compared to the approach in effect at the time GHSC-PSM was awarded. In April 2018, GHSC-PSM recompeted the shipping lanes, which saved an additional $656 thousand on shipments in the past six months.

The Global Supply Chain at a Glance

58 countries served

3,664 products in the catalog provided by **258** suppliers

Five international freight forwarders responsible for **2,746** shipping lanes

Three RDCs with inventory for responding rapidly to orders

Warehouse Optimization. In addition to cost savings on shipping rates, GHSC-PSM achieved cost savings on warehousing and shipping by optimizing the number and locations of our warehouses. GHSC-PSM consolidated global warehousing from five inherited warehouses to three (in Belgium, South Africa, and United Arab Emirates). GHSC-PSM also minimized costs by negotiating discounted per-pallet warehousing rates for the new regional distribution centers (RDCs). Since GHSC-PSM transitioned to the Belgium and United Arab Emirates RDCs in April 2018, the project has saved almost $1.2 million in warehousing costs and almost $1.7 million in shipping costs on actual commodities moving through these warehouses, compared to what warehousing and shipping would have cost for those commodities under the previous five-warehouse model. (This $1.7 million in shipping cost savings is in addition to the cost savings from negotiating lower shipping rates discussed in the previous paragraph.) GHSC-PSM estimates the project will realize an additional $1 million per year in savings for comparable use of the RDCs when the new South Africa RDC comes fully online in January 2019.

Altogether, GHSC-PSM has reduced logistics costs for warehousing and shipping by 10 percent compared to the previous logistics model, which resulted in **more than $4.9 million in actual logistics cost savings through the end of FY 2018**. Since the warehouse optimization began yielding savings in April 2018, GHSC-PSM has observed an even higher rate of savings and projects **saving $8 million per year** on logistics moving forward.

[2] Commodity categories represented include first-line adult antiretrovirals (ARVs), kits for voluntary medical male circumcision (VMMC), condoms, contraceptives, artemisinin-based combination therapy, other malaria pharmaceuticals, long-lasting insecticide-treated nets, and rapid diagnostic kits for malaria.

Total project savings to the U.S. Government are summarized in the box.

GHSC-PSM Cost Savings for U.S. Government to Date

In total, to date, GHSC-PSM has **saved U.S. taxpayers more than $85.3 million** on commodities and logistics, which we can use to buy more medicine and save more lives.

Health Areas

GHSC-PSM provides procurement, supply chain systems strengthening, and global collaboration to the U.S. government's programs for HIV/AIDS, malaria, FP/RH, MCH, and other emerging health threats. We provide highlights of project achievements below.

Support for the U.S. President's Emergency Plan for AIDS Relief (PEPFAR)

GHSC-PSM's work supporting PEPFAR's HIV/AIDS program is detailed in Section B1. To summarize, in FY 2018, GHSC-PSM:

- Delivered enough adult ARVs to provide **2.4 million years of treatment**;
- Procured **more than $594 million in HIV products, including $352 million in ARVs;** the project has **procured $1.1 billion in HIV products** over the life of the project;
- Achieved **87 percent OTD and 82 percent OTIF in Q4;** and
- Financed the procurement of HIV products for 38 countries and the strengthening of supply chain systems in 27[3].

GHSC-PSM also supported Ministries of Health to transition to tenofovir, lamivudine, dolutegravir (TLD) as a preferred first-line treatment and helped them adjust supply plans, where required, to retain women of childbearing age on other ARVs. The project, with USAID funding, placed an early order for TLD, to ensure PEPFAR-supported countries would be among early recipients of this new treatment. By the end of FY 2018, GHSC-PSM had **delivered almost six million packs of TLD to nine countries**.

Using insights into production costs and other detailed market information, GHSC-PSM negotiated favorable, but market-sustaining, prices for a variety of HIV medicines and commodities. Actual savings on procurements to date include the following:

- $54 million on ARVs; and
- Almost $3.8 million on VMMC kits.

The project endorsed a **reagent-rental approach** to laboratory equipment and commodities whereby governments and other partners pay for tests rather than for equipment and supplies. GHSC-PSM also contracted for testing that uses transcription-mediated amplification, which allows a clinical lab to screen blood with fewer steps, less processing time, and faster results. GHSC-PSM will continue to monitor performance and outcomes under the reagent rental approach.

GHSC-PSM continues to improve visibility into the stock status of HIV medicines and commodities at all levels of the supply chain to help ensure there are sufficient supplies (e.g., priority medicines, tests) for patients to receive the services they require. Reporting of central and regional stocks of ARVs and test kits for the Procurement Planning and Monitoring Report for HIV (PPMR-HIV)

[3] The number of countries for which GHSC-PSM provided technical assistance to strengthen supply chain systems for HIV programming includes Kenya, funded by the USAID mission in Kenya.

expanded to 15 countries this year. Also, 18 countries now regularly share data on stocks down to the lowest level of the supply chain; **information is currently available for 13,500 facilities**.

Support for the U.S. President's Malaria Initiative (PMI)

GHSC-PSM's work supporting PMI's malaria program is detailed in Section B2. To summarize, in FY 2018, GHSC-PSM:

- Delivered enough antimalarials to treat **80.1 million infections;**
- Procured **$239 million in malaria products** (e.g., long-lasting insecticide-treated nets [LLINs], artemisinin-based combination therapy [ACTs], rapid diagnostic tests [RDTs], severe malaria medicines, and other pharmaceuticals);
- Achieved **88 percent OTD and 65 percent OTIF in Q4;**
- Financed the procurement of malaria products for 30 countries, and the strengthening of supply chain systems in 25 countries[4]; and
- Started supporting four new PMI priority countries: Cameroon, Mali[5], Niger, and Sierra Leone.

GHSC-PSM's analysis and recommendations regarding LLINs and RDTs **informed shifts in PMI's policy**. Going forward, PMI will support a greater standardization of LLINs and incentivize a broader supply base for RDTs. In the coming months, these changes will save money, shorten delivery time, and increase the availability of these products on a sustained basis. GHSC-PSM also negotiated favorable prices for several products. **Actual savings of more than $22.4 million on procurements** to date include the following:

- $13.7 million on artemether-lumefantrine (ALu);
- $1.5 million on sulphadoxine-pyrimethamine + amodiaquine (SPAQ), artesunate-amodiaquine (ASAQ), and injectable artesunate;
- $6.5 million on LLINs; and
- $723,000 on RDTs.

Importantly, GHSC-PSM also **improved market health for malaria commodities** by contracting new suppliers of RDTs to ensure diversity and competition. **Quality assurance (QA) of malaria commodities[6] exceeded all targets** for the quality of the products and the timeliness of testing and reporting.

At the country level, in addition to supporting strengthening for supply chain systems, GHSC-PSM **enhanced the end-use verification (EUV) survey**, implemented regularly to determine the availability and proper use of malaria commodities at last-mile facilities. At national levels, the PPMR-malaria (PPMR-m) activity tracked the availability of malaria commodities in 23 countries.

[4] The number of countries for which GHSC-PSM provided procurement support or technical assistance to strengthen supply chain systems for malaria programming includes Kenya, which is funded by USAID/Kenya.
[5] GHSC-PSM has procured malaria commodities for Mali from the beginning of the project. The project started providing supply chain systems strengthening technical assistance to Mali in FY 2018.
[6] GHSC-PSM is responsible for the quality assurance of malaria products. The GHSC-QA contract provides the quality assurance of all other health products procured by GHSC-PSM.

Throughout the past year, GHSC-PSM was directly involved in distributing LLINs. In FY 2018, GHSC-PSM's field offices **distributed 21.7 million LLINs in 10 countries**.

Program Support for Voluntary FP/RH

GHSC-PSM's work supporting USAID's FP/RH program is detailed in Section B3. To summarize, in FY 2018, GHSC-PSM:

- Delivered enough contraceptives to provide **22.7 million couple-years of protection;**
- Procured **$46 million in FP/RH products;**
- Achieved **95 percent OTD and 83 percent OTIF in Q4;**
- **Saved the RH global community close to $2 million** through transfers of product and the postponement or cancellation of orders that were identified through the PPMR;
- Worked to expand the supplier base, contracting additional suppliers of oral contraceptives, intrauterine devices (IUDs), and two-rod implants;
- Concluded long-term agreements with favorable terms for several products, including copper-bearing IUDs; and
- Supported the procurement of products for voluntary FP/RH programs for 25 countries, and supported strengthening of supply chain systems in 20[7].

GHSC-PSM contracted **generic suppliers of oral contraceptives for the first time in USAID's history**. The project also worked closely with USAID and other donors to allocate the supply of long-term injectables, for which demand greatly outstrips supply. These two actions are expected to contribute to additional cost savings on contraceptive commodities moving forward and improve the availability of products.

GHSC-PSM continued to **support USAID's leadership role in the FP/RH global community**. The project provided information on 38 countries' stocks of contraceptives through the PPMR, facilitated Coordinated Assistance for Reproductive Health Supplies (CARhs) meetings and commodity exchanges that seek to balance stock levels, and helped develop the Global Family Planning Visibility and Analytics Network (Global FP VAN). The project helped revise the Contraceptive Security Indicators, a global data collection initiative that aims to inform policymaking, programming, and financing to increase access to family planning commodities. The project collected data on contraceptive security from 36 countries and published the results via an online, interactive dashboard. Finally, the project supported the global harmonization of FP/RH product packaging, assessed the availability of contraceptives through the private sector in Latin America, and continued to chair the Systems Strengthening Working Group of the Reproductive Health Supplies Coalition's (RHSC).

Program Support for MCH

GHSC-PSM's work supporting USAID's MCH program is detailed in Section B4. To summarize, in FY 2018, GHSC-PSM:

[7] The number of countries for which GHSC-PSM provided procurement support or technical assistance to strengthen supply chain systems for FP/RH programming includes Kenya, funded by USAID/Kenya.

- **Procured $4.8 million in MNCH products**;

- Achieved **68 percent OTD and 63 percent OTIF** in Q4. (Note: Late deliveries of atypical orders of medical equipment in July pulled down the quarterly rate.) MNCH OTD in August and September were 100 and 85 percent, respectively; and

- Funded the procurement of MNCH products for eight countries and the strengthening of supply chain systems in 15[8].

GHSC-PSM procures limited quantities of MNCH products. Priority MNCH pharmaceuticals were included in long-term agreements for essential medicines with wholesalers, local distributors, and manufacturers to reduce cycle time and increase competition between suppliers.

Project support for USAID's MCH program focuses on **improving the quality and availability of MNCH products** that Ministries of Health and partners largely procure with domestic resources. The project chaired the Maternal Health Supplies Caucus and provided supply chain information for priority MCH health challenges. We helped define the conditions under which oxytocin, used to treat postpartum hemorrhage, should be stored and transported, and helped **develop actionable advocacy messages** around this topic. The project also funded the development of **guidelines for managing sick infants** with severe bacterial infection and advised on how to ensure the availability of medicines to manage these infections where referral is not feasible. Finally, to help **improve visibility into the availability of MNCH products**, often not included in national logistics management information systems (LMIS), GHSC-PSM created and tested an EUV survey module on MNCH products.

Support for Other Infectious Diseases

GHSC-PSM's work supporting emerging health threats is detailed in Section B5. To summarize, in FY 2018, GHSC-PSM equipped Ministries of Health with condoms, mosquito repellent, and/or technical assistance to **reduce the spread of Zika in nearly 20 countries**. This included **procuring $4.7 million in mosquito repellent** for use by pregnant women to prevent Zika infection. The project also procured and delivered essential medicines and supplies for three countries formerly affected by Ebola (Guinea, Liberia, and Sierra Leone).

Strengthening of Health Supply Chain Systems

As described in Section C2, GHSC-PSM helped strengthen supply chain systems through 34 country and regional field offices, supported by headquarters-based experts. In most countries, multiple health areas provide funding to improve supply chains, with assistance that generally benefit all health areas[9]. The project supported most of these countries in the following:

- Forecasting and supply planning (FASP), so that 33 countries **generate regular updates to their annual supply plans** for HIV, malaria, and FP/RH products; thus, they are better able to determine their own needs in these health areas;

[8] The number of countries for which GHSC-PSM provided technical assistance for supply chain systems for MCH programming includes Kenya, funded by USAID/Kenya.

[9] The USAID Bureau for Global Health spreads the costs of technical assistance and activities to strengthen supply chain systems proportionally across health elements (i.e., HIV, malaria, FP/RH, and MCH). The Bureau reviews the cost-sharing formulas annually for each office to verify that each health area's share of the total cost for technical assistance remains equitable. However, systems strengthening efforts associated with activities specific to a given health element (e.g., distribution of LLINs for malaria or the scale-up of viral load testing for HIV) are supported entirely by the relevant office or program.

- LMIS, so that 33 countries can **better manage data on commodity stocks** throughout their supply chains, including three countries (Guinea, Malawi, and Nigeria) that shifted to electronic LMIS (eLMIS) this year; and

- Warehousing and distribution, as GHSC-PSM helped 31 countries to **optimize their logistics networks**, use space more efficiently, manage costs more effectively, monitor temperatures throughout their operations, and/or contract third-party logistics (3PL) providers to distribute commodities.

Also, GHSC-PSM provided substantial and innovative support for strategy and planning, the development of the supply chain workforce, process improvements, governance, quality assurance, and the management of health-care waste management.

Global Collaboration

As described in Section C3, throughout FY 2018, GHSC-PSM collaborated regularly with donors and decision makers such as the World Health Organization (WHO); the Global Fund to Fight AIDS, Tuberculosis, and Malaria (the Global Fund); the Clinton Health Access Initiative (CHAI); the United Nations Population Fund (UNFPA); the RHSC; and others. Our varied support to the global community includes hosting meetings, chairing working groups, drafting guidance, sharing data, and otherwise fostering collaboration to help achieve a continuous supply of health products at the best price.

Efforts to **track and trace commodities through adopting GS1 global standards** for identifying products, and for capturing and sharing data advanced significantly this past year. GHSC-PSM engaged government bodies and manufacturers to raise awareness of the value of GS1 standards, and to inform them of emerging initiatives in global health. In January, the project required that our suppliers[10] phase in the use of GS1 standard identifiers and barcodes. In February, we completed the integration of our Automated Requisition Tracking Management Information System (ARTMIS) with the GS1 Global Data-Synchronization Network (GDSN). The project worked to enhance the GDSN's utility in global health, including by obtaining product registration information directly from suppliers. The project developed guidance to countries on how to implement the GS1 standards and supported an initial set of countries (Angola, Ghana, and Rwanda) in assessing their current capabilities and developing strategies for implementation.

The pages that follow provide additional detail on strides taken by GHSC-PSM this year to ensure the continuous availability of health commodities to the people who need them around the world.

[10] Suppliers of pharmaceuticals, medical devices, sterile test kits, and laboratory reagents are required to phase in use of GS1.

SECTION A

INTRODUCTION

A1. Background

GHSC-PSM works to ensure uninterrupted supplies of health commodities to save lives and to create a healthier future for all. The project directly supports five global health areas of importance to the U.S. government:

- PEPFAR to help reach the Joint United Nations Programme on HIV/AIDS (UNAIDS) global 90-90-90 HIV/AIDS testing, treatment, and viral load (VL) suppression targets;
- PMI to reduce malaria deaths and substantially decrease malaria morbidity, toward the long-term goal of elimination;
- USAID's PRH program to ensure that key reproductive health commodities are available for safe and reliable family planning;
- USAID's MCH program to prevent child and maternal deaths; and
- Other public health threats as they emerge, with support for Zika and Ebola in FY 2018.

The project procures and delivers health commodities, offers technical assistance to strengthen national supply chain systems, and provides global supply chain leadership to ensure that lifesaving health commodities reach those most in need.

A2. About This Report

We are pleased to present our performance report for FY 2018 (October 1, 2017, through September 30, 2018). This report includes calculations of all required quarterly, semiannual, and annual metrics from the project's monitoring and evaluation (M&E) plan (available on GHSC-PSM's website).

GHSC-PSM is a matrixed project that integrates work across two axes: health areas and technical objectives. To reflect our work in each of these areas, the report is organized as follows:

- Section B summarizes major activities in each of the **five health areas** (HIV/AIDS, malaria, FP/RH, MCH, and other public health threats).
- Section C describes activities under each of the project's **three main technical objectives** (global commodity procurement and logistics, systems strengthening, and global collaboration). Because our M&E indicators are structured around our objectives, in Section C we also discuss select indicator results.
- Annex A provides **performance and context indicators**, including quarterly indicators for Q4 (July 1 through September 30, 2018), semiannual indicators for both halves of the fiscal year, and annual indicators.

Given the size and complexity of GHSC-PSM, this report summarizes our primary efforts this year and reflects only a fraction of the project's activities each day to help people around the world live healthier lives.

SECTION B

PROGRESS BY HEALTH AREA

In this section, we summarize GHSC-PSM's support for each of the five health areas (HIV/AIDS, malaria, FP/RH, MCH, and other public health threats) over FY 2018.

B1. HIV/AIDS

In Brief

38 countries procured HIV/AIDS commodities and **27 countries received systems strengthening support** with HIV/AIDS funding under the contract this year.

GHSC-PSM **continues to support the achievement of PEPFAR goals** by ensuring that country supply chains support the transition of patients on ARVs to the preferred drug, TLD.

GHSC-PSM made our first deliveries of TLD (to Nigeria, Rwanda, and Zambia) in Q3. By the end of FY 2018, the project had **delivered 5,968,090 packs of TLD to nine countries.**

By the end of FY 2018, GHSC-PSM had successfully reviewed and **captured data on ARVs, rapid test kits (RTKs), and condoms for 13,500 facilities** in 18 countries.

GHSC-PSM supports the PEPFAR goal of controlling the HIV/AIDS epidemic. With PEPFAR funding, we work to help countries achieve epidemic control under the UNAIDS 90-90-90 framework—so that 90 percent of people living with HIV know their status, 90 percent of people who know their status are on treatment, and 90 percent of people on treatment have suppressed viral loads.

Country Portfolio

GHSC-PSM supported commodity procurement for 38 countries and provided supply chain systems strengthening for HIV commodities in 27 countries in FY 2018. These are shown in Exhibit 3. GHSC-PSM is actively supporting PEPFAR's strategy for 2017 to 2020, which focuses on 13 priority high-burden countries. These countries are indicated by an asterisk in Exhibit 3.

Exhibit 3. Countries that Received GHSC-PSM Support with HIV Funding^ in FY 2018

AFRICA			AFRICA (cont.)			AFRICA (cont.)			ASIA		
Angola	■	■	Malawi*	■	■	Zambia*	■	■	Burma	■	■
Benin		■	Mali	■	■	Zimbabwe*	■	■	Cambodia	■	
Botswana*	■	■	Mozambique	■	■				Indonesia	■	
Burkina Faso		■	Namibia*	■	■	**LAC**			Laos		■
Burundi	■	■	Niger		■	Bahamas		■	Nepal		■
Cameroon	■	■	Nigeria	■	■	Dom. Republic		■	Papua New Guinea		■
Côte d'Ivoire*		■	Rwanda*	■	■	El Salvador	■		Thailand		■
DRC		■	Senegal		■	Guatemala	■		Vietnam	■	■
Eswatini*		■	South Africa		■	Haiti*	■	■	**EUROPE/EURASIA**		
Ethiopia	■	■	South Sudan	■	■	Honduras	■		Ukraine		■
Ghana	■	■	Tanzania*		■	Jamaica		■			
Kenya*^	■		Togo		■	Panama	■				
Lesotho*	■		Uganda*	■	■	Suriname		■			

■ *GHSC-PSM provides technical assistance to strengthen supply chains.*
■ *GHSC-PSM procures HIV commodities.*
** High HIV burden PEPFAR focus country*
^ GHSC-PSM provides support in Kenya under a unique task order overseen by USAID/Kenya.

Procurement

GHSC-PSM procures a variety of preventive, diagnostic, and treatment commodities for PEPFAR programs. Our procurements in FY 2018 and over the life of the project are summarized in Exhibit 4. GHSC-PSM has procured more than $1 billion in HIV commodities over the life of the project. More than half of all procurements were for adult ARVs and 28 percent were for laboratory in FY 2018.

Exhibit 4. GHSC-PSM Procurements of HIV Commodities

ITEM	FY 2018 Q4	FY 2018	Life of Project
Adult ARV	$121,033,281	$332,371,924	$652,004,000
Laboratory	$26,359,281	$167,086,529	$263,362,475
VMMC	$8,620,920	$22,362,843	$44,517,485
Condoms	$7,923,181	$22,101,158	$42,834,322
Pediatric ARV	$2,712,582	$20,416,210	$33,433,901
Other pharmaceutical products	$2,093,945	$15,439,321	$32,474,480
Other nonpharmaceutical products	$2,048,825	$9,309,932	$14,338,391
Food, water, sanitation and hygiene	$4,097	$2,268,523	$5,826,170
Other rapid test kits (RTK)	$163,680	$1,548,127	$2,881,551
Vehicles and other equipment	$8,327	$875,432	$2,185,425
HIV RTK	$292,887	$292,887	$292,887
TOTAL	**$171,261,007**	**$594,072,887**	**$1,094,151,089**

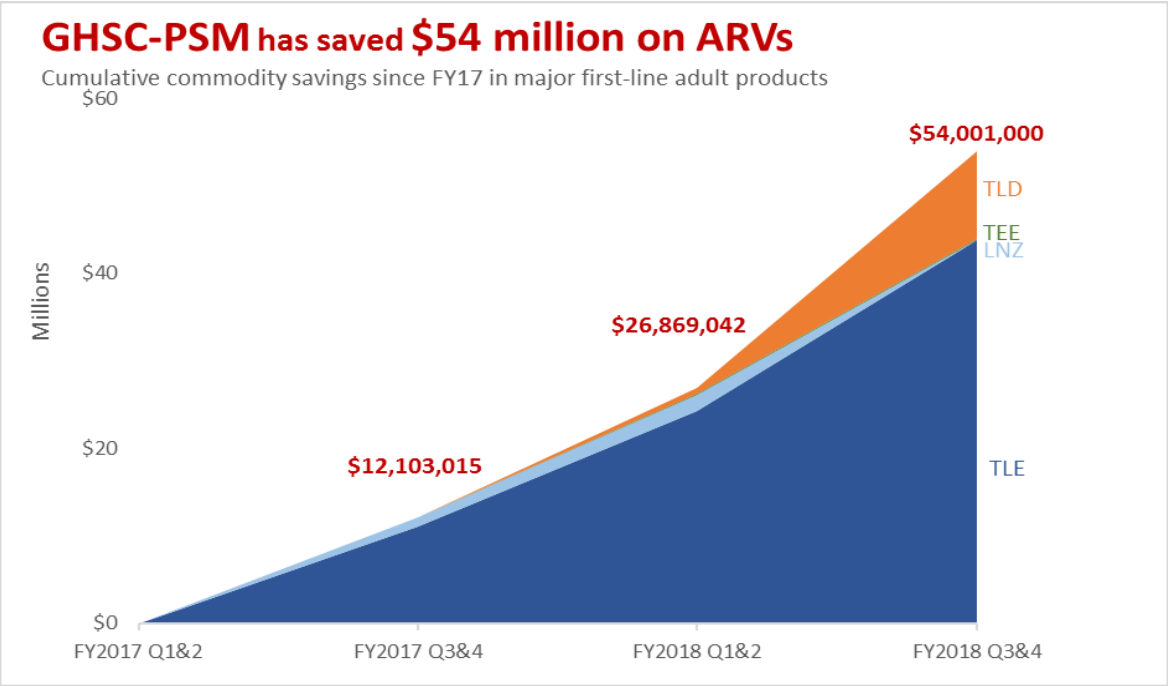
Strategic Sourcing of HIV Commodities

GHSC-PSM's strategic sourcing activities generated significant cost savings for PEPFAR and the countries and people served by its HIV programs. As shown in Exhibit 5, for ARVs alone, GHSC-

PSM has saved $54 million over the life of the contract, including $27.1 million of which was in FY 2018.

While tenofovir, lamivudine, efavirenz (TLE) procurements are declining as TLD overtakes it as the preferred adult first-line ARV, there continues to be demand for TLE. GHSC-PSM's efforts to promote competition for TLE generated significant cost savings. TLE prices have dropped to historic lows because of higher competition among suppliers that are not yet able to produce TLD. For TLD, strong negotiations achieved an overall savings through establishing regular committed volumes with quality assured suppliers.

Exhibit 5. Cost Savings From GHSC-PSM Procurement of ARVs



TEE = tenofovir/efavirenz/emtricitabine; LNZ = lamivudine/nevirapine/zidovudine

In FY 2018, GHSC-PSM competed and/or awarded the following strategic contracts for HIV commodities:

Male Condoms and Personal Lubricants

GHSC-PSM negotiated and awarded three global long-term contracts for male condoms and personal lubricants. The new supply contracts deliver cost savings, offer a broader range of product options, and include vendor-managed inventory (VMI) services, whereby the supplier manufactures and retains inventory for GHSC-PSM until the product is needed.

ARVs

GHSC-PSM implemented 14 new indefinite delivery, indefinite quantity (IDIQ) contracts with patent-holders and generic suppliers of ARVs that include:

- A new ARV (TLD) as well as legacy ARVs, including varying pack sizes for multi-month dispensing.
- Fixed pricing (for six months) along with ceiling prices (for the term of the contract) on all ARVs. This allows suppliers to offer a low price without building in too much risk for potential price fluctuations and reduces the time to complete a purchase order.

- Updated and standardized contract terms and conditions.

VMMC

In FY 2018, after a detailed market analysis, GHSC-PSM rationalized the supplier base for VMMC commodities and signed new IDIQ contracts resulting in:

- Fixed pricing for all commodities.
- More efficient and responsive production by suppliers.
- Implementation of VMI, where feasible. This reduces manufacturing lead time and allows for increased competition for short-lead-time orders that, in the past, could be filled only by one manufacturer.
- To date, GHSC-PSM has achieved $3.8 million in cost savings on VMMC products. The new long-term agreements should save an estimated $1.2 million per year.

Laboratory

GHSC-PSM signed long-term agreements with two manufacturers of laboratory equipment and supplies and made significant progress in negotiating long-term agreements with major VL manufacturers. On behalf of Zambia, the project also awarded an all-inclusive, reagent rental-based VL agreement, through which the country pays for tests rather than for the instrument itself, giving the provider an incentive to keep the equipment running. Service and maintenance are included in the contract to ensure continued operations and enhancements. The contract also includes requirements to report equipment uptime, with GHSC-PSM carefully monitoring performance. This approach maximizes VL clinical results and allows stakeholders to monitor performance and take timely corrective actions. GHSC-PSM is pursuing similar reagent rental approaches in Haiti and Nigeria.

GHSC-PSM reduced laboratory costs for PEPFAR programs through direct negotiations with suppliers and involvement in PEPFAR's strategic negotiations, including:

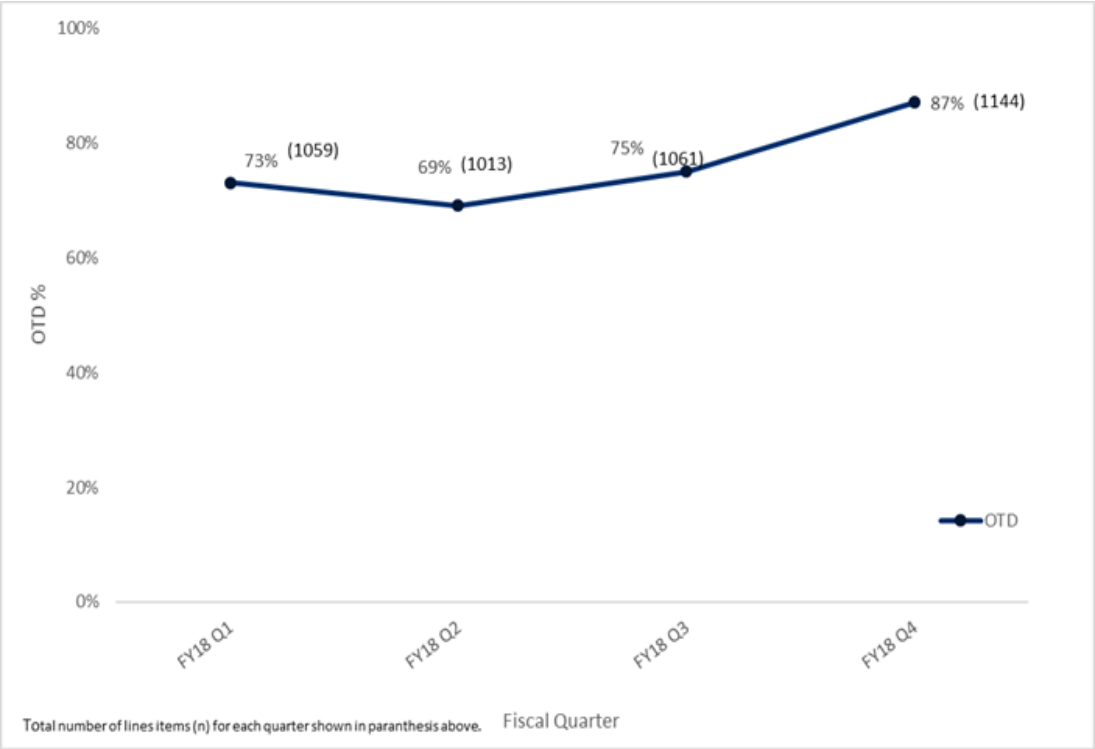
- Signing global and country-specific long-term agreements that are expected to generate about $1.2 million in savings per year (with additional benefits possible from contracts that are not yet fully executed).
- Collaborating with USAID, PEPFAR, and the Global Fund in planning and implementing a key VL manufacturer's protocol change and providing USAID with critical cost intelligence. This helped USAID negotiate a cost reduction that should save more than $1 million per year.
- Negotiating and reducing price per test for VL and early infant diagnosis on routine orders in multiple countries.

This year, GHSC-PSM also entered into a global long-term agreement with a manufacturer of VL tests that uses transcription-mediated amplification. This technology allows a clinical lab to screen blood with fewer steps, less processing time, and faster results.

Deliveries

GHSC-PSM delivered $494 million HIV commodities to countries in FY 2018, an increase of 55 percent over FY 2017 values. Timeliness of GHSC-PSM deliveries has improved significantly over the reporting period, as shown in Exhibit 6, reaching 87 percent for Q4. OTD for HIV commodities was 90 percent for September 2018.

Exhibit 6. HIV Commodity Deliveries, OTD



Potential Health Impact of HIV Deliveries

The commodities delivered by GHSC-PSM enable countries to provide important, large-scale health benefits to their populations, as summarized below.

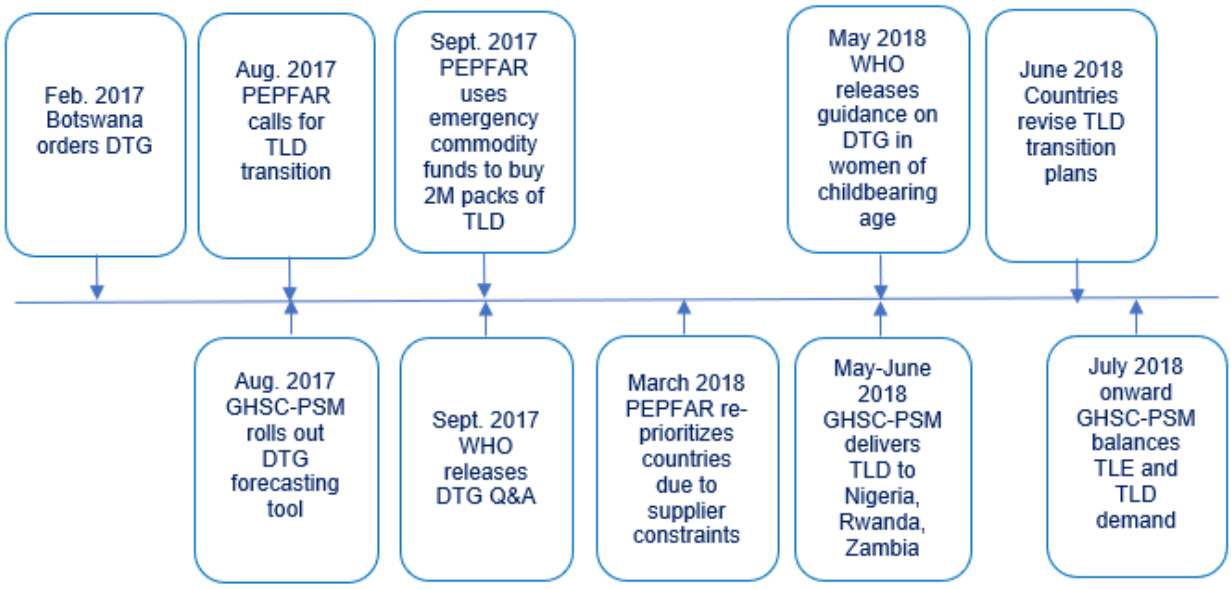
Health impact of GHSC-PSM deliveries of adult ARVs:

- GHSC-PSM delivered enough adult fixed-dose combination ARVs to provide more than **2.4 million person-years of HIV treatment in FY 2018.**
- GHSC-PSM has delivered enough adult fixed-dose combination ARVs to provide more than **3.9 million person-years of HIV treatment over the life of the project.**

Supporting the Second 90: Treatment and the Transition to TLD

To help achieve treatment goals, GHSC-PSM was heavily engaged in supporting the planned transition to the new first-line ARV, TLD, that came to fruition this year. The timeline of GHSC-PSM's support for the transition to TLD is shown in Exhibit 7.

Exhibit 7. Timeline of GHSC-PSM Support for the TLD Transition



Working closely with USAID, GHSC-PSM has played a pivotal role in managing the supply chain implications of this highly dynamic transition. At the beginning of the year, GHSC-PSM developed the transition strategy, which included planning forward orders, sourcing product, helping countries prepare and plan, and stocking RDCs to enable rapid order fulfillment.

Initially, before the research emerged from Botswana about potential risks of TLD use in women of child-bearing age[11], global demand threatened to outstrip supply available from the limited number of U.S. Food and Drug Administration-approved suppliers. GHSC-PSM, at USAID's request, placed global orders with manufacturers in anticipation of demand, well before PEPFAR country programs had placed their individual orders. This provided manufacturers with the certainty they needed to calculate manufacturing capacity and begin producing to scale. The early orders also helped ensure that PEPFAR programs would receive TLD as soon as it became available.

On release of the Botswana study findings and updated WHO and PEPFAR guidance, GHSC-PSM ascertained whether governments had changed plans for transitioning women of childbearing age to TLD, affecting their demand for TLD and their previous, or legacy, first-line ARVs. GHSC-PSM helped countries revise their TLD transition plans and ARV orders and placed an emergency order for 1.5 million units of TLE to avoid treatment interruption for women who would not transition to TLD. The project then worked closely with manufacturers to extend their production for orders over a longer period to support these adjustments. GHSC-PSM also started prepositioning stock in our RDCs to handle changing allocations.

[11] https://www.pepfar.gov/documents/organization/285550.pdf

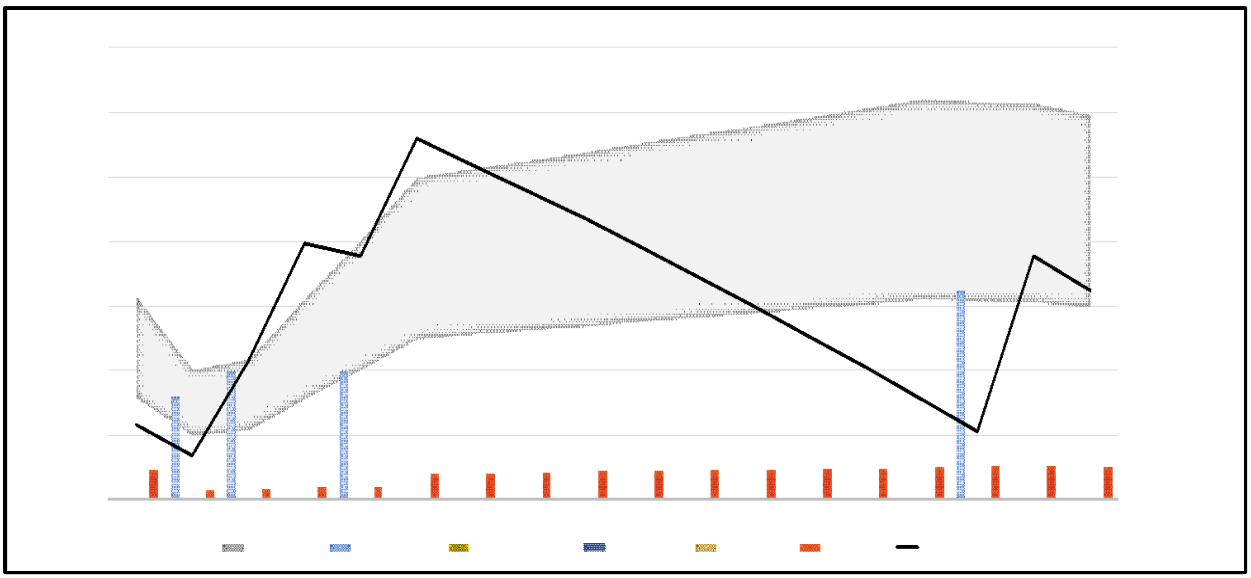
GHSC-PSM made our first deliveries of TLD (to Nigeria, Rwanda, and Zambia) in Q3. By the end of FY 2018, the project had delivered 5,968,090 packs of TLD to nine countries, as follows:

Country	Number of Packs Delivered
Botswana	350,000
Côte d'Ivoire	44,000
Eswatini	89,442
Haiti	215,155
Mozambique	300,000
Nigeria	2,988,857
Rwanda	21,736
Uganda	1,058,900
Zambia	900,000

One of the biggest challenges in supporting a smooth transition to TLD is balancing supply and demand in a rapidly changing environment. The project must forecast demand (and revise forecasts based on changing consumption rates) while monitoring suppliers' evolving manufacturing capacity. In Q4, GHSC-PSM clarified country demand for TLD and tightened communications with suppliers to ensure OTD. The project regularly reviews countries' supply of first-line ARVs, creates a demand forecast, and discusses these with suppliers. The information about country demand must be juxtaposed with the demands of the Global Fund, Kenya, South Africa, and Uganda, the other large procurers from the same supply source outside of GHSC-PSM, to ensure steady supply.

As part of the TLD transition, GHSC-PSM supports and tracks the utilization of other first-line ARVs, including of adult formulations of TLE. GHSC-PSM visualizes the drawdown of legacy ARVs and the increase in TLD using a tool that captures the 18-month forecast for each ARV, projected inventory levels and consumption, and deliveries by PEPFAR, the Global Fund, and the national government. The tool can be used to promote government/donor collaboration and reduce the need for emergency orders. To illustrate, exhibit 8 shows the inventory projection for TLD in Zambia. It highlights a potential need to move up the October 2019 order for 1.5 million units to maintain stock levels at the minimum acceptable level.

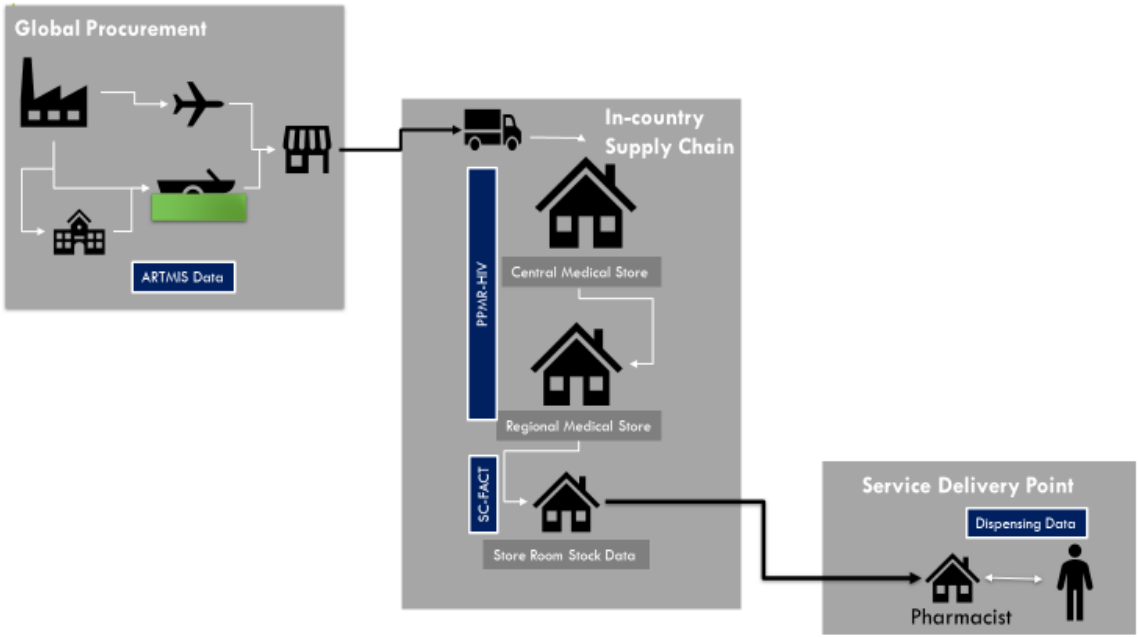
Exhibit 8. Zambia's Inventory Projection for TLD



Stock Tracking, Oversight, and Planning for HIV (STOP-HIV)

USAID seeks to triangulate clinical patient treatment data with site-level stock data and pharmacy dispensing data to assure that all patients leave their health facilities with the needed HIV test, prescription, or procedure. To provide the necessary data on stock levels, GHSC-PSM launched the Stock Tracking, Oversight, and Planning for HIV (STOP-HIV) initiative in Q4, depicted in Exhibit 9. STOP-HIV integrates data on HIV commodities from the highest level (shipments into the country) to the lowest level (stock levels at service delivery points).

Exhibit 9. STOP-HIV Schematic



In Q4, GHSC-PSM inaugurated the Supply Chain–Facility-level AIDS Commodity Tracking (SC-FACT) initiative to collect and standardize facility-level data. SC-FACT documents what data countries collect and how they manage those data and has developed and instituted a standardized

template for country site-level stock data. It has also created tools to diagnose stock imbalances and support mitigation of in-country HIV commodity stock issues. The project uses these raw data to calculate key variables such as the average quantity of product dispensed monthly and months of stock on hand. By the end of FY 2018, GHSC-PSM had successfully reviewed and captured data on ARVs, RTKs, and condoms for 13,500 facilities in 18 countries, comprising more than 800,000 data lines. Ultimately, the initiative will manage this information for 22 countries.

SC-FACT is closely coordinated with the ongoing PPMR-HIV activity, which collects stock data from central and subnational warehouses. The PPMR-HIV tool, developed by USAID and Global Health Supply Chain-Business Intelligence and Analytics (GHSC-BI&A), implemented by IntelliCog, was started in FY 2017 to share stock data with the Global Fund and ministries of health. GHSC-PSM PPMR-HIV administrators have onboarded countries for this rapidly expanding initiative, and work with field office and other staff to obtain and review country data. In FY 2018, GHSC-PSM participated in Coordinated HIV/AIDS Supplies (CHAS) Group meetings with the Global Fund and USAID. GHSC-PSM, USAID, and Global Fund have access to the PPMR-HIV online dashboard.

Supporting the First 90: Diagnosis

GHSC-PSM supports RTK availability to reach the first 90, HIV diagnosis. We meet regularly with the project that is responsible for procuring RTKs for PEPFAR (the Global Health Supply Chain-Rapid Test Kit [GHSC-RTK] project, implemented by Remote Medical International) to get updates on its RTK procurements, ensure a smooth transfer of country orders to that project, and ascertain where our field offices' help is needed to support orders.

GHSC-PSM helps countries forecast and quantify the number of RTKs needed to implement their HIV testing strategies. In FY 2018, the number of countries submitting quarterly RTK supply plans increased by 44 percent over FY 2017 (from an average of nine countries in FY 2017 to 13 in FY 2018). With testing approaches diversifying, to include self-testing and recency testing, GSHC-PSM started researching applicable methodologies and requirements for forecasting for these new testing approaches.

The project started collecting and reviewing data on RTK availability at the lowest distribution point. By the end of FY 2018, five PEPFAR countries were reporting RTK data in SC-FACT.

Supporting the Third 90: Viral Load Scale-Up

Reaching the third 90—suppressing the viral load of HIV patients on treatment—requires scaling up VL monitoring of patients on antiretroviral therapy (ART). For successful scale-up, countries must put in place human resources, a supply chain, quality systems, and laboratory infrastructure.

Viral load equipment in use in the Northern Region of Uganda *Photo credit: Ben Mubiru/GHSC-PSM*

Optimization

GHSC-PSM helps countries optimize their laboratory and sample referral networks to address scale-up challenges. We promote a network approach that triangulates demographic, geospatial, and diagnostic capacity data to inform laboratory procurement and equipment placement. For example,

in Q4, GHSC-PSM finalized the national VL award for six high-volume sites to diversify testing and support the optimized VL and early infant diagnosis network in Nigeria. These sites account for more than 70 percent of Nigeria's FY 2017 national testing volume.

Technical Assistance

The project provided technical assistance in quantification, supply planning, and network optimization through use of the Laboratory Efficiency and Quality Improvement Planning (LabEQIP) software. GHSC-PSM continued to support accurate VL procurement, ensuring consistency between commodities requested and the VL instrument capacity of the destination country. GHSC-PSM also helped strengthen lab supply chains and stock management in Angola, Botswana, Burundi, Eswatini, Ghana, Nigeria, and Zambia.

Software

GHSC-PSM worked closely with USAID, the Centers for Disease Control and Prevention, and the Foundation for Innovative New Diagnostics to develop new criteria for upgrades to LabEQIP that will be made in FY 2019. These enhancements will facilitate data collection and will visualize lab network performance and resources through maps and charts. The new features will help countries make data-driven decisions and assess the impact of lab interventions.

GHSC-PSM also worked closely with the developer of the ForLab software, which is used to quantify laboratory supplies, to update the software and prepare for the release of ForLab v2.0. The updated software makes it easier to forecast needs across disease areas and enables users to build forecasts using morbidity data.

Global Collaboration

GHSC-PSM hosted and supported the work of the Integrated Diagnostics Consortium, comprising the drug investment organization Unitaid and the Department of State Global AIDS Coordinator (S/GAC). The consortium shares best practices for all-inclusive pricing, key performance indicators, lab optimization, and targeted use of point-of-care testing.

Voluntary Medical Male Circumcision

A critical PEPFAR intervention, VMMC reduces HIV transmission from women to men by 60 percent in countries with high HIV prevalence in the general population. GHSC-PSM provides FASP, strategic sourcing, and procurement support for VMMC.

In January, the project hosted the USAID Office of HIV/AIDS VMMC biannual headquarters partner meeting. At the meeting, we highlighted the gap in information on demand for VMMC kits. This gap limits our ability to optimally stock kits, develop sourcing strategies, avoid emergency orders, and avoid service disruptions that ultimately hinder achieving VMMC targets. To help fill this gap, we developed and disseminated a VMMC reference guide, a VMMC quantification guide, and a tool to help countries plan VMMC orders. We supported VMMC quantification in Tanzania, and planned FY 2019 training for VMMC quantification in Malawi. These tools, technical assistance, and active promotion of FASP for VMMC had important results (see box).

Getting Visibility into Demand to Improve Supply

GHSC-PSM successfully motivated countries to increase their submission of supply plans for VMMC. Now 83 percent of the volume of VMMC procurement is covered by country supply plans submitted to GHSC-PSM. This insight into the quantity and timing of needs greatly enhances our ability to ensure adequate supplies are available to support VMMC programs and strengthens our negotiation position with vendors.

B2. Malaria

In Brief

A total of **30 countries** procured malaria commodities, and **25 countries** received systems strengthening support with malaria funding under the contract this year.

The project supported distribution of LLINs to provide **protection from malaria for tens of millions of people** in Angola, Burkina Faso, Ghana, Liberia, Malawi, Mali, Mozambique, Nigeria, South Sudan, and Uganda.

The project continued to provide technical leadership in **promoting malaria commodity market health** to help ensure secure supply.

At the end of Q4, **OTD for malaria commodities reached 88 percent**.

Under the PMI-funded malaria task order, GHSC-PSM supplies lifesaving prevention and treatment medicines, RDTs, and LLINs in PMI-supported countries. The project offers partner countries new approaches to strategic planning, logistics, data visibility, analytics, and capacity building. We also provide technical guidance to strengthen global supply, demand, financing, and introduction of new malaria commodities.

Country Support

GHSC-PSM procured malaria commodities for 30 countries and provided supply chain systems strengthening for malaria commodities in 25 countries in FY 2018. These are shown in Exhibit 10.

Exhibit 10. Countries that Received GHSC-PSM Support with Malaria Funding in FY 2018

AFRICA			AFRICA (cont.)			AFRICA (cont.)		
Angola	■	■	Liberia	■	■	Tanzania		■
Benin		■	Madagascar	■	■	Uganda	■	■
Burkina Faso	■	■	Malawi	■	■	Zambia	■	■
Burundi	■	■	Mali	■	■	Zimbabwe	■	■
Cameroon	■	■	Mozambique	■	■			
Cote d'Ivoire		■	Niger	■	■	**ASIA**		
DRC		■	Nigeria	■	■	Burma	■	■
Ethiopia	■	■	Rwanda	■	■	Cambodia	■	■
Ghana	■	■	Senegal		■	Laos	■	■
Guinea	■	■	Sierra Leone	■	■	Thailand	■	■
Kenya^	■	■	South Sudan	■	■			

■ *GHSC-PSM provides technical assistance to strengthen supply chains.*
■ *GHSC-PSM procures malaria commodities.*
^ *GHSC-PSM provides support in Kenya under a unique task order overseen by USAID/Kenya.*

Sourcing, Procurement, QA, Delivery, and Stockpile Use

Strategic Sourcing

In FY 2018, GHSC-PSM competed and/or awarded the following strategic contracts for malaria commodities:

RDTs. The project awarded six long-term contracts that include fixed pricing, with prices tiered by order volume. Strategic allocation of orders under these long-term agreements, buttressed by the new PMI policy that discourages sole-source selection of a supplier, will help simplify and expedite the RDT ordering process, ensure sustainable pricing, and increase supplier diversity. At the end of FY 2018, GHSC-PSM solicited expressions of interest from additional suppliers to further expand our pool and increase market health.

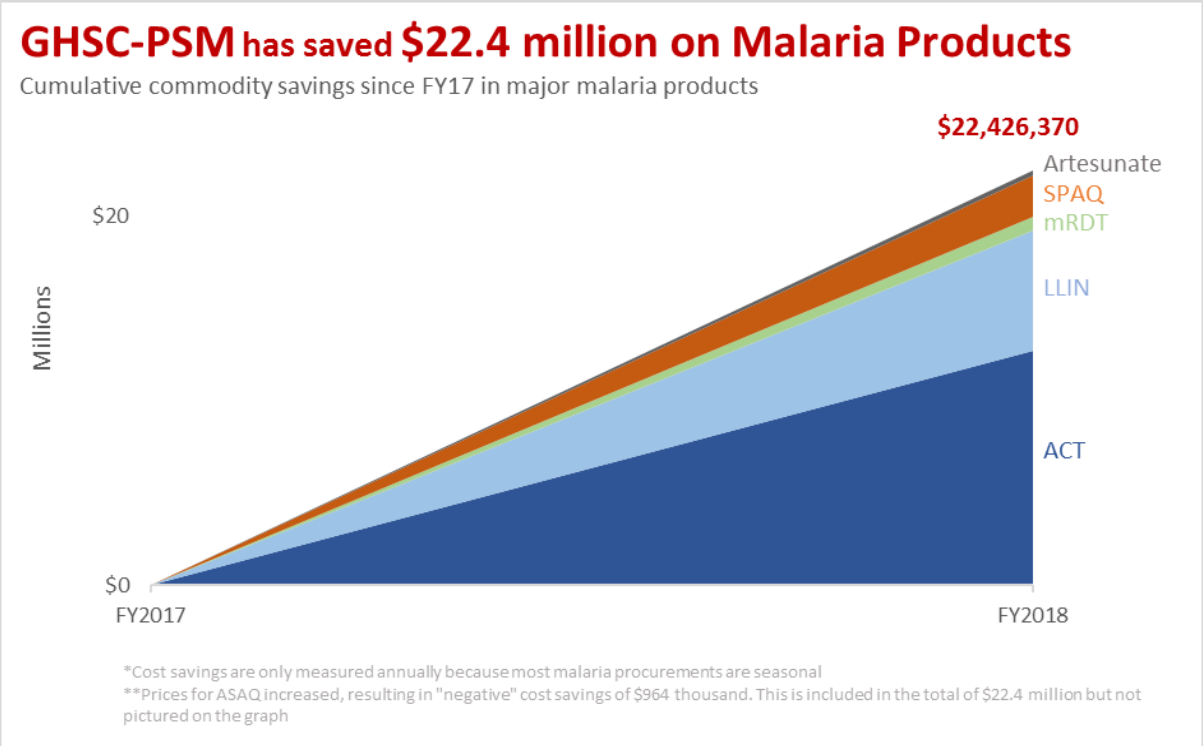
Pharmaceuticals. The project issued a request for proposals for artemisinin-based finished pharmaceutical products in Q4. The tender included two products, dihydroartemisinin/piperaquine (DHA-PPQ) tablets and pyronaridine-artesunate (PA) granules/tablets, that GHSC-PSM had not previously procured. The tender is expected to increase the supplier base for existing products and potentially increase GHSC-PSM's ability to respond to urgent orders at a lower cost through VMI. The tender signaled to the market GHSC-PSM's interest in protecting against future artemisinin shortages and/or price fluctuations by using semisynthetic artemisinin. These tenders reflect our collaboration with the Global Fund to stabilize the market for this key upstream starting material.

Long-lasting insecticide nets. In Q4, GHSC-PSM began work on a request for expressions of interest to identify the full spectrum of eligible LLIN vendors and assess the market for next-generation LLINs. GHSC-PSM plans to award framework agreements for most LLIN procurements in FY 2019, which will increase our ability to plan and reduce procurement lead time for LLINs.

In FY 2018, GHSC-PSM solicited proposals for additional third-party LLIN quality assurance laboratories. The awards (anticipated in early FY 2019) will increase quality control (QC) lab testing capacity and improve overall throughput.

Due to these activities, GHSC-PSM has achieved significant cost savings for the U.S. government as well as the countries and people served by its health programs. As shown in Exhibit 11, for malaria commodities alone, GHSC-PSM saved $22.4 million in FY 2018.

Exhibit 11. Cost Savings on Malaria Commodities in FY 2018



Procurement

GHSC-PSM procures a variety of preventive, diagnostic, and treatment commodities for PMI's program. In FY 2018, the project procured malaria commodities for 30 countries. The procurements are summarized in Exhibit 12. In FY 2018, 53 percent of the value of procurements was for LLINs and 20 percent for ACTs.

Exhibit 12. GHSC-PSM Procurements of Malaria Commodities

ITEM	FY 2018 Q4	FY 2018	Life of Project
LLINs	$23,991,889	$127,718,569	$208,812,764
ACTs	$11,542,511	$49,514,133	$81,614,040
RDTs	$3,303,750	$29,702,059	$43,285,177
Severe malaria medicines	$5,342,346	$14,730,850	$20,140,074
Other pharmaceutical products	$928,742	$13,514,417	$17,316,042
Sulphadoxine-Pyrimethamine (SP)	$1,314,151	$2,716,363	$4,249,524
Laboratory	$11,053	$634,123	$731,218
Other non-pharmaceutical products		$364,963	$640,550
TOTAL	**$46,434,443**	**$238,895,475**	**$376,789,389**

Quality Assurance

GHSC-PSM is directly responsible for ensuring the quality of the malaria commodities that we deliver through a comprehensive quality assurance/quality control (QA/QC) program.[12]

During FY 2018, the project finished developing standard operating procedures (SOPs) to cover all critical QA functions, work instructions for QA/QC of specific products, and a recall management plan with a communication protocol to initiate and manage recalls.

New Sampling for QA Testing Based on Risk. With PMI's concurrence, the project launched a new approach to ensuring the quality of the most commonly procured ACTs. To ensure compliance with internationally recognized quality standards and to better target independent third-party testing, the project developed a QA risk profile for key suppliers of ALu and ASAQ. Implemented in August 2018, the new approach enables GHSC-PSM to provide better value while controlling product quality risk. It will decrease the percentage of GHSC-PSM-procured ALu and ASAQ batches subject to third-party testing before shipment, which will shorten lead times and reduce costs associated with project QA processes. These savings can stretch PMI's

PMI supports procurement and delivery of malaria lab supplies in Cambodia. *Photo credit: Christine Norman/Chemonics*

[12] Quality assurance for other GHSC-PSM-procured commodities is provided by the GHSC-QA contract, which is implemented by FHI 360.

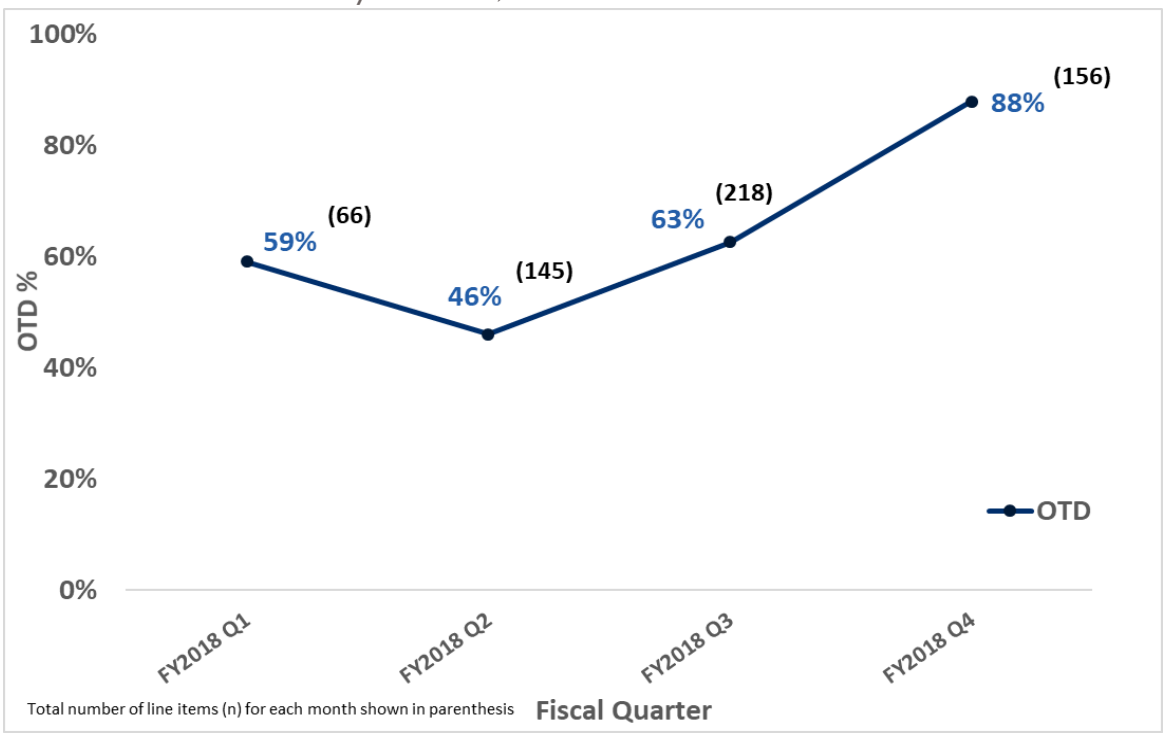
budget to procure additional treatments or fund additional technical assistance activities for PMI recipient countries.

QA Performance Indicators. During FY 2018, the project processed the highest volume of malaria orders to date, while also achieving 87 percent of commodity QA processes completed within estimated QA lead times. This was because of significant improvements in the lab network, increased lab staff and equipment, and improved GHSC-PSM forecasting of testing needs. GHSC-PSM also exceeded targets for percentage of product batches for which the product was out of specification (with zero out of specification in Q3 and Q4) and QA investigation reports submitted within 30 days of outcome determination (actual results were 100 percent for all products).

Deliveries

Timeliness of GHSC-PSM deliveries improved significantly over the reporting period. As shown in Exhibit 13, GHSC-PSM's OTD for malaria commodities lagged in the first part of FY 2018. OTD for malaria commodities dropped from 59 percent in Q1 to 46 percent in Q2. Three factors spurred the drop: poor supplier performance, the lagging effect of earlier orders for which our delivery commitments were poorly set, and many deliveries to three countries with long and unpredictable waiver lead times.[13] Under USAID's guidance, GHSC-PSM implemented initiatives to address supplier performance, increase the accuracy of our delivery commitments, and reduce long waiver lead times. As a result, OTD for malaria commodities rose to 63 percent in Q3 and 88 percent in Q4.

Exhibit 13. Malaria Commodity Deliveries, OTD



[13] All GHSC-PSM deliveries require that the country receiving the product waive duties on USAID donations. The process of receiving a waiver is protracted and unpredictable in some countries, making it difficult to project delivery dates.

Use of Stockpile

GHSC-PSM used the PMI ACT stockpile, based in the project's RDC in Belgium, to fulfill emergency needs for ALu in Mali, Nigeria, and Zimbabwe, and for new PMI countries Cameroon and Côte d'Ivoire.

Shelf-life remaining for malaria products in the project's RDCs stood at 73 percent at the end of the fiscal year. This exceeds the project target of 70 percent.

Potential Health Impact

GHSC-PSM deliveries gave countries the ability to provide important health benefits to their populations, as summarized below.

Health impact of GHSC-PSM deliveries of antimalarial treatments:

- In **FY 2018**, GHSC-PSM delivered enough antimalarials to **treat 80.1 million infections.**
- Over the **life of the project**, GHSC-PSM has delivered enough antimalarials to **treat 125 million infections.**

Global Collaboration

In Q4, GHSC-PSM began contributing to the global initiative to introduce next generation LLINs in locations where resistance to nets treated with a single insecticide has been observed. These include nets containing the synergist piperonyl butoxide (PBO) in addition to pyrethroid insecticide, as well as the new dual-active ingredient insecticide treated net. These combinations reduce the risk of pyrethroid resistance and increase mosquito mortality rates, resulting in better protection from malaria. GHSC-PSM met with USAID, the Bill and Melinda Gates Foundation, CHAI, Innovative Vector Control Consortium (IVCC), and other global partners to discuss strategies for introducing these new nets into global supply chains. The project provided supply chain expertise and information on country demand to help inform the global community's strategy for introducing the nets. GHSC-PSM started to purchase PBO nets for Ghana, Nigeria, and Tanzania, where pyrethroid resistance has been observed.

Procurement Planning and Monitoring Report (PPMRm)

GHSC-PSM manages data collection and reporting for the PPMRm. This report provides visibility into commodity stock status to help PMI, ministries of health, and GHSC-PSM identify stock-outs, shortages, and overstocks, and adjust planning accordingly. Countries report stock status of ALu, ASAQ, SP, artesunate injectable and suppository, and RDTs. While most countries report stock status at the central level, multiple countries report combined stock from multiple levels of their supply chains. Firsts in PPMRm reporting in FY 2018 are summarized in the box at right. In FY 2018, PPMRm reporting:

- Informed order prioritization to fill gaps in Kenya, Madagascar, and South Sudan;

PPMRm Firsts in FY 2018

In FY 2018:

- Cameroon and Côte D'Ivoire started reporting
- Countries started reporting stocks of suppository artesunate and artesunate injectable

- Identified stock-outs of malaria products in the Democratic Republic of the Congo (DRC), Uganda, and Zambia; and

- Identified overstocks of malaria products in Burkina Faso, Burundi, Cameroon, Ghana, Guinea, Kenya, Malawi, Mali, Mozambique, Nigeria, South Sudan, and Uganda.

LLIN Distribution Support

In FY 2018, many countries planned and/or implemented large- scale LLIN campaigns as a key prevention strategy. These are massive initiatives to ensure beneficiaries, particularly in high-impact areas, receive the nets they need before the rainy season. GHSC-PSM distributed more than 37 million nets in FY 2018, listed in Exhibit 14. These would provide protection for more than 75 million people.

Exhibit 14. LLINs Distributed in FY 2018 by Country

Country	# of Nets
Angola	1,500,000
Burkina Faso	50,000
Ethiopia	10,200,000
Ghana	4,243,800
Liberia	302,650
Madagascar	5,815,353
Malawi	189,200
Mali	1,425,506
Mozambique	1,537,146
Nigeria	10,339,702
South Sudan	500,000
Uganda	1,643,411
Total	**37,746,768**

While the actual LLIN distribution can last just a few weeks, logistics, supply planning, procurement, and pre-positioning the nets take months. The stories below illustrate the effort, collaboration, and even creativity the project employed in FY 2018 to deliver nets to those who need them.

In **Madagascar**, the National Coordinating Committee for malaria campaigns and GHSC-PSM teamed with the National Council of Women of Madagascar (CNFM) to create a communication strategy to reach women and men during an LLIN mass distribution campaign. While LLIN campaign messaging traditionally targets women as caretakers, men also play an important role as the traditional heads of households. The CNFM developed gender-sensitive management tools and communication materials for the campaign. While some messages were developed to motivate women, they also designed messages to include men and reinforce the notion that malaria is not exclusively a woman's issue. Men are shown in pictures and in training materials to encourage them to assist women and to demonstrate that malaria affects everyone. This campaign, which takes place in Madagascar every three years, targeted nearly 6 million households in 106 endemic districts.

In **Ethiopia**, GHSC-PSM supported the ministry of health in distributing 10.2 million LLINs to 264 districts. The LLINs were distributed to nearly 2 million households in Afar, Amhara, Oromia, Southern Nations Nationalities and Peoples' Region (SNNP), Benishangul Gumuz, Gambella, and Tigray regions. The support included regional and *woreda* (district-level) orientation, distribution supervision, close monitoring, communication, post-campaign review, and LLIN distribution process evaluation. Through these activities, GHSC-PSM oriented 1,206 regional level and 23,364 woreda-level health professionals in nine regional and 110 woreda orientation workshops, respectively. There were 538 participants who attended eight regional level post campaign LLINs distribution review meetings.

Porter carrying LLINs during a mass distribution in Zambezia Province, Mozambique. *Photo credit: Neivaldo Leonel Mostiço/NM*

In **Nigeria**, GHSC-PSM procured and distributed more than 10 million LLINs in FY 2018. During Q4, for example, more than 1.2 million households (6.1 million people) registered to receive LLINs through the Akwa Ibom LLIN campaign. GHSC-PSM procured 3.3 million nets for distribution in the state. The campaign mobilized communities by using town announcers and house-to-house visits to announce the distribution. Akwa Ibom state officials organized a successful campaign launch, and their continued support for the net distribution resulted in high publicity and awareness throughout the state.

Supply Chain Systems Strengthening

In FY 2018, the project provided technical assistance to 30 countries to strengthen national supply chains and improve health commodity availability with PMI funding. This included support for four new countries this year (Cameroon, Mali, Niger, and Sierra Leone). We illustrate this work below.

Building Human Resource Capacity to Better Manage Supply Chain in Countries

In **Mali**, with support from USAID and the Dutch Cooperation, Pharmacie Populaire du Mali (PPM) is building new prefabricated warehouses in Bamako and three other regions and is implementing a new warehouse management information system. GHSC-PSM trained 50 PPM staff people in warehouse operations management. After the training, these PPM senior staff reviewed the proposed improvements and agreed on an overall improvement plan for PPM.

The project supported National Malaria Control Programs (NMCPs), including those in **Cameroon** and **Sierra Leone**, with FASP support. To illustrate, in July in **Cameroon**, GHSC-PSM provided FASP support to the NMCP by training 25 people from the health ministry and WHO in quantification and in the use of FASP tools (Quantimed and Pipeline Monitoring and Procurement Planning System [PipeLine], respectively). The project organized a three-day workshop with NMCP in September to revise the national forecasting, conduct gap analysis to be proposed in the Malaria Operational Plan 2018, and develop supply plans for the coming fiscal year, including for products funded by other sources, such as the government of Cameroon and the Global Fund.

Improving Access to and Use of Quality Data

During FY 2018, GHSC-PSM provided technical support to country counterparts to strengthen their LMIS, implement the EUV survey, and improve their use of data for decision making. Efforts included helping:

- The Ugandan NMCP uses District Health Information System (DHIS2) and LMIS data to improve malaria commodity supply planning.
- The government of Cambodia conduct stock analysis, and, based on that stock data, redistribute malaria medicines to avoid a potentially major stock-out.

- Identify the best-performing and poorer-performing health centers in Burundi through baseline EUV indicators and help the poorer-performing health centers develop and implement corrective actions.

- The NMCP conduct Cameroon's first EUV in August in 112 sites in six regions using the revised methodology and a tablet-based questionnaire. The EUV survey identified issues in case management, commodity management, and facility management. Findings will inform interventions to address issues in case and pharmaceutical management.

- Introduce an easy-to-use Excel-based malaria commodities dashboard in Kenya that enabled commodity managers to identify gaps/challenges and prioritize appropriate actions for performance improvement.

- Conduct Commodity Accountability Performance Tracking visits with NMCP and district staff in Malawi to identify factors contributing to discrepancies between logistics data and malaria case data and to identify facility-specific interventions to address gaps.

- Develop an innovative GIS-based delivery tracking tool with the NMCP in Cameroon to monitor the status of shipments, identify appropriate transportation modes, and confirm last-mile delivery and documentation of seasonal malaria chemoprevention.

Improving Availability of Malaria Commodities at Lower Levels

During FY 2018, GHSC-PSM supported countries by providing training and optimization exercises to improve supply chain management. Examples are provided below.

A Nalube community health worker in Choma, Zambia, carries malaria RDTs and antimalarial drugs on a bicycle, ready for outreach in her catchment areas. *Photo credit: Evaristo Chola/GHSC-PSM*

GHSC-PSM teamed with **Madagascar**'s NMCP Directorate to train stock managers in remote areas to estimate their needs, reinforce the importance of submitting requisitions on time, and use an automated Excel dashboard to gain better visibility into stock levels.

GHSC-PSM supported **Zimbabwe**'s National Pharmaceutical Company in conducting a warehouse and inventory optimization exercise to help improve the operational efficiency of the health commodity supply chain.

In Q4, the project supported the **Malawi** health ministry's malaria and family planning commodity quantification review workshops, which strengthened the ministry's capacity to exercise oversight and ensure stock availability at central and service delivery point levels. Workshop participants forecast 2019 consumption, examined funding requirements and challenges, and identified solutions.

Also, in Q4, GHSC-PSM in **Cameroon** worked closely with third-party logistics providers to deliver and distribute 18 shipments of SPAQ for a highly successful seasonal malaria chemoprevention campaign. More than 5.4 million full therapeutics courses total were delivered to almost 500 health facilities.

B3. Family Planning and Reproductive Health

In Brief

25 countries[14] procured commodities for voluntary FP/RH programs and **20 countries received systems strengthening** support with FP/RH funding this year.

GHSC-PSM continued to play a **global leadership role**, chairing the Systems Strengthening Working Group of the RHSC and securing funds for member projects, providing thoughtful insights to the CARhs group, facilitating an interactive session at the West Africa Health Organization Early Warning System workshop, and closely coordinating with donors and interested parties in allocating limited supply of one-rod implants.

The project operationalized a **sourcing strategy** to reduce supplier risk, improve global RH market health, and save money. GHSC-PSM supported the RH supplies community's flagship initiative, the **Global FP VAN,** providing more than 2,000 hours of effort to launch a pilot with two products, two suppliers, and two countries.

The project **redesigned the Contraceptive Security Indicators**, surveyed 36 countries, and published the results via a report and an online, interactive dashboard.

The FP/RH task order serves as the primary vehicle through which USAID procures and provides commodities for voluntary USAID FP/RH programs; offers technical assistance to improve supply systems and contraceptive security in partner countries; and provides technical leadership to strengthen global supply, increase financing, and introduce new FP/RH commodities.

Country Support

GHSC-PSM supported commodity procurement for 25 countries and provided supply chain systems strengthening for FP/RH commodities in 20 countries in FY 2018, as shown in Exhibit 15.

Exhibit 15. Countries that Received GHSC-PSM Support with FP/RH Funding^ in FY 2018

AFRICA			AFRICA (cont.)			AFRICA (cont.)			LAC		
Angola	■		Guinea	■	■	Nigeria	■	■	Guatemala	■	
Benin		■	Kenya^	■	■	Rwanda	■	■	Haiti	■	■
Burkina Faso		■	Liberia	■	■	Senegal		■	**ASIA/NEAR EAST**		
Burundi	■		Madagascar	■	■	South Sudan	■		Bangladesh		■
Cameroon		■	Malawi	■	■	Tanzania		■	Nepal	■	■
DRC		■	Mali	■	■	Togo		■	Pakistan	■	
Ethiopia	■	■	Mauritania		■	Uganda	■	■	Yemen		■
Ghana	■	■	Mozambique	■	■	Zambia	■	■			

■ *GHSC-PSM provides technical assistance to strengthen supply chains.*

■ *GHSC-PSM procures FP/RH commodities.*

^ *GHSC-PSM provides support in Kenya under a unique task order overseen by USAID/Kenya.*

[14] All procurement and delivery figures for the FP/RH task order include Ebola procurements. The number of countries for which FP/RH commodities were procured is 25.

Sourcing, Procurement, and Delivery

Strategic Sourcing

This year, GHSC-PSM developed and began implementing a five-year sourcing strategy (2018 to 2023) that guides FP/RH commodity procurement in the near (one-year), medium (three-year), and long (five- year) terms. The strategy is dynamic and will be revisited annually, ensuring that GHSC-PSM's procurement is continually supportive of USAID's broader programmatic goals and global FP/RH market health, and consistently provides better overall value for the U.S. government.

The below IDIQ contracts are expected to increase supply security, support market health, and save money:

- **Oral contraceptives:** GHSC-PSM awarded three long-term supply contracts. These mitigate supply risk by diversifying the supplier base away from dependence on one source. The new contracts also save money and provide a broader range of product options. For the first time in USAID history, a supplier will provide customized trade packaging for social marketing organizations, so the product arrives in country locally branded and packaged. This saves time, reduces cost, and mitigates potential risk to the product.

- **Contraceptive implants:** The project awarded three long-term contracts for one- and two-rod implants that reduce costs and mitigate supply risk by adding one new supplier.

- **Contraceptive implant consumable kits:** GHSC-PSM issued a request for quotation for contraceptive implant consumable kits to harmonize specifications with the UNFPA, with the goal of establishing long-term contracts that reduce reliance on one source and establish fixed pricing.

- **IUDs:** The project awarded two long-term contracts that add a new supplier, achieve cost savings per unit, and reduce lead times.

- **Contraceptive injectables:** GHSC-PSM signed a long-term agreement with negotiated tiered pricing.

Procurement

In FY 2018, GHSC-PSM procured FP/RH commodities for 25 countries[15]. Our procurements are summarized in Exhibit 16.

[15] The FP/RH task order also procures Ebola commodities. The number of countries for which GHSC-PSM procures FP/RH commodities is 25. If Ebola commodities are included, GHSC-PSM procured commodities under this task order for 26 countries in FY 2018.

Exhibit 16. GHSC-PSM Procurements Under the FP/RH Task Order

ITEM	FY 2018 - Q4	FY 2018	Life of Project
Implantable contraceptives	$2,934,200	$18,789,930	$33,309,562
Injectable contraceptives	$26,350	$21,486,350	$29,665,652
Combined oral contraceptives	$1,518,235	$3,248,150	$9,255,024
Other nonpharmaceutical products[16]		$1,237,178	$1,345,199
Progestin only pills	$62,208	$369,180	$781,092
Standard days method		$598,820	$752,890
Other pharmaceutical products[17]		$402,073	$402,073
Copper-bearing IUDs		$43,014	$93,832
Emergency oral contraceptives	$11,296	$34,500	$34,500
Pregnancy tests		$8,840	$8,840
TOTAL	**$4,552,289**	**$46,218,035**	**$75,648,664**

In FY 2018, while GHSC-PSM carefully monitored increasing demand for longer-lasting contraceptives through the routine monthly demand, fulfillment and replenishment reviews, supply constraints of one-rod implants and depot-medroxyprogesterone acetate intramuscular injectable (DMPA-IM) heavily disrupted the fulfillment of orders. GHSC-PSM worked across the global community through the RHSC's Coordinated Supply Planning (CSP) group to address the issue in coordination with UNFPA. The project placed strategic inventories of one-rod implants at our RDC in Belgium to serve as a buffer against global supply shortages and to better manage country allocations, enabling us to respond to countries' demand and better allocate limited supply among countries. GHSC-PSM also collaborated closely with manufacturers, country recipients, the RHSC's CSP group, and CARhs to prioritize country orders for DMPA-IM and one-rod implants. GHSC-PSM's insights into stock levels, country orders, and consumption levels from multiple sources (e.g., PPMR, PipeLine, and M&E data) helped the global community ensure reliable, timely supply and continuously reinforced the benefits of using reliable data for decision making. Close collaboration with the CSP group, utilizing the above tools, enabled GHSC-PSM to allocate these commodities to avoid stock-outs in countries. GHSC-PSM continues to closely monitor product availability and provides weekly updates on prioritization and allocations to countries that place orders.

In FY 2018, GHSC-PSM handled three high-value orders, which were particularly complex due to the nature of the products and the in-country logistical challenges:

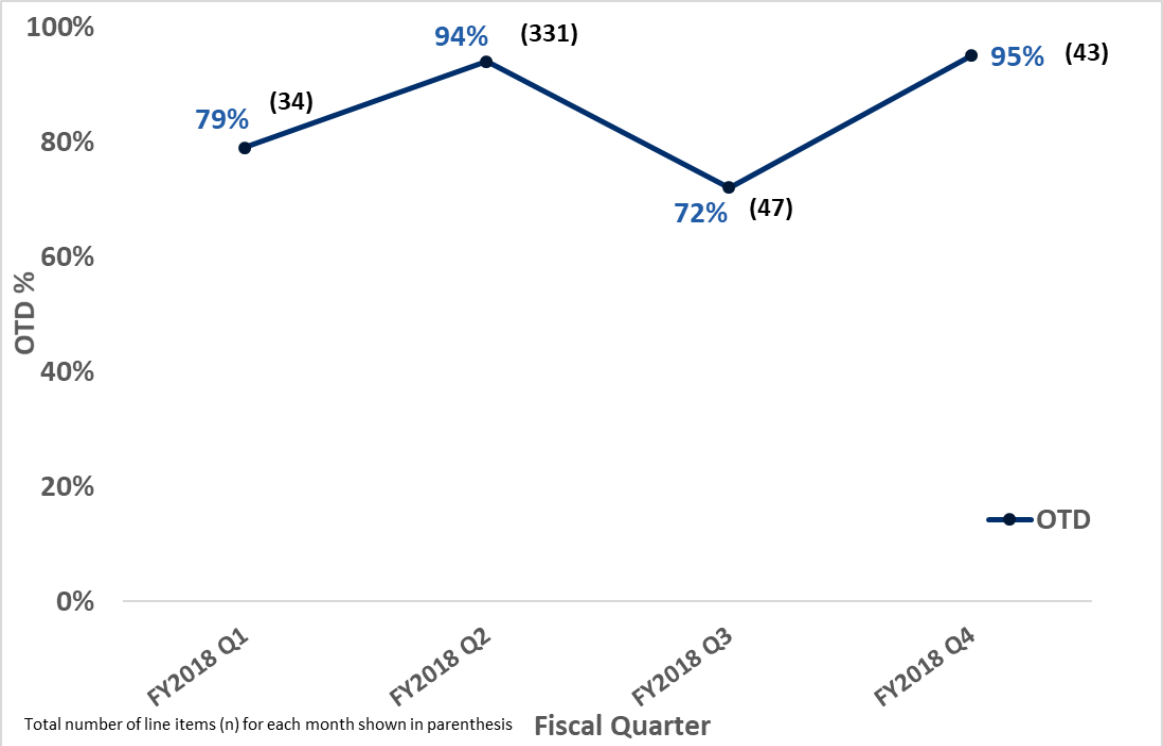
- The procurement and delivery of medicines for three countries formerly affected by Ebola: Guinea, Liberia, and Sierra Leone;
- The annual contraceptives orders for DRC that require a complex sourcing and logistics plan; and
- An emergency contraceptives order for Yemen complicated by the poor security situation compromising necessary supply chain infrastructure such as the port, warehousing, and transport.

[16] "Other nonpharmaceutical products" can include syringes, medical equipment and/or other supplies to support health facility operations as requested by the country.
[17] "Other pharmaceutical products" can include other essential medicines as requested by country.

Deliveries

Timeliness of GHSC-PSM deliveries of FP/RH commodities was strong over the reporting period, reaching 95 percent in Q4 as shown in Exhibit 17.

Exhibit 17. On-Time Delivery (OTD) of FP/RH Commodity Deliveries



Potential Health Impact

GHSC-PSM deliveries gave countries the ability to provide important health benefits to their populations, as summarized below.

Health impact of GHSC-PSM deliveries of contraceptives:

- In **FY 2018**, GHSC-PSM delivered enough contraceptives to provide **22.7 million couple years of protection.**
- Over the **life of the project**, GHSC-PSM has delivered enough contraceptives to provide **35.4 million couple years of protection.**

Programmatic Support: Addressing PRH Priorities

GHSC-PSM addressed USAID Office of Population and Reproductive Health (PRH) global priorities in three areas: global leadership in FP/RH policy, planning, and advocacy; knowledge management in response to program needs; and support to the field in implementing effective and sustainable FP/RH programs. We provide below examples of our work in these areas.

Collaborating with Global Stakeholders

Throughout FY 2018, the project continued to build global partners' awareness of and support for the U.S. government's FP/RH priorities and programs, and to support USAID's leadership in RH commodity availability.

Increasing family planning supplies data visibility to inform USAID and government decision making. GHSC-PSM was a key contributor to the development of the Global FP VAN. This is the reproductive health community's highly ambitious undertaking to increase contraceptive supply chain visibility and improve collaborative decision making between supply chain stakeholders through implementation of the private sector concept of a control tower. The long-term vision for the Global FP VAN is: (1) more timely and cost-effective delivery of commodities to countries; (2) more women reached with the right product at the right time; and (3) better coordination on how to allocate limited health resources. The proof of concept phase of the platform began in FY 2018 and will conclude in FY 2019. In 2018, the project provided expertise to define system requirements, help select a control tower solution provider through a collaborative process, and support architecture design. The project also supported the proof of concept launch in Nigeria and Malawi. GHSC-PSM played an integral role in super-user, IT, data management, and data sharing working groups. Through these groups, the project developed draft roles and responsibilities for Global FP VAN members; developed an M&E framework; drafted data sharing agreements that will enable data sharing between procurement agencies, manufacturers, and country programs; developed a data governance structure; tested provision of GHSC-PSM real-time order/shipment to the system; and performed user acceptance testing of the technology platform.

Supporting RHSC member efforts. Throughout FY 2018, GHSC-PSM chaired the RHSC Systems Strengthening Working Group. The chair helped secure three RHSC Innovation Fund grants for member agencies to advance the working group's priorities. They include developing a reproductive health-specific tool for supply chain costing, monitoring ambient temperatures in supply chains, and drafting a white paper on the availability of consumables for long-acting reversible contraceptives. Also, the chair organized deep-dive panels on country-level visibility efforts and led a well-attended joint webinar series with the Advocacy and Accountability Working Group on supply chain data for advocacy.

Coordinating registration data. Before pharmaceuticals and medical devices can be sold or imported, most countries require them to be registered with the appropriate regulatory body. Tracking which products are registered in which countries is a complex challenge, with a continually changing landscape of registrations, submissions, and requirements. In FY 2018, for the first time ever, GHSC-PSM partnered with the UNFPA to coordinate the capture and management of registration data for family planning commodities. By harmonizing with UNFPA on supplier communication, data structure, and tools, this collaboration is improving data quality and reducing unnecessary burden on suppliers of providing the same data to multiple parties. Small steps such as this can make a big difference when it comes to keeping orders moving quickly and ensuring the right product gets shipped.

Exploring the Total Market through Research

GHSC-PSM also contributed to data visibility for family planning products across all sectors in Benin, Kenya, and Togo. GHSC-PSM worked with IQVIA to develop reports showing total market pricing and product availability in each country. The reports will help inform potential activities at the country level to increase availability.

Collaborating Globally to Avert Stockouts and Expiries Through the PPMR

In FY 2018, the GHSC-PSM PPMR team processed data from 247 country reports to publish 12 global reports. Using PPMR data, the project worked with the CARhs group to:

- Expedite 13 shipments to Burkina Faso, Burundi, Chad, Liberia, Madagascar, and Tanzania to prevent stock-outs;
- Initiate five transfers of commodities (combined oral contraceptives, injectables, emergency contraceptives, female and male condoms) to Benin, Burkina Faso, DRC, Madagascar, and Togo;
- Track and provide valuable shipment information on planned and emergency shipments to 36 country data providers;
- Initiate and monitor the response to seven emergency requests to avert stockouts;
- Help postpone or cancel 10 shipments to avoid or reduce overstocks; and
- Respond to 71 information requests and provide countries with information on upcoming shipments and commodity-related procedures.

Actions taken based on PPMR information saved the FP/RH community close to $2 million this year (see box). In addition to providing information to the CARhs group to help ensure that countries have the FP/RH commodities they need when they need them, PPMR data inform FASP to proactively prevent stock-outs.

PPMR Identifies Opportunities to Avoid Waste

Over- and under-stocks identified through PPMR led to:

- Order postponement or cancelation that saved an estimated $642,000
- Product transfers that saved an estimated $1.02 million

GHSC-PSM also supported informed decision making by regional bodies. The project co-facilitated a workshop with the West African Health Organization (WAHO) and GHSC-TA: Francophone Task Order to improve the West and Central Africa Early Warning System for Contraceptives. At the workshop, 45 participants from 15 West African countries explored ways to improve the quality of contraceptive stock data and to increase use of data for decision making. These included increased health ministry awareness and ownership of the data provision process, analysis of historical PPMR data to better understand trends, and outreach by PPMR administrators to individual reporting countries to address other country-specific barriers to reporting. The success from this workshop has resulted in WAHO and Country Representatives requesting that this workshop to be carried out annually.

Tracking Contraceptive Security

Increasingly, countries recognize the importance and value of contraceptive security and regularly monitor progress in achieving it. In FY 2018, GHSC-PSM conducted a revamped Contraceptive Security Indicators survey in 36 countries. The data, which was made available in a report, a downloadable database, and in an online, interactive dashboard, provides findings on leadership, coordination, finance, commodities, supply chain, policies, quality, and the private sector. Of the countries surveyed:

- All have either a contraceptive security or reproductive health commodity security (RHCS) strategy or a strategy that explicitly mentions increasing contraceptive access;

- 61 percent (22 of 36 countries reporting) have family planning commodities that are subject to duties, import taxes, or other fees;
- 14 percent (five of 36 countries reporting) have policies that hinder the ability of the private sector to provide contraceptives; and
- 17 percent restrict access to contraceptives by young people, and 8 percent by unmarried people.

Survey findings enable global and country program managers, advocates, and decision makers to monitor progress toward contraceptive security, improve program planning, and advocate for improved policies and resources.

Supply Chain Systems Strengthening

In FY 2018, the project provided technical assistance to 20 countries to strengthen national supply chains and improve health commodity availability with FP/RH funding. Efforts that illustrate the diversity of support are provided below.

GHSC-PSM is increasing continuous access to FP/RH commodities in **Ghana** by helping the government implement last-mile distribution (LMD) to service delivery points. LMD aims to increase availability, accessibility, and affordability of reproductive health supplies to clients. Using third-party logistics transport services and a well-coordinated distribution plan, FP/RH health commodities were distributed to more than 4,000 service delivery points. As of Q4, more than 78 percent of facilities in Ghana were receiving commodities through LMD, freeing service delivery point staff and increasing efficiency and availability.

A patient receives a Norigynon shot made available through last-mile distribution in Ghana. *Photo credit: GHSC-PSM/Farmhouse*

GHSC-PSM implemented the *Smartphone for Reporting* initiative in **Haiti** to help site stock managers capture and submit FP logistics information from remote locations. The project purchased smartphones, designed a smartphone application, and trained staff to use the application and submit reports. After transitioning to the customized smartphone application, the on-time reporting rates improved at all family planning sites. This fiscal year, Haiti's health facility reporting rate for FP sites began at 69 percent and increased to 97 percent in Q2. The rate hovered near 100 percent for the remainder of the fiscal year. The smartphone initiative improved the timeliness of reporting and enabled more efficient and effective data collection. Progressively, this tool will be extended to all sites for all health commodities.

Due to ongoing violence and insecurity in **South Sudan**, active distribution of contraceptives outside Juba was not possible for several years. GHSC-PSM co-packaged a variety of FP/RH products into cartons. These FP/RH cartons were distributed alongside essential medicine kits using already established supply chains that were managed through the Health Pooled Fund. This was the best way

to help ensure contraceptive commodity availability in the absence of a robust functioning LMIS and resupply system.

In Balochistan, **Pakistan**, the provincial Population Welfare Department (PWD), with GHSC-PSM's help, identified poor data visibility as the root cause of stock-outs for FP products at sub-district levels. Unavailability of FP products at the last mile, despite sufficient stock at the central level, has been a major hurdle in increasing use of modern contraceptive methods. GHSC-PSM trained 19 PWD and Department of Health staff to serve as master trainers on use of FP data on an executive dashboard for data analytics. The master trainers are rolling out trainings and building similar capacity at district and lower levels. Also, to overcome Internet connectivity problems in remote areas that hinder timely facility reporting, the project worked with PWD Balochistan to install unstructured supplementary data service (USSD) capability on field worker phones. USSD allows someone with any type of mobile phone to text information to a network application program even in the absence of Internet connectivity.

B4. Maternal, Newborn, and Child Health

In Brief

GHSC-PSM supported **improving MNCH supply chains in 15 countries**.

GHSC-PSM provided technical **leadership on MNCH supply chain challenges** through participation in international meetings, with a focus on **appropriate management of MNCH products (including oxytocin management in the cold chain).**

The project continued efforts to increase the **availability and use of data on MNCH commodity availability** through additions to the EUV survey.

GHSC-PSM procured **$4.8 million and $366,945 in MNCH commodities this year in Q4**, respectively.

Under the task order for maternal, newborn, and child health, GHSC-PSM works to help end preventable child and maternal deaths by increasing access to quality-assured medicines and supplies for MCH. In collaboration with USAID, the project provides global technical leadership on MNCH commodities and ensures that supply chain management considerations are included in global dialogue and initiatives. GHSC-PSM focused on three key areas during this reporting period: commodity quality, data availability, and coordination with other MCH partners.

Technical Leadership in MNCH Supply Chain

Management of Oxytocin in the Supply Chain

GHSC-PSM worked to increase appropriate management of oxytocin throughout FY 2018. Oxytocin is the WHO-recommended first-line medicine for preventing and treating postpartum hemorrhage, the leading cause of maternal mortality in low-income countries and the primary cause of nearly one quarter of all maternal deaths globally. While oxytocin is widely available in most countries, it is heat sensitive and degrades quickly when exposed to temperatures above 25°C for extended periods of time. GHSC-PSM kicked off FY 2018 with a three-day technical consultation with experts to discuss the evidence around oxytocin quality, reach consensus on key points of evidence, and develop recommendations to promote safe storage and distribution practices of oxytocin in low-resource settings.

Following the oxytocin workshop, GHSC-PSM participated in a PATH and RHSC effort to develop an oxytocin messaging framework (see the document *Buy Quality Oxytocin, Keep It Cold*). The messaging framework translates the technical consultation recommendations into actionable advocacy messages to promote appropriate management of oxytocin in the cold chain. In Q4, GHSC-PSM participated in a webinar on the messaging framework for RHSC members and continued to develop materials and prepare for webinars to be held in Spanish and French in early FY 2019.

GHSC-PSM also collaborated with partners to author a robust technical review of the evidence on oxytocin quality issues. In Q4, in collaboration with USAID, WHO, Monash University, the Promoting Quality Medicines Program, and the Concept Foundation, GHSC-PSM wrote *Oxytocin: Evidence Review of Quality Issues,* which was submitted for publication as a peer-reviewed article. The technical review summarizes the most recent evidence on oxytocin stability and oxytocin supply chain management requirements in low-resource contexts.

GHSC-PSM helped the Ghana Health Service Family Health Division launch a broad strategy to ensure the quality of oxytocin throughout Ghana's health supply chain, building on previous work carried out by the Family Health Division and PATH. GHSC-PSM shared findings from a desk review entitled *Streamlining the Supply Chain for Quality Oxytocin in Ghana* and helped develop a concrete action plan for partner organizations. GHSC-PSM will provide ongoing support for implementing the plan.

Ambient Temperature Monitoring

In a collaborative effort between the HIV/AIDS and MCH task orders, GHSC-PSM piloted ambient temperature monitoring in the health supply chain in Mozambique using low-cost sensors and cloud technology. Temperature and humidity monitoring of ambient products during in-country transport is limited in some low-resource settings. This can leave patients at risk of receiving medicines that are not clinically effective. The project installed more than 100 sensors that monitor temperature and humidity in 12 warehouses (central, regional, and district), 12 clinic and hospital storerooms, seven trucks, and in three community health workers' bags, with full participation from the Ministry of Health.

Quality Assurance of MNCH Products in the Private Sector

In Q4, GHSC-PSM began work to improve quality assurance of MNCH products in the private sector by working with wholesalers and distributors. Many individuals and families seek care and treatment in the private sector; however, the quality of products sourced by the private sector from wholesalers and distributors varies. GHSC-PSM developed plans to work with distributors and wholesalers to understand the challenges and barriers they face in providing quality-assured products throughout the health supply chain. GHSC-PSM discussed this with USAID Missions in Ghana, Mozambique, and Zambia preparatory to conducting the assessment.

Nurse weighing a baby during a child welfare visit in Mamou, Guinea. *Photo credit: Youssouf Bah/GHSC-PSM*

Improving Availability of Data on MNCH Commodities

GHSC-PSM helped improve the availability of MNCH commodity data through developing and rolling out a new module for the EUV survey. Across low-resource settings, the availability of data on MNCH commodities is limited. This is because procurement of MNCH commodities is often local and decentralized, and data on these commodities often are not included in the country's LMIS. During pilot implementations in Ghana and Zambia in FY 2018, GHSC-PSM trained data collectors — principally drawn from local ministries of health — to pilot the new EUV MNCH module and sampling strategy.

Identifying Barriers to MNCH Commodity Availability

GHSC-PSM is developing a scope of work to increase access to newborn and child health commodities including oral rehydration salts (ORS), zinc, amoxicillin dispersible tablets, newborn

equipment, and supplies. This activity will identify factors that affect product availability, develop action plans with stakeholders, and implement select priority actions.

In January, GHSC-PSM contributed to a meeting convened by WHO in collaboration with United Nations Children's Fund (UNICEF) and the Bill and Melinda Gates Foundation on new guidelines for managing sick infants with possible severe bacterial infection where referral is not feasible. The new guidelines promoting this approach could help save some of the 600,000 lives lost to neonatal infections each year. After the meeting, GHSC-PSM advised countries on how to ensure availability of the medicines that are critical to successfully managing neonatal infections.

Throughout the year, GHSC-PSM chaired the Maternal Health Supplies Caucus. GHSC-PSM participated in the annual membership meeting where the work plan for the caucus was drafted, and, in Q4, chaired the Caucus' semiannual meeting. Members identified the continued need for clear and consistent messaging on the uterotonics available for preventing and treating postpartum hemorrhage, including oxytocin, misoprostol, and carbetocin.

Country Support

GHSC-PSM supported commodity procurement for eight countries and provided supply chain systems strengthening for MNCH commodities in 15 countries in FY 2018, as shown in Exhibit 18.

Exhibit 18. Countries that Received GHSC-PSM Support with MCH Funding^ in FY 2018

AFRICA			AFRICA (cont.)			AFRICA (cont.)			ASIA (cont.)		
DRC		■	Liberia	■		Nigeria	■		Nepal	■	
Ethiopia	■		Madagascar	■	■	Rwanda	■		Pakistan	■	
Ghana	■	■	Malawi	■		Zambia	■	■	**LAC**		
Guinea	■		Mali	■	■	**ASIA**			Guatemala	■	
Kenya^	■		Mozambique	■	■	Bangladesh		■	Haiti		■

■ *GHSC-PSM provides technical assistance to strengthen supply chains.*
■ *GHSC-PSM procures MNCH commodities.*
^ *GHSC-PSM provides support in Kenya under a unique task order overseen by USAID/Kenya.*

Sourcing, Procurement, and Delivery

Strategic Sourcing

GHSC-PSM managed a strategic procurement of essential medicines. Challenges in essential medicines procurement include the large number of products and irregular, large-volume, low-value orders. The new GHSC-PSM contracts cover a consolidated list of the most critical essential medicines, including key MNCH products. The contracts establish fixed unit pricing by country, eliminating the need to negotiate prices for each order. Having a consolidated product list with fixed prices enables GHSC-PSM to streamline the procurement process, reduce cycle time, and mitigate supplier delays.

Procurement

In FY 2018, GHSC-PSM procurements of MNCH commodities are summarized in Exhibit 19.

Exhibit 19. GHSC-PSM Procurements of MNCH Commodities

ITEM	FY 2018 Q4	FY 2018	Life of Project
Other nonpharmaceutical products	$153,552	$1,461,948	$1,461,948
Other pharmaceutical products		$3,151,963	$3,634,235
Laboratory	$74,920	$74,920	$233,664
Other RTK	$138,473	$138,473	$138,473
Food, water, sanitation, and hygiene		$9,570	$9,570
TOTAL	**$366,945**	**$4,836,874**	**$5,477,890**

Key procurements in FY 2018 included an emergency order of ORS/zinc to respond to the **Rohingya refugee crisis in Bangladesh** (see box).

Because of FASP, supported by the project in **Madagascar**, GHSC-PSM has procured and is in the process of delivering $440,000 key MNCH products. Also, GHSC-PSM coordinated with suppliers to register dossiers for four products. This is the first time GHSC-PSM coordinated registration of essential medicines through dossier submission.

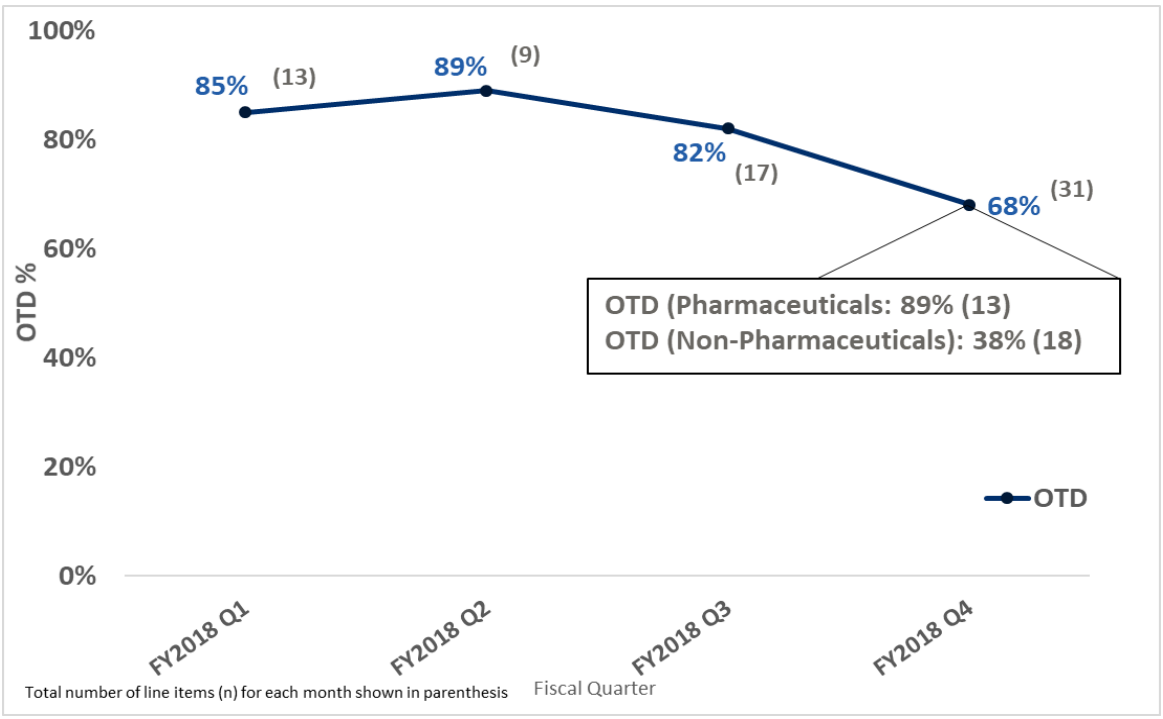
Four Weeks to Fill Emergency Order

GHSC-PSM identified sources of ORS/zinc in Bangladesh and delivered the product for Rohingya refugees there within four weeks of order receipt.

Delivery

Timeliness of GHSC-PSM deliveries has varied over the reporting period, as shown in Exhibit 20. OTD for MNCH overall (68 percent) was pulled down by late delivery of a large order of medical equipment for Mozambique, though OTD of MNCH pharmaceuticals in Q4 was 89 percent.

Exhibit 20. OTD for MNCH Commodities in FY 2018



Although the process of procuring and delivering medical equipment to Mozambique was a protracted one, it represents a major contribution to the health of Mozambican mothers and children. GHSC-PSM delivered $1.5 million of medical supplies and hospital equipment to that country, which will equip more than 1,400 health facilities. Equipment includes medical examination tables, resuscitation apparatus for adults and neonates, newborn heating lamps, fetoscopes, and C-section, episiotomy, and delivery kits.

The Minister of Health of Mozambique, Dr. Nazira Abdula, demonstrates use of maternal and child health medical equipment for United States Ambassador Dean Pittman after the official delivery ceremony. *Photo credit: US Embassy Mozambique*

Supply Chain Systems Strengthening

In FY 2018, the project provided technical assistance to 15 countries to strengthen national supply chains and improve health commodity availability with MCH funding. Examples of support provided by GHSC-PSM include:

- **Ethiopia.** With GHSC-PSM support, the government of Ethiopia started including MNCH commodities in its LMIS.
- **Madagascar.** GHSC-PSM supported the introduction of the DHIS2, which is the electronic online tool for health data management and analysis. After the official launch ceremony in April 2018, a pilot phase was implemented in two districts from May to August 2018.
- **Nepal.** GHSC-PSM assisted the Department of Drugs Administration of Nepal to issue a notice to manufacturers, importers, and distributors on the required labeling and storage of oxytocin.

B5. Other Emerging Health Threats

In Brief

The project **procured $4.7 million in mosquito repellent** for use by pregnant women to prevent Zika infection.

GHSC-PSM supported **commodity procurement and distribution to antenatal care facilities** to ensure that pregnant women have access to the Zika prevention commodities.

GHSC-PSM is working to build resilient supply chains that are equipped to face the challenge of emerging public health threats when they arise.

Supporting the Zika Response

With MCH funding, GHSC-PSM helps pregnant women throughout Latin America and the Caribbean avoid contracting Zika, an arbovirus and sexually transmitted infection that often causes severe birth defects, such as microcephaly and congenital Zika syndrome, when it infects women during pregnancy.

To address the Zika threat, GHSC-PSM has cultivated effective partnerships and relationships with USAID Missions, ministries of health, and USAID implementing partners that are working on the front lines of the U.S. government's Zika response. In Latin America and the Caribbean, the project is equipping health ministries with condoms, mosquito repellent, and technical assistance to resist Zika's spread.

In FY 2018, GHSC-PSM procured male condoms or mosquito repellent for 14 countries for Zika prevention[18]. Despite the lack of long-term GHSC-PSM staff in 13 of these countries, GHSC-PSM headquarters-based and short-term specialists provided robust supply chain and procurement support. GHSC-PSM managed and coordinated all aspects of supply chain technical assistance, including quantification, import permitting, warehousing, transport, and distribution logistics. This was particularly challenging for mosquito repellent, as summarized in the box at right.

GHSC-PSM Addresses Challenges to Procure/Deliver/Distribute Mosquito Repellent

Procuring, delivering, and distributing mosquito repellent as a health product for Zika prevention presented several unique challenges, including:

- Providing remote and short-term technical support to countries that requested repellent but had no GHSC-PSM field offices (except Haiti).
- Turnover of health ministry leadership and unsteady political climates in some countries made authorizations and duty waivers difficult or, in some cases, impossible to obtain.
- Because of its unusual product categorization, obtaining permission to import repellent involves long lead times.
- There are few suppliers of U.S. Environmental Protection Agency-approved products.
- Repellent cannot be stored or transported alongside pharmaceutical products because of risk of contamination, creating unique supply chain/handling requirements.
- There is no systematized FASP framework for repellent.
- Health facilities/antenatal care clinics have no experience instructing pregnant women to use repellent.

[18] The countries for which GHSC-PSM procured male condoms or mosquito repellent for Zika prevention in FY 2018 were: Antigua and Barbuda, Barbados, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Paraguay, St. Kitts and Nevis, Saint Lucia, Saint Vincent and Grenadines, and Trinidad and Tobago.

The repellent and condoms are distributed to antenatal care clinics, where they will be dispensed to pregnant women. GHSC-PSM worked with ministries of health to develop informational posters and brochures for health facility staff on how to store mosquito repellent and for pregnant women on how to use the product to prevent Zika. The project translated these materials into Spanish and Haitian Creole.

During Q4, GHSC-PSM delivered the first repellent—an order of 183,600 units—to the Honduras Ministry of Health. The project continued to coordinate closely with government ministries, USAID Missions, and other USAID implementing partners to manage delivery of six additional orders of mosquito repellent, all due by the end of calendar year 2018. GHSC-PSM is working with local partners to meet requirements to send mosquito repellent to Peru, Ecuador, and Paraguay by spring 2019. In Q4, GHSC-PSM also delivered 3.6 million condoms to Haiti and 378,000 condoms to El Salvador for Zika prevention.

Mosquito repellent to protect against Zika being delivered to the Honduran health ministry's warehouse. *Photo credit: Nelson Lorenzana /GHSC-PSM*

Also, in Q4, GHSC-PSM developed plans to adapt the *Emergency Supply Chain Playbook*, which was developed under the Global Health Security Agenda to address future outbreaks of Ebola virus in West Africa, to prepare for future outbreaks of the Zika virus in Latin America and the Caribbean.

Addressing Other Emerging Health Threats

During FY 2018, the FP/RH task order received funding to procure essential medicines and medical supplies for three countries formerly affected by Ebola: Guinea, Liberia, and Sierra Leone. The project procured more than 200 unique medicines and supplies and distributed them to clinics in those three countries.

Sourcing and Procurement

Sourcing

To procure condoms with Zika funding, GHSC-PSM leveraged three existing indefinite quantity contracts for male condoms that had been established for HIV programs. With these contracts already in place, GHSC-PSM was able to swiftly respond to Zika requirements. USAID's Zika programs benefited from the reduced prices negotiated for these very large-scale contracts.

Procurements

In FY 2018, GHSC-PSM the value of GHSC-PSM orders fulfilled for repellent and condoms for Zika were:

- $4,657,223 for repellent
- $351,575 for male condoms

SECTION C

PROGRESS BY OBJECTIVE

C1. Global Commodity Procurement and Logistics

In Brief

GHSC-PSM delivered 6,151 line-item orders this year, with a value of **$742.6 million**. This reflects a 67 percent increase in line-item orders and a 79 percent increase in commodity value over FY 2017.

87 percent of line items were delivered on time in Q4, based on the defined on-time window (within the period 14 days before or seven days after the agreed delivery date [ADD]).

The project **procured $888.7 million** in health commodities in FY 2018. Procurement values now exceed **$1.5 billion for total life of project**.

The Global Supply Chain at a Glance

58 countries served

3,664 products in the catalog provided by **258** suppliers

Five international freight forwarders responsible for **3,354** shipping lanes

Three regional distribution centers with inventory for rapid response to orders

C1a. Global Supply Chain: Focused on Safe, Reliable, Continuous Supply

As part of GHSC-PSM's commitment to continuous improvement and innovation, during FY 2018, the project developed six long-term goals and priority initiatives to achieve each goal. In Q4, GHSC-PSM took the following actions toward the goals:

1. **On-Time Delivery.** Introduced the Not-On-Time Delivery (NOTD) tool that supports root-cause analysis and rigorous continuous performance improvement to push and sustain OTD performance above the quarterly target of 80 percent.
2. **Cycle Time Reduction.** Identified business process and operating model improvements to reduce the effort and shorten the average time required to process orders.
3. **Cost Savings.** Working closely with USAID, defined the criteria and methodologies to capture commodity and logistics savings and commenced tracking those savings.
4. **Client Satisfaction.** Working closely with field offices, developed the bi-annual client satisfaction survey that will launch in early FY 2019.
5. **Engaged and Skilled Workforce.** Created a staff engagement and skill development strategy that includes regular surveys of staff, technical and soft skills training, and career development.

The above strategic goals are helping to drive project performance over the longer term. GHSC-PSM already achieved significant outcomes in FY 2018, selected highlights of which are discussed below.

Gaining More Health Through Strategic Sourcing

GHSC-PSM took strategic, data-driven approaches to sourcing health commodities that generated an array of important benefits for USAID, PEPFAR, and PMI this year. Details of sourcing activities are provided in the discussion of the relevant health area (see sections B.1 – B.4). GHSC-PSM achieved the following important "firsts" in FY 2018:

- Negotiated the price for a new, first-line fixed-dose combination ARV (TLD) below the price of the existing first-line ARV;
- Placed a new VL testing platform that uses automated transcription-mediated amplification technology to allow a clinical lab to screen blood with fewer steps in less processing time and increase capacity per shift;
- Established the first VMI service agreement for male condoms to deliver cost savings and maintain a high-level of responsiveness to USAID Missions and partners;
- Established the first VMI program with two suppliers for VMMC which cut the manufacturing lead times by two to four weeks, allowing those suppliers to fulfill short-lead time orders;
- Provided information that led to a PMI policy change allowing additional source of supply for malaria RDTs for the first time, thereby increasing competition among test suppliers;
- Developed a new SPAQ contracting and sourcing strategy that involved placing large advance orders for maintenance in a contingency stockpile;
- Integrated generic suppliers and products into USAID's family planning portfolio;
- Expanded the range of male condom and lubricant product options to better support USAID social marketing partners;
- Incorporated trade packaging services into new supply contracts for oral contraceptives to better support USAID social marketing partners;
- Put in place the first agreements with established prices with six wholesalers and two local distributors for essential medicines to streamline procurement;
- Instituted an order allocation approach that helps ensure all holders of multi-award contracts receive some orders and thus continue to be interested in serving our market; and
- Leveraged the project's aggregated buying power across two health areas (HIV and FP/RH) with a supplier of ARVs and emergency contraception to facilitate supply of the latter, which is a low value but strategic product.

GHSC-PSM's strategic sourcing efforts work to enhance market health, reduce lead time, secure value-added services, and save money for our clients. Specific achievements in FY 2018 are summarized below.

Enhanced Market Health

Strategic sourcing efforts enhanced market health by contracting new, qualified sources for many products. These additional suppliers reduce over-dependence on one or a few suppliers. Further,

competition in the marketplace helps ensure improved performance and competitive pricing. Long-term contracts with new suppliers—including, in some cases, generic suppliers—were concluded for:

- ARVs
- VL reagents
- VMMC kits
- Malaria RDTs
- Oral contraceptives
- IUDs
- Two-rod implants
- Essential medicines

Reduced Lead Time

GHSC-PSM sourcing and contracting efforts reduced costs and lead time for products by:

- Strategically pre-ordering product before specific country orders were in hand for TLD and SPAQ.

- Incorporating VMI into contracts so the vendor holds inventory for quick shipment rather than starting to manufacture product on receipt of an order. This year, the project reduced lead time through VMI for VMMC kits and male condoms, while continuing to evaluate expansion to additional commodities where value can be derived.

- For essential medicines, finalizing fixed price agreements by country, minimizing the duration of requests for quotations, reducing time spent on evaluations, and reducing the amount of communications and approvals.

- Reducing complexity, color and variation in orders for LLINs, which had delayed and added costs to orders.

Value-Added Services

GHSC-PSM also secured value-added services for our clients, including:

- Trade packaging services, whereby suppliers of oral contraceptives destined for social marketing organizations brand the product prior to shipment so the product is ready for use on arrival in country.

- Rental reagent agreements for VL tests that pay suppliers for tests on a price-per-test basis rather than paying them for separate delivery of equipment, maintenance, and supplies. The new rental reagent approach makes the supplier responsible for ongoing up-time of the equipment.

Cost Savings

Finally, GHSC-PSM achieved considerable cost savings on commodities through:

- Order aggregation;
- Contract negotiations that reflected solid understanding of market forces and supplier costs;
- Procuring directly from the manufacturer rather than through a wholesaler; and
- Increasing competition.

The value of cost savings achieved to date on major product categories is presented in Section C1b below.

Improving Flexibility Through Use of Regional Distribution Centers

Beginning in late FY 2017, GHSC-PSM consolidated five RDCs inherited from the previous projects to three RDCs, located in Belgium, South Africa, and the United Arab Emirates. This new chain of regional warehouses is carefully calibrated to provide the best level of service for a demanding, life-critical supply chain. In Q4, GHSC-PSM concluded the new contract for warehousing services in South Africa as the last step in RDC consolidation.

In general, the project is sending more products through the RDCs, including, in FY 2018, ARVs, condoms, VMMC kits, malaria commodities, and contraceptives. Flowing product through RDCs provides significant flexibility in the timing and quantity of product that can be allocated to a country, increasing availability. Also, GHSC-PSM increasingly holds products in RDCs while awaiting duty waivers and import approvals (e.g., for DRC, Mozambique) or quality testing results.

Q4 saw the project's highest level of RDC throughput. The project distributed more than $65 million and more than 330 order lines of products from RDCs in Q4 – both record highs. Distributions from RDCs included more than 30 lines of emergency orders. Other highlights of our RDC use include delivering TLD to seven countries and dynamically allocating constrained contraceptive supply from RDCs.

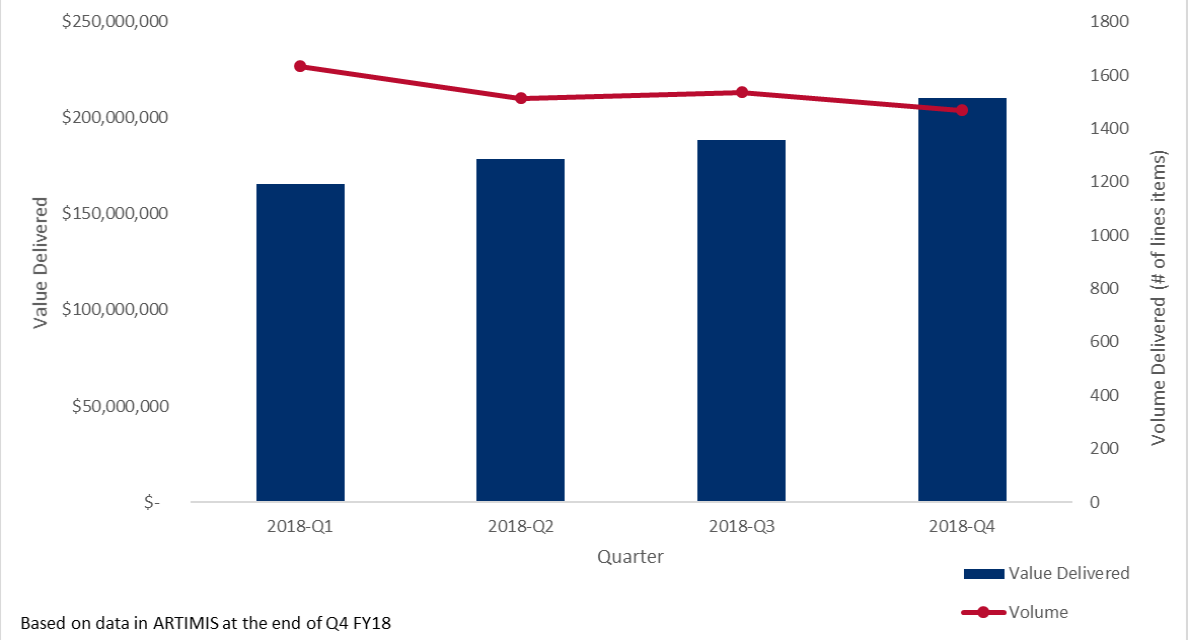
Proactively Managing an Increasing Volume of Shipments

In FY 2018, GHSC-PSM deliveries continued to increase each quarter, ending the year with a cumulative total of $742.6 million worth of commodities (6,151 line items) delivered to 58 countries (see Exhibit 21). This represents a 79 percent increase in commodity value and a 67 percent increase in the number of line-item orders over FY 2017. In the box at right, we provide examples of the scale at which the project works.

Examples of Logistics Scale

- A GHSC-PSM 3PL moved 160 containers of LLINs from Pakistan to Nigeria over three months. These containers lined up side-by-side would have a footprint the size of a football field.
- GHSC-PSM 3PLs collected and shipped 2,794 pallets from Korea to 11 countries in the space of three weeks. These pallets would completely fill the passenger and baggage space of four B747s.

Exhibit 21. Value and Volume of GHSC-PSM Deliveries by Quarter for FY 2018



Throughout the year, the project executed several initiatives to improve operational efficiency. Examples include improving accuracy of data in ARTMIS, updating country profiles used to plan and execute orders and shipments, and providing logistics training for project procurement teams.

GHSC-PSM also worked to address special challenges associated with delivery to countries. For example, the project worked proactively to reduce the number of required importation waivers to ship 407 line items to DRC by consolidating shipments from various suppliers prior to dispatch.

Assuring Product Quality

In FY 2018, GHSC-PSM worked to ensure that health commodity product QA requirements are embedded in project operational procedures. The project achieved this through developing and implementing SOPs, work instructions, and templates, incorporating QA requirements into solicitations, and collaborating closely with the GHSC-QA contractor (FHI 360). The latter includes updating the product catalog with QA requirements and storage conditions based on information from GHSC-QA. GHSC-PSM also ensured that the RDCs comply with good distribution practices.

Improving Data Quality

During FY 2018, GHSC-PSM established systems to track and report data issues, conducted data quality reviews, and worked closely with stakeholders to resolve data quality issues, including developing solutions in ARTMIS to address issues.

To continue to drive efficiencies and data quality, the project tested and launched an integration with the GDSN, which allows for automated and real-time exchange of master data information with suppliers. This added more than 200 attributes to ARTMIS to capture data ranging from weights/dimensions to storage requirements.

Using Data to Drive Performance

GHSC-PSM introduced several new tools in FY 2018 that were integral to improving the project's OTD performance. These include:

- The Order Promise tool, which captures relevant product, destination country, supplier, and logistics information to allow the project to set realistic delivery dates.

- The PipeLine dashboard, which provides a consolidated view of order status, timeliness of deliveries, and throughput across various activities in the supply chain. The project's global supply chain team reviews the dashboard each day to track order status and identify corrective actions to bring an order back on time if it is tracking for a late delivery.

- The Not-OTD (NOTD) tool, which identifies the first stage at which an order falls irretrievably behind. Using this tool, the project conducts root-cause analysis of problems each month, with early results (see box).

- The Cycle Time dashboard, which tracks cycle times for each supply chain step. This allows us to identify bottlenecks and develop solutions to improve overall performance.

Data Drives Performance Improvement

The NOTD tool identified inaccurately set ADDs as one of the three leading causes of late orders. Armed with this insight, the Global Supply Chain retrained staff on using the order promise tool to project ADDs. By the last month of Q4, inaccurately set projected ADDs were no longer a significant cause of late deliveries.

GHSC-PSM also developed several other tools that capture data to inform decisions, improving project performance and responsiveness to client needs:

- The Goods Available Date (GAD) tool sends automated reminders to suppliers to prepare shipping documents in anticipation of impending GADs.

- The Freight Calculator provides freight estimates that are required in requisition orders. The estimates are based on product type, quantity, and mode for various shipping lanes based on pre-negotiated rates with the 3PL providers.

- The Rate Card tool provides visibility to lanes where the project has pre-negotiated rates and allows the project to request a spot bid in anticipation of an impending shipment.

- The Available-to-Promise tool analyzes incoming and existing inventory in the RDCs to inform decisions about how to fulfill an order and to track allocation of stock in the RDC.

- The Decentralized Procurement tool provides side-by-side comparison of prices for international products, including expected freight costs, with likely costs of the product if it were procured locally. This supports sound decision making about buying internationally or locally for countries that manage decentralized procurements.

GHSC-PSM also used sophisticated modeling and other analytic techniques to guide decisions. Examples this year include data-driven decisions on network optimization, 3PL selection, the TLD transition, and process revisions to reduce cycle time for releasing procurement orders.

C1b. Project Performance

In this section, we summarize findings on key global supply chain results related to delivery timeliness (OTD and OTIF[19]) and cost savings. More detail on other indicators of global supply chain performance are provided in Annex A. OTD and OTIF indicators generally had an upward trend throughout FY 2018, as shown in Exhibit 22 (quarterly OTD and OTIF) and Exhibit 23 (monthly OTD and OTIF).

Exhibit 22. GHSC-PSM OTD and OTIF by Quarter for FY 2018

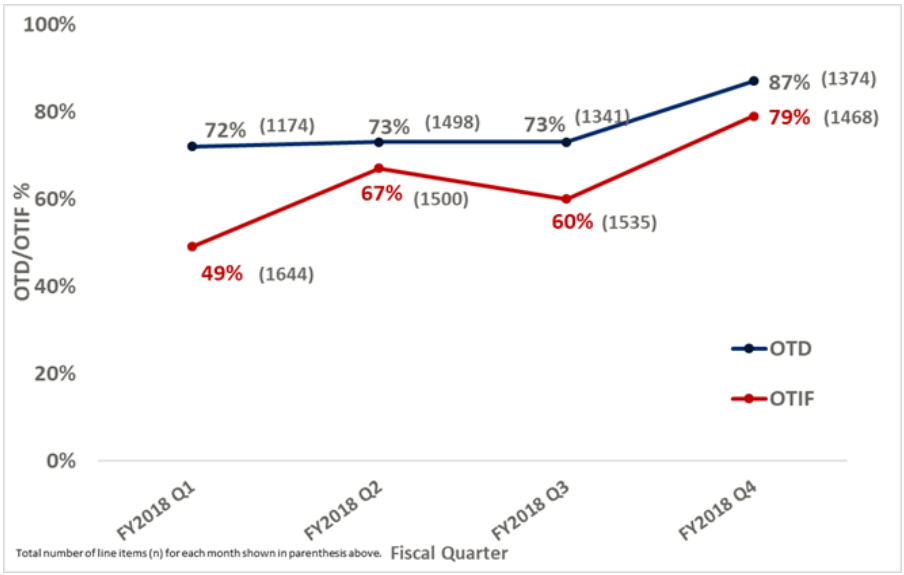
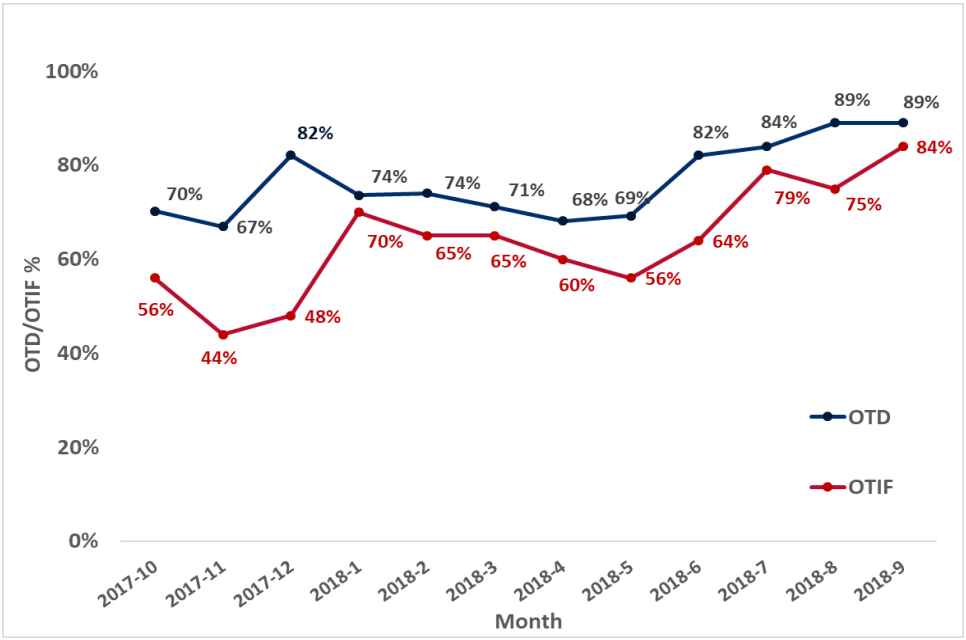


Exhibit 23. GHSC-PSM OTD and OTIF by Month for FY 2018



[19] GHSC-PSM measures on-time delivery in two ways. OTD is the number of on-time deliveries as a percentage of expected deliveries in the reporting period. It answers the question of how well the project met expectations for deliveries that period and best reflects recent performance. The OTIF rate reflects the number of on-time deliveries as a percentage of actual deliveries in the reporting period, as well as how many deliveries were in full. OTIF rates drop as late orders from previous months get delivered.

In Q4, GHSC-PSM continued to build on the performance of previous quarters, achieving 87 percent OTD for the quarter. This exceptionally strong performance, capping progressively improving performance in the three previous quarters, yielded an overall performance of 77 percent OTD for the full fiscal year. Importantly, OTD exceeded 80 percent for the HIV/AIDS, malaria, and FP/RH health areas for each month of Q4, and for MNCH for the last two months of the quarter, as shown in the box. (Note one late shipment to Mozambique with eight line items in July brought down the MNCH quarterly performance.) This demonstrates improved performance that is both broad and sustained. Similarly, the OTIF indicator improved from 49 percent at the beginning of FY 2018 to 79 percent in Q4 and 65 percent for the year. With the strong OTD performance throughout Q4, OTIF, which is a lagging indicator, hit 84 percent in September.

OTD Rates by Health Area and Overall in Q4

	July	August	September	Q4
TO1	85%	88%	90%	87%
TO2	86%	94%	83%	88%
TO3	93%	94%	100%	95%
TO4	33%	100%	85%	68%
Overall	84%	89%	89%	87%

In the table above, green-shaded boxes exceed 80 percent (the quarterly target) and amber-shaded boxes are below 80 percent.

This steady improvement in OTD and OTIF reflects the success of several initiatives, including:

- Creating commodity and health area-specific procurement teams;
- Introducing and using the OPT tool to more accurately estimate product- and country-specific lead times;
- Introduced the order management dashboard and refined the daily management review first introduced in late 2017; and
- Introducing the NOTD tool to conduct monthly root-cause analysis of late deliveries, develop preventative actions, and continuously improve processes.

The number of undelivered orders (i.e., the backlog) continued to decline. In Q4, backlog reached an all-time low of 2 percent, which is well within the target of 5 percent. The project anticipates that, with continued strong OTD performance, the backlog will continue to stay within the target.

Cost Savings

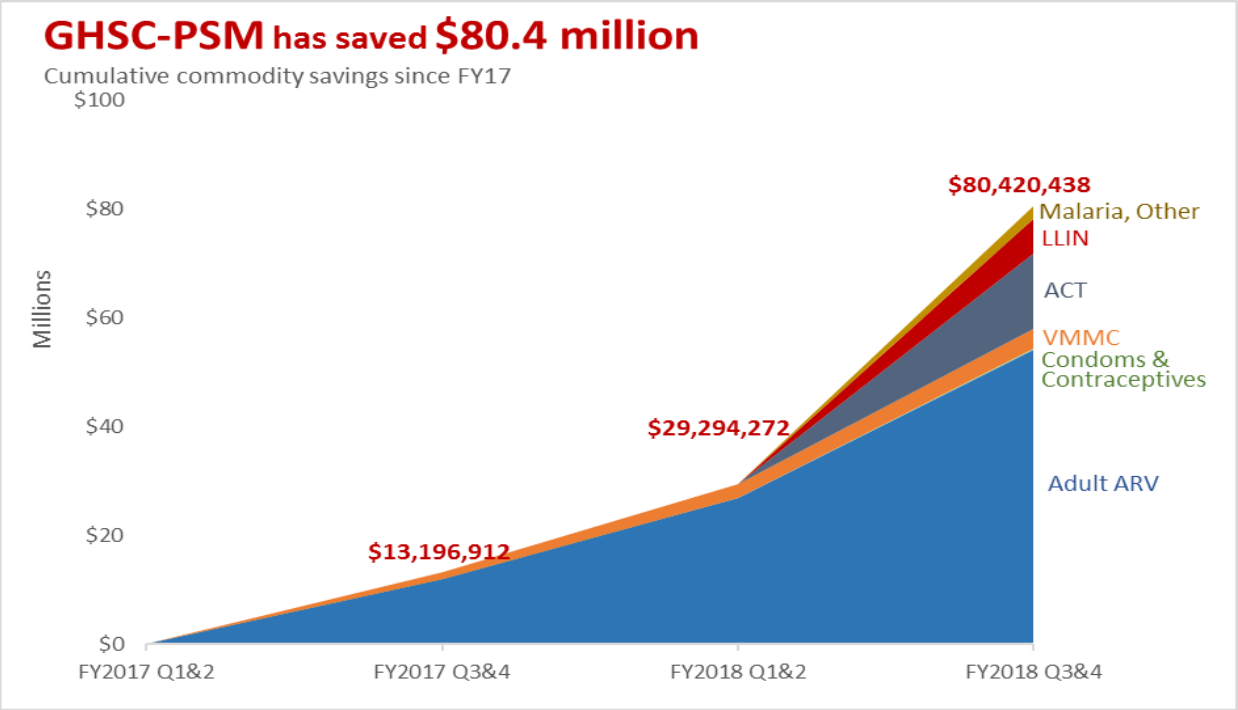
GHSC-PSM works hard to achieve best value, including cost savings, in procurement and delivery for the U.S. Government and the countries and populations we serve.

Savings on Commodities

Our strategic sourcing work — from ensuring competition to negotiating armed with detailed knowledge of costs, concluding fixed price contracts, having vendors manage inventory for the project, and bundling goods and services — has generated significant cost savings on commodity procurements, as shown in Exhibit 24. It is important to note that these represent actual cost savings on commodities procured to date, not projections of savings in the future. It is also important to note that these commodity procurement savings are not comprehensive; they represent savings on major but not all commodity categories. Commodity cost savings are measured

as the difference between what GHSC-PSM would have paid for commodities at baseline price levels and what GHSC-PSM actually paid for those commodities in the current period. The first half of FY 2017 is considered the baseline period for most products.

Exhibit 24. Cumulative Cost Savings on Commodities



Savings on Logistics

In addition to saving money on commodity procurement, GHSC-PSM has worked to reduce warehousing and logistics costs. GHSC-PSM obtains transportation services through a 4PL model, which takes advantage of competition between shipping companies (known as 3PLs) to improve service and reduce costs. GHSC-PSM pooled our purchasing power and scale in competing 510 air, 258 ocean, and 33 land lanes. By competing the lanes in 2016, GHSC-PSM saved more than $1.4 million on actual shipments (a 7.3 percent reduction) compared to the approach in effect at the time GHSC-PSM was awarded. In April 2018, GHSC-PSM recompeted the shipping lanes, saving an additional $656 thousand from the re-competition on shipments in the past six months.

To save money on warehousing, GHSC-PSM consolidated five inherited warehouses to three (in Belgium, South Africa, and United Arab Emirates). GHSC-PSM determined the number and location of our RDCs by conducting a network optimization that sought to minimize warehousing and transportation costs while maintaining the flexibility that is required for a dynamic global supply chain. GHSC-PSM also minimized costs by negotiating discounted per-pallet warehousing rates for the new RDCs. Since GHSC-PSM transitioned to the Belgium and United Arab Emirates warehouses in April 2018, the project has saved almost $1.2 million in warehousing costs and almost $1.7 million in freight costs, in addition to the freight cost savings from negotiating lower freight rates, as discussed in the previous paragraph. The South Africa warehouse is scheduled to transition in January 2019, and initial estimates show that the project will realize an additional $1 million per year for comparable use of the RDCs when the new South Africa RDC comes fully online.

These logistics savings amount to a 10 percent reduction compared to the previous logistics model, resulting in more than $4.9 million in actual logistics cost savings through the end of FY 2018.

Moving forward, once the new warehouse in South Africa is in use, GHSC-PSM projects **the project will save $8 million per year** on logistics assuming similar level of activity.

Cost savings benefit to the U.S. government:

Altogether, **GHSC-PSM has achieved more than $85.3 million in actual cost savings** on commodities and logistics over the life of the project. These significant cost savings can be used to buy more medicine and save more lives.

C2. Systems Strengthening Technical Assistance

In Brief

GHSC-PSM provided health supply chain systems strengthening through 34 field offices that **support 41 countries**.

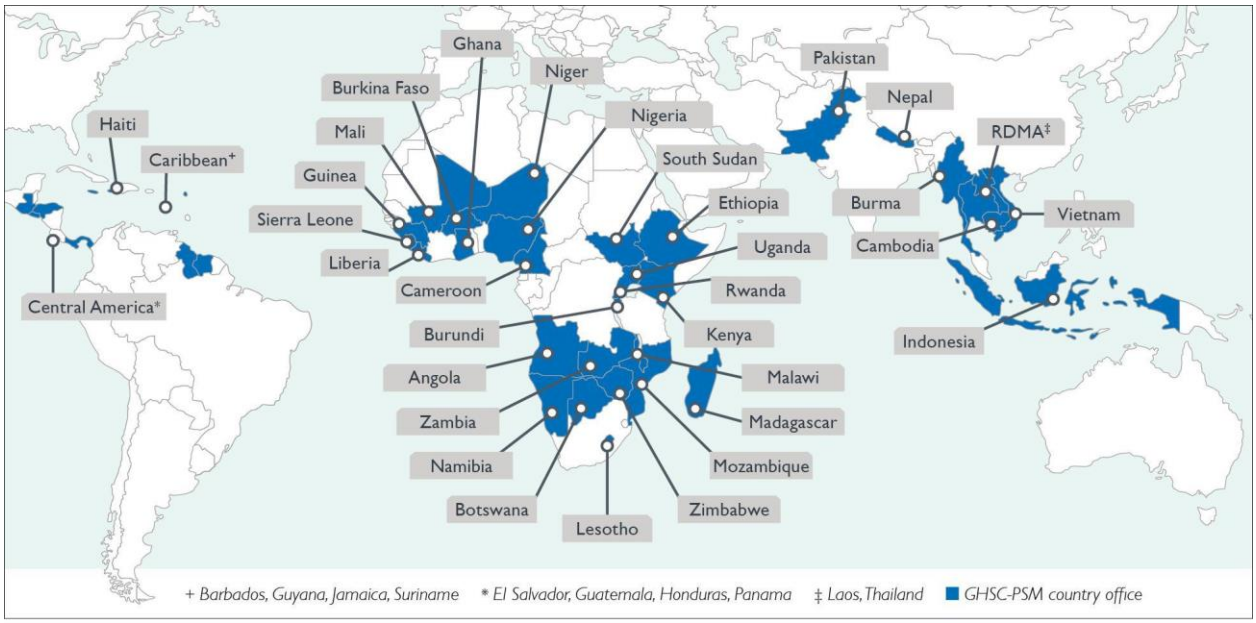
The project **started up offices** in Mali, Niger, and Sierra Leone.

More than 1,280 staff work in project field offices.

The project saw significant results from our FASP, LMIS, strategy and planning, procurement, workforce development, governance and leadership, QA, lab, VMMC, process improvement, and waste management technical assistance.

GHSC-PSM's vision is for every country to have a government-led health supply chain that is integrated, optimized, accountable, agile, lean, and able to sustainably supply quality products to all its citizens. Each supply chain system should emphasize automated data capture, real-time end-to-end data visibility, pharmaceutical-grade infrastructure, and efficient distribution. Each supply chain should be managed by supply chain professionals in a culture of quality improvement, and, where advisable, develop strategies to outsource functions to accountable private sector providers. In FY 2018, GHSC-PSM maintained 34 field offices and provided long- and/or short-term technical assistance to ministries of health and other key stakeholders in 41 countries to achieve these ends. The project is funded to provide technical assistance for different health areas in each country, as shown in Exhibit 25 on the following page.

Exhibit 25. Health Area Support for Systems Strengthening by Field Office[20]



Country	Health Area
Angola	• • •
Botswana	•
Burkina Faso	•
Burma	• •
Burundi	• • •
Cambodia	• •
Cameroon	• •
Caribbean	•
Central America	• • •
Ethiopia	• • • •
Ghana	• • • •
Guinea	• • •
Haiti	• •
Indonesia	•
Kenya	•
Lesotho	•
Liberia	• • •

Country	Health Area
Madagascar	• • •
Malawi	• • • •
Mali	• • • •
Mozambique	• • • •
Namibia	•
Nepal	• •
Nigeria	• • • •
Niger	•
Pakistan	• •
RDMA	•
Rwanda	• • • •
Sierra Leone	•
South Sudan	• • •
Uganda	• • •
Vietnam	•
Zambia	• • • •
Zimbabwe	• •

• HIV • Malaria • FP/RH • MNCH • Kenya task order

As can be seen from the list, 30 percent of field offices have funding from one health area only, while 70 percent have funding from two or more health areas. Almost 25 percent of GHSC-PSM field offices have funding from all four health areas. Supported countries' supply chains benefit from substantial synergies and efficiencies available from this cross-funding. Exhibit 26 shows which technical areas were supported by GHSC-PSM in each country or regional program.

[20] GHSC-PSM's work in Kenya is funded by USAID/Kenya rather than by the health areas.

Exhibit 26. Health Supply Chain Systems Strengthening Areas of Focus in FY 2018

Country	FASP	LMIS	Warehousing & Distribution	Strategy & Planning	Procurement	Workforce Development	Governance & Leadership	Quality Assurance	Lab	VMMC	Process Improvement	Waste Management
Angola	●	●	●	●	●		●					
Botswana	●	●	●	●	●			●	●	●		
Burkina Faso	●	●	●	●		●						
Burma	●	●	●	●	●	●	●	●	●		●	
Burundi	●	●	●	●	●			●	●			
Cambodia	●	●		●	●							
Cameroon	●	●	●	●		●	●		●			
Caribbean*	●	●		●								
Central America#	●	●	●	●	●	●	●	●				
Ethiopia	●	●	●	●	●	●	●	●				
Ghana	●	●	●		●	●	●		●			
Guinea	●	●	●	●	●	●	●					●
Haiti	●	●	●	●	●			●	●			●
Indonesia	●	●	●	●				●	●			
Kenya	●	●		●		●						
Lesotho	●	●	●	●		●						
Liberia	●	●	●		●							
Madagascar	●	●	●	●	●	●	●	●				
Malawi	●	●	●	●		●	●	●	●	●		
Mali	●	●	●	●			●					
Mozambique	●	●	●	●	●	●	●	●	●	●		
Namibia	●	●	●	●	●	●	●					
Nepal	●	●	●	●	●	●					●	
Niger	●	●	●	●		●						●
Nigeria	●	●	●		●	●	●	●	●		●	●
Pakistan	●	●	●	●	●	●	●	●		●		
RDMA ^			●	●	●							
Rwanda	●	●	●		●				●	●	●	
Sierra Leone	●	●	●	●			●					
South Sudan	●	●	●	●	●			●				
Uganda	●	●	●		●	●			●	●	●	
Vietnam	●	●	●	●	●	●	●	●				●
Zambia	●	●	●	●	●	●	●	●	●	●	●	●
Zimbabwe	●	●	●	●	●	●	●	●	●	●		

* Barbados, Guyana, Jamaica, Suriname
# El Salvador, Guatemala, Honduras, Panama
^ Laos, Thailand

Budgets for technical assistance vary widely, with some USAID Missions investing in comprehensive supply chain systems strengthening, and others investing selectively based on need and availability of funding. As seen in Exhibit 26, GHSC-PSM supported FASP, LMIS development, warehousing and distribution, and strategy and planning in almost all country programs.

C2a. Activities and Achievements

Following are highlights from FY 2018 of where and how GHSC-PSM has applied health supply chain systems strengthening approaches globally and in specific countries.

Forecasting and Supply Planning

Quantification — or FASP — is a country-driven, forward-looking process of estimating quantities and costs of products required for a specific health program and determining when those products should be delivered. A robust FASP process helps countries ensure an uninterrupted supply of lifesaving commodities for their health programs and beneficiaries.

GHSC-PSM has helped countries develop and improve supply plans for eight commodity groups that are procured by the project. Supply plans are the source of our procurements for countries, based on projections of consumption and inventory.

Also, the project provided in-country and remote technical support in FASP to help countries move from reliance on external technical support to independence by developing their own fully integrated FASP capabilities. Two examples of such support are provided below.

In **Indonesia**, TB case funding has increased every year. Jakarta's Provincial Health Office is committed to improving supply chain management for TB drugs, particularly distribution, recording, and reporting on first-line drugs for osteoarticular tuberculosis. In September, GHSC-PSM trained District Health Officers in DKI Jakarta Province on how to complete monitoring tools for first-line TB drug stock at the district level, including how to report months of stock, variance between drug use and distribution, and facilities experiencing over- or under-stocks. This TB reporting tool will improve coordination among pharmacists and the provincial staff in charge of TB drug supply planning, monitoring, and evaluation.

In July, GHSC-PSM conducted the first-ever training in **Malawi** on quantification of lab commodities using the ForLAB software. For a long time, quantification of lab products in Malawi was fragmented and suffered from a lack of useful tools. To strengthen coordination and integration of lab commodity procurement systems, GHSC-PSM helped the Ministry of Health (MOH) provide training using the ForLAB 2.0 software, which can be used to forecast for several disease areas, including HIV (including for viral load and early infant diagnosis), TB, malaria, and VMMC. After the training, the Malawi Lab FASP team developed a road map and plan for using FORLAB for the 2019 lab quantification exercise, with trained staff from the various participating organizations forming the countrywide lab quantification team.

LMIS Development

A strong LMIS provides the data needed for accurate supply planning, optimized storage, efficient and timely distribution, and accountability throughout the supply chain. GHSC-PSM helped develop and implement LMIS in 31 countries in FY 2018, moving countries closer to automation and electronic data capture, and providing better data to support decision making.

In **Guinea,** the project helped the Ministry of Health automate its paper-based LMIS. The new eLMIS rolled out across the entire country in August. The project trained 268 supply chain staff from regional and district health facilities to use the eLMIS for reporting, aggregation, and visualization of

logistics data from 453 health facilities. GHSC-PSM also supports internet connectivity for 42 facilities and hospitals. An early —and key — benefit is summarized in the box at right.

Guinea is the most recent example of large-scale introduction of eLMIS in FY 2018. Other countries where GHSC-PSM supported national implementation of eLMIS this year include Malawi and Nigeria.

GHSC-PSM is helping prepare the health ministry of **Angola** to implement OpenLMIS v3 by gathering logistics data, documenting and analyzing business process flows, transferring knowledge to MOH personnel, and evaluating sites' readiness to start using the new system. In FY 2018, the project helped the government create SOPs for inter-institutional logistics coordination among national programs (HIV, malaria, FP/RH) and the central medical store. The project also advised the ministry on system interoperability, master data compliance with GS1 standards, and creation of a support mechanism to ensure sustainability.

Critical Consumption Information Now Available in Guinea

One of a supply chain's biggest challenges is knowing how much product is needed on a national level (for supply planning) and at sites (for distribution planning). Guinea's new eLMIS automatically calculates monthly consumption of health commodities using recent, actual consumption data.

- Supply chain managers have instant access to data and can easily identify which essential medicines and commodities are needed in the communities they serve.
- Consumption trends can now inform planning to reduce overstock and/or stock-outs.

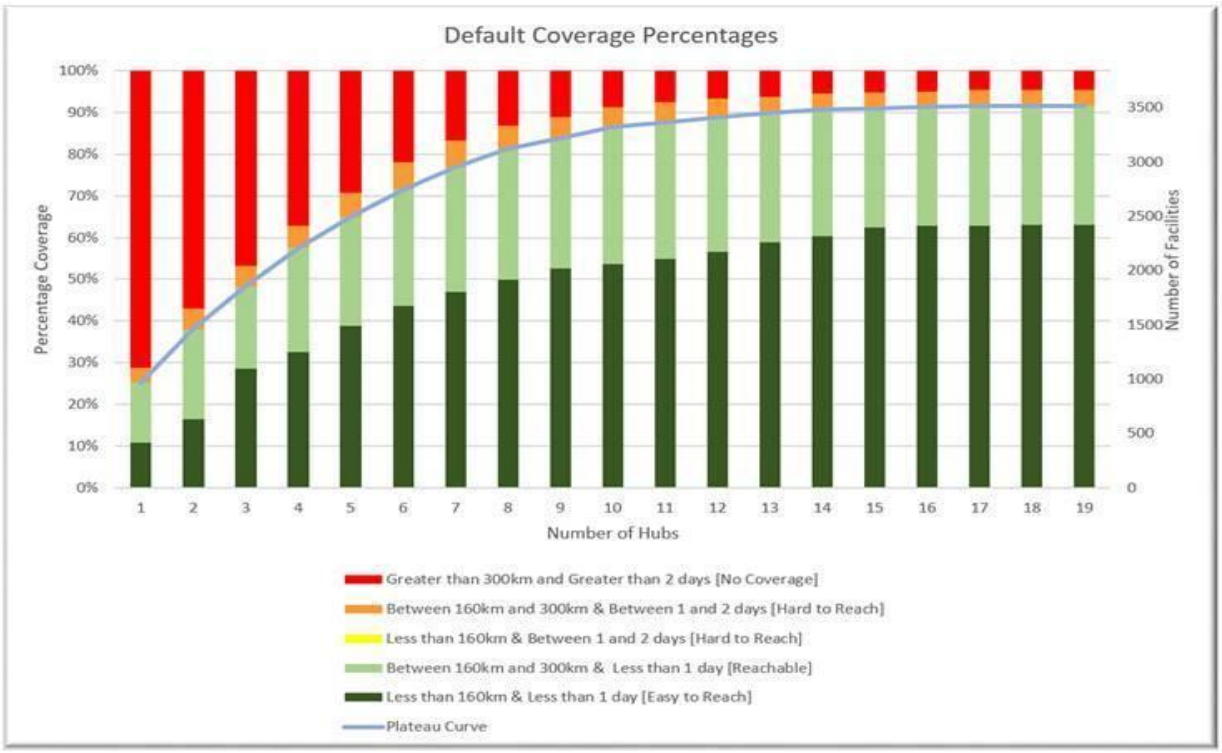
In **Botswana,** GHSC-PSM provided technical assistance to the logistics management unit to fix software bugs, train users, and enhance its Supply Chain Manager software application when it stopped working. The logistics management unit had to manually process more than nine months of data collected after the system stopped working. These data were successfully imported into the improved application and are now being used for analysis. By fixing the software and equipping staff with adequate training and documentation, GHSC-PSM helped ensure the much-needed data on facility stock levels are collected, aggregated, and accurately analyzed to provide decision makers with information needed to ensure continuous availability of commodities to health facilities.

Warehousing and Distribution

Countries need optimized warehousing and distribution networks that store and transport health commodities cost effectively and securely, under conditions that protect commodity quality. This can be achieved by optimizing the network; expanding or improving storage space and transportation infrastructure; leveraging GS1 barcoding standards for item identification and data capture; ensuring adequate QA, handling, and inventory controls; monitoring movement throughout the system; and, where advisable, using alternative ownership and management models (i.e., private sector versus government). GHSC-PSM provided warehousing and distribution support in 28 countries in FY 2018.

In August, GHSC-PSM used network optimization to help the **Ethiopia** Pharmaceuticals Fund and Supply Agency (PFSA) understand the level of coverage provided to health facilities in the current supply chain network. Network optimization classifies a health facility as *covered* depending on its distance from and travel time to the nearest hub. PFSA set specific benchmarks for distance and travel time to determine if a facility was covered or not. GHSC-PSM developed an optimization model using these parameters, the GPS coordinates for health facilities and hubs, the digital road network, and the Google road network. The model (see Exhibit 27) creates different scenarios by changing the number of hubs in the network, distances, and travel times so that decision makers could evaluate the impact of different network configurations. As the exhibit illustrates, there is low marginal utility in expanding beyond 12 hubs.

Exhibit 27. Ethiopia's Network Optimization Default Coverage Percentages



In September, the President of **Mozambique** and the U.S. Ambassador to Mozambique inaugurated a new warehouse[21] built with U.S. government support in Nampula. The largest in the country, the new warehouse increases central and regional storage capacity by 20 percent. GHSC-PSM helped transfer about 3,000 pallets to the new warehouse from temporary storage using more than 100 container and 10-ton trucks over 15 days. A 20-foot shipping container, and material handling equipment were also transferred. GHSC-PSM provided technical assistance for equipment specifications, optimal loading points, warehouse layout, rack design, and rack installation in the new warehouse. MACS, the GHSC-PSM-managed electronic warehouse management software, was used to keep the move organized. GHSC-PSM helped bolster new staff members' warehouse management skills by providing training on SOPs, logistics best practices, and the use of the MACS software, as well as on material handling equipment and safety.

Mozambique's President Filipe Nyusi cuts tape at the warehouse main entrance during the official inauguration ceremony on September 16, 2018. *Photo credit: USAID Mozambique*

[21] US Embassy's Press Release, *the Inauguration of the Northern Regional Pharmaceutical Warehouse: American People Congratulate Mozambican People*: https://mz.usembassy.gov/the-inauguration-of-the-northern-regional-pharmaceutical-warehouse-american-people-congratulate-mozambican-people/

In August, GHSC-PSM helped **Angola's** central medical store CECOMA select and start planning for a warehouse management system (WMS). The project supported CECOMA in holding a stakeholder workshop to conduct a situational and gap analysis of the existing system, then develop a vision for future warehouse use, supply chain improvements, and a WMS that would support that vision, including costs and system requirements. GHSC-PSM trained CECOMA staff in WMS capabilities and requirements, appropriate technology, current state and best-in-class process flows, GS1 attributes, and barcode scanning. The WMS will be implemented first at CECOMA, then expanded to regional distribution centers. The WMS will allow all warehouses to standardize product names and share information across the supply chain. It will improve in-house warehouse processes and inventory accuracy and will shorten order lead times.

GHSC-PSM completed the second phase of activity-based costing of the logistics system in Zambia. Activity-based costing allows stakeholders to understand the true costs of storing and transporting health commodities and provides supply chain managers tools to proactively manage resources for improved efficiency and greater sustainability. Zambia has started a "Lean Cycle" daily planner using the Plan, Do, Check, Act technique. They also are using, for the first time on a GHSC-PSM project, a CubiScan device that automatically captures volumetric information (the weight and dimension of each unit of measure) and updates the WMS. Zambia follows Lesotho in adopting an activity-based management approach, with Uganda planning this work for its National and Joint Medical Stores in early FY 2019.

Workforce Development

Efficient, sustainable supply chains that ensure the right products get where they're needed when they're needed require professional, well-trained supply chain workforces. GHSC-PSM helps countries strengthen their public health supply chain workforces through professionalization and approaches to workforce development. In FY 2018, GHSC-PSM supported supply chain workforce development in 20 countries.

Pharmacists like this woman in Cambodia are important parts of the supply chain workforce. *Photo credit: Christine Norman/Chemonics*

In partnership with USAID, the global advocacy initiative People that Deliver, and the USAID-funded project Human Resources for Health (HRH) 2030, GHSC-PSM published the *Building Human Resources for Supply Chain Management Theory of Change*[22] in Q4. This is the first published theory of change on the topic of human resources in health supply chain management in development. It provides a foundation for developing strategies to manage the quantity, type, and capacity of human resources required to operate strong health supply chains.

Leadership, Governance, and Process Improvement

GHSC-PSM continued to support the governments of **Botswana, Ethiopia, Ghana, Guatemala, Haiti, Rwanda, and Vietnam** in establishing foundational leadership, governance, and

[22] The Theory of Change is available here: https://peoplethatdeliver.org/ptd/resources/human-resources-supply-chain-management-theory-change

procurement process approaches to ensure more self-sustaining supply chains. This work focuses on strengthening logistics management units, improving legislative frameworks for procurement, and improving procurement procedures and processes.

GHSC-PSM is helping the Central Medical Stores of **Botswana** improve OTD performance of local suppliers. In Botswana, the government procures all health commodities, purchasing on the local market rather than internationally whenever possible. In August, GHSC-PSM helped the Central Medical Stores Procurement Unit improve its contract management process for both pharmaceutical commodities and warehouse and distribution services. Together, we identified better supplier relationship management as key to reducing delays and lead-times for commodities, and improved communications on service performance with the outsourced warehouse service provider as key to improving logistics. The project also supported the Procurement Unit in developing action plans to improve the procurement and contract management cycle, including increasing efficiency in government payments to address supplier issues with cash flow that constrain performance.

GHSC-PSM has been helping the **Guatemalan** health ministry's logistics management unit develop the country's first five-year strategic master plan for its supply chain management system. The master plan, approved in September 2018, empowers the logistics management unit to establish a roadmap for aligning cooperating agencies to achieve a stronger, integrated supply chain. In the long run, this will eliminate the duplication of effort by different parties through parallel, incompatible systems.

With the help of GHSC-PSM, the health ministry in **Vietnam** negotiated prices for medicines with suppliers for the first time in FY 2018. The project assisted the National Centralized Drug Procurement Center with background research and preparation of price negotiation dossiers. The project also helped the Center organize a four-day workshop to familiarize the Price Negotiation Committee with the technical material for price negotiation and with negotiation methods and tactics. As a result, the committee was in a better position to undertake its first negotiation in the fall of 2018 and will be prepared to undertake similar negotiations for other medicines, including ARVs, in the future.

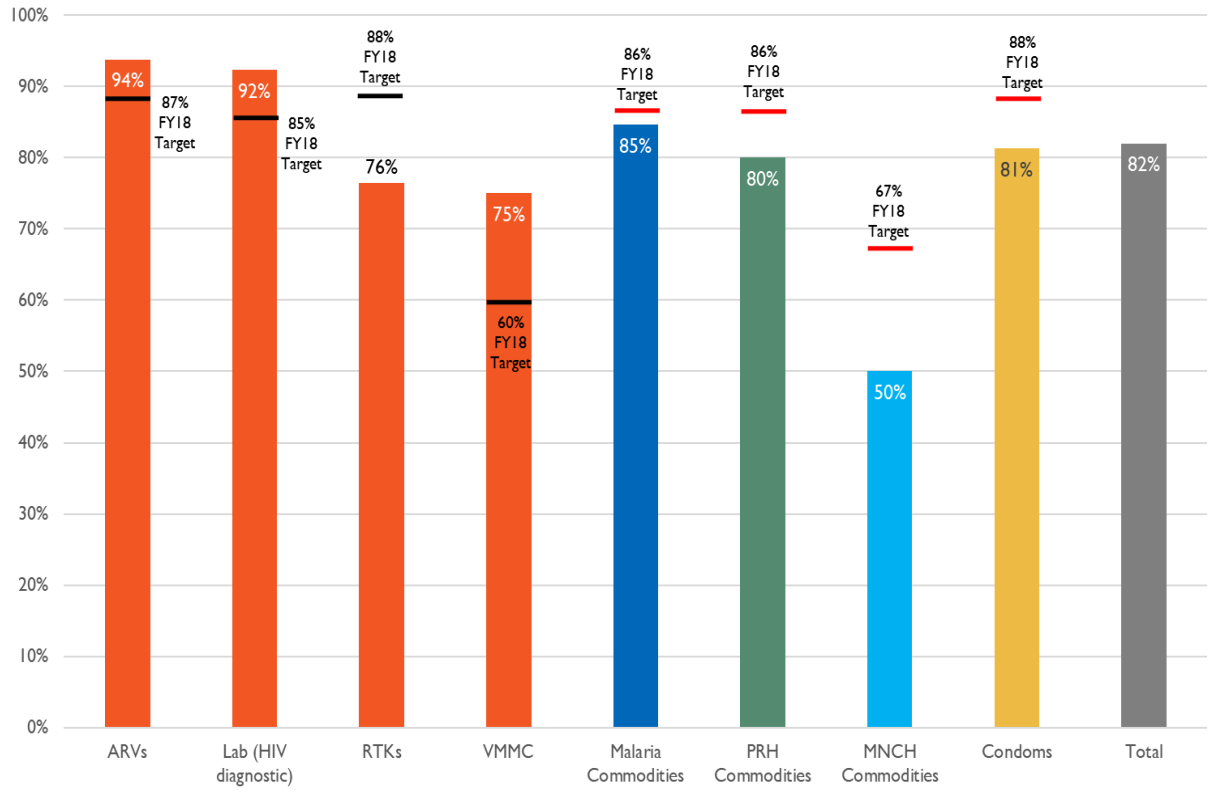
C2b. Project Performance

GHSC-PSM collects and analyzes data on a variety of indicators of national supply chain system health to understand the environments in which we operate and to help us calibrate our work. These indicators also help establish priorities for our systems strengthening support and, over time, will allow us to assess the outcomes of our technical assistance. Values for these indicators are provided in Annex A.

Percentage of Countries Conducting Quarterly Supply Plan Updates

In Exhibit 28, we present results for a foundational indicator — percentage of countries conducting quarterly supply plan updates — that is critical to ensuring procurements are planned and not emergencies and that adequate stock levels are maintained in the supply chains that we support.

Exhibit 28. Percentage of Required Supply Plans Submitted to GHSC-PSM by Commodity Group



Under the quantification paradigm supported by GHSC-PSM, supply plans take a regularly updated, forward-looking view of demand for 18 months. This comprehensive, systematic, and long-term approach to supply planning provides visibility into monthly demand even if a single quarterly update is not submitted.

Across all commodity groups, 82 required quarterly supply plans were submitted in Q4, representing almost 82 percent of the supply plans expected. Coverage ranged from submission of 92 percent of required supply plans for lab (HIV diagnostics), 94 percent for ARVs, and 85 percent for malaria commodities to 50 percent (three of six) for MNCH commodities. While submission rates are slightly down across several health areas, the raw number of supply plans submitted this quarter has increased, as has the expected number of supply plans submitted since the previous quarter.

C3. Global Collaboration

In Brief

GHSC-PSM conducted market dynamics research for HIV/AIDS, malaria, and FP/RH commodities to **identify ways to strengthen markets for key commodities**.

The project made significant progress in implementing a plan to **incorporate global standards** throughout our supply chain. This will help improve efficiency, reduce costs, and improve end-to-end data visibility.

GHSC-PSM continued to **participate actively in global fora**, sharing data and promoting new approaches, and to **test innovations** in our global and country-level procurement and logistics work.

C3a. Activities and Achievements

GHSC-PSM's global collaboration throughout the year focused on strategic engagement, market dynamics, and other research, awareness, and advocacy efforts. The project is also working to scale successful innovations in multiple countries and within the global health supply chain space. The scale, scope, and complexity of managing a global supply chain requires the project to collaborate with many global and local partners to ensure the availability of health commodities. By integrating our work across health sectors and sharing information, resources, activities, and capabilities, we can achieve together what we could never achieve alone.

Strategic Engagement

As described throughout this report, GHSC-PSM engages actively with other global players to promote availability of health commodities. The project does so by providing supply chain expertise to important global fora; working with other global partners to allocate scarce supply; promoting harmonization in standards and practices; and working to manage commodity stock information as a global good. The project's contributions in these areas in FY 2018 are recapped below.

Providing Supply Chain Expertise to Important Global Fora

GHSC-PSM represents the supply chain point of view in key global meetings to ensure donors and governments take supply chain considerations into account when planning their programs. This helps them get timely access to the commodities needed for their programs. Participation in these meetings also helps GHSC-PSM stay current with emerging requirements so we are ready to respond to global health commodity needs. Specifically, in FY 2018, GHSC-PSM:

- Hosted and presented data at the USAID Office of HIV/AIDS' biannual VMMC headquarters partner meeting to ensure all partners were able to collaborate on commodity and supply chain issues;
- Facilitated a Medicines for All Institute (M4ALL) panel on prioritizing drugs for chemistry improvements, presented at the M4ALL Global Health Summit, and supported that group's steering committee;
- With CHAI, led an ART Optimization Programme Advisory Committee meeting discussion;
- Shared procurement information with the Antiretroviral Procurement Working Group;

- Hosted, with the Medicines Patent Pool, a meeting on the University of Liverpool's solid drug nanoparticle formulation, future applications of which may alter the presentation of antimalarials and ARVs;

- Contributed to a global initiative, with the Bill and Melinda Gates Foundation, CHAI, IVCC, and other global partners, to introduce new LLINs for use in locations where resistance to single insecticide-treated nets has been observed;

- Worked with the Bill and Melinda Gates Foundation to develop a complementary source of artemisinin;

- Chaired the RHSC's Systems Strengthening Working Group and launched the working group's webinar series with a first webinar, *Data is Dialogue* and a second focused on data and advocacy in East Africa;

- Moderated a panel on market conditions that attract manufacturers to the market and presented a well-attended virtual panel for the RHSC on *Reproductive Health Supplies in Humanitarian Settings;*

- Joined the RHSC Market Development Approaches Working Group private sector data workstream, is surveying FP/RH market stakeholders about their interest and willingness to pay for private sector commodity market data from third party vendors, and is assessing whether current information meets stakeholders' needs;

- Participated in a meeting on consumables for long-acting reversible contraceptives at the RHSC's General Members Meeting;

- Co-facilitated a workshop with the West African Health Organization to improve the West and Central Africa Early Warning System for Contraceptives;

- Presented at the Track20 meeting on platforms used to collect family planning data;

- Collaborated on the design of the information system solution for the Global FP VAN;

- Hosted a technical consultation with RHSC on the scientific evidence around oxytocin quality with WHO, UNFPA, manufacturers, wholesalers, governments, and universities;

- Co-hosted with PATH a workshop to develop a messaging framework around oxytocin and shared the oxytocin messaging framework at the annual meeting of the Postpartum Hemorrhage Community of Practice; and

- Hosted a training on the revised National Supply Chain Assessment tool's improved scoring features for participants from CHAI, the Global Fund, UNICEF, and various development agencies working on supply chain systems strengthening.

Promoting Harmonization

GHSC-PSM shares our methods with the global community to promote broad improvement in product availability. For example, we shared our contractual service and maintenance terms for VL testing platforms with CHAI, WHO, and Unitaid so all global laboratory stakeholders can align on requirements that promote performance. As another example, we are working closely with UNFPA to assess current packaging specifications for condoms and reproductive health commodities and

evaluating the potential to harmonize packaging between procurers. Also, we worked closely with the Global Fund to ensure a harmonized procurement approach to active pharmaceutical ingredient (API) requirements for artemisinin-based products in our latest request for proposals to ensure quality and minimize instability in the raw material market.

Managing Commodity Stock Information as a Global Good

GHSC-PSM serves as an information resource on commodity availability, sharing our supply chain information and additional country data on stocks. As described in Section B, through the PPMR process in the HIV/AIDS, malaria, and FP/RH sectors, GHSC-PSM manages collection of data on country-level stocks of critical health commodities. These data are shared with countries and donors in user-friendly dashboards to inform planning and prioritization. Every quarter, based on this information, the global community considers actions to address imbalances, such as redistributing stock to mitigate stock-outs and minimize waste. GHSC-PSM also worked closely with the CSP group to review DMPA-IM and one-rod implant orders to mitigate the risk of stock-outs given the tight supply of these commodities. The project provides weekly updates to this group on product availability and on efforts to allocate product to achieve priorities. Additionally, GHSC-PSM is an active participant in developing the Global FP VAN, which will increase supply chain visibility and improve collaboration between USAID and other major procurers of contraceptives.

Coordinating to Manage Country Registration Data

Before pharmaceuticals and medical devices can be imported, most countries require them to be registered with the appropriate regulatory body. For the first time, in FY 2018, GHSC-PSM coordinated with the UNFPA on the capture and management of country registration data for family planning commodities. By harmonizing on supplier communication, data structure, and tools, GHSC-PSM is improving the quality of the data and reducing the unnecessary burden on suppliers of providing the same data to multiple parties. Small steps such as this can make a big difference when it comes to keeping orders moving quickly and ensuring the right product gets shipped.

Research and Innovation

GHSC-PSM is engaged in cutting-edge research that helps shape global markets to meet countries' needs for health commodities and that explores better ways to get these products to the people who need them. Specific engagements and activities during the fiscal year included:

Market Dynamics

The project continued a robust program of research into the health commodity marketplace. Insights from our market dynamics research inform our approaches to working with the private sector to ensure long-term market responsiveness, efficiency, and sustainability.

API Issues and Blue Sky in China. The changing regulatory environment in China presents pharmaceutical suppliers with challenges in securing key starting materials and APIs. GHSC-PSM is proactively tracking the prices of key raw materials and APIs available from China, mapping API markets for HIV, and designing a risk mitigation strategy with manufacturers. These activities will inform business decisions and improve supply chain flexibility to reduce the potential for stock-outs.

Manufacturing and chemistry improvements. GHSC-PSM collaborates with M4ALL and Project Optimize to explore the development of new, more scalable, and more cost-effective technologies for manufacturing global health medicines. We analyzed key first-line products (lamivudine and emtricitabine) to inform PEPFAR decision making around the priority drug list and Project Optimize strategies. Also, GHSC-PSM is using market dynamics models to analyze emtricitabine. Findings will inform M4ALL's strategies for improving the manufacturing chemistry for this product.

GHSC-PSM also participated in the first M4ALL Institute Steering Committee on March 29. We joined a panel with CHAI and the Medicines Patent Pool that considered how to promote manufacturer uptake of optimized M4ALL processes. We also facilitated a panel on USAID's experience with ARVs to inform approaches to prioritizing drugs for chemistry improvements.

Private sector data collection. GHSC-PSM and IQVIA concluded a study on availability of contraceptives in the private sector in Brazil, the Dominican Republic, Guatemala, Honduras, and Nicaragua, and presented findings to the RHSC's Latin America Caucus. Following this, Guatemalan representatives wanted to better understand how private sector data can be combined with public sector data to improve the availability of contraceptive supplies. GHSC-PSM/IQVIA presented findings to the Guatemalan Contraceptive Security Committee in September 2018, and GHSC-PSM is now helping determine how the government of Guatemala can continue to access private sector data.

Country-level private sector landscape analysis. At the country level, GHSC-PSM commissioned a private sector supply chain landscape analysis of HIV, malaria, tuberculosis, MNCH, and FP/RH commodities and RDTs in Nigeria. The analysis included findings from targeted interviews with stakeholders from the private sector supply chain and a quantitative study of the private sector in eight states and five wholesale markets.

Global packaging requirements. Building on FP2020's 2015 *Procurement Misalignment Report*, GHSC-PSM is conducting research to inform harmonization of packaging requirements and configurations among major contraceptive and condom procurers. These will reduce unnecessary market barriers while responding to country needs.

Understanding the market potential of the levonorgestrel releasing intra-uterine system. GHSC-PSM joined the Levonorgestrel Releasing Intra-Uterine System (LNG-IUS) Coordination Platform Committee. The project is evaluating this product's potential as a new long-term method for inclusion in the USAID method mix. In Q4, GHSC-PSM engaged with FHI360 to better understand market factors for the LNG-IUS such as in-country demand and product acceptability.

Other Examples of Research and Innovation

This year, GHSC-PSM introduced a number of innovations or new approaches in our global activities that can inform others' supply chain approaches. These include:

- A revised approach for third-party testing of commodities based on manufacturers' and product risk profiles;
- Surveying suppliers of WHO-prequalified MNCH products to understand barriers and opportunities to increase use of the WHO Collaborative Registration Procedure;
- Rental reagent agreements for laboratory equipment and supplies;
- Service standards and requirements in laboratory agreements;
- Customized trade packaging services for socially-marketed contraceptives;
- More representative sampling for EUVs;
- New modules that cover MNCH and FP/RH commodities for EUVs;
- Revised the Contraceptive Security Indicators;

- Monitoring ambient temperatures and conditions throughout the supply chain through temp tales, small devices that record and transmit information about surrounding conditions;

- Developed a procurement guide for conducting a competitive procurement for unmanned aerial vehicles (UAVs) to be used for cargo delivery; and

- Conducted scoping visits to Malawi, Rwanda, and Zambia to assess the feasibility of testing the integration of UAVs into health supply chains to serve patients in remote rural areas. The project expects to implement this activity in FY 2019.

New Approaches and Technologies at the Country Level

GHSC-PSM also supported wide-ranging innovation in the many countries we serve, helping them introduce new approaches and new technologies to improve their supply chain performance. Examples are provided in Exhibit 29. While some of these activities may be routine in other countries, for each country specified, the innovation represents a notable advancement for its national supply chain.

Exhibit 29. Examples of Country Innovations

COUNTRY	INNOVATION
New Approach	
Cameroon	The government formed supply chain task forces to provide continuous follow-up on key supply chain management issues.
Ethiopia	GHSC-PSM supported a distribution network analysis that will help inform PFSA hub consolidation in coming years. GHSC-PSM, PFSA, and MOH developed 'quick-win' teams that closely monitor commodity stock status and then deploy those teams to analyze situations and facilitate rapid stock transfer to avoid supply risks.
Madagascar	Collaborated with the National Council of Women to develop training materials and support women's involvement in an LLIN campaign.
Malawi	Supported the MOH's rollout of ForLab to better quantify lab products.
Mali	Worked on construction of a prefabricated "warehouse-in-a-box project" for the Pharmacy of Mali.
Mozambique	The government piloted school-based distribution of LLINs as part of a continuous follow-up on key supply chain management issues.
Namibia	The government started delivering therapeutic and supplementary food using the pharmaceutical supply chain's existing trucks, routes, and schedules.
Zimbabwe	The most recent EUV survey sampling strategy involved weighting for recent malaria incidence to increase the likelihood that facilities in higher-burden malaria areas were selected for the survey.

New Technologies	
Burma	Burma's health ministry introduced a new data utilization tool that immediately helped township managers identify stock imbalances and reallocate stocks among facilities.
Cameroon	Introduced a new GIS-based tracking tool to monitor and better plan transport routes.
Ghana	Introduced social media discussion platforms, such as WhatsApp, to support key country interventions such as last-mile distribution and LMIS implementation.
Guinea, Lesotho, Malawi, Nigeria	These governments rolled out new, national eLMISes.
Kenya	The government introduced an LLIN dashboard to facilitate monitoring of LLIN distribution.
Lesotho	The National Drug Service Organisation introduced a new warehouse management system (WMS) with use of handheld barcode readers to improve accuracy.
Mali	The government, with GHSC-PSM support, piloted the interoperability of DHIS2 with the country's LMIS to obtain access to data from all levels of the health system in all geographies in real time.
Pakistan	The government of Balochistan installed USSD data service capability on field worker cell phones in remote areas so they could transmit stock data by SMS text. The project added stock optimization capability to Pakistan's LMIS to show how overstocked quantities can be redistributed.
Rwanda	Supported implementation of global standards (GS1).
South Sudan	Piloted a call center approach to tracking stock levels and deliveries in South Sudan. Introduced the PipeLine software in the central warehouse to help generate optimal procurement and delivery schedules for ARVs and malaria commodities.
Zambia	The government started using a new molecular method for VL testing, the first such clinical use of this method for a PEPFAR program.
Zimbabwe	VMMC providers shifted to ordering detachable couches that are more portable to support their prevention activities. Developed a commodity availability early warning dashboard system.

Importantly, new approaches or adoption of new technology by one health area benefit other health areas, multiplying the impact of supply chain innovations.

Building Awareness and Advocacy for Change in Supply Chain Issues

GHSC-PSM works to build awareness of key supply chain issues and advocates for change around them at global and country levels. Examples are provided below.

Global Standards

Adoption of global standards has become a central part of the entire GHSC program to reduce costs, enhance efficiencies, and improve the availability of health commodities worldwide. In 2018, the Global Standards team developed the enabling environment for GS1 standards implementation with suppliers. In 2019, the focus will be on driving adoption, monitoring, and reporting on compliance.

In FY 2018, GHSC-PSM continued to advocate for use of GS1 standards with the global community, suppliers, and with countries, as summarized below.

At the global level, GHSC-PSM:

- Worked with the GS1 and the Global Data Synchronization Network™ community to introduce several features to enhance GS1 use in global health, including incorporating product country registration information direct from suppliers and supporting suppliers in sending product-related information to donors;
- Published a *Business Case for the Implementation of Global Standards* that describes the benefits to the global health community from implementing global standards;
- Presented our draft country implementation guidance in a think-tank session for country regulators at the first African GS1 Healthcare Conference; and
- Continued work with the RHSC and UNFPA to create a common product master data file that includes attribute information for hormonal contraceptives.

At the supplier level, GHSC-PSM:

- Incorporated requirements for product identification, labeling, and data exchange in accordance with GS1 standards in our new health commodity contracts;
- Developed and shared a *GHSC-PSM Global Standards Technical Implementation Guideline* to support suppliers who are new to global standards to help them understand how to meet the new requirement;
- Launched our GDSN community enablement initiative, which provides supplier outreach and onboarding; and
- Conducted pilot projects with two major suppliers in which we successfully received master data for select pharmaceutical products and laboratory supplies.

At the country level, GHSC-PSM:

- Helped countries plan for GS1 standards. The project supported participation by 19 countries in the first African Healthcare Conference, and then convened USAID activity managers and project field office representatives to discuss how to operationalize conference outcomes in FY 2019 work plans.

- Held workshops to build awareness of pharmaceutical traceability and global standards in Ghana and Rwanda and provided training on master data management in Ghana.

Other Advocacy

GHSC-PSM also undertook several initiatives to promote change in supply chain policies and regulations this year. At the global level, GHSC-PSM:

- Produced a paper that outlines the negative impact of importation regulations based on the percentage of product shelf-life remaining, recommending instead a shift to months of remaining shelf-life. The paper was provided to USAID for discussion with external partners such as WHO. Case studies in the paper were also discussed with specific ministries of health to advocate for policy changes.

- Completed the user survey on the Contraceptive Security Indicators and Index to understand how stakeholders use the tool to monitor a country's contraceptive security status, assess public sector funding needs, track progress after introducing a new commodity or implementing a program to expand access, or advocate for timely government action.

- Co-published a messaging framework around management of oxytocin with PATH and the RHSC.

- Helped review a draft guidance document on procurement of MNCH commodities to help non-specialists ensure the quality of the MNCH medicines they procure.

GHSC-PSM advocacy at the country level included the following:

- Worked with the government of Uganda and USAID to streamline the review process for import applications, improve the management information system used to process clearance applications, and achieve government agreement to fast-track clearance applications for quality-assured health commodities;

- Continued to advocate for a network as opposed to a traditional approach to lab procurement and use of reagent rental and all-inclusive procurement;

- Worked closely with People that Deliver to develop, refine, and implement systematic approaches to sustaining human resources in the supply chain development space;

- Successfully advocated with the Lagos state government to provide an increase for the state's Logistics Management Coordination Unit in the 2018 budget; and

- Supported the government of Ghana and donors there in developing an action plan to ensure the quality of oxytocin throughout Ghana's supply chain.

Collaborating Across GHSC-PSM Health Areas and With Other GHSC Projects

Collaboration and Synergies Across Health Areas

The GSHC-PSM contract combines procurement and supply chain support for all global health areas into one contract for the first time. This consolidation has generated benefits for all health areas that are felt every day. Below we summarize four areas — data visibility, contracting, innovation and research, and training — where the cross-pollination and benefits of consolidation were particularly notable this year.

Data visibility. GHSC-PSM can apply lessons learned and best practices from work in one health area to another. For example, the long-standing PPMR and the emerging Global FP VAN approaches for FP/RH commodities are directly informing development of PPMR-HIV. Also, lessons learned by using and aligning various data sources (i.e., PipeLine, supply plans, and PPMR) to understand the state of FP/RH commodity security are informing a similar HIV/AIDS task order initiative targeting HIV commodity security.

Ministries of health have gleaned information on malaria commodity stock levels and commodity use from EUV surveys for years. In revising the EUV, GHSC-PSM improved the methods for conducting these surveys and incorporated a new module that supports collection of data on MNCH commodities. This will fill a critical gap in data on MNCH commodity stock status at the facility levels for the first time in many countries.

Contracting. GHSC-PSM continued to leverage our methods, approaches, and infrastructure across all four health areas. For example, the combined volume of shipping to transport our HIV, malaria, FP/RH, and MNCH commodities generated substantial 3PL provider interest in our solicitation for 3PL services and helped the project negotiate favorable terms in our 3PL service contracts.

Some suppliers manufacture products for multiple health areas (e.g., for both HIV/AIDS and FP/RH). GHSC-PSM leverages significant spend in one health area to get attention for small orders for another health area that otherwise might not be prioritized. Similarly, GHSC-PSM has been able to leverage our considerable spend on condoms for HIV in procuring condoms for Zika.

Research and innovation. The project develops approaches and/or systems in one health area that diffuse to other areas. For example, GHSC-PSM piloted an innovative call center to track HIV/AIDS commodity availability at facilities throughout South Sudan. The call center offers a flexible solution for accessing data despite the lack of a functioning LMIS. This approach was then expanded to capture data on other health commodities, including malaria and FP/RH commodities. As other examples, the project is piloting temperature monitoring and unmanned aerial vehicles with funding from some health areas that potentially can benefit all health areas.

Training. As described in Section C3 below, GHSC-PSM trained 9,812 host-country government and other supply chain staff this fiscal year. This health supply chain training strengthens a country's supply chain for all commodities and health areas.

Collaboration with Other GHSC Projects

GHSC-PSM is a member of the GHSC program family and interacted regularly with the other GHSC projects this year, as summarized below.

GHSC-PSM supports the GHSC-RTK project, implemented by RMI, in ensuring availability of HIV RTKs. Our extension of supply planning efforts to cover RTKs and our regular sharing of RTK supply plans gives the GHSC-RTK project good visibility into needs for its product 18 months into the future. Also, our survey of country-level supply chain personnel provided key insights into RTK supply chain challenges, and our work to address these challenges will support more predictable demand and improved planning for GHSC-RTK's procurement activities.

GHSC-PSM interacts continuously with GHSC-QA, implemented by FHI 360, to coordinate QA efforts for HIV, FP/RH, and MNCH commodities. We are working closely with the GHSC-QA project to find creative ways for completing QA processes at different logistics stages to shave cycle time and improve OTD performance.

The GHSC-BI&A project, implemented by IntelliCog, aggregates data from all GHSC projects so that USAID and external parties can examine performance and perform analysis across projects. The

BI&A dataset for GHSC-PSM and our own data management system structure GHSC-PSM's data differently. As a result, methodologies to calculate indicators from the two different datasets must be reconciled to obtain consistent and accurate results. GHSC-PSM and GHSC-BI&A staff collaborate to align queries to calculate values for some priority performance indicators such as OTD. The BI&A project also participated in CHAS planning meetings and hosts the PPMR-HIV database.

GHSC-PSM collaborates with the GHSC-Technical Assistance (GHSC-TA) contractors (Chemonics International and Guidehouse) that provide health supply chain systems strengthening support in West Africa, South Africa, and Tanzania. In some cases, those partners provide in-country support for GHSC-PSM procurements.

USAID has asked GHSC-PSM to create one integrated website for the GHSC program. The project is working with other GHSC contractor counterparts to plan and populate the integrated website.

C3b. Project Performance

People Trained

A key performance measure related to global collaboration and cross-cutting activities is the number of people trained. This indicator provides a basic illustration of where the project is focusing its capacity-building resources and where it might expect related supply chain outcomes to improve.

This year, the project trained 9,812 people, of whom 36.5 percent were women and 63.5 percent were men. Most trainings were cross-cutting, addressing topics relevant to multiple health areas. Exhibit 30 shows the technical focus of trainings provided in FY 2018.

Exhibit 30. Technical Focus of Trainings Provided by GHSC-PSM in FY 2018

Technical Topic	Number of People Trained
Warehousing and Inventory Management	3,155
MIS	1,658
Quality Assurance	1,643
Human Resources Capacity Development	1,316
Governance and Financing	888
Monitoring and Evaluation	716
Transportation and Distribution	247
Forecasting and Supply Planning	112
Strategy and Planning	67
Procurement	10
Grand Total	**9,812**

Annex A. M&E Indicators

The Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) project tracks a full array of performance indicators that span commodity procurement and logistics, global collaboration, and several cross-cutting issues (e.g., training). Our commodity procurement and logistics indicators capture efficiency, effectiveness, quality, and cost of our service delivery, in line with the industry-standard Supply Chain Operations Reference (SCOR) model. Other indicators reflect performance of project partners (e.g., vendors), providing insight into how we plan, procure, and deliver high-quality health commodities through our management of subcontractors. Our global collaboration and cross-cutting indicators track contributions to the global community as well as project-wide services and contributions (e.g., number of innovations developed). In-country performance indicators capture the availability of stock at central and subnational warehouses, the extent of health facility-level stockouts by product, health element, and country, health facility reporting rates to the logistics management information system (LMIS), product loss while under GHSC-PSM control, project-led innovations, trainings, and support to developing or updating supply chain policies, regulations, and standard operating procedures. Finally, our context indicators provide information on the country supply chain environments in which we operate to inform decision making and monitor critical assumptions.

Data Use

GHSC-PSM advocates for transparent access to appropriate data as a means of encouraging accountability, transparency, and evidence-based management. In the following tables, we capture the program activities and results, as specified in the project's Monitoring and Evaluation plan.

The GSHC-PSM field offices and headquarters use the data captured here to continuously improve results. The overall goal of the program is to ensure uninterrupted supplies of health commodities; the data that inform these indicators contribute to this. A visual management system of our progress (updated and utilized daily) allows managers to hone in on and troubleshoot these individual orders. Across all field offices, GHSC-PSM and our partners and counterparts actively use data from the Automated Requisition Tracking Management Information System (ARTMIS) and in-country logistics management information system (LMIS) to monitor stock levels and inform procurement planning.

Methodology Notes for Measuring Impact

In this report, we share the following results, each based on products delivered between the start of the project through September 30, 2018:

1. Number of years of antiretroviral (ARV) treatments delivered by GHSC-PSM
This report only includes Adult Efavirenz/Lamivudine/Tenofovir (TLE) and Nevirapine/Lamivudine/Zidovudine (NLZ) – and for the first time, Dolutegravir/Lamivudine/Tenofovir (TLD). Doses for calculating treatments are based on World Health Organization (WHO)-recommended guidelines. The calculation of patient-years allows GHSC-PSM to monitor effectiveness and efficiency by a standard unit.

2. Number of full doses of malaria treatment
Includes malaria treatments delivered over the life of the project, with "full dose" based on WHO-recommended treatment guidelines. Specific medicines counted are limited to those used only for treatments, and not primarily as prophylaxis. Specifically, it includes only Artemether/Lumefantrine and Artesunate/Amodiaquine formulas this quarter.

3. Number of Couple Years Protection (CYP) provided by delivered contraceptives

CYP is a standard indicator calculated by multiplying the quantity of each contraceptive method distributed by a conversion factor to yield an estimate of the duration of contraceptive protection provided per unit of that method. The CYP for each method is then summed for all methods to obtain a total CYP figure. CYP conversion factors are based on how a method is used, failure rates, wastage, and how many units of the method are typically needed to provide one year of contraceptive protection for a couple. The calculation takes into account that some methods, e.g., condoms and oral contraceptives, may be used incorrectly and then discarded, or that intrauterine devices (IUDs) and implants may be removed before their life span is realized. This GHSC-PSM measure includes all condoms, IUDs, and hormone (oral, injectable, and implantable) contraceptives delivered over the life of the project, with the conversion factor provided by USAID/MEASURE (see https://www.usaid.gov/what- we-do/global-health/family-planning/couple-years-protection-cyp for details).

Explanatory notes on current data

Data for the project's core global logistics indicators were fully generated using ARTMIS reports. This includes all data for both on-time, in-full (OTIF) and on-time delivery (OTD), cycle time, backlog, framework contracts, and price variance. The Global Supply Chain team is actively using system-generated data on a daily basis.

Delivery data presented in this report reflect orders captured in the system and marked as delivered or agreed to be delivered between July 1 and September 30, 2018 for Q4; annual data includes data from October 1, 2017 to September 20, 2018 . Data were analyzed on October 22, 2018 to account for delivery windows, proof of deliveries being attained, and data quality assessments being conducted. Given that indicator A16, "percentage of backlogged line items," must be calculated two weeks after the reporting period end date, data were analyzed on October 15, 2018 for A16. Because GHSC-PSM continues to clean and update the data in the system daily, as described below, data pulled at a different point in time for the same time period may reflect additional updates. GHSC-PSM will continue to push for timely data entry; however, some degree of data lag is inherent in the global supply chain data system. Due to continuous data quality assessment actions, the figure presented in an annual report may differ slightly from a calculation derived from previously reported data.

During this reporting period, Q4 FY18, some noteworthy milestones were reached:
• Results of the 2017 Contraceptive Security Indicators (CSI) Survey in a new interactive web dashboard. The project has also begun disseminating the findings, together with USAID, at various conferences and meetings.
• End Use Verification survey (with refinements developed this year) were conducted in Cameroon, Burkina Faso, and Zambia
• GHSC-PSM TO2 annual report, FY18
• Regular contributions to reinforce USAID evidence base

Data Quality
GHSC-PSM continues its commitment to providing internal and external stakeholders with the highest possible data quality. This is accomplished through a range of continuous actions specifically designed to identify, validate, and revise incorrect data. Actions include:
1. Ad hoc data quality improvement:
When users identify inaccurate data, they report the necessary changes to the ARTMIS HelpDesk. Progress for resolving data quality tickets is reviewed twice a week.

2. Data Quality Assessment (DQA):
Each quarter, key data underlying the OTD calculations for line items with a delivery date in the current quarter are validated through two independent mechanisms.

a. Actual delivery date validation
The actual delivery date is the date that GHSC-PSM delivers a line item to the recipient. To assess the quality of this data field in ARTMIS, we surveyed data from each Incoterm group and used lot quality assurance sampling (LQAS) to confirm that the data fields are accurate to >95% (with < 5% α or β errors). If a group does not pass this test, evidence is inspected to confirm the ARTMIS data of each and every line item within that group. If applicable, the original scan of the proof of delivery (PoD) is retrieved, examined, and verified. After each line item was reviewed, we corrected any discrepancies before calculating the reported data.

b. Agreed delivery date (ADD)
The ADD is the date that GHSC-PSM commits to deliver a line item to the recipient. It is established at the time that a requisition order (RO) is approved and is the point of reference for determining if an order was delivered on time. Because the ADD is now system-generated – it is automatically designated according to product specifications and other attributes – it is not subject to input error. However, if an ADD is modified for any reason, this risk is re-introduced. All adjusted ADDs were validated and the following attributes were confirmed: 1) they were only changed for reasons considered valid by USAID, and 2) they were substantiated with the requisite approvals and backup documentation.

This systematic review demonstrated that actual delivery dates and ADDs in ARTMIS are valid (>99%).

Field Office Reporting and Data Validation

Each quarter, the field offices face an expedited data collection, reporting, and analysis schedule. They must submit their indicator data within five working days of the period end. Once the data are transmitted by field offices, the GHSC-PSM headquarters M&E team conduct a systematic review to validate the data before additional analysis and aggregation can be done. Working closely with technical and M&E staff in the field, we ensure that each data point is uniformly of high quality and can be harmonized across the project. This schedule allows us to be responsive to the quick turnaround required for appropriate document review and finalization. However, it makes it difficult for teams to digest the results, incorporate evidence, and report on the usage of indicator data in this document. We continue to promote additional feedback measures that will contribute to even greater usage.

Summary of Performance

The following tables include indicator values for performance indicators, presented by quarter, health area, and tracer product, as relevant. These performance indicators assess the outcomes of routine supply chain operations. While the performance on many of these indicators may not be immediately attributable to GHSC-PSM's activities in the short term, all are related to the project's long-term goal of ensuring an uninterrupted supply of health commodities in country public health systems.

We also report on context indicators, providing values by country. With each indicator table, we provide a definition of the indicator, our analysis, and known data limitations. For country performance indicators, targets are set in-country through consultations that include field offices, USAID missions, government counterparts, and project technical staff and leadership. Progress on these indicators, including B1, B2, B3, and C10, will be monitored against the country-level targets and used for management and decision making.

Context Indicators

Context indicators are meant to provide high-level insight into the public health commodity supply chain systems that GHSC-PSM and our partners are working to strengthen. They guide strategic direction for stakeholders (including GHSC-PSM field offices, ministries of health, donors, NGOs, and others) working to improve supply chain performance. GHSC-PSM will routinely monitor these indicators to identify areas where systems strengthening is needed and to assess the effectiveness of system strengthening approaches. With the collective contribution of GHSC-PSM and other key stakeholders, we expect to see improvements in these indicators over time.

The majority of context indicators are compiled from existing in-country data platforms such as LMIS and warehouse management systems, which GHSC-PSM is working to strengthen in many countries to enable governments to more fully use the data for supply chain decision making. GHSC-PSM compiles context indicator data for all countries in which the project maintains a field office, regardless of the extent of the project's engagement in the country. Therefore, the results in a given country, for a specific point in time, are not solely a consequence of GHSC-PSM's activities, but rather are reflective of the many stakeholders and elements that influence in-country supply chain performance.

Beyond system strengthening activities, these contextual data (including data from the Procurement Planning and Monitoring Report [PPMR], Procurement Planning and Monitoring Report for Malaria [PPMRm], Pipeline, and other platforms, in addition to GHSC-PSM's context indicators) are the basis for the GHSC-PSM-led regional approach to address commodity imbalances across countries. GHSC-PSM works with the international donor community to identify and respond immediately to shortages of life-saving commodities.

Section A: Fiscal Year 2018 Key Performance Overview IDIQ							
Reporting Period (Quarter) Start Date			**10/01/2017**	**01/01/2018**	**04/01/2018**	**07/01/2018**	**10/01/2017**
Reporting Period (Quarter) End Date			**12/31/2017**	**03/31/2018**	**06/30/2018**	**09/30/2018**	**09/30/2018**
Summary Performance to Date			**FY2018 Q1**	**FY2018 Q2**	**FY2018 Q3**	**FY2018 Q4**	**FY2018**
Global Supply Chain							
A1a.	Percentage of line items delivered on time and in full, within the minimum delivery window – %		49%	67%	60%	79%	65%
A1b.	Percentage of line items delivered on time, within the minimum delivery window – %		72%	73%	73%	87%	77%
A3.	Cycle time (average) – # (days per shipment)		212	202	226	239	218
A4.	Inventory turns (average number of times inventory cycles through GHSC-PSM-controlled global facilities) – ratio		5.0				
A5.	Total landed cost (logistics costs) – %		9.1%		14.2%		12.0%
A13.	Percentage of batches of product showing nonconformity (out of specification percentage) – %		0.4%	0.2%	0%	0%	0.1%
In Country							
B1.	Stockout rate at SDPs – %		12%	15%	15%	16%	14%
B2.	Percentage of stock status observations in storage sites where commodities are stocked according to plan, by level in supply system – %		26%	23%	24%	22%	23%
B3.	SDP reporting rate to the logistics management information system (LMIS) – %		84%	85%	85%	76%	80%
Cross cutting							
C2.	Number of people trained – #	TO-Specific Trainings Combined	1,723	4,587	2,318	1,972	10,351
		Cross-TO Trainings	1,879	3,015	2,344	7,840	14,969
		All Trainings (TO-Specific & Cross-TO)	3,602	7,602	4,662	9,812	25,320

Important: Key performance metrics on this page are intended to provide an overall snapshot of the project's performance. They may conceal nuances of TO performance and must be interpreted in light of individual TO performance or granular data.

Section B: Fiscal Year 2018 Key Performance Overview by Task Order

Performance to Date

		IDIQ	Task Order 1					Task Order 2					Task Order 3					Task Order 4				
		FY18 Target*	TO1 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	TO2 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	TO3 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	TO4 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4
Global Supply Chain																						
A1a	Percentage of line items delivered on time and in full, within the minimum delivery window – % *(in parentheses: Total number of line items delivered)*	80%	N/A	50% (1,505)	61% (1,042)	61% (1,240)	82% (1,187)	N/A	32% (82)	43% (137)	50% (220)	65% (195)	N/A	62% (42)	94% (311)	78% (60)	83% (54)	N/A	80% (15)	70% (10)	67% (15)	63% (32)
A1b	Percentage of line items delivered on time within the minimum delivery window – % *(in parentheses: Total number of ADDs in the quarter)*	80%	N/A	73% (1,061)	69% (1,013)	75% (1,059)	87% (1,144)	N/A	59% (66)	46% (145)	63% (218)	88% (156)	N/A	79% (34)	94% (331)	72% (47)	95% (43)	N/A	85% (13)	100% (8)	82% (17)	68% (32)
A2	Percentage of QA processes completed within the total estimated QA lead times - %		N/A					80%	82%	99%	84%	83%	N/A					N/A				
A3	Cycle time (average) – # (days per line item delivered)		158	206	212	213	228	262	316	267	296	309	RDC: 176 Direct Drop: 224	RDC: 236 Direct Drop: 217	RDC: 189 Direct Drop: 129	RDC: 193 Direct Drop: 285	RDC: 221 Direct Drop: 262	N/A	190	235	233	225
A4	Inventory turns (average number of times inventory cycles through GHSC-PSM-controlled global facilities) – ratio		4	6.2				3	4.6				3	3.3				N/A				
A5	Total landed cost (logistics costs) – %	8%	N/A	9.1%				N/A	21.2%				N/A	12.5%				N/A	20.6%			
A6a	Absolute percent supply plan error, with variants mean absolute percent error (MAPE) and forecast bias – %	30%	See A6a indicator pages for detailed data for this indicator.																			
A6b	Absolute percent forecast error, with variants mean absolute percent error (MAPE) and forecast bias – %	35%	See A6b indicator pages for detailed data for this indicator.																			
A7	Percentage of line items imported using a temporary registration waiver (temporary waiver percentage) – %		Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A
A8	Average percentage of shelf life remaining for warehoused commodities, weighted by the value of each commodity's stock (product at risk percentage) – %		78%	82%	81%	81%	84%	70%	74%	74%	70%	73%	75%	81%	84%	86%	83%	N/A				

A2 (QA lead times) is not reported for TO1, TO3, or TO4. Reason: QA processes for these TOs are managed by the GHSC-QA project.

A7 (temporary waiver percentage) is not reported. Reason: The project is still operationalizing sources and indicator calculations.

****Targets reflect anticipated project performance by end of FY18 (September 30, 2018).***

Performance to Date

Indicator			IDIQ FY18 Target*	Task Order 1 TO1 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	Task Order 2 TO2 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	Task Order 3 TO3 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	Task Order 4 TO4 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	Cross Cutting FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4
A10	Percentage of product procured using a framework contract (framework contract percentage) – %			75%	71%	70%	65%	85%	30%	24%	29%	37%	40%	95%	99%	99%	100%	100%	55%	100%	100%	100%	100%	N/A				
A12	Percentage of price variance between the median unit price paid during the quarter and the median unit price paid over the life of the project – %			See A12 indicator page for detailed data for this indicator. Target not required.																								
A13	Percentage of batches of product for which the final result is showing nonconformity (out of specification percentage) – %			N/A					<1%	0.4%	0.2%	0.0%	0.0%	N/A					N/A					N/A				
A14	Average vendor rating score – rating	Suppliers		Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A	Not required	N/A	N/A	N/A	N/A	Not required				
		Laboratory QA								77%	86%	80%	76%															
		Freight forwarders																							64%	76%	73%	76%
A15	Percentage of QA investigation reports submitted within 30 calendar days of outcome determination (QA investigation report submission) – %			N/A					90%	100%		100%		N/A					N/A					N/A				
A16	Percentage of backlogged line items – %		<5%	N/A	5%	4%	2%	2%	N/A	6%	7%	7%	1%	N/A	1%	2%	2%	0.2%	N/A	10%	0%	3%	0%	N/A				
In Country Performance and Sustainability																												
B1	Stockout rate at SDPs – %			Set at the country level	6%	9%	9%	8%	Set at the country level	13%	16%	16%	18%	Set at the country level	13%	18%	17%	18%	Set at the country level	N/A				N/A				
B2	Percentage of stock status observations in storage sites where commodities are stocked according to plan, by level in supply system – %				33%	34%	36%	35%		25%	24%	28%	25%		19%	15%	16%	16%		29%	13%	16%	20%	N/A				
B3	SDP reporting rate to the logistics management information system (LMIS) – %				83%	88%	91%	89%		83%	89%	89%	91%		79%	82%	80%	69%		72%	80%	81%	55%	N/A				
B4	Average rating of in-country data confidence at the central, subnational, and SDP levels – rating (0-9 scale)			Not required	6.2				Not required	6.5				Not required	6.7				Not required	6.7				N/A				

A9 and A11 have been dropped from the GHSC-PSM M&E plan with approval from USAID.

A13 (out of specification percentage) is not reported for TO1, TO3, or TO4. Reason: QA processes for these TOs are managed by the GHSC-QA project.

A14 (average vendor rating score) is not reported for QA vendors for TO1, TO3, or TO4. Reason: QA processes for these TOs are managed by the GHSC-QA project. Supplier scorecard is undergoing revisions; data to be reported in a future report.

A15 (QA investigation report submission) is not reported for TO1, TO3, or TO4. Reason: QA processes for these TOs are managed by the GHSC-QA project.

**Targets reflect anticipated project performance by end of FY18 (September 30, 2018).*

Performance to Date

Indicator		Task Order 1					Task Order 2					Task Order 3					Task Order 4					Cross Cutting				
		TO1 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	TO2 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	TO3 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	TO4 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4
B5	Percentage of required annual forecasts conducted – %	See B5 indicator page for detailed data for this indicator. Targets: ARV 87%, RTK 88%, Condoms 88%, Lab (HIV diagnostic) 85%, VMMC 60%, Malaria 86%, PRH 86%, MNCH 67%																								
B6	Percentage of required supply plans submitted to GHSC-PSM during the quarter – %	See B6 indicator page for detailed data for this indicator. Targets: ARV 87%, RTK 88%, Condoms 88%, Lab (HIV diagnostic) 85%, VMMC 60%, Malaria 86%, PRH 86%, MNCH 67%																								
B7	Percentage of total spent or budgeted on procurement of commodities for public sector services by the government, the U.S. government, the Global Fund, or other sources – %	See B7 indicator page for detailed data for this indicator. Target not required.																								
B8	Percentage of initially GHSC-PSM-supported supply chain functions carried out by national authorities without external technical assistance – %	Indicator definition is under development with USAID at this time. Data is not reported for this fiscal year.																								
B9	Supply chain technical staff turnover rate – ratio	See B9 indicator page for detailed data for this indicator. Target not required.																								
B10	Percentage of countries that have a functional logistics coordination mechanism in place – %	Not required	85%				Not required	82%				Not required	63%				Not required	63%				N/A	N/A			
B11	Percentage of leadership positions in supply chain management that are held by women (in countries where GHSC-PSM is providing technical assistance related to workforce development) – %	Not required	60%				Not required	42%				Not required	18%				Not required	7%				N/A	26%			
B12	Mean absolute percent consumption forecast error, with forecast bias variant – %	See B12 indicator page for detailed data for this indicator. Target not required.																								
C1	Number of innovations (including operations research studies) that were developed, implemented, or introduced and are related to the health commodity market or supply chain best practices – #	Not required	3	1	2	6	Not required	1	1	1	2	Not required	2	3	2	3	Not required	0	1	0	0	N/A	3	4	4	9
C2	Number of people trained – #	Not required	1,362	505	725	875	Not required	37	2,146	1,028	1,067	Not required	99	1,936	565	-	Not required	225	0	0	30	N/A	1,879	3,015	2,344	7,840

C3 has been dropped from the GHSC-PSM M&E plan with approval from USAID.

Targets reflect anticipated project performance by end of FY18 (September 30, 2018).

Performance to Date

Indicator		Task Order 1					Task Order 2					Task Order 3					Task Order 4					Cross Cutting				
		TO1 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	TO2 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	TO3 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	TO4 FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4	FY18 Target*	2018 Q1	2018 Q2	2018 Q3	2018 Q4
C4	Percentage of required files submitted to BI&A in the reporting period – %	N/A					N/A					N/A					N/A					TBD	77%	88%	92%	84%
C5	Percentage of required files timely submitted to BI&A in the reporting period – %	N/A					N/A					N/A					N/A					TBD	77%	86%	92%	84%
C6	Percentage of complete submissions reported to BI&A in the reporting period – %	N/A					N/A					N/A					N/A					TBD	N/A			
C7a	Percentage of product lost due to expiry while under GHSC-PSM control (product loss percentage – Expiry) – %	See C7a indicator page for detailed data for this indicator. Target not required.																								
C7b	Percentage of product lost due to theft, damage, or other causes while under GHSC-PSM control (product loss percentage – theft, damage, other) – %	See C7b indicator page for detailed data for this indicator. Target not required.																								
C8	Number of global advocacy engagements in support of improved availability of essential health commodities – #	Not required	4		4		Not required	3	1			Not required	10	4			Not required	0	0			Not required	5	4		
C10	Percentage of GHSC-PSM-procured or supported molecular instruments that remained functional during the reporting period – %	Set at the country level	89%	72%	68%	74%	N/A					N/A					N/A					N/A				

C6 (accurate submissions to BI&A) is not reported at this time. Reason: The project is still operationalizing sources and indicator calculations.

C9 has been dropped from the GHSC-PSM M&E plan with approval from USAID.

Targets reflect anticipated project performance by end of FY18 (September 30, 2018).

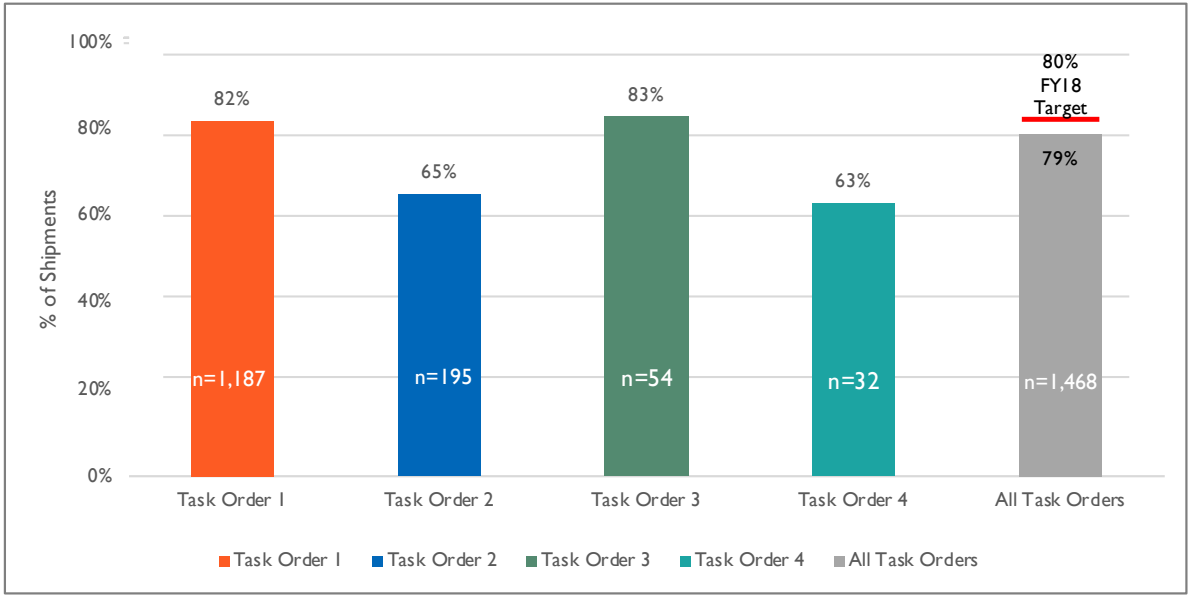
A1a. Percentage of line items delivered on time and in full, within the minimum delivery window

Measure Definition

Numerator: Number of line items delivered to the recipient on time and in full during the quarter.
Denominator: Total number of line items delivered to the recipient during the quarter.
Purpose: On time, in full (OTIF) is a measure of supply chain reliability. This indicator depicts the degree to which the right products are delivered on time (defined for the project as no more than 14 days before or 7 days after the agreed delivery date) and in the right quantity, as specified by the customer.

Task Order	FY18 Target	Achievement FY2018 Q4	Achievement Year to Date*
TO1	N/A	82%	64%
TO2	N/A	65%	52%
TO3	N/A	83%	88%
TO4	N/A	63%	67%
All TOs	80%	79%	65%

Indicator Performance FY2018 Q4



Analysis

- The project saw marked progress in OTIF in Q4 FY2018, following the trend for the fiscal year. In Q4 FY2018, the OTIF rate was slightly below the target at 79%, driven mostly by 80+ OTIF rates for TO1 and TO3. TO4 OTIF was mostly low due to late deliveries of a non-pharmaceutical large order of medical equipment, which also drove down TO4 OTD. As our backlog continued to decrease, OTIF converged closer to OTD. OTIF will continue to hover slightly below OTD if there is any backlog and if any orders are split into multiple deliveries.

Data Notes

- Line items are considered on time if they are delivered between 14 calendar days before and up to 7 calendar days after the agreed delivery date.
- All male and female condom and lubricant deliveries are reported under TO1.
- Targets reflect anticipated project performance by end of FY18 (September 30, 2018).
- *Year to Date performance is calculated using all data currently available, which may include data that were not available at the time of reporting for previous quarters. Current year to date figures may differ slightly from a calculation derived from previously reported data.

A1a. Percentage of line items delivered on time and in full, within the minimum delivery window (tracer product category)

HIV	Total number of line items delivered	Number of line items delivered on time and in full	On time in full (%)
Task Order 1	1,187	970	82%
Adult ARVs	101	68	67%
Condoms	33	22	67%
Food and WASH	1	1	100%
HIV RTK	3	3	100%
Laboratory	763	669	88%
Other Non-pharma	128	102	80%
Other Pharma	85	52	61%
Other RTK	1	1	100%
Pediatric ARVs	50	35	70%
Prefab			
Vehicles and Other Equipment	1	1	100%
VMMC	21	16	76%

Malaria	Total number of line items delivered	Number of line items delivered on time and in full	On time in full (%)
Task Order 2	195	126	65%
ACTs	80	58	73%
Laboratory	9	6	67%
LLINs	59	31	53%
mRDTs	16	10	63%
Other Non-Pharma	1	1	100%
Other Pharma	13	4	31%
Severe Malaria Meds	10	10	100%
Sulphadoxine-pyrimethamine	7	6	86%

PRH Method Level	Total number of line items delivered	Number of line items delivered on time and in full	On time in full (%)
Task Order 3	54	45	83%
Combined Oral Contraceptives	10	8	80%
Copper-bearing Intrauterine Devices	3	3	100%
Emergency Oral Contraceptives	4	3	75%
Implantable Contraceptives	14	13	93%
Injectable Contraceptives	14	12	86%
Progestin-only Pills	5	4	80%
Standard Days Method	2	1	50%
All Other TO3 Products	2	1	50%

Maternal and Child Health	Total number of line items delivered	Number of line items delivered on time and in full	On time in full (%)
Task Order 4	32	20	63%
Laboratory			
Other Non-pharma	14	4	29%
Other Pharma	18	16	89%

Blank rows indicate that no line items for these product categories were delivered this quarter.

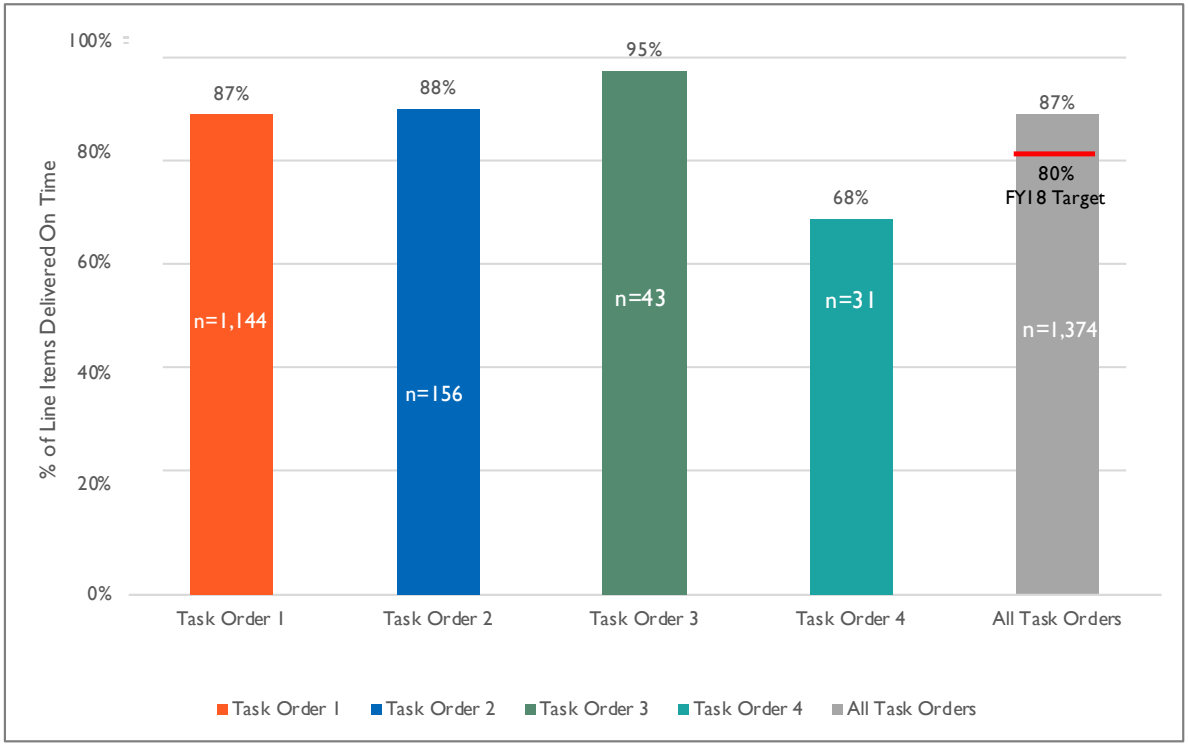
A1b. Percentage of line items delivered on time, within the minimum delivery window

Measure Definition

Numerator: Number of line items with an agreed delivery date during the quarter that were delivered to the recipient on time.
Denominator: Total number of line items with an agreed delivery date during the quarter.
Purpose: On time delivery (OTD) is an essential, industry-standard measure of supply chain reliability. It reflects the extent to which customers can be confident that their order will arrive at the right time, defined for the project as no more than 14 days before or 7 days after the agreed delivery date.

Task Order	FY18 Target	Achievement FY2018 Q4	Achievement Year to Date*
TO1	N/A	87%	77%
TO2	N/A	88%	65%
TO3	N/A	95%	92%
TO4	N/A	68%	78%
All TOs	80%	87%	77%

Indicator Performance FY2018 Q4



Analysis

- On-time delivery performance was fairly consistent through Q3 of FY18, staying between 72 and 73 percent. However, Q4 saw a steady improvement, exceeding our target by 7% (87% for Q4) and bringing our annual average to 77%.
- OTD for malaria commodities has continued to improve (63% in Q3 to 88% in Q4) as GHSC-PSM implemented initiatives, through the guidance of USAID, to address supplier performance, increase the accuracy of our delivery commitments, and reduce long waiver lead times.
- Although the overall TO4 OTD rate was low in Q4 FY18, OTD of MNCH pharmaceuticals in Q4 was 89 percent. However, the overall OTD for TO4 was negatively affected by late deliveries of a large order of medical equipment for Mozambique.

Data Notes

- Line items are considered on time if they are delivered between 14 calendar days before and up to 7 calendar days after the agreed delivery date.
- All male and female condom and lubricant deliveries are reported under TO1.
- Targets reflect anticipated project performance by end of FY18 (September 30, 2018).
- *Year to Date performance is calculated using all data currently available, which may include data that were not available at the time of reporting for previous quarters. Current year-to-date figures may differ slightly from a calcuation derived from previously reported data.

A1b. Percentage of line items delivered on time, within the minimum delivery window (tracer product category)

HIV	Total number of line items with ADDs in the quarter	Number of line items with ADDs in the quarter delivered on time	On Time Delivery (%)
Task Order 1	1,144	999	87%
Adult ARVs	90	79	88%
Condoms	27	19	70%
Food and WASH	1	1	100%
HIV RTK	3	3	100%
Laboratory	763	686	90%
Other Non-pharma	119	92	77%
Other Pharma	74	60	81%
Other RTK	2	1	50%
Pediatric ARVs	44	39	89%
Prefab			
Vehicles and Other Equipment	1	1	100%
VMMC	20	18	90%

Malaria	Total number of line items with ADDs in the quarter	Number of line items with ADDs in the quarter delivered on time	On Time Delivery (%)
Task Order 2	156	137	88%
ACTs	63	62	98%
Laboratory	7	6	86%
LLINs	43	34	79%
mRDTs	17	16	94%
Other Non-Pharma	1	1	100%
Other Pharma	10	3	30%
Severe Malaria Meds	10	10	100%
Sulphadoxine-pyrimethamine	5	5	100%

PRH Method Level	Total number of line items with ADDs in the quarter	Number of line items with ADDs in the quarter delivered on time	On Time Delivery (%)
Task Order 3	43	41	95%
Combined Oral Contraceptives	9	8	89%
Copper-bearing Intrauterine Devices	2	2	100%
Emergency Oral Contraceptives	4	4	100%
Implantable Contraceptives	11	11	100%
Injectable Contraceptives	11	10	91%
Progestin-only Pills	3	3	100%
Standard Days Method	1	1	100%
All Other TO3 Products	2	2	100%

Maternal and Child Health	Total number of line items with ADDs in the quarter	Number of line items with ADDs in the quarter delivered on time	On Time Delivery (%)
Task Order 4	31	21	68%
Laboratory			
Other Non-pharma	13	5	38%
Other Pharma	18	16	89%

Blank rows indicate that no line items for these product categories had ADDs in this quarter.

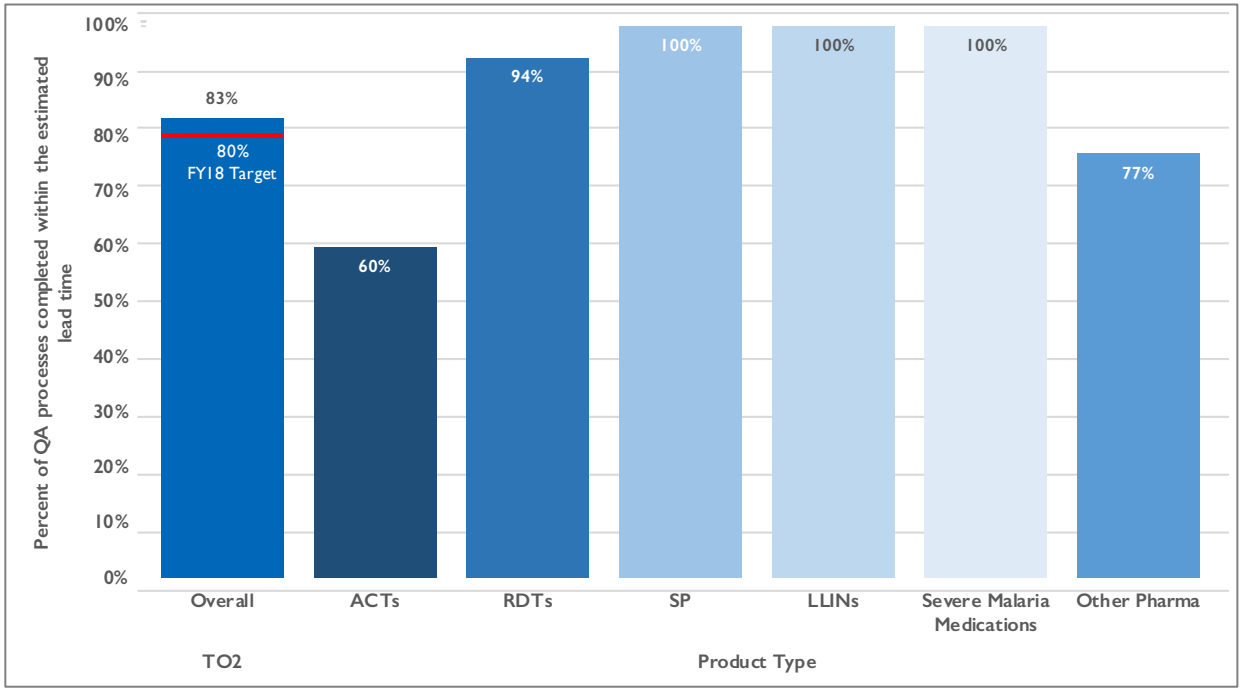
A2. Percentage of quality assurance (QA) processes completed within the total estimated QA lead times

Measure Definition

Numerator: Number of consignments complying with the pre-established QA lead times during the quarter.
Denominator: Total number of consignments requiring QA processes that were cleared for shipment during the quarter.
Purpose: This indicator reports on the timeliness of completion of quality assurance (QA) processes. It gives insight into how well the project is managing its QA subcontracts and the impact of QA procedures on the overall product procurement and delivery cycle time.

Task Order	FY18 Target	Achievement FY2018 Q4	Achievement Year to Date
TO1	N/A	N/A	N/A
TO2	80%	83%	87%
TO3	N/A	N/A	N/A
TO4	N/A	N/A	N/A

Indicator Performance FY2018 Q4



Analysis

- Across TO2 consignments requiring QA processes, 83 percent were completed within the designated lead times. This is in line with, and even exceeds, the target of 80% compliance with lead times and was achieved even as consignment volume increased. The 96 shipments requiring QA this quarter represents a 17 percent increase in volume from Q3.
- For ACTs, lab capacity was strained due to large volumes of several orders requiring testing at the same time. Priorities for testing were set in consultation with the procurement team, with the objective of prioritizing orders acording to their ADDs.

Data Notes

- Total number of consignments requiring QA processes that were cleared for shipment this quarter is 96. Consignment is defined as a shipment of commodities, including one or more line items. QA process transactions are managed at the consignment level, regardless of the number of line items in the consignment.
- Exceptional procedures outside of routine QA testing and clearance have been excluded from the indicator. This includes consignments requiring QA investigations, method transfers, non-PMI procurements, post-shipment quality control, and LLIN shipments requiring witnessing of loading and/or sealing of goods. Four consignments were excluded this quarter for these reasons.
- All QA activities for TO2 are conducted by GHSC-PSM. All QA activities for TO1, TO3, and TO4 are managed by the USAID GHSC-QA contract. GHSC-QA may be contacted for data related to these TOs.
- Target reflects anticipated average project performance for the full 2018 fiscal year (October 2017-September 2018).

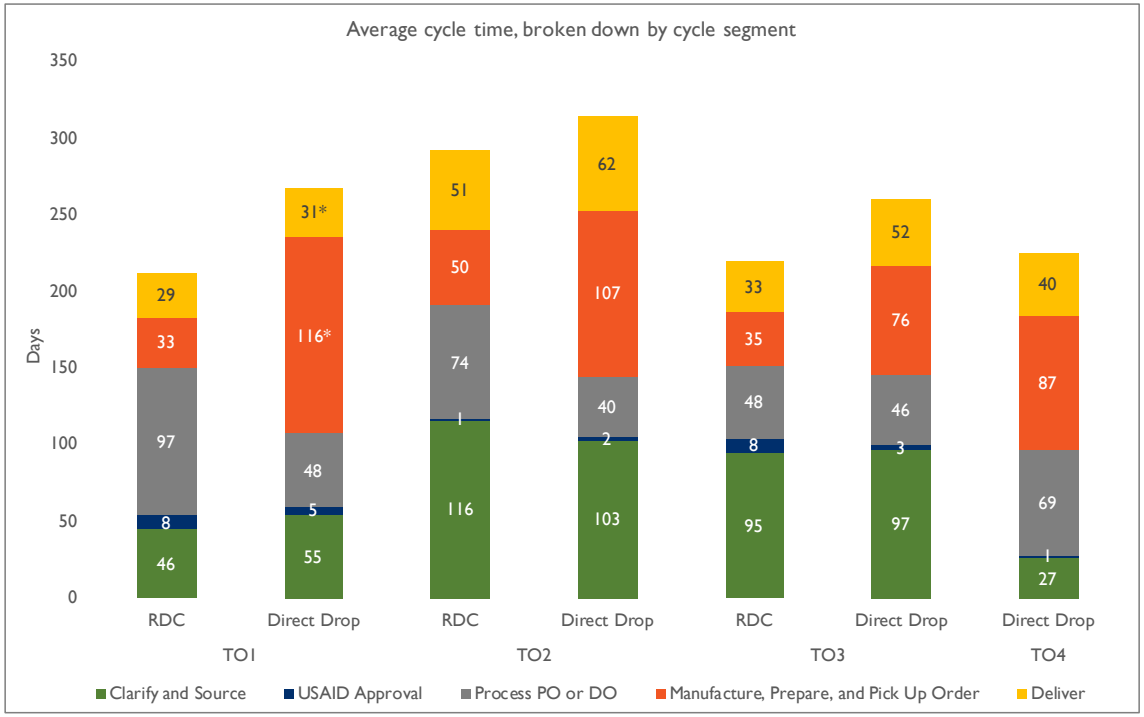
A3. Cycle time (average) # (days per line item delivered)

Measure Definition

Numerator: Sum of cycle time for all line items delivered during the quarter.
Denominator: The count of all line items delivered during the quarter.
Purpose: Cycle time is the number of days between when a customer order is submitted and when it is filled. It reflects the responsiveness of the GHSC-PSM supply chain and how quickly customer orders are being filled.

Task Order	FY18 Target	Achievement (All Modes) FY2018 Q4	Achievement (All Modes) Year to Date*
TO1	158	228	213
TO2	262	309	296
TO3	176 (RDC); 244 (direct drop)	221 (RDC) 262 (Direct drop)	207 (RDC) 154 (Direct drop)
TO4	N/A	225	221
All TOs	N/A	239	218

Indicator Performance FY2018 Q4



Analysis

- Overall end-to-end cycle time has risen from the previous quarter, from 226 to 239 days. At the task order level, TO1, TO2, and TO3 RDC fulfillments all saw increases. TO3 direct drop and TO4 cycle times both decreased from the previous quarter.
- While the project did not meet its cycle time targets, this has not impacted its ability to deliver orders to recipients on time. On-time delivery performance, as shows in the previous pages and discussed in the main narrative of this report, has continued to increase over the fiscal year, even as cycle times have lengthened.
- This may be due to countires entering their orders with longer lead times in advance of their Requested Delivery Dates (RDD). On average, orders entered in FY2017 had lead times of 156 days in advance of the customer's RDD. In FY2018, this rose to an average of 199 days. This advance planning allows the procurement teams to communicate early with suppliers and better manager orders to acheive better value and delivery performance.
- Advance planning does introduce idle "dwell time" into the order cycle, during which no action is expected because there is more lead time avialable than is necessary to process and deliver the order. Dwell time is currently not tracked in GHSC-PSM's information system, but the project is is working to begin identifying and tracking this time over the coming fiscal year. These efforts will ultimately result in a "dwell-adjusted" cycle time metric, which will provide a clearer picture of the active cycle time required for each line item.
- In addition to the routine cycle segmens shown here, the project added 47 new items to the catalog as a result of customer requests for new products. The average time for a new product to be added to the catalog was less than one day (i.e. the item was added the same day it was requested).

Data Notes

- **Due to system requirements, items that are fulfilled via direct drop but then transit through the RDC are tracked and reported as RDC fulfillments. This occurs most often on TO2 and occasionally on TO3.**
- Additional milestones and cycle segments are defined in the GHSC-PSM M&E plan. Data for additional segments will be included as the quality and completeness of ARTMIS milestone data improve. At this time, less than 60 percent of line items delivered in the quarter have data available for RO validation and actual goods available date (GAD) milestones. The project has recently changed its systems and policies to improve the quality and capture of actual GADs, which will allow improved reporting in future quarters. These milestones will be excluded from cycle time reporting until data completeness meets this threshold, per the GHSC-PSM M&E plan.
- Task Order 2 quality assurance process segment cycle time (time from Actual GAD to QA Completed Date) could not be calculated this quarter because the start and ending milestones do not meet the 60 percent completeness threshold noted above. However, per the results of indicator A2, 84 percent of QA processes were completed within the pre-established lead times.
- * The K+N LMIS captures and reports logistics milestone dates for line items picked up and delivered by 3PLs. In cases where suppliers (not 3PLs) are responsible for some or all delivery processes (i.e., "C" and "D" Incoterms), GHSC-PSM does not typically receive data on logistics milestone dates. Without pick up dates, the "Manufacture, Prepare, and Pick Up" and "Deliver" segments cannot be calculated for these line items. TO1 Direct Drop had large quantities of these line items this quarter, which means that these segments are calculated and reported above with less than 60 percent completeness for each segment, indicated with a (*). Data for these segments are 47 percent complete for TO1 Direct Drop line items.
- Overall cycle time data presented in this report are inclusive of all days from order entry date to actual delivery date, including all manufacture time and any time an order spends on hold. The MIS and GSC teams are working on procedures to apply hold flags to line items in ARTMIS when appropriate, so that hold time may be excluded from future cycle time calculations, per the project M&E plan. The M&E plan also specifies that a variation of cycle time will be presented with the manufacturing segment (PO release date - actual goods availability date) removed. This segment has not been removed at this time due to incomplete data for GADs, as noted above. Once data completeness for this milestone has improved, the project will present a version of overall cycle time less manufacture time, per the M&E plan.
- Data on overall cycle start and end dates are complete for all line items delivered this quarter. However, internal milestone data are not complete for some line items (as with the GAD example mentioned previously). In these cases, line items with incomplete data are excluded from the segment averages. For this reason, the sum of all segments may not be equal to the overall average per task order and fulfillment channel.
- *Year to Date performance is calculated using all data currently available, which may include data that were not available at the time of reporting for previous quarters. Current year-to-date figures may differ slightly from a calculation derived from previously reported data.
- Targets reflect anticipated project performance by end of FY18 (September 30, 2018).

A3. Cycle time (average) Tracer product category

HIV	All channels and modes	Air		Sea		Land		Multiple	
		Warehouse Fulfillment	Direct Drop Fulfillment	Warehouse Fulfillment	Direct Drop Fulfillment	Warehouse Fulfillment	Direct Drop Fulfillment	Warehouse Fulfillment	Direct Drop Fulfillment
# of Line Items Delivered	1,187	50	489	49	43	5	547	1	3
Task Order 1	228	202	262	228	277	170	197	231	394
Adult ARVs	252	219	283	230	288	170	243	231	
Condoms	267	214		270	267				
Food and WASH	218		218						
HIV RTK	73						73		
Laboratory	216		255		229		187		
Other Non-pharma	211		232		260		192		
Other Pharma	328	121	308		302		407		
Other RTK	209		209						
Pediatric ARVs	266	222	275	271	412				387
Prefab									
Vehicles and Other Equipment	65						65		
VMMC	136	60	70	136	264		78		410

Malaria	All channels and modes	Air		Sea		Land	Multiple
		Warehouse Fulfillment	Direct Drop Fulfillment	Warehouse Fulfillment	Direct Drop Fulfillment	Direct Drop Fulfillment	Direct Drop Fulfillment
# of Line Items Delivered	195	39	97		59		
Task Order 2	309	293	313		314		
ACTs	326	275	353				
Laboratory	247		247				
LLINs	314				314		
mRDTs	308	368	231				
Other Non-Pharma	211		211				
Other Pharma	242	164	249				
Severe Malaria Meds	269		269				
Sulphadoxine-pyrimethamine	360	253	378				

PRH Method Level	All channels and modes	Air		Sea		Land
		Warehouse Fulfillment	Direct Drop Fulfillment	Warehouse Fulfillment	Direct Drop Fulfillment	Warehouse Fulfillment
# of Line Items Delivered	54	23	10	16	2	3
Task Order 3	230	189	253	258	308	269
Combined Oral Contraceptives	250	226		241	308	
Copper-bearing Intrauterine Devices	185	185				
Emergency Oral Contraceptives	288		288			
Implantable Contraceptives	219	206	197			269
Injectable Contraceptives	224	136	103	262		
Progestin-only Pills	190	163		302		
Standard Days Method	278		278			
All Other TO3 Products	260		260			

Maternal and Child Health	All channels and modes	Air	Sea	Land
		Direct Drop Fulfillment	Direct Drop Fulfillment	Direct Drop Fulfillment
# of Line Items Delivered	32	22	10	
Task Order 4	225	230	215	
Other Non-Pharma	211	200	215	
Other Pharma	236	236		

Blank rows indicate that no line items for these product categories were delivered this quarter.

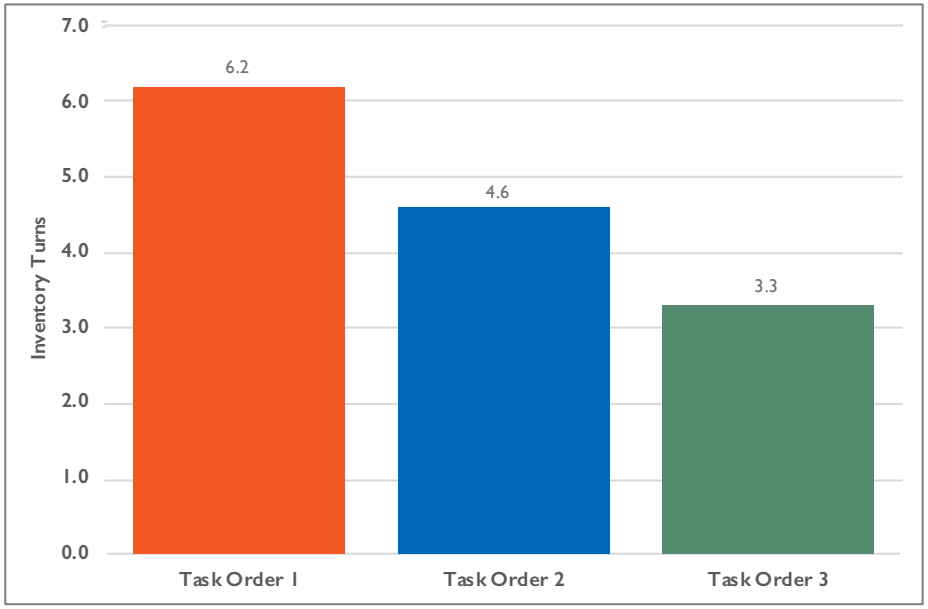
A4. Inventory Turns (average number of times inventory cycles through GHSC PSM controlled global facilities)

Measure Definition

Numerator: Total ex-works cost of goods distributed from GHSC-PSM-controlled global inventory stocks (in USD) within the fiscal year
Denominator: Average monthly inventory balance (in USD)

Task Order	Annual Target	Achievement FY2018
TO1	4	6.2
TO2	3	4.6
TO3	3	3.3
TO4	N/A	N/A
All TOs	N/A	5.0

Indicator Performance



Analysis

- The transition to TLD as a first-line adult ARV was one of the key drivers of the high TO1 inventory turns, due the large number and volume of orders. In addition, average monthly inventory levels have been lower than in FY2017 due to the streamlining of order processing, reducing inventory dwell time. Finally, an increase in VMMC orders fulfilled this year also contributed to higher inventory turns for TO1.
- **For TO2 products, an improvement in inventory turns was achieved by reducing the monthly restocking levels and active rotation of stockpile to non-emergency orders.**
- **TO3 products are stocked to forecasted global demand, based on historical demand and statistical tools rather than direct country demand. This, coupled with extended lead times in replenishment and fulfillment, poses a challenge to achieve higher turns. In this performance period, turns for copper IUDs and oral contraceptives were lower than targets due to significant decline in demand, while injectables saw a significant upswing in country consumption, leading to increased turns.**

Data Notes

- GHSC-PSM does not hold any inventory for Task Order 4.
- Average inventory balance is calculated using the ending balance at the close of each month. Average monthly inventory balances for each task order are as follows: Task Order 1 (including all condoms): $16,808,589; Task Order 2: $1,299,516; Task Order 3: $11,551,877.

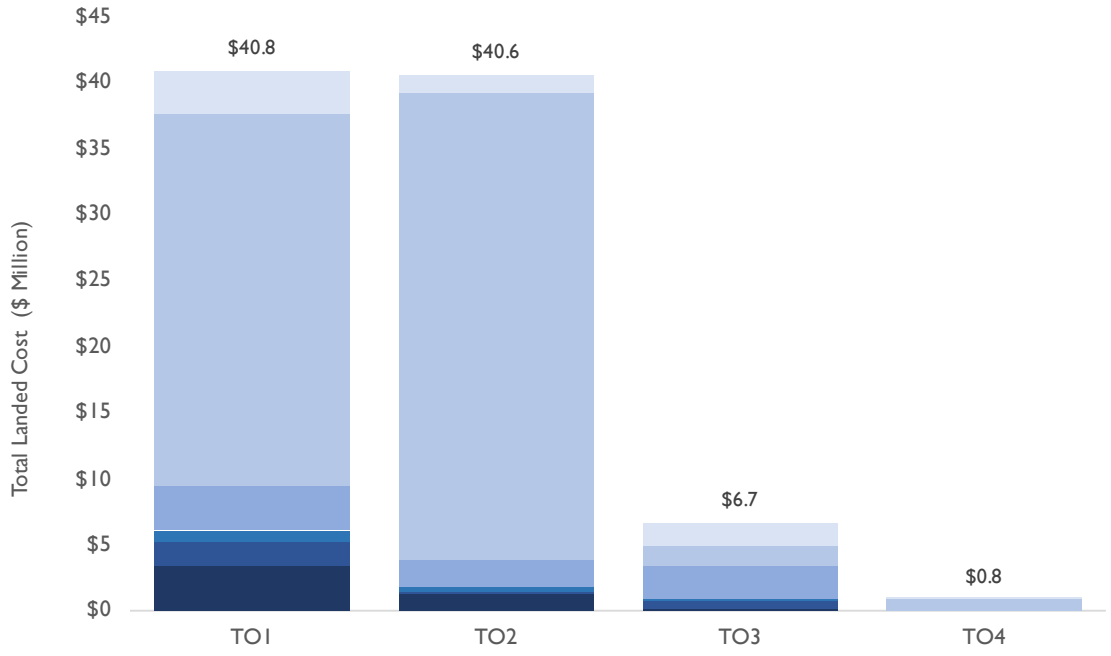
A5. Total landed cost (logistics costs only)

Measure Definition

Numerator: Sum of all logistics costs (in USD) paid by GHSC-PSM during the reporting period.
Denominator: Total value of commodities delivered to customers during the reporting period.

Task Order	Annual Target	Achievement FY2018
TO1	N/A	8.3%
TO2	N/A	21.3%
TO3	N/A	12.5%
TO4	N/A	20.6%
All TOs	8%	12.0%

Indicator Performance



	TO1	TO2	TO3	TO4
Total Landed Cost as a % of Comm. Value:	8.3%	21.3%	12.5%	20.6%
Total Value of Commodities Delivered:	$494 m	$191 m	$54 m	$4 m

Inbound Freight ■ Warehousing ■ Loss ■ Insurance ■ Outbound Freight ■ Drop Ship Freight ■ Other costs

Analysis

- Total landed costs as a percentage of the value of delivered commodities increased from FY2017 to FY2018 at the overall project level. This is driven mainly by increases in the cost of freight, which have risen globally due to increases in fuel prices and logisitics capacity constraints. The project continues to pursue best value through its 4PL model and competition for shipping lanes (see additional detail on lostistics costs in the main narrative of this report). However, freight costs are expected to continue to rise in subsequent years and impact this indicator.
- The only task order which saw a reduction in this indicator from last year was Task Order 3, which had a significant reduction in warehousing costs. These cost reductions impacted TO1 and TO2 as well, but had a greater proportional impact on TO3 because so many of its orders are fulfilled from inventory.
- Per agreement with USAID, QA costs are not included in this indicator, since GHSC-PSM does not manage QA across all TOs. For TO2, where QA is managed by GHSC-PSM, the total landed cost with QA costs included is $43.1 million (up from $40.6 million without QA). As a percentage of commodities delivered, total landed cost rises from 21.3 percent to 22.6 percent with QA costs included.

Data Notes

- Total landed costs includes all costs paid between October 2017 and September 2018, per Chemonics' financial management information system. Total value of commodtiies delivered includes total value of all line items delivered to customers with an actual delivery date during the same period, per ARTMIS. The indicator includes both GSC and decentralized procurement costs and delivery values.
- The source for expenditures data is the project's monthly financial statement. For this report, the project made one adjustment to correct for a large credit to the TO1 Warehousing cost category, received from a supplier for whom the project had previously stored a large quantity of product. This indicator was calculated with that credit removed to more accurately capture actual warehousing expenditures during the period.

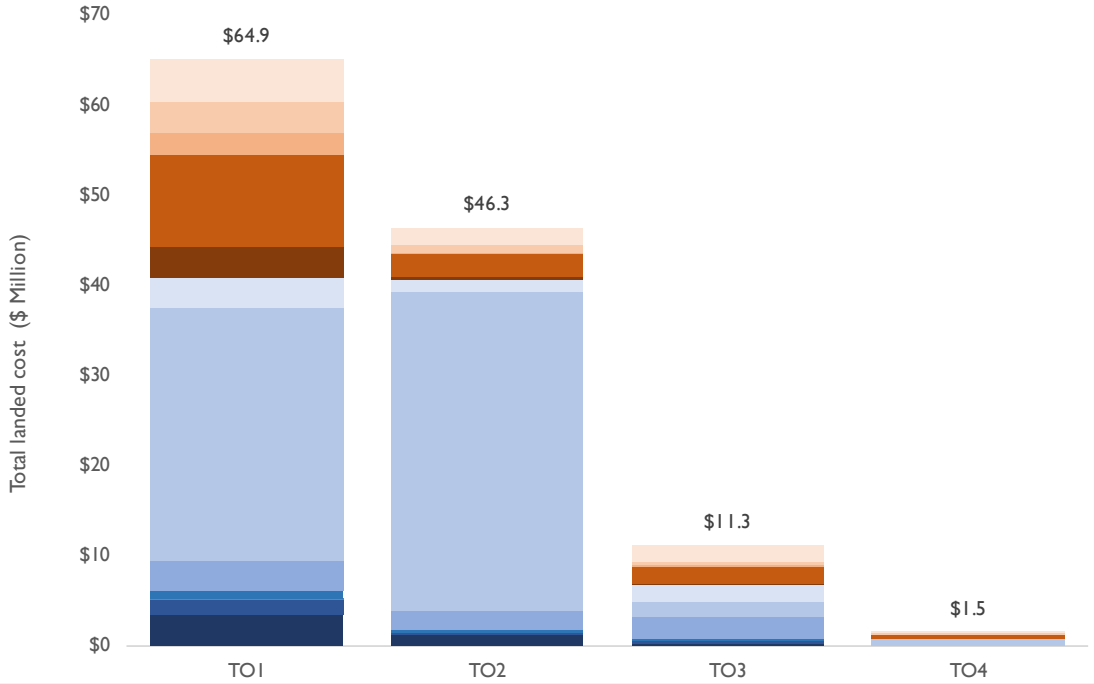
A5. Total landed costs (logistics and HQ operations costs)

Measure Definition

Numerator: Sum of all commodity-related and HQ operations costs (in USD) paid by GHSC-PSM during the reporting period.
Denominator: Total value of commodities delivered to customers during the reporting period.

Task Order	Annual Target	Achievement FY2018
TO1	N/A	13.1%
TO2	N/A	24.3%
TO3	N/A	21.0%
TO4	N/A	38.3%
All TOs	N/A	16.7%

Indicator Performance



Analysis

- When headquarters operations costs are included, total landed costs for FY2018 have fallen compared to FY2017. The largest cost resdutions have been in the Procurement and MIS areas, which was expected as the initial build-out of ARTMIS was completed and the procurement teams reached a steady state of operations.

- Per agreement with USAID, QA costs are not included in this indicator because GHSC-PSM does not manage QA across all TOs. For TO2, where QA is managed by GHSC-PSM, the total landed cost with QA costs included is $49.4 million (up from $46.3 million without QA). As a percentage of commodities delivered, total landed cost rises from 24.3 percent to 25.9 percent with QA costs included.

Data Notes

- Total landed costs includes all costs paid between October 2017 and September 2018, per Chemonics' financial management information system. Total value of commodtiies delivered includes total value of all line items delivered to customers with an actual delivery date during the same period, per ARTMIS. The indicator includes both GSC and decentralized procurement costs and delivery values.

- The source for expenditures data is the project's monthly financial statement. For this report, the project made one adjustment to correct for a large credit to the TO1 Warehousing cost category, received from a supplier for whom the project had previously stored a large quantity of product. This indicator was calculated with that credit removed to more accurately capture actual Warehousing expenditures during the period.

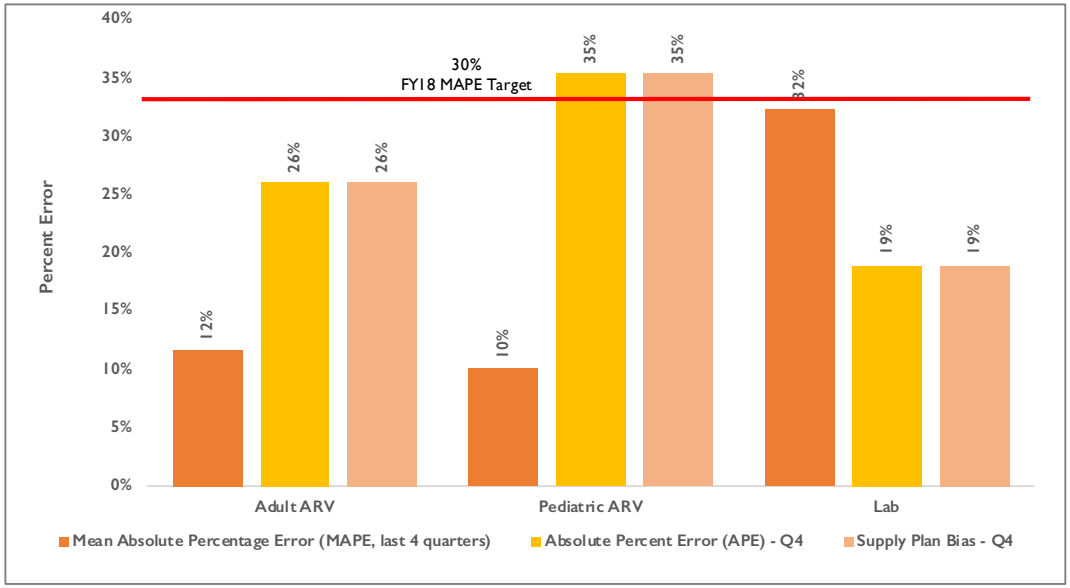
A6a. Absolute percent supply plan error, with variants mean absolute percent error (MAPE) and supply plan bias

Measure Definition

Numerator: Absolute value of the differences between the actual quantities with requested delivery dates during the quarter minus the quantities planned for delivery according to country supply plans.
Denominator: Sum of the actual quantities with requested delivery dates during the quarter.
See Data Notes below for variant definitions.
Purpose: This indicator looks at how well country commodity supply plans match the commodities which were actually delivered. It is used to assess the accuracy of country supply plans and to promote efficient supply management practices.

Product	FY18 Target: MAPE	FY2018 Q4 Supply plan error (%)	FY2018 Q4 Supply plan bias (%)	Last Four Quarters MAPE (%)	Last Four Quarters Supply plan bias (%)
Adult ARV	<30%	26%	26%	12%	12%
Pediatric ARV	<30%	35%	35%	10%	-10%
Lab	<30%	19%	19%	32%	32%

Indicator Performance FY2018 Q4



Analysis

- Four-quarters MAPE results for all three product groups (dark orange columns to the left) were all within the targeted range of < 30 percent.
- Q4 variance in adult ARVs seemed to be driven by shifts in TLE and TLD orders. Two countries requested orders for TLE that were not in the supply plans. In one instance, a large order of TLD for Zambia was requested to be split across two quarters, resulting in a variance of about 1 million units for this quarter.
- GHSC-PSM has begun requesting and receiving supply plans from both supply chain agencies in Uganda, which will provide greater visibility into the whole demand for that country. Continued use of the TLD transition planning tool will also contribute to better alignment between orders and supply plans.
- Supply plan error for lab items has narrowed to its best single-quarter performance this year. Better mapping of products, line-by-line reviews of the planned items, and more active feedback have contributed to better understanding of planned shipments. Gaps where VL procurements were not reported in the submitted plans have been rectified. Updated plans that include molecular planned orders have been received through a joint effort with the HSS Lab & VMMC team.

Data Notes

- Planned quantities are drawn from an aggregation of country supply plans submitted in the prior quarter, including only the quantites that are forecasted to be procured through GHSC-PSM. Actual quantities are derived based on the requested delivery dates for products included in customer ROs submitted to ARTMIS.
- See GHSC-PSM's IDIQ Monitoring and Evaluation Plan for complete details on indicator defintions and calculations. Simplifed versions of the definitions are provided below for reference:

Supply plan error: $$\frac{|(Actual\ ordered\ quantity) - (Planned\ quantity)|}{(Actual\ ordered\ quantity)}$$

Supply plan bias: $$\frac{(Actual\ ordered\ quantity) - (Planned\ quantity)}{(Actual\ ordered\ quantity)}$$

MAPE: $$\frac{|(Sum\ of\ actual\ ordered\ quantity\ in\ last\ 4\ quarters) - (Sum\ of\ planned\ quantity\ in\ last\ 4\ quarters)|}{(Sum\ of\ actual\ ordered\ quantity\ in\ last\ 4\ quarters)}$$

Supply plan bias (last four quarters): $$\frac{(Sum\ of\ actual\ ordered\ quantity\ in\ last\ 4\ quarters) - (Sum\ of\ planned\ quantity\ in\ last\ 4\ quarters)}{(Sum\ of\ actual\ ordered\ quantity\ in\ last\ 4\ quarters)}$$

Supply plan bias definitions are under review and may be refined in the future.

- Negative supply plan bias indicates fewer products requested compared to the forecast. Positive supply plan bias indicates more products ordered than forecasted.
- At the present time, GHSC-PSM does not measure supply plan accuracy for TO2 or TO4. Forecast accuracy (indicator A6b) is measured for TO3.
- Targets reflect anticipated project performance on the four-quarters MAPE indicator by end of FY18 (September 30, 2018).

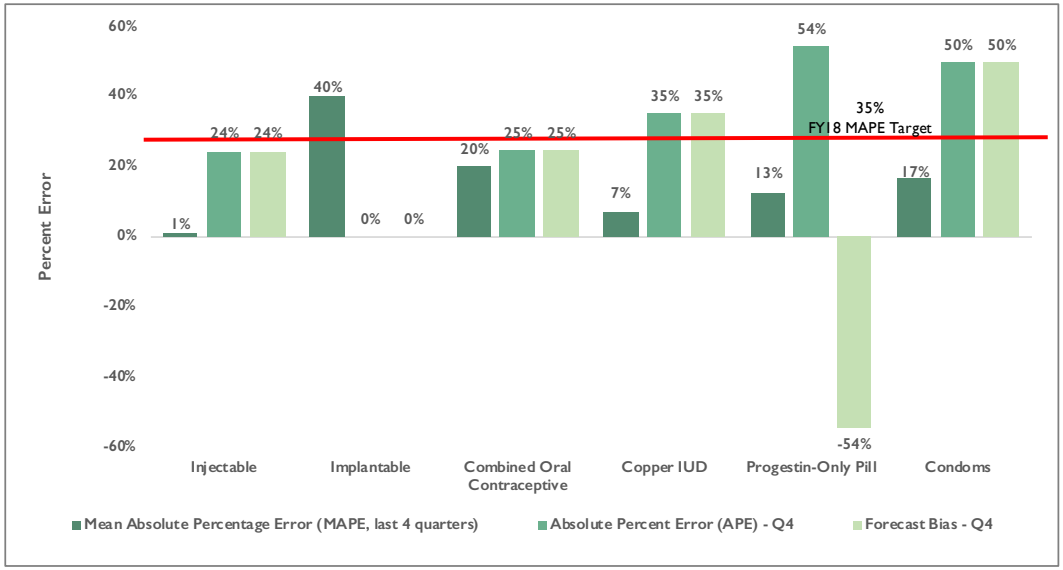
A6b. Absolute percent forecast error, with variants mean absolute percent error (MAPE) and forecast bias

Measure Definition

Numerator: Absolute value of the differences between the actual quantities with requested delivery dates during the quarter minus the quantities planned for delivery according to the global demand forecast.
Denominator: Sum of the actual quantities with requested delivery dates during the quarter.
See Data Notes below for variant definitions.
Purpose: This indicator looks at how well country global demand forecasts for commodities (based on the country supply plan together with variables such as country order history, data from planning groups, and global market dynamics) match the commodities actually delivered. It will be used to assess the accuracy of the global demand forecasts and promote efficient supply management practices.

Product	Target Annual	FY2018 Q4		Last Four Quarters	
	FY18 Target: MAPE	Absolute percent error (%)	Forecast bias (%)	MAPE (%)	Forecast bias (%)
Injectable	<35%	24%	24%	1%	-1%
Implant	<35%	0%	0%	40%	40%
Combined Oral	<35%	25%	25%	20%	20%
Copper IUD	<35%	35%	35%	7%	7%
Progestin Pill	<35%	54%	-54%	13%	-13%
Condoms	<35%	50%	50%	17%	17%

Indicator Performance FY2018 Q4



Analysis

- Five out of six product groups fell within the targeted range of less than 35 percent forecast error over the last four quarters (dark green columns to the left). Only implants fell outside this range at 40 percent, although the current quarter's ordere were placed exactly according to the forecast.
- Global supply constraints for one-rod implants and DMPA intramuscular injectables continue to be managed by the Coordinated Supply Planning (CSP) group, which helps allocate and prioritize GHSC-PSM's orders.
- For condoms, GHSC-PSM received several orders for Caribbean countries which were ordering these products for the first time and which have not typically submitted supply plans. Mali is also changing its supply planning approach to break down the demand by each in-country recipient. Previous plans have included more recipients than USAID and GHSC-PSM typically supports with commodity procurements.
- Intrauterine devices and progestin-only pills are both low-volume products that can be heavily impacted by changes to a single order. For example, a Zambia order for progestin-only pills was delayed until 2019 due to sufficient stock in country, resulting in the under-ordering of this product this quarter.

Data Notes

- Forecasted or planned quantities are drawn from the GHSC-PSM global demand forecasts for each product, which are based on an aggregation of country supply plans submitted in the prior quarter and additional inputs, such as country order history, data from coordinated planning groups, and global market dynamics indicators. Actual quantities are derived based on the requested delivery dates for products included in customer ROs submitted to ARTMIS.
- See GHSC-PSM's IDIQ Monitoring and Evaluation Plan for complete details on indicator definitions and calculations. Simplified versions of the definitions are provided below for reference:

Absolute percent error: $$\frac{|(Actual\ ordered\ quantity) - (Planned\ quantity)|}{(Actual\ ordered\ quantity)}$$

Forecast bias: $$\frac{(Actual\ ordered\ quantity) - (Planned\ quantity)}{(Actual\ ordered\ quantity)}$$

MAPE: $$\frac{|(Sum\ of\ actual\ ordered\ quantity\ in\ last\ 4\ quarters) - (Sum\ of\ planned\ quantity\ in\ last\ 4\ quarters)|}{(Sum\ of\ actual\ ordered\ quantity\ in\ last\ 4\ quarters)}$$

Forecast bias (last four quarters): $$\frac{(Sum\ of\ actual\ ordered\ quantity\ in\ last\ 4\ quarters) - (Sum\ of\ planned\ quantity\ in\ last\ 4\ quarters)}{(Sum\ of\ actual\ ordered\ quantity\ in\ last\ 4\ quarters)}$$

Forecast bias definitions are under review and may be refined in the future.

- Negative forecast bias indicates fewer products requested compared to the forecast. Positive forecast bias indicates more products ordered than forecasted.
- At the present time, GHSC-PSM does not create demand forecasts for TO2 or TO4. Supply plan error (indicator A6a) is measured for TO1.
- Targets reflect anticipated project performance on the four-quarters MAPE indicator by end of FY18 (September 30, 2018).

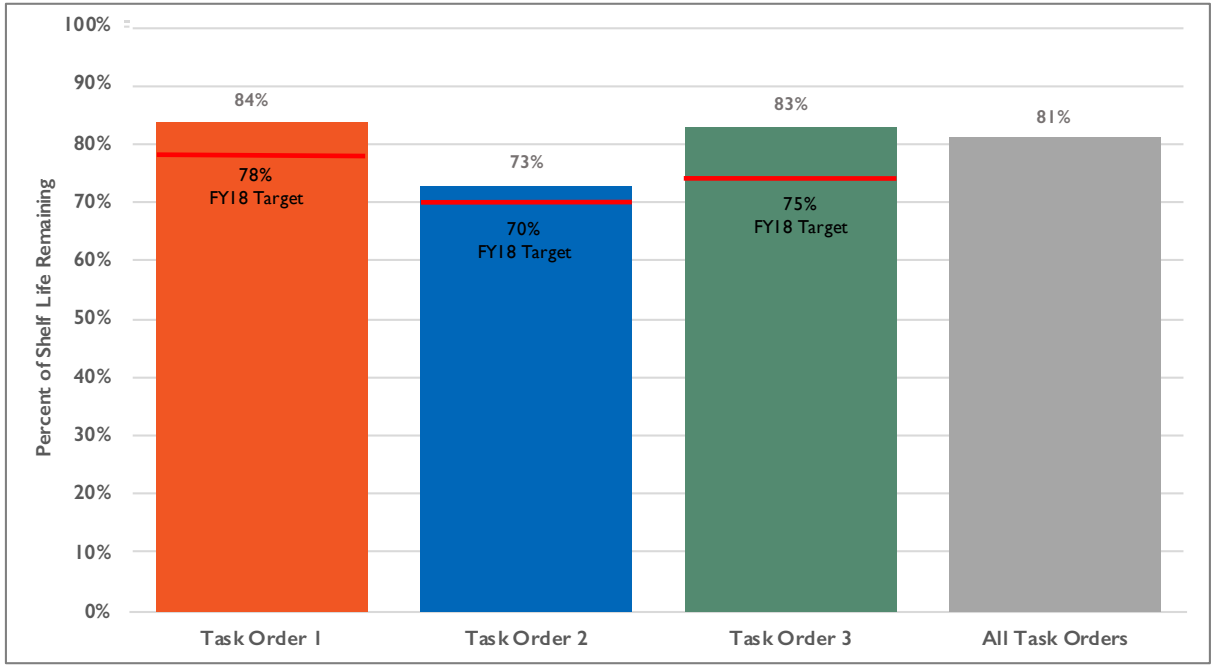
A8. Average percentage of shelf life remaining for warehoused commodities, weighted by the value of each commodity's stock (product at risk percentage)

Measure Definition

Numerator: Percentage of shelf life remaining at the end of the quarter, weighted by value of commodities, summed across all products.
Denominator: Total value of commodities, summed across all products, at the end of the quarter.
Purpose: This indicator, a measure of warehouse efficiency at GHSC-PSM regional distribution centers (RDCs) or stockpiles, can be used to gauge the amount of product that is at risk of expiration in a specified time. The information it provides helps maximize the efficiency of product turnover.

Task Order	FY18 Target	Achievement FY2018 Q4	Achievement Year to Date
TO1	78%	84%	82%
TO2	70%	73%	73%
TO3	75%	83%	83%
TO4	N/A	N/A	N/A
All TOs	NA	81%	81%

Indicator Performance FY2018 Q4



Analysis

- Shelf life is slightly down from Q3 (82%), with overall percentages slightly increased (TO1 & TO2) and slightly decreased (TO3).
- From Q3 to this quarter, the overall value of TO3 products stored in the RDCs decreased by $5.3 million. Some of these product categories have a long shelf life, and moving such a large quantity of products can impact the overall remaining shelf life available.
- All three task orders have kept their remaining shelf life values above target levels for this quarter.

Data Notes

- Total value of stock on hand as of June 30, 2018 is as follows: Task Order 1 - $23,155,170. Task Order 2 - $8,800,081. Task Order 3 - $ 9,733,606.
- Task Order 1 stock on hand includes all condoms. No inventory is kept for Task Order 4.
- Some expiries for Task Order 1 occurred this quarter. These quantities are excluded from the numerator and denominator of this indicator, as this stock was not available for allocation at the end of the quarter. See indicator C7a (percent of product loss due to expiry) for reporting on these expirations.
- Targets reflect anticipated project performance by end of FY18 (September 30, 2018).

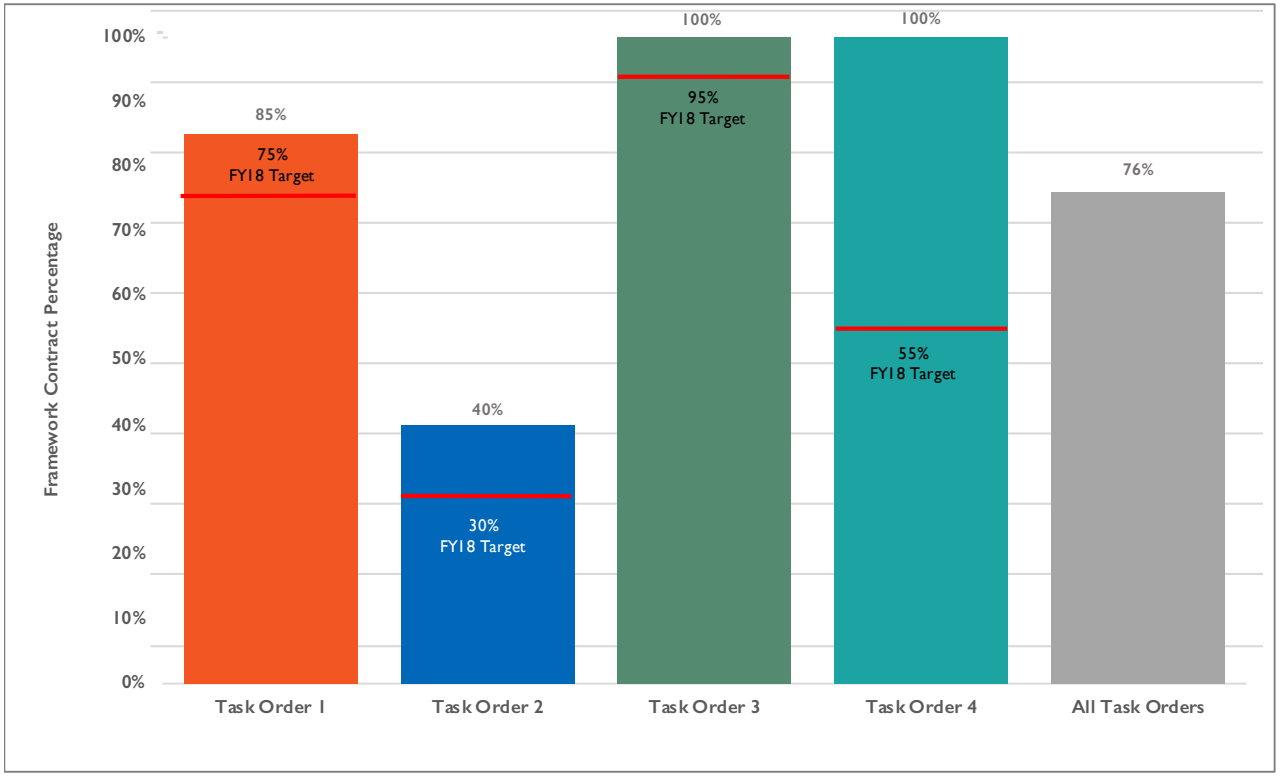
A10. Percentage of product procured using a framework contract (framework contract percentage)

Measure Definition

Numerator: Value of product purchased through framework contracts during the quarter.
Denominator: Total value of commodities purchased during the quarter.
Purpose: This indicator, which refers to the proportion of products purchased through framework contracts with suppliers, helps assess whether GHSC-PSM is promoting strategic sourcing to ensure the best value for customers. Framework contracts, in addition to being suited for negotiation for best value, also eliminate steps in the procurement process, enabling a quicker cycle time and reduced transaction costs.

Task Order	FY18 Target	Achievement FY2018 Q4	Achievement Year to Date*
TO1	75%	85%	71%
TO2	30%	40%	30%
TO3	95%	100%	99%
TO4	55%	100%	100%
All TOs	NA	76%	62%

Indicator Performance FY2018 Q4



Analysis

- Overall, performance has improved or remained constant across the board. Overall performance has improved from last quarter (58%)
- For T01, vehicle & other equipment contracts increased from 0 to 100 percent. With a value of $8.6 million, this accounted for most of the increase in TO1. There were slight decreases in other-non pharma, down to 2 percent from 15 percent last quarter, but the overall magnitude of $2 million was counterbalanced by other increasing categories.
- For TO2, severe malaria meds have returned to 100 percent performance, up from 71 percent last quarter. Orders for SP tablets, of which 60 percent were in framework contracts, also helped increase the overall performance for TO2. However, the high value and volume of LLIN procurements continues to be the main driver of TO2 performance on this indicator.
- GHSC-PSM plans to award framework agreements for the majority of LLIN procurement in FY2019 which is projected to drive an overall increase for TO2 at the same time. Additionally, the project awarded six long-term contracts that include fixed pricing, with prices tiered by order volume. Once procurement commences on these contracts in FY19, the overall TO2 performance should see a marked increase.

Data Notes

- Commodities are considered "purchased" during the quarter if the "PO Released for Fulfillment Date" in ARTMIS is between July 1 and September 30, 2018.
- Framework contracts include indefinite delivery, indefinite quantity contracts (IDIQs), blanket purchase agreements (BPAs), and basic ordering agreements (BOAs). Non-framework contracts include firm fixed price and fixed unit price subcontracts, simplified purchase agreements, and other types of one-off purchase orders.
- Procurement totals per task order are as follows: Task Order 1 (including all condoms and decentralized procurement): $171,261,007. Task Order 2: $46,434,442. Task Order 3: $4,552,289. Task Order 4: $366,945.
- *Year to Date performance is calculated using all data currently available, which may include changes to procurements that occurred in previous quarters, such as cancellations. Current year-to-date figures may differ slightly from a calculation derived from previously reported data.
- Targets reflect anticipated project performance by end of FY18 (September 30, 2018).

A10. Percentage of product procured using a framework contract (framework contract percentage) Tracer product category

HIV	Total value of all product procured	Framework contract percentage
Task Order 1	$171,261,007	85%
Adult ARVs	$121,033,281	100%
Condoms	$7,923,181	100%
Food and WASH	$4,097	100%
HIV RTK	$292,887	0%
Laboratory	$26,359,281	9%
Other Non-pharma	$2,048,825	2%
Other Pharma	$2,093,945	100%
Other RTK	$163,680	0%
Pediatric ARVs	$2,712,582	100%
VMMC	$8,327	0%
Vehicles and Other Equipment	$8,620,920	100%

Malaria	Total value of all product procured	Framework contract percentage
Task Order 2	$46,434,443	40%
ACTs	$11,542,511	98%
LLINs	$23,991,889	0%
Laboratory	$11,053	0%
SP	$1,314,151	60%
Other Pharma	$928,742	100%
Severe Malaria Meds	$5,342,346	100%
mRDTs	$3,303,750	0%

PRH Method Level	Total value of all product procured	Framework contract percentage
Task Order 3	$4,552,289	100%
Combined Oral Contraceptives	$1,518,235	100%
Emergency Oral Contraceptives	$11,296	100%
Implantable Contraceptives	$2,934,200	100%
Injectable Contraceptives	$26,350	100%
Progestin-only Pills	$62,208	100%

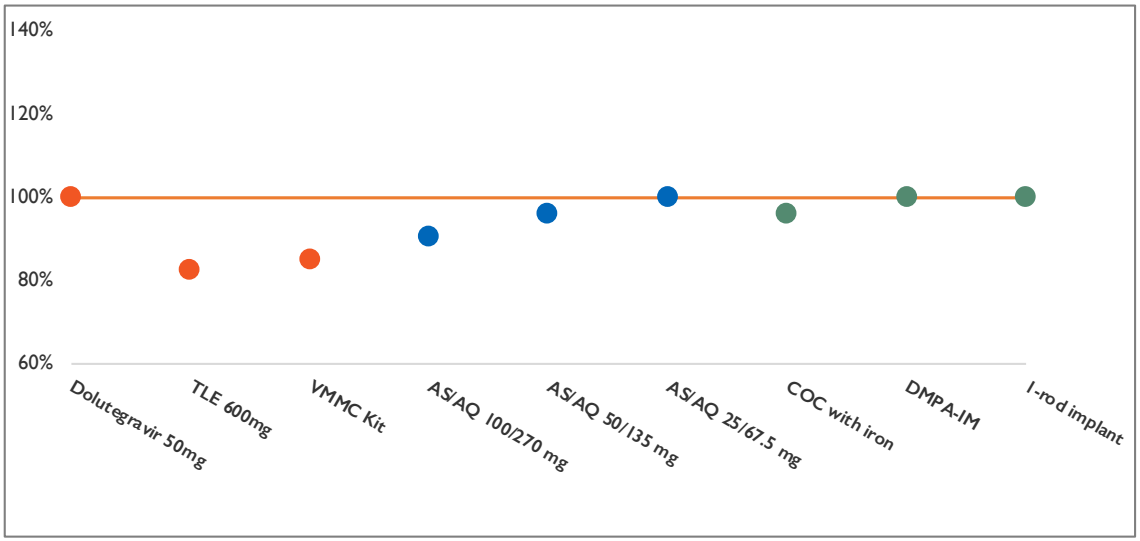
Maternal and Child Health	Total value of all product procured	Framework contract percentage
Task Order 4	$366,945	100%
Laboratory	$74,920	100%
Other Non-Pharma	$153,552	100%
Other RTK	$138,473	100%

A12. Percentage price variance between the median unit price paid during the quarter and the median unit price paid over the life of the project

Measure Definition

Numerator: Median price paid per base unit of measure during the quarter.
Denominator: Median price paid per base unit of measure over the life of the project.
Purpose: This indicator allows GHSC-PSM to track variation in price for commodities ordered. Price variations can reflect a variety of market and supply chain realities, including but not limited to market stability, pricing structure in strategic contracts, and fluctuations in demand and capacity.

Indicator Performance FY2018 Q4



Analysis

- Prices have remained stable for most of the project's frequently ordered products this quarter. The median price for TLE and VMMC kits was lower this quarter compared to the median over the life of the project. For TLE, this is because GHSC-PSM negotiated and committed to suppliers on procuring a certain volume of TLE, which lowered the price. As for VMMC kits, the contracts were rebid and the number of suppliers was consolidated from six to four. This increased the volume procured from each supplier and lowered the price.

Data Notes

- Targets not required for this indicator, per the GHSC-PSM M&E plan.
- The three most frequently ordered catalog products in the quarter are analyzed. Order frequency for this indicator is measured by the number of line items ordered per product per quarter. In cases where services, low value or non-core items (e.g. pipettes, lab refrigerators) are among the top orders in a quarter, GHSC-PSM may report on core items in their place.
- Exact product names and life-of-project median unit prices for the products shown above are as follows: Dolutegravir 50 mg Tablet, 30 Tablets, $3.60, Efavirenz/Lamivudine/Tenofovir DF 600/300/300 mg Tablet, 30 Tablets, $6.95, MC Kit, Non-Sterile, Reusable, Instruments for Dorsal Slit/Sleeve Resection, 1 Kit, $23.90, Artesunate/Amodiaquine 100/270 mg Tablet, 25 x 3 Blister Pack Tablets, $6.11, Artesunate/Amodiaquine 50/135 mg Tablet, 25 x 3 Blister Pack Tablets, $3.66, Artesunate/Amodiaquine 25/67.5 mg Tablet, 25 x 3 Blister Pack Tablets, $2.76, Levonorgestrel/Ethinyl Estradiol 150/30 mcg + Fe 75 mg, 28 Tablets/Cycle (PS), 1 Cycle, $0.27, Depot (IM) Medroxyprogesterone Acetate 150 mg/mL (1 mL) Vial, w/ AD Syringe, Burn Boxes, 1 Each, $0.88, Etonogestrel 68 mg/Rod, 1 Rod Implant, 1 Each, $8.50.
- Order frequency may differ from the project's highest value products. The top three products per task order with the highest value of orders placed include Efavirenz/Lamivudine/Tenofovir DF 600/300/300 mg Tablet, Dolutegravir/Lamivudine/Tenofovir DF 50/300/300 mg Tablet, and COBAS TaqMan, CAP/CTM HIV v2.0, Quantitative for TO1, two sizes of LLIN and Artesunate (w/ 1 Amp NaHCO3 5% + 1 Amp NaCl 0.9%) 60 mg Vial for TO2, and Depot (IM) Medroxyprogesterone Acetate 150 mg/mL (1 mL) Vial, w/ AD Syringe, Burn Boxes, Levonorgestrel 75mg/rod, 2 rod Implant, and Etonogestrel 68 mg/Rod, 1 Rod Implant for TO3.

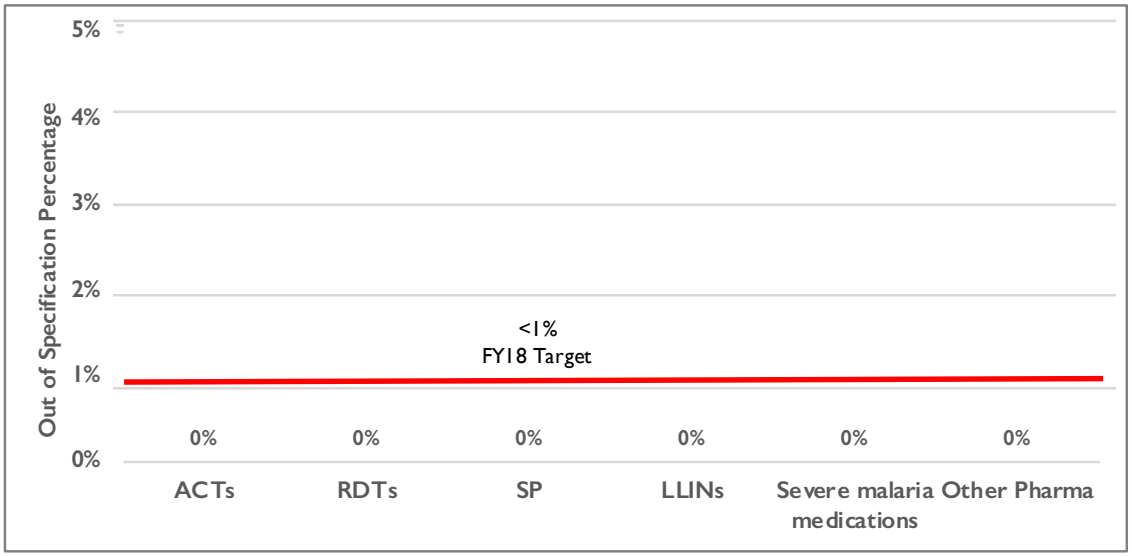
A13. Percentage of batches of product for which the final result is showing nonconformity (out-of-specification-percentage)

Measure Definition

Numerator: Total number of batches of product showing nonconformity during the quarter.
Denominator: Total number of batches tested during the quarter.
Purpose: This indicator measures whether manufactured products meet acceptance criteria and critical quality standards as defined by regulatory authorities.

Task Order	FY18 Target	Achievement FY2018 Q4	Achievement Year to Date
TO1	N/A	N/A	N/A
TO2	<1%	0.0%	0.1%
TO3	N/A	N/A	N/A
TO4	N/A	N/A	N/A

Indicator Performance FY2018 Q4



Analysis

- No tested batches had any out of specification result this quarter.

Data Notes

- Total number of batches of malaria products tested this quarter is 555.
- All QA testing for TO2 is conducted by GHSC-PSM. All testing for TOs 1, 3, and 4 is conducted via the USAID GHSC-QA contract. GHSC-QA may be contacted for out-of-specification data for these TOs.
- Target reflects anticipated average project performance for the full 2018 fiscal year (October 2017-September 2018).

A14. Average vendor rating score

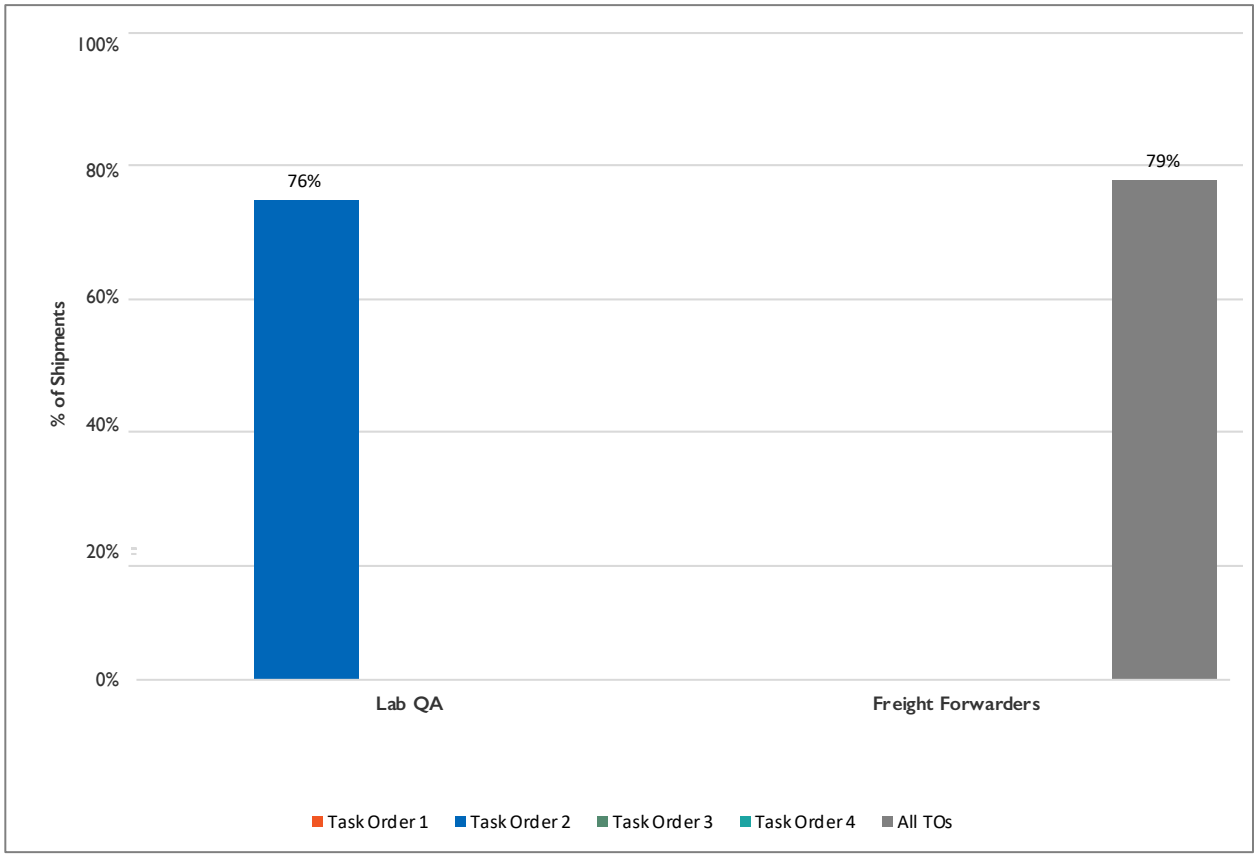
Measure Definition

Numerator: Sum of all key vendor ratings.
Denominator: Number of vendors from whom GHSC-PSM procured products/commodities, lab testing services, or freight forwarding during the quarter.
Purpose: This indicator enables GHSC-PSM and USAID to monitor performance of their vendors. This information helps the project to better manage vendor relations and can be used as a factor in vendor selection. Project vendors include manufacturers of health commodities (suppliers), freight forwarders (third party logistics providers), and labs providing quality assurance testing of commodities.

Achievement

Task Order	FY2018 Q4 Lab QA	FY2018 4 Freight Forwarders
TO1		
TO2	76%	
TO3		
TO4		
All TOs	N/A	79%

Indicator Performance FY2018 Q4



Analysis

- The average lab vendor score has stayed relatively constant for the last few quarters, hovering at about 75 percent. Reliability (on-time provision of completed test reports) continues to be the weakest performance area, at 59 percent this quarter. The most significant factor in this performance has been the large volume of samples arriving at labs within a short period of time. For two out of three labs, more than 70 percent of samples received by labs for testing fell within about a 5-week period.
- Overall performance among the 3PLs improved this quarter from 76 to 79 percent. This was driven by a large increase in 3PL on-time performance from 67 to 83 percent. In addition to the recent updates to the scorecard tool, primarily to factor in additional elements such as EDI status performance and customer service, the Deliver/Return team has been implementing a number of strategies that have helped to improve 3PL performance. The team works closely with 3PLs to understand the lanes that they have been awarded, holding weekly meetings with them to be able to catch any problems early. A combination of close adherence to the Order Promise Tool for establishing lead times, and continual improvement activities--in particular the use of non-compliance reports (NCRs) to closely monitor and follow up on issues--have been key contributors to this improvement. It should also be noted that the scorecard now makes exclusions for shipments for which there were significant factors outside of a 3PL's control that affected the lead time when calculating a 3PL's on-time performance rate, such as supplier non-adherence to the GAD.

Data Notes

- Lab QA vendors (all TO2): Three labs were evaluated this quarter.
- Freight forwarders (no TO disaggregation): Five freight forwarders were evaluated this quarter. The time period covered by the scorecard is June - August 2018.
- Supplier scorecard is undergoing revisions; data to be reported in a future report.
- Target not required for this indicator.

A14. Average vendor rating score - further score breakdowns by component

Commodity Suppliers

	Result (Total Score)	Product Quality	Order Fullfillment (On Time In Full)	Invoicing Accuracy	Service
TO1 (n=					
TO2 (n=					
TO3 (n=					
All TOs					

QA Lab Vendors (TO2 Only)

Criteria	Reliability (Timeliness of Service)	Responsiveness	Completeness (of Documentation)	Cost	Service	Total
Title	Does the lab provide on-time provision of completed test reports?	Does the lab provide prompt response after receipt of GHSC-PSM request for testing?	Frequency of modification to certificates of analysis (CoAs)	Submitted invoices for routine testing adhere to set IDIQ pricing	Qualitative: Adherence to other terms and conditions (not related to reliability, responsiveness, completeness, and cost)	
Weight	43%	15%	18%	15%	10%	100%
Average Score (n=3)	**58%**	**82%**	**98%**	**100%**	**67%**	**76%**

3PL Vendors (n=5)

#	Component	Numerator	Denominator	Score	Indicator Weight	Component Weight	Weighted Score
1-EDI Status Performance							
1a	Completeness - % of status messages received out of the total number of expected status messages (calculated as a product of number of delivered shipments and 8 shipment statuses)	Number of status messages received	Number of expected status messages during the reporting period (for the delivered shipments)	87%	2.5%	5%	3%
		6001	6896				
	Timeliness - % of status messages received within agreed latency period (within 48 hours of event)	Number of status messages received within agreed latency period	Number of messages received during the reporting period	42%	2.5%		
		949	2264				
2-ETA Delivery Accuracy/Reliability							
2	Percentage of shipments for which Actual Delivery Date was within ETA Delivery estimate sent on EDI statuses from 3PL	Number of shipments delivered during the reporting period which arrived within the approved window	Number of shipments delivered during the reporting period			8%	6%
	(+5/-5 calendar days window)	740	878	84%	3%		
	(+2/-2 calendar days window)	638	878	73%	5%		

3PL Vendors (n=5)							
#	Component	Numerator	Denominator	Score	Indicator Weight	Component Weight	Weighted Score
4-Invoicing Accuracy						10%	7%
4a	Completeness - % of invoices received for shipments that have been fully delivered more than 7 days ago	Number of invoices received for shipments that have been fully delivered	Number of shipments delivered during the reporting period	73%	3%		
		643	884				
4b	Timeliness - % of invoices received within 30 days of delivery	Number of invoices received within 30 days of delivery	Number of invoices received during the reporting period	47%	2%		
		305	643				
4c	Accuracy - % of invoices received without exceptions	Number of invoices received without exceptions	Number of invoices processed during the reporting period	74%	5%		
		883	1190				
5-On-time performance						40%	33%
5a	RFQ Transit Time - % of transport orders delivered according to the 3PL's committed transit time per mode and per lane requested "port to door" (temporary) (window +/-5 days)	Number of shipments delivered during the reporting period which arrived within the LSP's committed transit time per mode and per lane requested	Number of shipments delivered during the reporting period	75%	20%		
		692	922				
5b	Delivery - % of transport orders delivered within the Agreed Delivery Date window (where sufficient lead time has been provided, window +7/-14)	Number of shipments delivered during the reporting period which arrived within the Agreed Delivery Date window	Number of shipments delivered during the reporting period	88%	20%		
		561	641				
6- On-time spot quote turnaround						10%	9%
6a	Spot/Emergency Timeliness - % of emergency spot quote requests for which a response was received within 1 business day	Number of emergency spot quote responses provided within 1 business day	Number of emergency spot quotes requested during the reporting period				
		0	0				
6b	Spot/Non-emergency Timeliness- % of non-emergency spot quote requests for which a response was received within 3 business days	Number of non-emergency spot quote responses provided within 3 business days	Number of non-emergency spot quotes requested during the reporting period	87%	10%		
		231	265				
7- Rate of Non-compliance Reports (NCR)						10%	9%
7	Percentage of shipments for which an NCR was opened during the reporting period (lower percentage = higher score)	Number of NCRs opened during the reporting period	Number of shipments delivered during the reporting period	89%	10%		
		100	910				
8-Responsiveness						5%	4%
8	Timeliness - % (percentage of shipments for which booking was confirmed "on time" within 2 business days)	Number of shipments booked during the reporting period for which booking was confirmed by the 3PL within 2 business days	Number of shipments booked during the reporting period	87%	5%		
		821	948				
						Total Score	**79%**

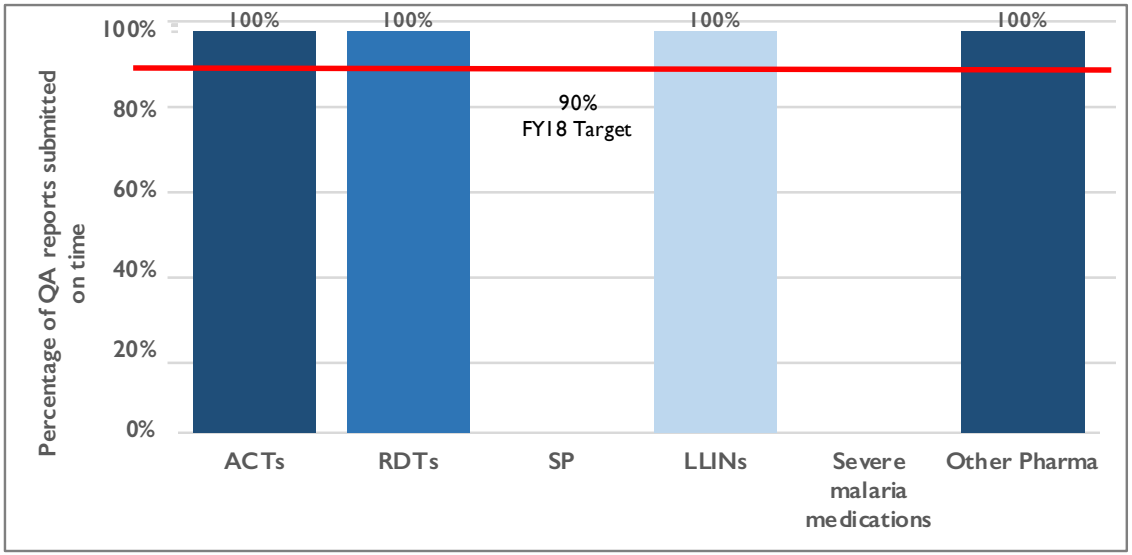
A15. Percentage of quality assurance investigation reports submitted within 30 calendar days of outcome determination

Measure Definition

Numerator: Total number QA investigation reports submitted to PMI within 30 days of outcome determination
Denominator: Total number of QA investigation reports due during the reporting period
Purpose: This indicator measures the timeliness of GHSC-PSM submissions of QA investigation reports.

Task Order	FY18 Target	Achievement FY2018 Q3-4	Achievement Year to Date
TO1	N/A	N/A	N/A
TO2	90%	100%	100%
TO3	N/A	N/A	N/A
TO4	N/A	N/A	N/A

Indicator Performance FY2018 Q3-4



Analysis

- The GHSC-PSM Task Order 2 QA team had four QA investigation reports due during the reporting period, all of which were submitted to PMI within the 30 day deadline.

Data Notes

- All QA investigations for TO2 are conducted by GHSC-PSM. All investigations for TOs 1, 3, and 4 are conducted via the USAID GHSC-QA contract. GHSC-QA may be contacted for out-of-specification data for these TOs.
- Target reflects anticipated average project performance for the full 2018 fiscal year (October 2017-September 2018).

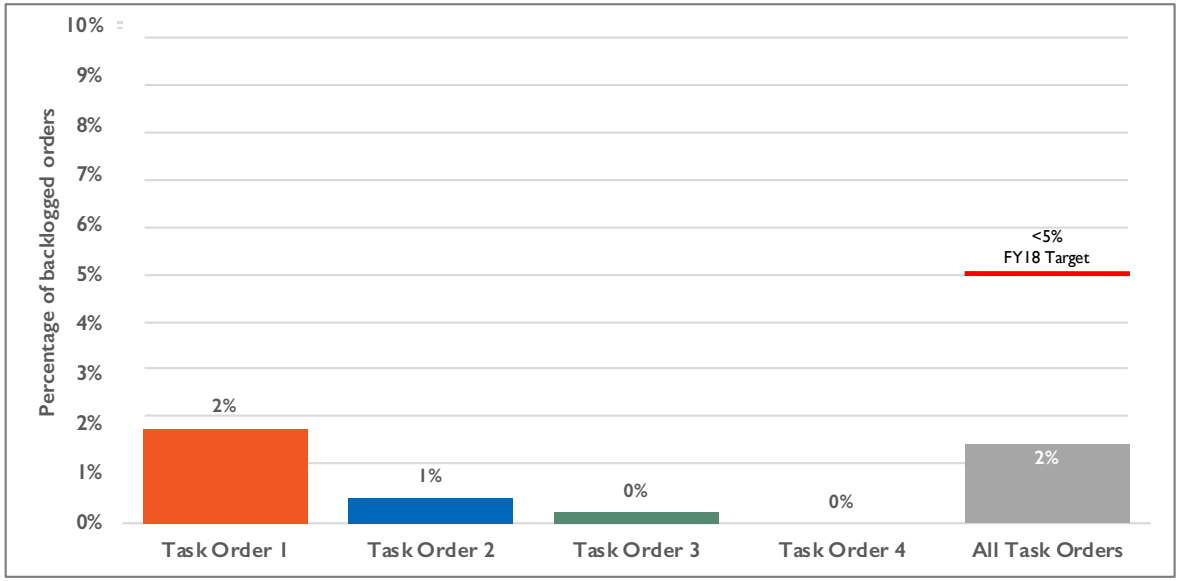
A16. Percentage of backlogged line items

Measure Definition

Numerator: Number of line items with an agreed delivery date (ADD) on or before the reporting period end date within a rolling 12-month period, that have not been canceled or put on hold and that are currently undelivered and late.
Denominator: Total number of line items with an ADD on or before the reporting period end date, within a rolling 12-month period, that have not been canceled or put on hold.
Purpose: Measuring and tracking backlogged items helps to prioritize and quickly resolve undelivered late orders to mitigate downstream impacts.

Task Order	FY18 Target	Achievement FY2018 Q4
TO1	NA	2%
TO2	NA	1%
TO3	NA	0%
TO4	NA	0%
All TOs	<5%	2%

Indicator Performance FY2018 Q4



Analysis

- Backlog percentage for the period is 2% (1.6% rounded to 2%), down from 3% in the previous quarter. Our backlog continues to fall below our target of 5% for FY2018 for all task orders and continues to support the convergence of our OTD rate and OTIF rate (see indicator A1a and A1b). TO3 had a backlog percentage of .2% which presents as 0% due to rounding. Given that the indicator measures only the number of line items within a rolling 12-month period, nine line items which are undelivered and late fall outside of this window. Most of these line items outside of the rolling 12-month period are currently clearing customs or are ready to ship to their final destination.

Data Notes

- The total number of line items with agreed delivery dates in the last 12 months are as follows: Task Order 1 (including all condoms for any TO) - 4,365. Task Order 2 -586. Task Order 3 - 449. Task Order 4 - 69.
- The project currently has 9 undelivered line items with an ADD before the 12 month period of this indicator.
- Targets reflect anticipated project performance by end of FY18 (September 30, 2018).

A16. Percentage of backlogged items

HIV	**Denominator** (Total number of line items with an ADD on or before the reporting period end date, within a rolling 12-month period, that have not been cancelled or put on hold.)	Percentage of backlogged items
Task Order 1	4,365	2%
Adult ARVs	417	3%
Condoms	194	0%
Food and WASH	28	0%
HIV RTK	3	0%
Laboratory	2,742	1%
Other Non-pharma	440	1%
Other Pharma	209	9%
Other RTK	12	0%
Pediatric ARVs	216	2%
Prefab		
Vehicles and Other Equipment	14	0%
VMMC	90	3%

Malaria	**Denominator** (Total number of line items with an ADD on or before the reporting period end date, within a rolling 12-month period, that have not been cancelled or put on hold.)	Percentage of backlogged items
Task Order 2	586	1%
ACTs	218	0%
Laboratory	51	0%
LLINs	137	1%
mRDTs	57	0%
Other Non-Pharma	28	0%
Other Pharma	27	0%
Severe Malaria Medicines	42	0%
Sulphadoxine-pyrimethamine	26	0%

PRH Method Level	**Denominator** (Total number of line items with an ADD on or before the reporting period end date, within a rolling 12-month period, that have not been cancelled or put on hold.)	Percentage of backlogged items
Task Order 3	449	0%
Combined Oral Contraceptives	28	0%
Copper-bearing Intrauterine Devices	11	0%
Emergency Oral Contraceptives	4	0%
Injectable Contraceptives	49	0%
Implantable Contraceptives	54	0%
Progestin-only Pills	11	0%
Standard Days Method	6	17%
All Other TO3 Products	286	0%

Maternal and Child Health	**Denominator** (Total number of line items with an ADD on or before the reporting period end date, within a rolling 12-month period, that have not been cancelled or put on hold.)	Percentage of backlogged items
Task Order 4	69	0%
Laboratory		
Other Non-Pharma	22	0%
Other Pharma	47	0%

B1. Stockout rate at SDPs

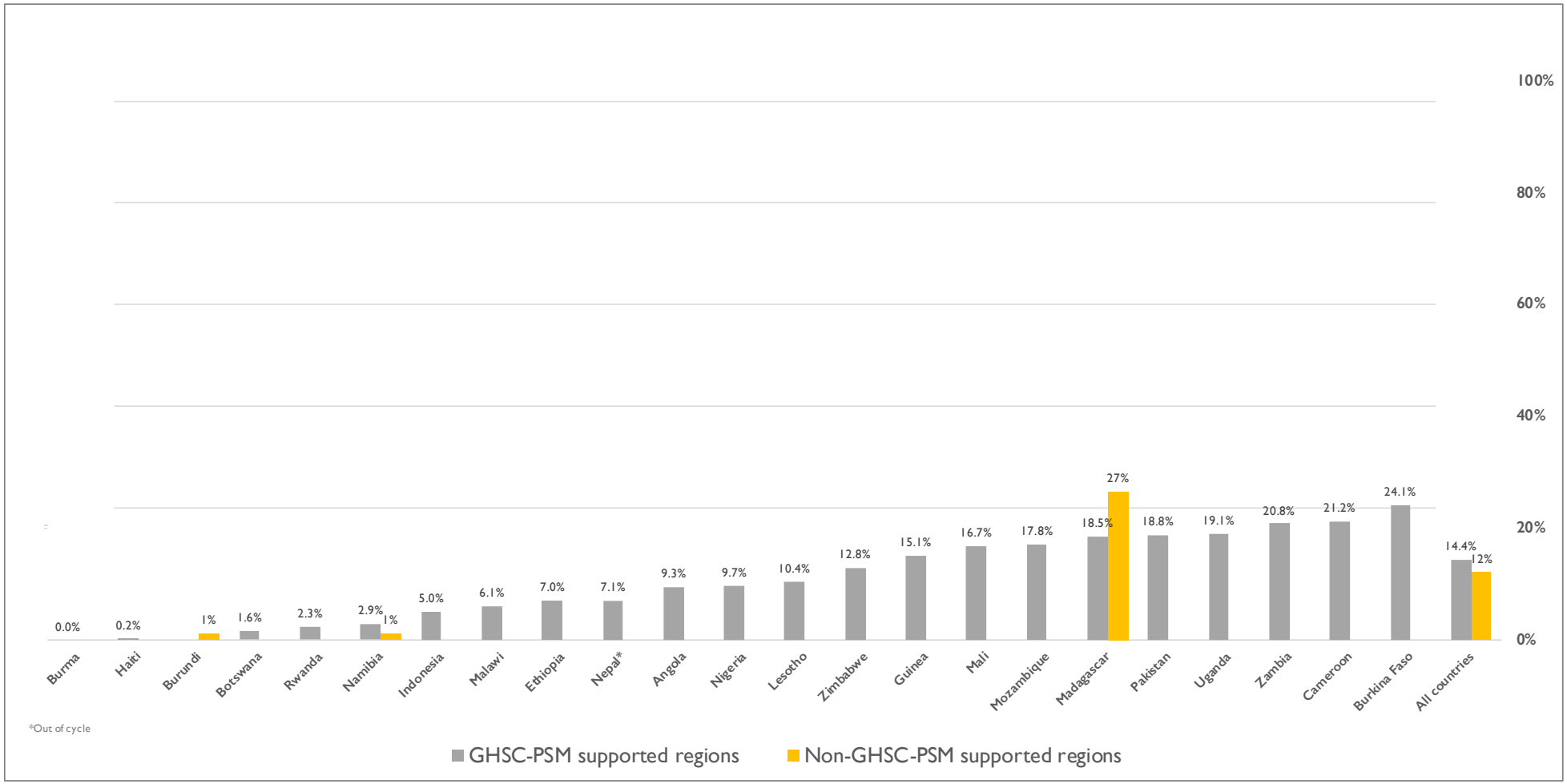
Measure Definition

Numerator: Number of SDPs that were stocked out of a specific tracer product according to the ending balance of the most recent logistics report (or on the day of site visit).
Denominator: Total number of SDPs that reported/were visited in GHSC-PSM-supported countries that offer the tracer product.
Purpose: This indicator determines the prevalence of commodity stockouts (meaning either unavailable, or available but unusable due to damage or expiry) at facilities or service delivery points. In conjunction with other data, stockout information helps determine the location of bottlenecks in the supply chain. This enables GHSC-PSM to focus on those areas to reduce future stockouts.

Task Order	Overall Stockout Rate Achievement	
	FY2018 Q4	Year to Date
TO1	8%	8%
TO2	16%	15%
TO3	16%	15%
All TOs	14%	14%

▸ Targets for this indicator are set at the country level

Overall Stockout Rate by Country



Out-of-cycle countries are not counted toward overall totals.
Stockout rates presented are for all key products offered in each country, irrespective of the funder of those products.
Note also that GHSC-PSM does not provide technical support to all levels of the supply chain in all countries.

B1. Percentage of SDPs with stockouts of tracer products

	Countries	Angola	Botswana	Burkina Faso	Burma Non-GHSC-PSM-supported	Burundi Non-GHSC-PSM-supported	Cameroon	Ethiopia	Guinea	Haiti	Lesotho	Madagascar	Madagascar Non-GHSC-PSM-supported	Malawi	Mali	Mozambique	Namibia	Namibia Non-GHSC-PSM-supported	Nigeria	Rwanda	Uganda	Zambia	Zimbabwe
HIV	Task Order 1	2%	2%		0%	2%	9%	7%		0.0%	10%			4%		10%	3%	1.1%	6%	2%	19%	12%	10%
HIV	First-line Adult ARVs	0%	0%		0%	2%	8%	2%		0%	2%			0%		0.4%	0%	0%	4%	2%	12%	4%	1%
HIV	Second-line Adult ARVs	0%	0%		0%	2%		14%		0%	6%			2%		3%	13%	0%	6%	1%		4%	8%
HIV	First-line Pediatric ARVs	0%	0%		0%	5%	0%	3%		0%	3%			2%		2%	0%	0%	6%	3%	18%	6%	16%
HIV	First RTKs	0%	3%			2%	9%	13%		0%	2%			2%		23%	0%	2%	2%	2%	6%	4%	9%
HIV	Second RTKs	11%	3%			2%	10%	11%		0%	3%			4%		26%	0%	4%	6%	0%	9%	14%	14%
HIV	Tie-breaker RTKs							14%			5%						7%	2%	6%		27%		24%
HIV	Male Condoms**	0%	4%			2%		7%		0%	8%			7%		28%	0%	0%	8%	3%		19%	3%
HIV	Female Condoms**	0%	5%			0%					5%			14%		42%	0%	0%	9%	4%		29%	6%
HIV	EID Consumables		0%		0%			4%											10%	0%			
HIV	EID Reagents		0%		0%			0%			0.0%					0%			10%	0%	0%	0%	0%
HIV	Viral Load Consumables				0%			24%											10%	0%			
HIV	Viral Load Reagents		0%		0%			0%			33%					0%			0%	0%	0%	8%	0%
HIV	Ready-to-use Therapeutic Foods (RUTF)							19%			74%										53%		
Malaria	Task Order 2	18%		24%		1%	42%	10%	14%			16%	24%	4%	15%	24%			11%	2%	10%	21%	17%
Malaria	First-line ACTs (AL 6X1)	0%		18%			66%	12%	10%					1%	9%	23%			8%	2%		18%	12%
Malaria	First-line ACTs (AL 6X2)	13%		10%			67%	12%	6%					2%	16%	24%			11%	4%		27%	23%
Malaria	First-line ACTs (AL 6X3)	44%		52%			69%	16%	9%					2%	34%	33%			15%	1%		22%	24%
Malaria	First-line ACTs (AL 6X4)	0%		41%			58%	5%	17%					0%	10%	36%			11%	2%		23%	12%
Malaria	First-line ACTs (AL inability to treat)			4%			38%	4%	2%					0%	1%	0%			0%	0%	3%	3%	1%
Malaria	First-line ACTs (AS/AQ 100/270mgx3)			37%		0%	56%					13%	22%						11%				
Malaria	First-line ACTs (AS/AQ 100/270mgx6)			38%		1%	48%					12%	20%						12%				
Malaria	First-line ACTs (AS/AQ 25/67.5mg)					0%	54%					12%	22%						10%				
Malaria	First-line ACTs (AS/AQ 50/135mg)					0%	46%					8%	13%						11%				
Malaria	Rapid Diagnostic Tests for Malaria	25%		5%		1%	28%	10%	5%			8%	16%	1%	10%	10%			10%	3%	7%	6%	8%
Malaria	Sulphadoxine-pyrimethamine (SP)	100%		8%		3%	5%		12%			25%	35%	9%	5%	23%			10%		12%	31%	24%
Malaria	LLINs			8%		1%	6%		39%			66%	62%	16%	23%	15%			21%				

* Out of cycle

** Male and female condoms are reported under both TOs 1& 3.

B1. Percentage of SDPs with stockouts of tracer products

	Countries	Burundi Non-GHSC-PSM-supported	Ethiopia	Ghana	Guinea	Haiti	Madagascar	Madagascar Non-GHSC-PSM-supported	Malawi	Mali	Mozambique	Nigeria	Pakistan	Rwanda	Uganda	Zambia	*Nepal (FY18 Q3)
PRH**	Task Order 3	1%	6%		17%	0.3%	22%	30%	12%	18%	24%	11%	19%	2%	34%	30%	7%
	Copper-bearing Intrauterine Devices	1%	2%		21%	0%	51%	51%	6%	16%	19%	8%	24%	2%		26%	7%
	Calendar-based Awareness Methods					0%	46%	62%		19%				0%			
	Male Condoms* **	2%	7%		7%	0%	24%	35%	7%	15%	28%	8%	17%	3%			7%
	Female Condoms* **						5%	25%	14%	26%	42%	9%		4%			
	Injectable Contraceptives	0.1%	3%		13%	0.5%	13%	17%	14%	11%	26%	5%	18%	2%	34%	5%	6%
	Depot Medroxyprogesterone Acetate 104 mg/0.65 mL										52%						
	Depot Medroxyprogesterone Acetate 150 mg Vial, SR	0.1%	3%		13%	0.5%	13%	17%	14%	11%	26%	10%	18%	2%	34%	18%	6%
	Norethisterone Enanthate											8%				46%	
	Implantable Contraceptives	0.1%	3%		14%	0.5%	24%	28%	0%	12%	20%	10%		0.2%		3%	13%
	Etonogestrel 68 mg/Rod, 1 Rod Implant		5%				24%	28%	12%			13%		3%		32%	
	Levonorgestrel 75mg/Rod, 2 Rod Implant	0.1%	4%		14%	0.5%			12%	12%	20%	12%		4%		31%	13%
	Combined Oral Contraceptives	1%	9%		20%	0.5%	14%	18%	16%	21%	26%	18%	18%	2%		34%	6%
	Levonorgestrel/Ethinyl Estradiol 150/30 mcg + Fe 75 mg, 28 Tablets/Cycle		9%		20%	0.5%	14%	18%		21%			18%	2%		34%	6%
	Levonorgestrel/Ethinyl Estradiol 150/30 mcg 28 Tablets/Cycle	1%							16%		26%	18%					
	Emergency Oral Contraceptives	4%	9%						8%		18%						
	Levonorgestrel 0.75 mg, 2 Tablets	4%	9%						8%		18%						
	Levonorgestrel 1.5 mg, 1 Tablet																
	Progestin-only pills	1%	7%		25%		20%	31%	7%	28%	17%	8%		3%		30%	
	Levonorgestrel 30 mcg 35 Tablets/Cycle	1%	7%		25%		20%	31%	7%	28%	17%	8%		3%		30%	

* Out of cycle

The PRH "method level" **(in bold) refers to the percent of facilities stocked out of all products the facility offers within a given method. A stockout at the "product level" refers to the number of sites stocked out of that particular product (depending on what is offered at a particular facility). A facility could be stocked out of one product and not stocked out at the method level.

***Male and female condoms are reported under both TOs 1 & 3.

B1. Stockout rate - granular-level analysis

Analysis

Overall stockouts for the quarter decreased slightly from 15 percent to 14 percent, while the year-to-date rate remained at 14 percent. Task Order 1 stockouts edged down from 9 to 8 percent, while Task Order 2 increased by less than a percentage point, and Task Order 3 decreased by less than a percentage point.

Twenty-three countries reported this quarter on the stockout rate at service delivery points. Of those, 9 (39 percent) decreased their stockout rates since last quarter, while another three countries (13 percent -- Burma, Burundi, and Haiti) maintained their very low stockout rates. Five countries (22 percent) had slight stockout rate increases (less than 2 percentage points). Burkina Faso's 13 percent increase was largely due to its recent shift between AS/AQ and AL antimalarials, which occurred just as data were being collected and did not reflect an actual lack of overall ACT availability. Cameroon (showing an increased stockout rate of 15 percentage points) started reporting Task Order 2 data for the first time this quarter, using the End Use Verification survey, which showed high stockout rates of all antimalarial products.

Country Analysis

Angola	For TO1, a stockout of the First RTK in one SDP was noted. Delays in signing the requests from SDPs in INLS continues to be the bottleneck for this. For TO2, despite the change in the denominators, a stockout of AL 6 x 2 in one hospital out of eight was observed, as well as four stockouts of AL 6x3 out of eight observations and three stockouts of RDT out of twelve observations. The only hospital providing ANC was stocked out of Sulphadoxine-pyrimethamine (SP). Stocked according to plan trends were as follows: AL 6x1: 13 percent in the previous quarter and 0 percent in this quarter; AL 6x2: 14 percent in the previous quarter and 13 percent in this quarter; AL 6x3: 11 percent in the previous quarter and 44 percent in this quarter; AL 6x4: 30 percent in the previous quarter and 25 percent in this quarter. There was no issue of inability to treat malaria at all 12 supported hospitals.
Botswana	Botswana maintained a 0 percent stockout rate for adult ARVs. Pediatric ARVs were also in stock at all reporting SDPs, an improvement over a 33 percent stockout rate last quarter. Condom and RTK stockout rates have also improved as of August. However, there have been central-level RTK stockouts starting in September (see B2), for which PEPFAR has donated funds for emergency procurements through GHSC-RTK.
Burkina Faso	The overall stockout rate appears to show a large increase this quarter. This is due in large part to stockouts of AL 6x3 and AL 6x4, new products officially introduced into the system in August 2018, the same month for which data were collected. The distribution of these products did not begin in earnest until September. Very few health facilities were able to procure them in August. Despite this change in products, the AL "inability to treat" rate remained low at 4 percent. Stockout rates for SP, RDTs, and LLINs all decreased this quarter.
Burma	The three ART centers and two HIV viral load labs received continuing support from GHSC-PSM for their quarterly stock monitoring EWS of ARVs and viral load commodities.GHSC-PSM implemented an additional viral load lab in Yangon for quarterly stock monitoring of viral load/EID lab commodities. The focal persons from the fourth viral load lab in Magway received a refresher training on a monitoring tool in FY18 Q4, but a joint visit with NAP will be needed before they start submitting stock monitoring sheets. Currently, three out of four Abbot viral load sites provide stock monitoring reports and two (total of two labs in country) have a functioning stock monitoring/EWS system. None of the ART sites, viral load labs, or EID labs were stocked out of tracer commodities in Q4.
Burundi	Burundi has maintained low stockout rates throughout the fiscal year. The GHSC-PSM team will continue to support the District Health Offices to identify and address SDP stockouts, monitor compliance with requisition schedules, analyze logistics data, and support data quality.
Cameroon	HIV stockout rates for all observed products remain within the target range of 10 percent, although there have been some increases in RTK stockout rates since the previous quarter. The Cameroon team conducted its first End User Verification survey for malaria this quarter and is pleased to report stockout rate data for this task order for the first time. The survey revealed high stockout rates of ACTs in the surveyed regions. However, because Cameroon uses both AS/AQ and AL treatments, this does not necessarily imply that patients do not receive treatment when facilities are stocked out of any one product.
Ethiopia	Overall stockouts improved from 8.4 percent to 7 percent since last quarter; however, they fell short of Ethiopia's target of 5 percent. Task Order-specific stockout rates ranged from 6 percent for Task Order 3 to 10 percent for Task Order 2. Stockouts among HIV/AIDS commodities were impacted by the high stockout rate (24 percent) for viral load consummables and second-line adult ARVs (14 percent). The stockout rate for pediatric ARVs declined slightly from the previous quarter. As the three viral load sample consumables (PPT, EDTA, and cryogenic vial) are used interchangeably, the higher stockout rate of PPT has had a smaller impact on facility service provision than the 24 percent rate would appear (a smaller percentage of facilities - 9 percent - were stocked out of all three of these consumables). The malaria product stockout rate was 10 percent overall, with pack sizes of AL showing stockout rates between 5 and 12 percent. The combination of higher malaria transmission this quarter and delayed procurements by PFSA led to these stockouts; however with "inability to treat" at only 4 percent, disruptions to service were minimal. Stockouts of FP/PRH products remained consistent with last quarter at 6 percent.
Ghana	Ghana did not report indicator B1 this quarter for two reasons: 1) GHSC-PSM Ghana staff were unable to retrieve/download the data from the EWS due to system challenges, and 2) the level of confidence in the EWS -- the only system that can provide facility level stock status information -- is low due to low reporting rates (about 7%). The field office and HQ M&E team is working on identifying an alternative source for this indicator.

Country Analysis	
Guinea	With an overall reduction in stockouts of 6 percentage points since last quarter, Guinea's was the largest improvement in stockouts of countries this quarter; however, it remains high at 15 percent. Guinea reported a low AL inability to treat rate of 2 percent; however, 39 percent of SDPs reported stockouts of LLINs this quarter. The stockout rate for contraceptives was 17 percent. The relatively high rates can be attributed to the parallel systems for ordering and distribution of health commodities, and to the fact that health facilities may not be using their recorded consumption and physical inventory rates when calculating order quantities. Contraceptives in particular are resupplied based on an allocation (push) system, not always matching demand. GHSC-PSM is supporting the central medical stores (PCG) and all health programs to implement the integrated ordering and distribution roadmap (malaria, contraceptives, HIV, and TB). This plan describes milestone dates and specifies the actions to be taken by each actor (health facility, district, programs, and PCG) throughout the order cycle. The project is also assisting health facility staff to estimate order quantities during quarterly LMIS review meetings ad performing supervision visits targeting poor performing health facilities.
Haiti	Haiti experienced no stockouts among any sites in HIV/AIDS products, and only two sites were stocked out of any FP/PRH products due to increased demand and the promotion of long-term methods. This continued strong performance is due to maintaining the necessary quantities of stock at the central level (only second RTKs faced a stockout at the central level this quarter), and strong site-level reporting and follow-up.
Indonesia	Indonesia reported an additional seven facilities for the RTK tracer products (1st, 2nd and tie-breaker), bringing the total number of facilities reported to 12 for those products as well as most used 1st line ARV. Most used 2nd line ARV reports seven facilities and most used 1st line pediatric ARV reports five facilities.
Lesotho	Overall stockouts in Lesotho decreased by about 3 percentage points from the previous quarter due to stock arriving at SDPs and identifying and addressing challenges with inventory management.
Madagascar	GHSC-PSM-supported sites registered an overall stockout rate of 19 percent (down from 20 percent last quarter), while non-supported sites had a rate of 27 percent (up from 24 percent last quarter). In GHSC-PSM-supported sites, stockouts of FP/PRH commodities (22 percent) were higher than the rate for malaria commodities (16 percent). LLINs showed the highest stockout rate at 66 percent of reporting facilities stocked out; however, all other malaria products have reduced their stockout rates since last quarter, bringing the total TO2 stockout rate for Madagascar down from 19 to 16 percent.
Malawi	Malawi had low stockout rates for ARVs, RTKs, and ACTs this quarter. Inability to treat with AL was at 0 percent. This was due to adequate stock in-country for malaria products, and the end of the malaria peak season. Stockouts for FP/RH products were higher, ranging from 12 to 16 percent for key products (injectables, implants, and combined oral contraceptives). An emergency order of DMPA intramuscular has been placed to mitigate the risk to clients during the global shortage of this product.
Mali	Overall stockouts in Mali decreased by 3 percentage points from the previous quarter. Mali was well within its target for FP/PRH stockouts, but stockouts of malaria products were slightly higher than the target. Contributing to the gains this quarter was the fact that all distribution plans prepared by the National Malaria Control Program with GHSC-PSM support were fully implemented. This action helped to move antimalarial products regionally to address stockouts at the site level. Another strategy which may have helped to reduce stockouts is the End Use Verification (EUV) survey, which was conducted this quarter. Following the survey, teams provided immediate corrective measures to problems encountered in the field, including redistribution of commodities from overstocked facilities to those that were stocked out. One of the upcoming activities to improve stock availability is the development of a mechanism for properly scheduling deliveries based on available space.
Mozambique	With SIGLUS' expansation, the number of SDPs reporting continues to increase for TO2, TO3, and TO4. The number of SDPs reporting for TO2 and TO3 increased by more than 80 percent this quarter, while TO4 saw a reporting rate increase of more than 40 percent.
Namibia	Namibia’s stockout rates remain low, although instances of stockouts have increased slightly since Q3. Delayed ordering by facilities from the central and regional medical stores contributed to the stockout of HIV test kits. Stockout of second line ARV is a result of the procurement process CMS has to go through to procure products. GHSC-PSM continues to work with MoHSS to redistribute existing stock of 2nd line ARV and expedite delivery.
Nepal	Stockouts of FP and MCH commodities have decreased in FY18 Q4 compared to FY18 Q3. The only commodity which saw an increased stockouts is ORS, from 10 percent in Q3 to 14 percent in Q4. It should also be noted stockout denominators for Q4 reporting were much smaller than the denominator used in Q3 reporting, due to improved data entry in the eLMIS. The non-reporting health facilities' data do not get entered in the eLMIS whereas in the past in the LMIS system, all the health facilities data were entered despite non-reporting (reporting zero as the ending balance in the reporting quarter). Q3 was the first quarter the paper-based LMIS data were entered in eLMIS database. Nepal's LMIS data lags by one quarter; consequently, the stockout data reported in Q4 were for Q3.
Nigeria	Overall, the stockout rate at the SDP in Nigeria was slightly higher than the previous quarter (9.7 percent in Q4 FY18 vs 8 percent in Q3 FY18). TO1: Stockout rates for Adult and Pediatric HIV-most used 1st line ARVs were 4 percent and 6 percent, respectively, while HIV-most used 2nd line ARV was 6 percent. This continued strong performance within the coutry target was achieved through sustained strategies to ensure minimal stockouts by facilitating inter-facility redistribution of commodities from those with high months of stock (MOS) to those with low MOS and maintaining close attention to emergency orders. Performance on Unigold and Stat Pak improved due to in-country availability compared to last quarter, when the commodity was not available. The stockout rates for PCR reagents increased over the last three quarters to 10 percent due to the increased sample load at affected facilities. However, there was no interruption in services as their emergency orders were resupplied immediately. TO2: Stockouts for AL was 0.5 percent and AA was 24 percent, showing significant improvement from previous quarters. The low level of stock of LLINs for routine distribution resulted in an increase in the stockout rate in Q4. There will be a delivery of procured LLINs in the next quarter for distribution to health facilities. TO3: Commodities that contributed to tthe higher stockout were largely Microgynon and Implanon, which have limited availability in country resulting from a global shortage.

Country Analysis	
Pakistan	During the reporting period, the overall stockout rate of FP commodities remained almost unchanged. The stockout rate at service delivery points in supported provinces (KP, Punjab, Balochistan, and Sindh) for FP contraceptives (3 Month Injection, COC, Condom and Copper-T-380 A) remained at 18 percent in FY 2018 Q4. Stockouts in Punjab have increased to 20 percent in the reporting quarter from 17 percent in the last quarter. In Punjac province, stockouts have increased for 3 Month Injection from 18 percent to 20 percent, Copper-T-380 A from 19 percent to 22 percent, COC from 18 percent to 21 percent, and for condoms 15 percent to 19 percent in the reporting period.Overall stockouts in KP province have decreased to 10 percent in the reporting quarter from 11 percent in the previous quarter. In Sindh province, stockout rates improved from 22 percent in Q3 to 17 percent in Q4. The overall stockout rate in Balochistan province increased to 21 percent this reporting period, compared to 17 percent in the last quarter.
Rwanda	Rwanda continued to show an overall low SDP stockout rate for GHSC-PSM-supported sites (2.3 percent in Q4 FY18 vs 3 percent in Q3 FY18). Rwanda saw a decrease in stockout rates across all task orders (2 percent for each TO, compared to 3 percent for TO1, 4 percent for TO2, and 3 percent for TO3 in Q3). As noted in the stocked according to plan analysis as well, stockouts increased for Atazanavir/Ritonavir at the central level; the CPDS has requested that the next GHSC-PSM shipment should be planned to be delivered early, by January 2019. The GHSC-PSM Rwanda office continues to review stock information at sites and assist with the redistribution of some of the quantities held at both at the District Pharmacy and SDP level to mitigate stockouts at the health centers.
Uganda	For TO1 commodities, there has been a slight increase in stockout rates of 1 percent (from 18 percent in Q3 to 19 percent in Q4). First line adult ARV - TLE increased from 10 percent to 12 percent, first line pediatric ARV-Zidovudine/Lamivudine/Nevirapine decreased from 20 percent to 18 percent, RUTF decreased from 55 percent to 53 percent, and HIV-Tie breaker RTK increased from 20 percent to 27 percent. The increase in TO1 stockout rates can be largely linked to stockout rates for the HIV-Tie breaker RTK and first line Adult ARV. For TO2, there has been a slight increase in stockout rates, from 6 percent to 8 percent. ACT stockouts increased from 1 percent to 3 percent, and the RDT stockout rate remained the same at percent at the SDP level. Compared to last quarter, stockout rates among SPs have increased from 10 percent to 12 percent. This increase may be attributed to the general increase in the number of patients seen, with an 8 percent increase in outpatient departments, 26 percent increase in inpatients, and 6 percent increase of confirmed cases during the July-August cycle. For TO3, stockout rates for Depo increased from 30 percent in Q3 to 34 percent in Q4. Thiswas mainly due to a change in warehousing from UHMG to JMS that took place in July 2018. Therefore, distribution of FP commodities to SDPs was interrupted as the MOH had to put a new mechanism in place for distribution of FP commodities by JMS.
Zambia	Zambia's overall stockout rate stayed largely the same since last quarter, at 21 percent, with TO3 stockouts continuing to represent the bulk of the stockouts. During its transition from TLE to TLD, Zambia is currently reporting on TLE 300/300/600mg as its most used first-line adult ARV, for which 4 percent of reporting sites were stocked out this quarter. A small number of sites also reported on TLE 300/300/400mg (0 out of 26 reporting sites stocked out) and TLD 300/300/50mg (0 out of 43 sites stocked out). For malaria commodities, Zambia's AL "inability to treat" rate remained low at 3 percent; however, individual pack sizes continued to face high stockouts, ranging between 18 and 27 percent. This is in large part due to the low fill rate from the central medical stores (MSL). For instance, Chabiliki rural health center in Nchelenge District ordered 240 units of AL 4X6, and the fill rate was 6 percent. Similar situations occurred in numerous other facilities. Reasons for stockouts of TO3 products ranged from MSL's non-adherence to the bimonthly delivery schedule, to data quality errors, to the lack of trained staff to administer products (in the case of implants). Zambia is working on addressing each of these challenges. To address the immediate issue of the stockouts, the project facilitated emergency orders and redistribution from overstocked to understocked facilities. The project continues to provide on-the-job training and supportive supervision to facilities to improve timely and accurate reporting. It is working with district and provincial health offices to ensure that facilities order and are supplied. The project also continues to work on strengthening MSL's internal processes, including using automated tracking tools to monitor adherence to the distribution schedule, and supporting distribution via 3PLs.
Zimbabwe	Zimbabwe saw reductions in stockouts for first line adult ARVs and second RTKs, which was expected due to consistent deliveries. Stockouts of pediatric ARVs have risen as the country transitions to a new regimen. The stockout rate for the new product is expected to decline as the remaining legacy product is consumed and distribution of the new product improves. Malaria stockouts declined as peak seasons consumption dropped off, with inability to treat dropping to only 1 percent.

Data Notes

- Stockout rates presented are for all key products offered in each country, irrespective of the funder of those products.
- GHSC-PSM does not provide technical support to all levels of the supply chain in all countries.
- GHSC-PSM defines a “supported region” as an administrative unit which is: 1) immediately below the central level, 2) receiving “sustained” support from the project, meaning that it has one or more ongoing work plan activities, and 3) these activities can be expected to have some eventual influence on facility-level supply chain outcomes. Countries where not all of these conditions apply to any region will be considered “non-GHSC-PSM-supported.” Only SDPs that fall within “GHSC-PSM-supported” regions are included in task order level, overall country level, or project level results reporting, as these SDPs are considered to be within the reach of GHSC-PSM’s influence.

B2. Percentage of stock status observations in storage sites where commodities are stocked according to plan, by level in supply system (tracer products)

Measure Definition

Numerator: Number of stock status observations for a tracer commodity that were within the designated minimum and maximum quantities at storage sites.
Denominator: Total number of stock status observations for a tracer commodity at storage sites.
Purpose: This indicator checks to see if the supply chain system is functioning as it was designed by tracking if both the central level and subnational level medical stores can maintain the designated quantity of stock (months of stock between min and max levels) to treat patients or to distribute to treatment facilities or secondary distribution centers. This metric can help locate bottlenecks within the system which prevent patients from receiving needed commodities and/or result in stockouts or expiries.

Task Order	Achievement FY2018 Q4	Year to Date
TO1	35%	35%
TO2	25%	25%
TO3	16%	17%
TO4	20%	19%
All TOs	22%	23%

▸ Targets for this indicator are set at the country level

Indicator Performance

		Central	Sub-National Level 1
HIV	**Task Order 1**	30%	36%
	First-line Adult ARVs	39%	51%
	Second-line Adult ARVs	30%	42%
	First-line Pediatric ARVs	29%	37%
	First RTKs	33%	30%
	Second RTKs	53%	30%
	Tie-breaker RTKs	29%	19%
	Male Condoms	13%	23%
	Female Condoms	15%	20%
	RUTF	25%	6%
	EID Consumables	38%	100%
	EID Reagents	38%	100%
	Viral Load Consumables	0%	100%
	Viral Load Reagents	25%	100%
Malaria	**Task Order 2**	22%	25%
	First-line ACTs (AL 6X1)	23%	13%
	First-line ACTs (AL 6X2)	31%	22%
	First-line ACTs (AL 6X3)	27%	14%
	First-line ACTs (AL 6X4)	8%	15%
	First-line ACTs (AS/AQ 100/270mgx3)	9%	20%
	First-line ACTs (AS/AQ 100/270mgx6)	0%	28%
	First-line ACTs (AS/AQ 25/67.5mg)	0%	29%
	First-line ACTs (AS/AQ 50/135mg)	18%	21%
	RDTs for Malaria	40%	26%
	Sulphadoxine-pyrimethamine (SP)	8%	23%
	LLINs	47%	64%

*Stocked according to plan rates presented are for all key products offered in each country, irrespective of the funder of those products.
The PRH "method level" **(in bold) refers to the percent of facilities stocked out of all products the facility offers within a given method. A stockout at the "product level" refers to the number of sites stocked out of that particular product (depending on what is offered at a particular facility). A facility could be stocked out of one product and not stocked out at the method level. Method level aggregations represent the total number of observations for each stock status summed across all tracer products within that particular method.

		Central	Sub-National Level 1
PRH	**Task Order 3**	21%	15%
	Injectable Contraceptives	34%	17%
	Depot Medroxyprogesterone Acetate 104 mg/0.65mL	36%	11%
	Depot Medroxyprogesterone Acetate 150 mg Vial, SR	36%	23%
	Norethisterone Enanthate	0%	4%
	Implantable Contraceptives	28%	17%
	Etonogestrel 68 mg/Rod, 1 Rod Implant	23%	13%
	Levonorgestrel 75mg/Rod, 2 Rod Implant	30%	21%
	Combined Oral Contraceptives	23%	13%
	Levonorgestrel/Ethinyl Estradiol 150/30 mcg +Fe 75 mg, 28 Tablets/Cycle	28%	11%
	Levonorgestrel/Ethinyl Estradiol 150/30 mcg 28 Tables/Cycle	0%	18%
	Emergency Oral Contraceptives	5%	10%
	Levonorgestrel 0.75 mg, 2 Tablets	0%	11%
	Levonorgestrel 1.5 mg, 1 Tablet	17%	6%
	Progestin-only Pills	32%	12%
	Levonorgestrel 30 mcg 35 Tablets/Cycle	32%	12%
	Copper-bearing Intrauterine Devices	4%	21%
	Calendar-based Awareness Methods	13%	38%
	Male Condoms	11%	13%
	Female Condoms	22%	10%
MCH	**Task Order 4**	14%	20%
	Oxytocin (10 IU Injectable)	18%	22%
	MgSO4 (50% Injectable)	9%	16%
	Injectable Gentamicin	10%	13%
	ORS+zinc (together)	0%	12%
	Chlorhexidine Gel	0%	36%
	Amoxicillin (125 mg or 250 mg Dispersible Tablets)	30%	21%
	Zinc (Alone)	11%	24%
	ORS (Alone)	11%	17%

B2. Percentage of stock status observations in storage sites where commodities are stocked according to plan, by level in supply system (tracer products for out-of-cycle country - Nepal)

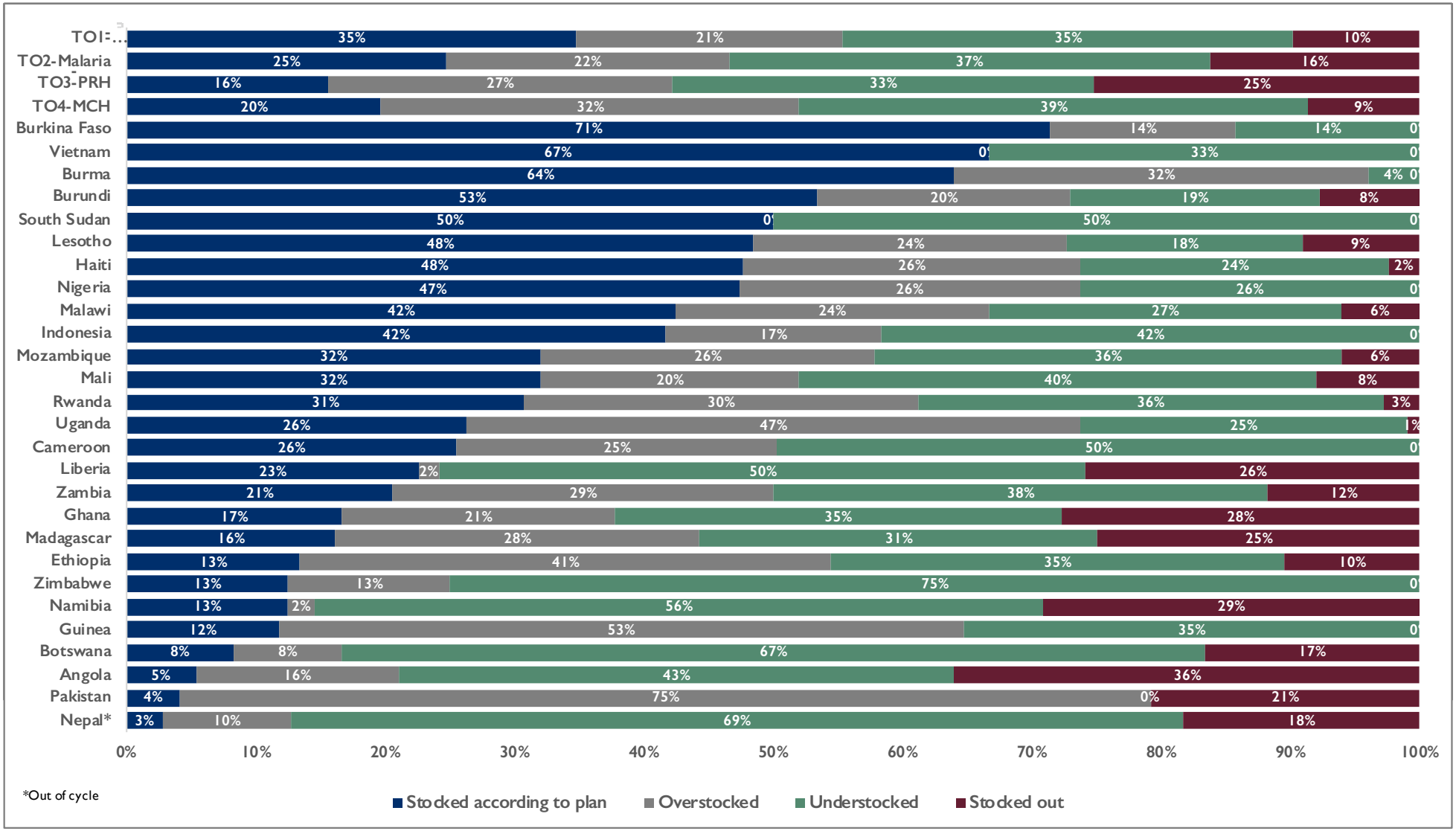
Indicator Performance

		Central	Sub-National Level 1
PRH	**Task Order 3**	0%	5%
	Injectable Contraceptives	0%	0%
	Depot Medroxyprogesterone Acetate 104 mg/0.65mL	0%	
	Depot Medroxyprogesterone Acetate 150 mg Vial, SR		0%
	Norethisterone Enanthate		
	Implantable Contraceptives	0%	25%
	Etonogestrel 68 mg/Rod, 1 Rod Implant		
	Levonorgestrel 75mg/Rod, 2 Rod Implants	0%	25%
	Combined Oral Contraceptives	0%	0%
	Levonorgestrel/Ethinyl Estradiol 150/30 mcg +Fe 75 mg, 28 Tablets/Cycle	0%	0%
	Emergency Oral Contraceptives		
	Levonorgestrel 0.75 mg, 2 Tablets		
	Levonorgestrel 1.5 mg, 1 Tablet		
	Progestin-only Pills		
	Levonorgestrel 30 mcg 35 Tablets/Cycle		
	Copper-bearing Intrauterine Devices	0%	0%
	Calendar-based Awareness Methods		
	Male Condoms	0%	0%
	Female Condoms		

*Stocked according to plan rates presented are for all key products offered in each country, irrespective of the funder of those products.
**The PRH "method level" refers to the percent of facilities stocked out of all products the facility offers within a given method. A stockout at the "product level" refers to the number of sites stocked out of that particular product (depending on what is offered at a particular facility). A facility could be stocked out of one product and not stocked out at the method level.

		Central	Sub-National Level 1
MCH	**Task Order 4**	0%	0%
	Oxytocin (10 IU Injectable)		0%
	MgSO4 (50% Injectable)	0%	0%
	Injectable Gentamicin	0%	0%
	ORS+zinc (Together)		
	Chlorhexidine Gel		0%
	Amoxicillin (125mg or 250mg Dispersible Tablets)	0%	0%
	Zinc (Alone)		0%
	ORS (Alone)	0%	0%
	PCV Vaccine		

B2. Percentage of stock status observations in storage sites, where commodities are stocked according to plan, by stock status (countries)



B2. Stocked according to plan - granular-level analysis

Analysis

- GHSC-PSM compiles indicator data for all countries in which the project maintains a field office, regardless of the extent of the project's engagement in the country. Therefore, the results in a given country for a specific point in time are not solely a consequence of GHSC-PSM's activities, but rather reflect the many stakeholders and elements that influence in-country supply chain performance.
- Overall, 22 percent of tracer products were stocked within the minimum and maximum levels at storage sites this quarter. This is a slight decrease from 24 percent last quarter.
- Tracer products were slightly more likely to be stocked according to plan at the central level for PRH products and more likely to be stocked according to plan at the first sub-national level (TO1: 30 percent central and 36 percent subnational 1; TO2: 22 percent central and 25 percent subnational 1; TO3: 21 percent central and 15 percent subnational 1; TO4: 14 percent central and 20 percent subnational 1).
- HIV products were stocked according to plan 35 percent of the time, a decrease from last quarter (36 percent). First line ARVs were stocked according to plan 39 percent of the time at the central level and 51 percent of the time at the subnational level. Second line ARVs and first line pediatric ARVs both showed a decrease in stocked according to plan at central level to 39 percent and 30 percent, respectively. Viral load reagents stocked according to plan was same as last quarter at 25 percent, and viral load consumables showed a marked decrease over last quarter from 25 percent to 0 percent. EID consumables showed a marked increase from 22 percent last quarter to 38 percent, and EID reagents showed an increase from 31 percent to 38 percent this quarter.
- Malaria products were stocked according to plan 25 percent of the time, a decrease from last quarter's 28 percent. The products most likely to be stocked according to plan include malaria rapid diagnostic tests (40 percent central level), AL 6X2 (31 percent central level), and AL 6X3 (27 percent central level).
- PRH products were stocked according to plan 16 percent of the time, the same as the previous quarter. The products most likely to be stocked according to plan include depot medroxyprogesterone acetate 150mg (36 percent central level), Levonorgestrel 30 mcg 35 Tablets/Cycle (32 percent central level), Levonorgestrel 75mg/Rod, 2 Rod Implant (30 percent central level), and Levonorgestrel/Ethinyl Estradiol 150/30 mcg +Fe 75 mg, 28 Tablets/Cycle (28 percent central level).
- MNCH products were stocked according to plan 19 percent of the time, a slight increase from 16 percent last quarter. The products most likely to be stocked according to plan at central level include Amoxicillin (125 mg or 250 mg Dispersible Tablets) (30 percent), Oxytocin (10 IU Injectable) (18 percent), and at the first sub-national Chlorhexidine Gel (36 percent) and Zinc (Alone) (24 percent).

Data notes

- Q4 data do not include subnational level 2 observations as the data were deemed not complete enough to be included.
- Stocked according to plan rates presented are for all key products offered in each country, irrespective of the funder of those products.

B2. Stocked according to plan - country-level analysis

Country Analysis	
Angola	For TO1, the HIV tracer products lowered the stock status from one level above to the next level below. During the reporting period, no shipments of the HIV tracer products were received at the central level, and distribution had been carried out during the quarter. This explains the downgrade of the stock status at this level for the tracer products. The first line HIV adult ARV and male condoms are at risk of stockout. At the provincial level (and consequently the central level), the first line ARV had one observation of being understocked in the first month of the quarter and two observations of being stocked out. The first line ARV is the only tracer that is available at the central level (understocked) that had two stockout observations at the provincial level. For TO2, at the central level all artemether lumefantrine-based ACT presentations (100%) were understocked. With all four AL presentations observed understocked at the central level, and considering that 62 percent are at risk of stockout and 20 percent are already stocked out at the provincial level, the country will be facing stockouts of antimalarials very soon.
Botswana	Most HIV products were understocked at the central level during the reporting period and RTKs, viral load reagents, and consumables were stocked out in the last month of the quarter. ARVs were understocked due to delayed shipments from local suppliers, although stock status for first line adult ARVs improved by the end of the quarter. RTK and lab product shortages occurred due to expired tenders. RTK stockouts have been resolved with emergency procurements, and the CMS is working to advertise new tenders. Finally, understocks of male condoms are due to a marked increase in consumption. The CMS is taking steps to revise the forecast for condoms to account for the increased consumption, which will help maintain adequate stock at central and SDP levels.
Burkina Faso	Apart from Alu 6x1 and SP which were understocked and overstocked, respectively, all other tracer products were stocked according to plan at the central medical stores.
Burma	At the central level in NAP, two out of three tracer ARV drugs are stocked according to plan; the remaining one has excess stock. Among the 20 observations from partners, 13 items are stocked according to plan. There were seven overstocked items from partners. The overstocked items from central and subnational levels occurred with the most used second line ARV or most used 1st line pediatric ARV. Among the TO2 commodities, malaria first line ACT was understocked, while RDT was stocked according to plan.
Burundi	Burundi reported no central-level stockouts for the second quarter in a row. Most products at both the central and district levels are either stocked according to plan or overstocked. Stock observations for Burundi are based on three monthly stock reports from CAMEBU at the central levels (with the exception of family planning, which only requisitions and reports quarterly), and from July and August monthly reports from district warehouses. District reporting is less consistent, leading to varying numbers of observations per product at the district level. Contraceptives are not stocked at the district level. GHSC-PSM is supporting a number of activities to support good inventory management practices, including improved district reporting via DHIS2, adherence to the requisition schedules, strengthening quantification subcommittees in all three task orders, and conducting quarterly inventories.
Cameroon	At the central level, HIV products were largely understocked, other than pediatric ARVs which were overstocked. This status was found down to the regional level, where two-thirds of observations were understocked. For malaria products (report from the regional level only), the team observed a stock imbalance, with overstocks and understocks varying across regions. Plans are underway to reallocate malaria products between warehouses to resolve these imbalances.
Ethiopia	A total of 544 observations were conducted in 18 PFSA warehouses. The overall stocked according to plan rate fell since last quarter and 10 percent of tracer product observations were stocked out. Stock status of malaria products improved, but that of FP/PRH commodities worsened Higher stockouts were recorded for Microgynon and emergency contraceptive pills. The project is working to improve stock management by supporting good inventory management practice including regular stock analysis, supporting the determination of stock levels, and integrating program commodities into the integrated program logistics system (IPLS).
Ghana	The stockout rate in Ghana increased this quarter by 10 percent due to several products seeing this rate increase between 20 percent and 60 percent. These products, which include some ACTs, male condoms, and emergency oral contraceptives, saw an increased stockout rate due to a decision to delay procurement in late 2017 due to overstock at the central level, quality testing delaying the issuance of product to the regional level, and gaps in distribution, respectively.
Guinea	Guinea experienced understocking of all malaria tracer products this quarter with the exception of SP, which was overstocked; as a result, no malaria products were stocked according to plan. For population and reproductive health products, the stocked according to plan rate dropped from 33 percent to 17 percent; all products were overstocked except for progestin-only pills, which were stocked according to plan.

Country Analysis	
Haiti	Due to Haiti's transition to TLD, TDF was overstocked this quarter. Second RTKs (Unigold) were the only product that experienced a stockout at the central level this quarter, but this did not lead to any stockouts at the facility level. Second line adult ARVs were also overstocked due to overforcasting. Two shipments arrived at the same time due to one having been late. Pediatric ARVs were found to be overstocked (two out of three observations) due to lower consumption that resulted from a change in policy which favored a different drug. Forty-one percent of FP/PRH observations were stocked according to plan, while most of the remainder were overstocked.
Indonesia	This quarter, no HIV product was stocked out at the central and regional facilities visited. This is a significant improvement from last quarter, when the most used second line ARV and and most used first line pediatric ARV were stocked out.
Liberia	Stocked according to plan rates for malaria declined from the previous quarter, with AL presentations mostly understocked and AS/AQ mostly stocked out. Deliveries of AS/AQ and rapid diagnostic test are expected to arrive in FY2019 Q1. For family planning, about one third of observations were stocked according to plan. While stockouts of combined oral contraceptives and injectable contraceptives did occur, these were both resolved with incoming shipments before the end of the quarter.
Madagascar	Fifty-seven percent of observations at the central level were stocked out, while another 39 percent were understocked. At the subnational level, however, 45 percent of observations were either stocked according to plan (16 percent), or overstocked (29 percent). For malaria commodities, 20 percent of subnational observations were stocked according to plan, while another 36 percent were overstocked. For FP/PRH commodities, a combined total of 35 percent of observations were either stocked according to plan (13 percent) or overstocked (22 percent).
Malawi	HIV and malaria products were generally in stock at the central level, with some understocking of male condoms and overstocking of some AL presentations. FP/RH stock status was more varied, with understocks of combined oral contraceptives and implants, and stockouts of DPMA intramuscular due to the ongoing global product shortage. GHSC-PSM shared a gap analysis with the Ministry of Health and other partners, which helped initiate procurements for condoms and injectable contraceptives. Shipments for these commodities are expected before the end of the year.
Mali	Stocked according to plan has continued to improve incrementally, despite GHSC-PSM Mali not meeting its target for this indicator. During the quarter, the National Pharmacy (PPM) received product quantities for all task order areas. PPM has made efforts to implement all distribution plans sent by the National Malaria Control Program in order to free up space and improve storage conditions.
Mozambique	Mozambique's stock statuses remained fairly consistent from last quarter, with the biggest difference being a 4 percent increase in overstock observations and a 4 percent decrease in understock observations.
Namibia	Understocks and stockouts have increased at the central level because no framework supply contracts are in place, and the CMS is only able to procure limited quantities through RFQs. GHSC-PSM provided support to the government to respond to queries for the ARV tender that closed in September 2018 and is currently undergoing adjudication. Award of this tender is expected before the end of the year, which will lead to a more stable supply of ARVs. GHSC-PSM is also processing an order for pediatric ARVs requested by the MOHSS, due to difficulties in sourcing the products.
Nepal	Stock status data were reported this quarter for four regional medical stores and two central medical stores combined as one. Because the LMIS data lag by one quarter, Q3 stock status were analyzed to be reported for Q4. All data from the storage sites at the end of Q3 were extracted manually from online IMS to ascertain the stock status. Similarly, the missing issue data (of four quarters) used to calculate monthly issue data to ascertain MOSOH for the storage sites were also extracted from online IMS. The only product that was stocked according to plan was Levonorgestrel 75mg/Rod 2 Rod Implants, which was stocked according to plan 25 percent of the time.
Nigeria	Overall, commodities that were stocked according to plan decreased in Q4 (47 percent) compared to Q3 (55 percent), while those understocked increased to 26 percent. One driver of the higher percentage of commodities understocked was HIV first and second RTKs (Determine and Unigold). The consumption of both RTKs proved to be higher than what was originally forecasted. GHSC-PSM is working to expedite the expected shipment for delivery by early October and mitigate the risk of any stockouts. FOr TO2 products, both AL1 to AL4 were stocked according to plan, but the AAs across the age bands are overstocked due to a sharp decline in consumption. GHSC-PSM is considering a review of current forecasts if the low consumption trend continues for AA.

Country Analysis	
Pakistan	Pakistan has an advanced LMIS which allows them to report stock status observations at levels lower than subnational 1. The following narrative includes observations at the subnational 2 level. The overall stock according to plan for supported sites of KP, Punjab, Balochistan, and Sindh was 16 percent during the reporting quarter, an increase from the previous quarter's 12 percent. Stock according to plan has increased in Punjab Province from 11 percent to 14 pecent, In Sindh province from 14 percent to 17 percent, and in KP from 10 percent to 20 pecent, whereas in Balochistan stocked according to plan has remained unchanged at 15 percent during the reporting period. Stocked according to plan remains low in Punjab due to direct shipments by province to SDPs, bypassing districts. GHSC-PSM is analyzing methods to adjust this phenomenon in future reporting.
Rwanda	The overall stocked according to plan rate increased from 20 percent last quarter to 31 percent in Q4, while the percentage of commodities understocked decreased to 36 percent this quarter compared to 44 percent last quarter. While Atazanavir/Ritonavir was at risk of stocking out at the central level, the CPDS has requested that the next planned GHSC-PSM shipment be delivered early, by January 2019. Most commodities were available at the facility level, and even with some understocked or stocked out commodities upstream at higher levels of the supply chain, there was no interruption of the services at the SDP level.
Uganda	Fifty-six percent of TO1 commodities were stocked according to plan, which was maintained from FY18 Q2. This stability was mainly due to on-time delivery that ensured supply plans stayed between minimum and maximum levels, with the exception of the most used first line ARVs for adults, which was understocked. Data for TO1 RUTF are currently not available. TO2 commodities also remained stocked according to plan at 6 percent, although 94 percent of TO2 commodities were overstocked though without risk of expiry. TO3 commodities were stocked according to plan in Q4, and this remained the same as the previous quarter at 20 percent. Shipments of injectable contraceptives were delivered in August 2018 for alternative distribution, and more contraceptive implants will be delivered in November. There were delays in distribution following a stop work order and subcontract change order sent to UHMG for USAID-procured FP commodities arrangements that have been transferred to JMS.
Vietnam	Two of three observations of the HIV most-used first line ARV items were understocked according to plan because two orders arrived in August that couldn't be distributed, as the manufacturing site is different than the marketing authorization in the carton box. GHSC-PSM now working closely with MOH to solve this issue.
Zambia	Zambia's central medical store (MSL) experienced understocking of Nevirapine, having issued out most of its stock to facilities in June. However, additional shipments were received in August and September and expected in October, and facilities have not been affected. Efavirenz 200mg was centrally stocked out at the end of August 2018. This is due to an inaccurate assumption during forecasting that most children would move to adult regimens of this product. The forecast has since been adjusted upwards. To address this issue, GHSC-PSM pushed up two of its shipments and has planned additional shipments for November and January. Abacavir 300mg was overstocked due to decreased use of the commodity, but there is no risk of expiry. Similarly, Efavirenz 600mg and Lamivudine/Zidovudine 300/150mg were overstocked but are not at a significant risk of expiry. For several AL pack sizes, the situation is similar, with overstocks that are not at risk of expiry as the country heads into the malaria season. SP has been stocked out and may continue to be as no funding for additional shipments has been planned. RDTs were understocked due to a delayed shipment from another partner. Part of that shipment was received in September and the remainder is now scheduled for January. Although facility demand for copper IUDs has been low, they are stocked out at the central level due to high issues to facilities immediately after a stock count last January; however facilities continue to be adequately stocked due to low demand. Noristerat is currently also stocked out centrally, but a shipment is expected this month. Injectable contraceptives (DepoProvera) is understocked due to the high demand for this and other short-term FP methods.
Zimbabwe	First line ARVs were understocked at the central level, as the new regimen has been pushed to facilities. Second line adult ARVs are overstocked. The shortage of foreign exchange led the Nation AIDS Trust Fund (NATF) to seek a cost sharing arrangement with UNDP, while simultaneously pursuing funding from relevant local authorities. This resulted in some duplicate orders, producing overstocks. GHSC-PSM has delayed some shipments to mitigate the risk of expiries. Additional products were understocked for numerous reasons, including a QA hold on condoms, delayed shipments, funding gaps, expiries, and short-term increases in consumption of testing reagents. Malaria products were understocked at the central level because stock was distributed to facilities.

B3. Service delivery point (SDP) reporting rate to the logistics management information system (LMIS)

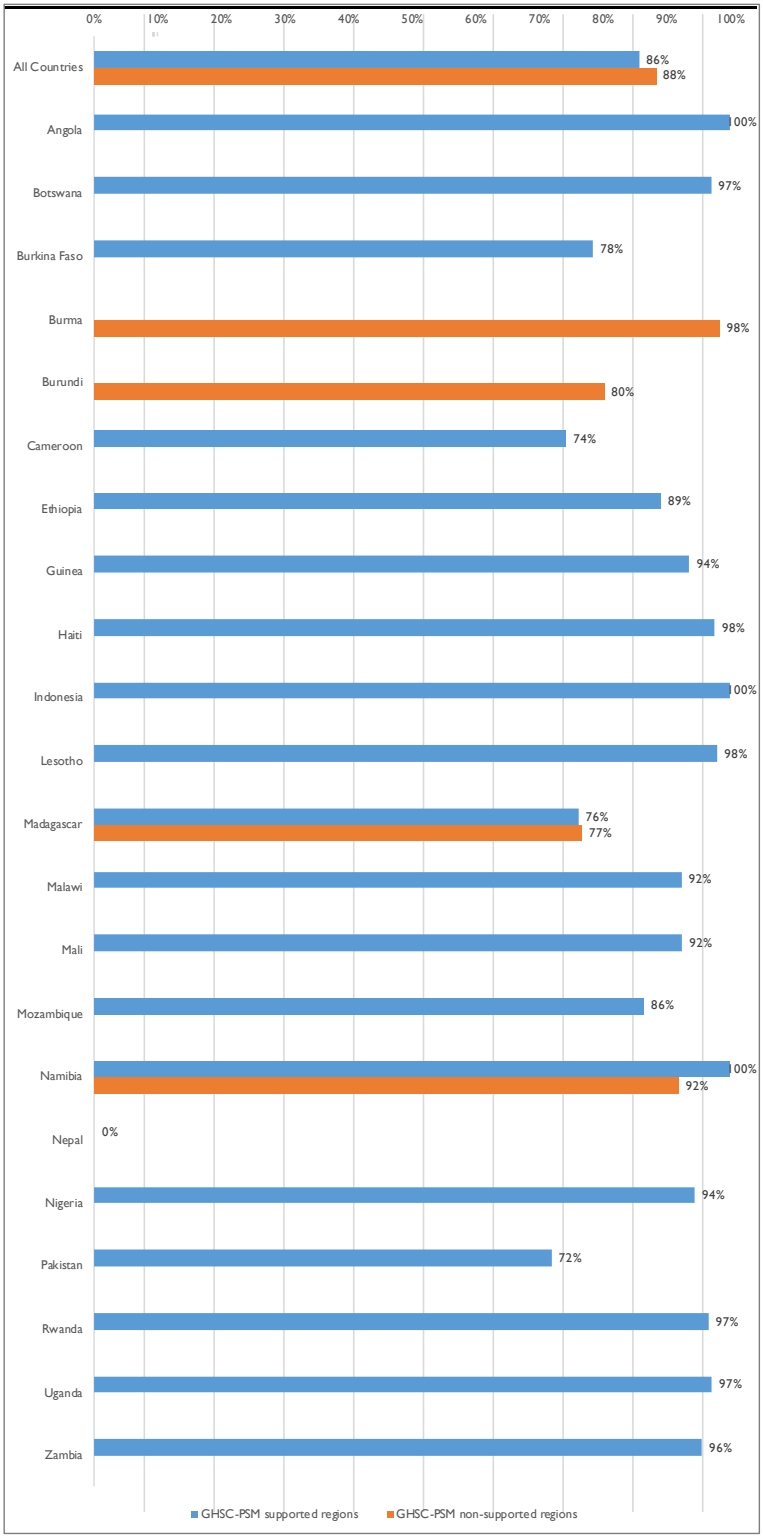
Measure Definition

Numerator: Number of SDPs whose LMIS report(s) or order form(s) were received at the central level within 30 days of the specified in-country deadline.
Denominator: The total number of SDPs in-country that are required to report.
Purpose: This indicator determines whether timely SDP-level data are available to supply chain managers, who use these data for decision making. It illustrates whether SDP data are flowing smoothly up through the LMIS without becoming stuck in bottlenecks along the way. Both timely submission of reports by the SDPs, as well as timely aggregation and/or data entry at any intermediate levels, are used to determine this indicator's performance.

Task Order	Achievement	
	FY2018 Q4	Year to Date
TO1	89%	88%
TO2	91%	88%
TO3	69%	76%
TO4	55%	66%
All TOs	76%	80%

▸ Targets for this indicator are set at the country level

Indicator Performance



Analysis

- The overall reporting rates decreased by 9 percentage points this quarter. This is largely driven by TO3 and TO4, both of which saw a decrease in reporting rates by 11 percent and 26 percent, respectively. This decrease can mostly be attributed to Nepal, which changed its administrative structure from a central to a federal one. Lack of clarity of the fate of the district stores during the reporting period might have resulted in demotivation among district store's staff responsible for sending the reports to the LMIS unit.
- Haiti had a perfect reporting rate for HIV/AIDS sites, while for FP/PRH, the rate declined very slightly to 96 percent, for an overall reporting rate of 98 percent. Most sites continue to report on time or within a week of the deadline, while a small percentage report within two weeks of the deadline.
- Botswana has maintained high reporting rates from GHSC-PSM-supported SDPs. The success is mainly attributed to continued dedicated follow-up by the Logistics Management Unit (LMU) at CMS. GHSC-PSM site monitors were also deployed in Q2 and have been providing technical assistance to the District Health Management Team (DHMT) and health facilities in managing inventory and compiling monthly LMIS reports.
- Reporting rates in Malawi have remained consistent since the previous quarter, with a small increase in FP/RH reporting (84 in Q3 to 87 percent in Q4), and a larger increase for maternal and child health (from 88 to 93 percent in the same timeframe). GHSC-PSM has been working to assist District Health Offices with internet airtime, and to conduct supportive supervision to sites to ensure continued functionality of OpenLMIS and high reporting rates.
- Guinea maintained its high reporting rate for malaria products (99 percent) and increased its reporting rate for PRH products from 84 to 87 percent this quarter, up from only 67 percent in the first quarter of the year. These rates were achieved despite the fact that the new eLMIS was being rolled out.
- Namibia's reporting rate rose from Q3 to Q4, with strong increases in the number of sites reporting within one week of the reporting deadline. GHSC-PSM provided significant training this quarter, emphasizing the use of inventory and dispensing tools, and on-time reporting.
- In Madagascar, despite the addition of many new sites, the reporting rate only dropped slightly from 79 to 76 percent.
- Mali's reporting rate remained strong for Task Orders 2, 3, and 4 (at 95 percent for all), but continued to be very low for Task Order 1 (11 percent). The success of Task Orders 2, 3, and 4 can be partly attributed to the technical assistance from regional GHSC-PSM technical advisers in the regions of Koulikoro, Sikasso, Segou, Mopti, and to the internet service packages that GHSC-PSM provided to the regional health directorates to speed up data entry in OSPSANTE. Regarding Task Order 1 reporting, a meeting involving all relevant actors has been planned to address a leadership gap in this area.
- Burkina Faso's reporting rate improved this quarter due to the end of the health workers strike that had hampered data collection last quarter.
- The overall LMIS reporting rate in Ethiopia for the current quarter was 89 percent, which is 1.7 percent lower than the previous quarter. Despite this slight decrease, the trend shows significant improvement compared to FY18-Q2, which was 81 percent.

Data Notes

- **Targets for this indicator are set at the country level.**
- SDPs located in non-GHSC-PSM-supported regions are not included in the task order or project level totals reported at the top right.
- Certain countries have limited access to SDP data and report stockouts (B1) and are reporting rates from a small number of sites. These include Angola (21 sites), Botswana (33), Indonesia (12), and Namibia (64). See the Denominator Annex at the end of this report for a complete listing of country denominators by task order.

B3. Service delivery point (SDP) reporting rate to the logistics management information system (LMIS)

Country SDP Reporting Rates by Task Order		Angola	Botswana	Burkina Faso	Burma - Not Supported	Burundi - Not Supported	Cameroon	Ethiopia	Guinea	Haiti	Indonesia	Lesotho	Madagascar	Madagascar - Not Supported	Malawi	Mali	Mozambique	Namibia	Namibia - Not Supported
HIV	TO1	100%	97%		98%	84%	74%	89%		100%	100%	98%			93%	11%	98%	100%	92%
Malaria	TO2	100%		78%	98%	82%		89%	99%				94%	89%	97%	95%	71%		
PRH	TO3					75%		88%	87%	96%			90%	87%	87%	95%	85%		
MCH	TO4							90%					43%	52%	93%	95%	75%		

Country SDP Reporting Rates by Task Order		Nepal*	Nigeria	Pakistan	Rwanda	Uganda	Zambia	Zimbabwe
HIV	TO1		94%		97%	95%	92%	75%
Malaria	TO2		97%		96%	98%	97%	76%
PRH	TO3	0%	91%	72%	94%		97%	
MCH	TO4	0%			100%		97%	

Data Notes

- Country and task order reporting rates are for service delivery points located in GHSC-PSM-supported regions, unless otherwise noted. Relevant regions for this indicator are the first subnational administrative units below the central level. A region is considered "supported" by GHSC-PSM if the project is providing sustained support to that region, meaning that it has one or more ongoing work plan activities directed at that region and can be expected to have some eventual influence on SDP-level supply chain outcomes there.
- Data for SDPs in non-supported regions are excluded from the project- and task order-level summary totals reported on the previous page.
- Blank boxes in the tables above and to the left indicate that the associated task order is operating in the country, but that there is no LMIS for reporting or no GHSC-PSM access to reporting for that health element.

B4. Average rating of in country data confidence at the central, subnational, and SDP levels

Measure Definition

Numerator: Sum of all rating scores (0-9 points each) for all sites reporting.
Denominator: Total number of sites reporting.

Task Order	Annual Target	Achievement FY2018
TO1	N/A	6.2
TO2	N/A	6.5
TO3	N/A	6.7
TO4	N/A	6.7
All TOs	N/A	

Indicator Performance

Country	TO1	TO2	TO3	TO4
Angola	7.9 [8]	7.7 [11]	6.5 [6]	
Cameroon	6.8 [24]	5.8 [16]		
Ethiopia	6.7 [109]	6.6 [99]	7.3 [101]	7.1 [101]
Ghana	8.7 [3]	8.7 [3]	9 [3]	9 [3]
Haiti	7.8 [104]		7.8 [75]	
Lesotho	9 [5]			
Madagascar		6.5 [52]	6.1 [52]	6.3 [7]
Malawi	6.1 [130]	6.0 [130]	6.2 [130]	6.5 [130]
Mali	2.3 [37]	6.1 [78]	5.3 [78]	5.4 [78]
Mozambique	6.2 [70]	6.2 [70]	6.2 [70]	6.2 [70]
Namibia	7.0 [31]			
Nepal			7 [6]	7 [6]
Nigeria	4.2 [187]	5.1 [119]	4.0 [54]	1.4 [26]
Pakistan			7.3 [69]	7.3 [21]
Rwanda	7.9 [83]	8.1 [83]	8.4 [83]	8.5 [83]
Uganda	8.4 [28]	8.0 [31]	7.9 [12]	
Zambia	6.7 [43]	7.1 [43]	6.9 [43]	7.2 [43]
Zimbabwe	6.9 [58]	7.3 [58]		

Analysis

- GHSC-PSM developed a data quality assessment (DQA) user guide to measure the average rating of in-country data confidence. The purpose of the guide is to provide direction for data collectors on how to review source documentation and report stock data against required data elements, and to provide ratings on whether the data are available, accurate, and timely. The guide also looks at data management and reporting system components to identify the underlying causes for poor data quality in line with USAID's and WHO's data quality frameworks. Countries are scored on a scale of 0-3 for each of three data quality attributes: data completeness, accuracy, and timeliness. For each site, the three scores are summed to get a score ranging from 0 to 9. A score of 8-9 is considered "very good," 6-7 is considered "good," 4-5 is "fair," 2-3 is "poor," and 0-1 is "very poor."

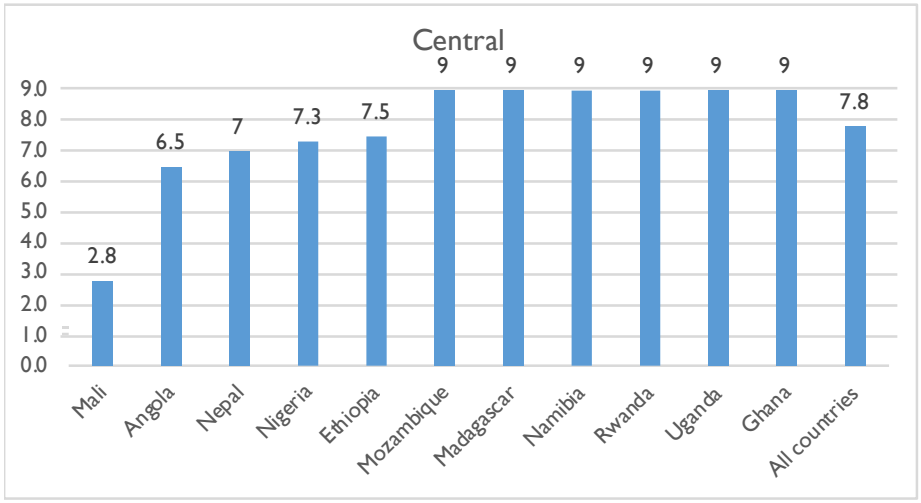
- Central level data quality (assessed in 11 countries) ranged from 2.8 in Mali to 9 in Mozambique, Madagascar, Namibia, Rwanda, Uganda, and Ghana. Subnational data quality (assessed in 11 countries) ranged from 5.9 in Madagascar to 9 in Rwanda. SDP data quality (assessed in 16 countries) was the lowest rated among supply chain levels, ranging from 4.3 in Nigeria to 9 in Lesotho. Both the number of sites and the supply chain levels assessed varied widely from country to country.

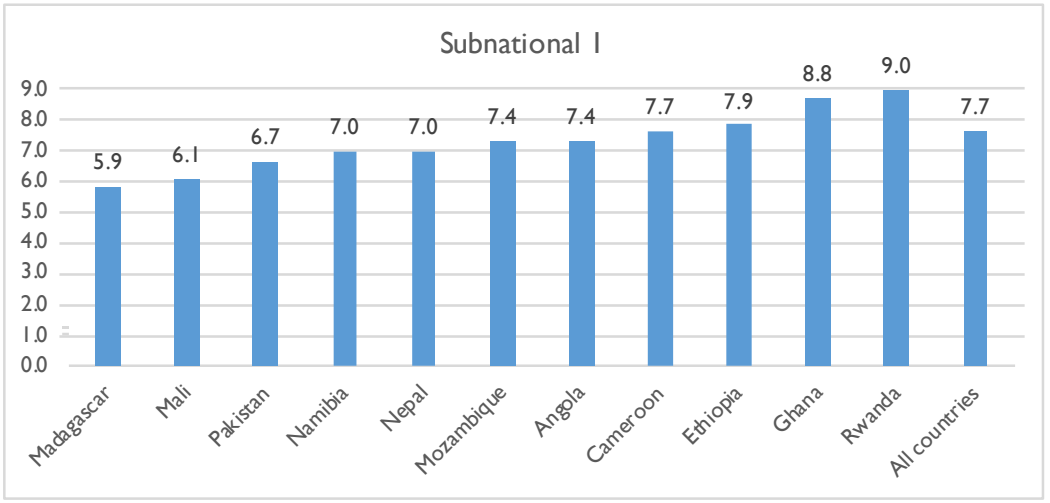
Data Notes

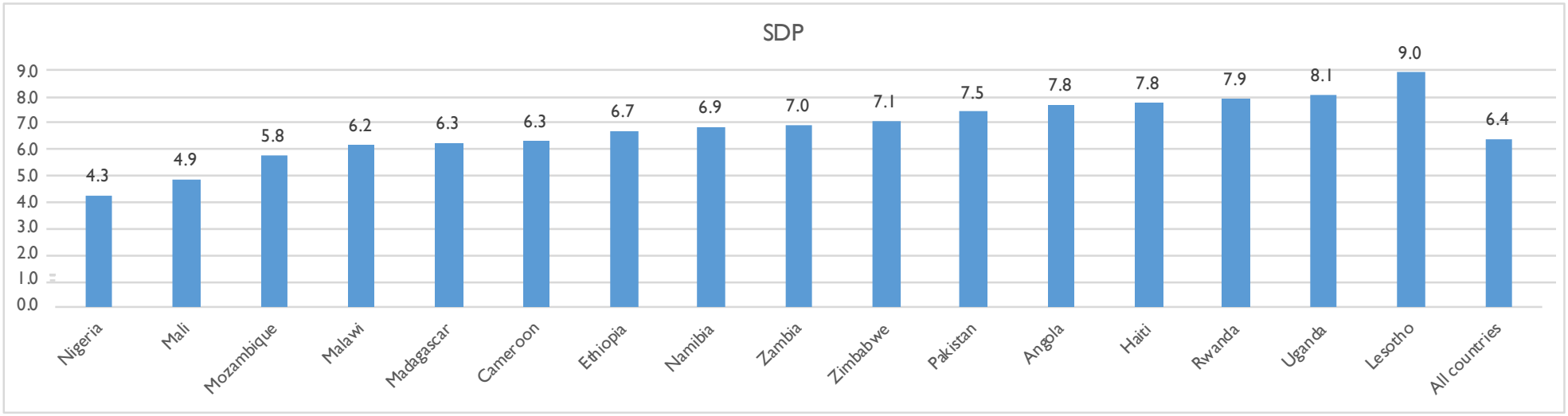
- Data for this indicator was collected using a standardized DQA tool and methodology developed by GHSC-PSM to assess data availability, accuracy, and timeliness.
- The number of sites visited, the levels of the supply chain assessed, and the extent to which countries were able to conduct representative assessments varied per country. The number of sites is in [brackets] next to the score. In many instances, the data have limited ability to be generalized outside of the sites visited.

B4. Average rating of in-country data confidence at the central, subnational, and SDP levels

Indicator Performance







B4. Average rating of in-country data confidence at the central, subnational, and SDP levels

Country Analysis	
Angola	GHSC-PSM supports one central warehouse for TO1, TO2 and TO3, 18 provincial warehouses (TO2 and TO3, with an exception for Luanda deposit for TO1) and nine SDPs (TO1) and eighteen SDPs (9 x TO1 and 12 x TO2, where 3 SDPs are both for TO1 and TO2). From this sample size, a total of 19 sites were selected for DQA. The central warehouse, CECOMA, received a score of 6.5. The sub-national storage sites recieved an average score of 7.4 and the SDPs received an average score of 7.8.
Botswana	A data quality assessment for Botswana was not planned for FY2018. As such, there are no data for this indicator.
Burkina Faso	A data quality assessment for Burkina Faso was not planned for FY2018. As such, there are no data for this indicator.
Burma	A data quality assessment for Burma was not planned for FY2018. As such, there are no data for this indicator.
Burundi	Burundi's data quality assessment was conducted late in the fiscal year and was not completed in time for this reporting.
Cameroon	DQAs were conducted in two regional warehouses for HIV products, and one for malaria products. Data quality at these sites is generally high. SDPs with some reporting challenges were purposively selected for DQAs to enable coaching and mentoring of those sites Of the 22 sites selected for HIV, 15 also had malaria data available. A major data quality challenge for these sites were incomplete and/or un-updated stock cards.
Ethiopia	The DQA was conducted in 13 PFSA branches, 88 health facilities and 4 regional labs, along with the central PFSA, with an additional systems assessment conducted in 11 regional health bureaus. The objective was to sample about 7 percent of 1,245 ART service delivery points that GHSC-PSM selected and included for the internal database, which is about 88 SDPs, 4 regional labs, 13 PFSA hubs, and the central PFSA warehouse. SDP sampling was also conducted based on the relative geographical size of the regions, with the larger regions having more data points selected. However, regardless of region size, at least four SDPs were sampled from each region. Political instability in Somali and Oromia regions during the data collection period was a major factor in the decision to exclude some SDPs from the two regions and two hubs (Jigjiga and Negelle Borena) from the assessment. This preliminary result shows overall data confidence of 6.9 out of 9, an increase over the 6.3 score from last year. The average data confidence was rated to be good. The data confidence rate is found to be better for PFSA hubs than SDPs.
Ghana	Ghana assessed the data confidence in the Central and Regional Level Monthly Stock Status Report, which is managed by Global Fund in partnership with GHSC-PSM colleagues.
Guinea	Guinea is currently in the process of conducting its annual DQA.
Haiti	Haiti's overall and task order level data quality score was 7.8, collected only at the SDP level. This was among the highest scores for the facility level, and represented an increase for Haiti for Task Order 1 products from 6.8 last year to 7.8 this year ("good" to "very good"). The Task Order 3 score remained at 7.8. There were numerous activities implemented in the past year which may have contributed to the strong performance. These include an "incentives for better performance" strategy that recognized high performing facility stock managers and site managers, a "smartphone for reporting" activity that provided remote family planning sites with smartphones and a program to report stock data through these devices, and the "Système de Gestion des Données de Consommation et Calcul" (SYGDOCC calculation tool and system) developed by GHSC-PSM Haiti that ensures timely receipt of consumption data from facilities and helps strengthen inventory management and reporting. In addition, routine data validation was completed in all ten departments by the GHSC-PSM Haiti data validation team, while at the same time empowering and training the government's regional supply chain monitors to take over this data validation in their regions.
Lesotho	For the assessment, 10 percent of SDPs were included in Leribe and Berea districts. They used the most recently reporting end balance in the informed push compared with stock on hand in the bin cards to assess data accuracy.
Liberia	A full data quality assessment for Liberia's logstics data was not conducted this year. Anecdotally, data availability has improved this year, as Liberia is now able to provide central level stock status for indicator B2, as well as the PPMR and PPMRm.
Madagascar	Madagascar assessed 39 health facilities, all 12 district pharmacies (PhaGDis), and the central medical store (SALAMA). The central medical store is ISO 9001 certified and received a perfect score of 9 from the assessment. Subnational warehouses scored the lowest, at 5.9, and SDPs scored 6.3 overall, which is considered "good." Among malaria commodities, SDPs scored a 6.5, while for FP/PRH commodities they scored a 6.2.

Country Analysis	
Malawi	Malawi conducted DQAs at 130 service delivery points, out of a total of nearly 700, sampling from three strata (district and central hospitals, rural hospitals, and health centers). Availability and accuracy of data is generally good across task orders, with slightly weaker scores for HIV and malaria accuracy. Data timeliness scores (which is based on district reporting of SPD data to higher levels) were lower, averaging 1.2 out of 3. (This is consistent with the high reporting rate in B3, as the parameters for timely reporting the DQA exercise are more stringent than the overall reporting rate). The MOH and GHSC-PSM support good quality data in Malawi through supportive supervision to continuously address performance gaps and improve commodity and data management.
Mali	Mali's overall data quality score was 5.2, classified as "fair". When considered by supply chain level, Mali's regional and district warehouses scored the highest, at 6.1 ("good"), while the central level only scored 2.8 ("poor"). At the central medical store, data availability was low, with important data elements such as average monthly consumption, minimum and maximum stock levels, and days of stockouts left blank. For the most part, stock card data did not align with stock reports, leading to low data accuracy. In terms of timeliness, the central medical store also had not submitted logistics reports since July 2018. SDPs scored "fair" (5.9) due to a tendency to not complete primary stock management tools, and the practice of storing products using different units than the purchase units leading to data errors. Some sites produced their stock reports without completing stock cards. The score for malaria products was 6.1, which is classified as "good", while HIV/AIDS products only scored a 2.3 for data quality, classified as "poor". Data quality has been a big challenge for the HIV/AIDS program, beginning with an LMIS reporting rate of only 11 percent. Data entry into OSPSANTE is not occurring, and reports are not being submitted on time in most of the sites surveyed. In several regions, district warehouses did not have stock cards for HIV/AIDS products. One of the main reasons for the low reporting rate for HIV/AIDS products is the parallel flow of products and the related information system set up by the National AIDS Control Program. GHSC-PSM is discussing with in-country stakeholders about integrating the HIV/AIDS LMIS with the existing integrated LMIS for Malaria, FP, MNCH and other key essentials medicines. There are a number of actions GHSC-PSM Mali is taking to improve the data quality weaknesses identified. At the facility level, the project is providing capacity building (including supportive supervision) to stock and facility managers on the use of paper-based LMIS forms. At the regional level, GHSC-PSM is convening health districts on a quarterly basis to discuss supply chain management issues. This mechanism is very productive, but there is a gap at the district level where other implementing partners support monthly or quarterly meetings where supply chain issues have not normally been discussed. GHSC-PSM will be joining these meetings and will increase the focus on supply chain. Additionally, GHSC-PSM is seeking opportunities to leverage funds from USG partners and other donors such as The Global Fund, Project Last Mile, etc., to improve data analysis and use of logistics data at lower levels.
Mozambique	At the central level, three of the six central warehouses were visited (Zimpeto, Matola, and Pioneiros) as staff faced challenges visiting the remaining three warehouses. At the subnational level, all provincial warehouses were visited, while at the SDP level, 5 percent of SDPs (or 67 SDPs) in all 11 provinces were selected, though due to accessibility issues 11 sites ultimately could not be visited. The sample of SDP facilities included those using SIGLUS because GHSC-PSM started using this data for this system this fiscal year.
Namibia	Data quality was assessed during targeted national support supervisory visits conducted by teams from the MoHSS division of pharmaceutical services in collaboration with GHSC-PSM. The teams visited seven regions in February and March 2018. On-site support to health facilities was conducted using customized checklists at 17 hospitals, 24 primary health facilities, and the two multi-regional medical depots (one in Oshakati and the other in Rundu). Data accuracy, with an average score of 1.3 out of 3, was identified as the area which needs improvement and will be a focus for the project in FY19.
Nepal	In FY18, a DQA was conducted at the two central and four regional medical stores. This is also the first time in two central and two regional stores that eLMIS was used as the source to conduct the DQA. In the other two regional stores where eLMIS was not implemented, online IMS was used as the data source. Based on the field observation, the data availability parameter is incomplete unless a few sites below the assessed storage sites also undergo a DQA process to complete the supply chain cycle. Overall, the data availability was good for all the sites, while data accuracy was not good for most of the storage sites. Both the central stores and the regional stores received an average score of 7.
Nigeria	At the central level, 7.3 was the average rating of in-country data confidence. Data were collected beween March and April, 2018 over approximately eight weeks across 246 facilities (240 SDPs and six stores) in 16 states plus FCT. Overall ratings show that the central level sites had high confidence scores for Task Order 1 and 2 for all parameters (data timeliness, accuracy, and availability), while TO3 had a fair rating for data availability and poor ratings for accuracy and timeliness. At the SDP level, average ratings were fair to poor for all task orders, with TO4 rating the lowest. Although he project has just started TO4 technical assistance in few states, data quality was assessed on TO4 in all states visited, even those that have not yet received techincal assistance. The project will explore means of improving on-the-job training at the SDP level on inventory management, including appropriate use of LMIS tools to improve their quality of data.

Country Analysis	
Pakistan	Joint field monitoring visits were conducted at districts and the facility level to collect and analyze data for B4 indicator on data availability, accuracy, and timeliness for FP tracer products. During the reporting period, joint field monitoring visit were conducted in sub national (district stores), SDPs in KP, Sindh and Punjab. The overall score for sub national and SDPs visited was 7.3 out of 9, which indicates fair/good data availability, accuracy and timeliness of tracer products. The overall rating for data availability of tracer product at 90 sub-national and SDPs visited sites was 2.7 out of 3 (fair/good). The overall rating for data accuracy of tracer product at 90 sub-national and SDPs visited sites was 2.4 out of 3 (fair/good). The overall scoring for data timeliness of tracer product at 90 sub-national and SDPs visited sites was 2.2 out of 3 (fair/good).
Rwanda	The average rating of in-coutry data confidence for Rwanda was 9 at the central level. Across the TOs at all sites, TO4 had the highest rating at 8.5, followed by TO3 (8.4), TO2 (8.1) and TO1 (7.9). Although overall the ratings were still higher than average, for TO1, accuracy was the weakest with a rating of 2.2, driving the overall rate lower compared to other TOs. Timeliness scored 2.6 and completeness 2.7.
Uganda	The purpose of the DQA was to build confidence in the logistics data from the national DHIS2/HMIS and to ensure that GHSC-PSM is aware of the strengths and weaknesses of logistics data in relation to three data quality dimensions. A simple random sampling method was used to select SDPs, while warehouses were purposively sampled and interviewed. Some data collection challenges included incomplete stock cards and stock books, lack of some stock cards for a few items like LLINs at some SDPs, and limited personnel to carry out the DQA (only one person available) amidst competing demands. The central medical store received a score of 9 while service delivery points received an average score of 8.1
Vietnam	A data quality assesment was not planned for Vietnam for FY18.
Zambia	The overall data confidence rating for Zambia facilities was good (7 out of 9), out of which maternal and child health products represented the highest data quality at 7.2. TO1 had the lowest data confidence rating at 6.7. Out of the 43 facilities assessed, 51 percent (22/43) had very good data quality, representing a 21 percentage point increase from the previous FY17 DQA which was at 30 percent. This means that required data were available for all or nearly all tracer products. Data are recorded, calculated, and reported accurately and in a timely manner. Thus, the project is 80-90 percent confident that 51 percent of sampled facilities had very good data quality.Additionally, 37 percent (16/43) of the facilities had good quality data, meaning that the required data were available for most tracer products. There may be some errors in how data are recorded, calculated, or reported, but most elements are usually accurate. Reports are mostly submitted on time. Therefore, the project is 60-70 percent confident that in 37 percent of the sampled facilities the data quality was good. Only 5 percent of sampled facilities (2 out of 43) had fair data quality, and 7 percent (3 out of 43) had poor data quality. The central medical store was not assessed.
Zimbabwe	A DQA was conducted on the Zimbabwe Assisted Pull System (ZAPS), which serves over 1,700 sites. The country was divided into northern and southern regions, from which three provinces were randomly selected. For travel feasibility, two districts per region and five sites per district were also randomly selected for site visits. Data quality scores for availability and timeliness of reporting are similar for both task orders. In terms of accuracy, average scores are generally lower for HIV products. This may be due to transitions for key HIV tracer products this year, which impacted record keeping down to the health facility level.

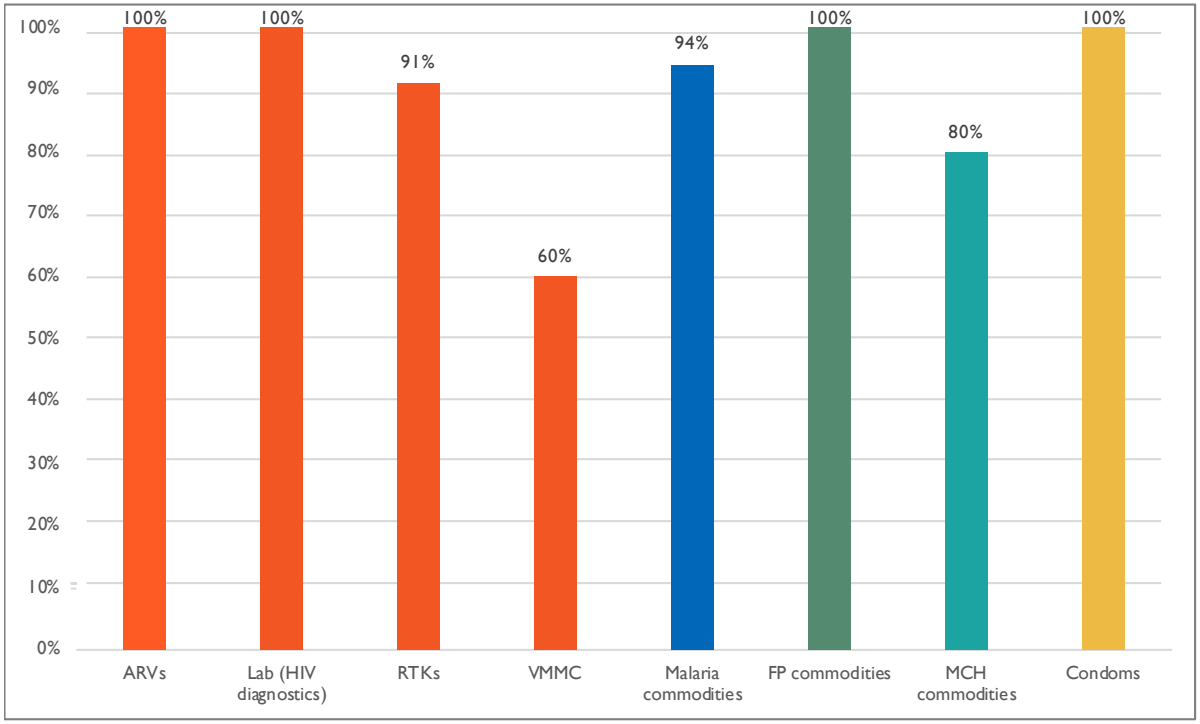
B5. Percentage of GHSC-PSM countries conducting annual forecasts

Measure Definition

Numerator: Number of all GHSC-PSM-supported countries that conducted required annual forecasts
Denominator: Total number of GHSC-PSM-supported countries that are required to conduct annual forecasts

Commodity Group	Achievement FY18
ARVs	100%
Lab (HIV diagnostic)	100%
RTKs	91%
VMMC	60%
Malaria Commodities	94%
PRH Commodities	100%
MNCH Commodities	80%
Condoms	100%
Total	94%

Indicator Performance



Analysis

- GHSC-PSM-supported countries reported that 94 percent of required annual forecasts were conducted in FY18. This ranged from 100 percent for ARVs and RTKs to 78 percent for MNCH commodities.
- Countries reporting that no annual forecast was conducted in FY18 include:

  RTKs: Malawi
  VMMC: Malawi, Zambia
  Malaria: Burkina Faso
  MCH: Ghana, Haiti

Data Notes

- The denominator is based on the number of countries in a particular TO where annual forecests are expected to be updated, and therefore we would expect to have visibility into whether an annual forecast was conducted. The denominators per category group are: ARVs [14] ; Lab (HIV Diagnostics) [11] ; RTKs [11] ; VMMC [5] ; Malaria Commodities [16] ; FP Commodities [17] ; MNCH Commodities [9] ; Condoms [10] .

B5. Percentage of countries conducting annual forecasts

Commodity	Country	Annual Forecast Conducted
ARV	Angola	Yes
	Botswana	Yes
	Burundi	Yes
	Cameroon	Yes
	Ethiopia	Yes
	Ghana	Yes
	Haiti	Yes
	Mozambique	Yes
	Rwanda	Yes
	South Sudan	Yes
	Uganda	Yes
	Vietnam	Yes
	Zambia	Yes
	Zimbabwe	Yes
Lab	Botswana	Yes
	Burundi	Yes
	Cameroon	Yes
	Ethiopia	Yes
	Haiti	Yes
	Mozambique	Yes
	Rwanda	Yes
	South Sudan	Yes
	Uganda	Yes
	Zambia	Yes
	Zimbabwe	Yes
RTK	Burundi	Yes
	Cameroon	Yes
	Ethiopia	Yes
	Ghana	Yes
	Haiti	Yes
	Malawi	NO
	Mozambique	Yes
	Rwanda	Yes
	South Sudan	Yes
	Uganda	Yes
	Zambia	Yes
VMMC	Malawi	NO
	Mozambique	Yes
	Uganda	Yes
	Zambia	NO
	Zimbabwe	Yes

Commodity	Country	Annual Forecast Conducted
Malaria	Angola	Yes
	Burkina Faso	NO
	Burundi	Yes
	Ethiopia	Yes
	Ghana	Yes
	Guinea	Yes
	Madagascar	Yes
	Malawi	Yes
	Mali	Yes
	Mozambique	Yes
	Niger	Yes
	Rwanda	Yes
	South Sudan	Yes
	Uganda	Yes
	Zambia	Yes
	Zimbabwe	Yes
PRH	Angola	Yes
	Burundi	Yes
	Ethiopia	Yes
	Ghana	Yes
	Guinea	Yes
	Haiti	Yes
	Madagascar	Yes
	Malawi	Yes
	Mali	Yes
	Mozambique	Yes
	Nepal	Yes
	Nigeria	Yes
	Pakistan	Yes
	Rwanda	Yes
	South Sudan	Yes
	Uganda	Yes
	Zambia	Yes
MNCH	Ethiopia	Yes
	Ghana	NO
	Haiti	NO
	Madagascar	Yes
	Mali	Yes
	Mozambique	Yes
	Nepal	Yes
	Pakistan	Yes
	Rwanda	Yes
	Zambia	Yes
Condoms	Ethiopia	Yes
	Ghana	Yes
	Haiti	Yes
	Malawi	Yes
	Mozambique	Yes
	Rwanda	Yes
	South Sudan	Yes
	Uganda	Yes
	Zambia	Yes
	Zimbabwe	Yes

B6. Percentage of required supply plans submitted to GHSC PSM during the quarter

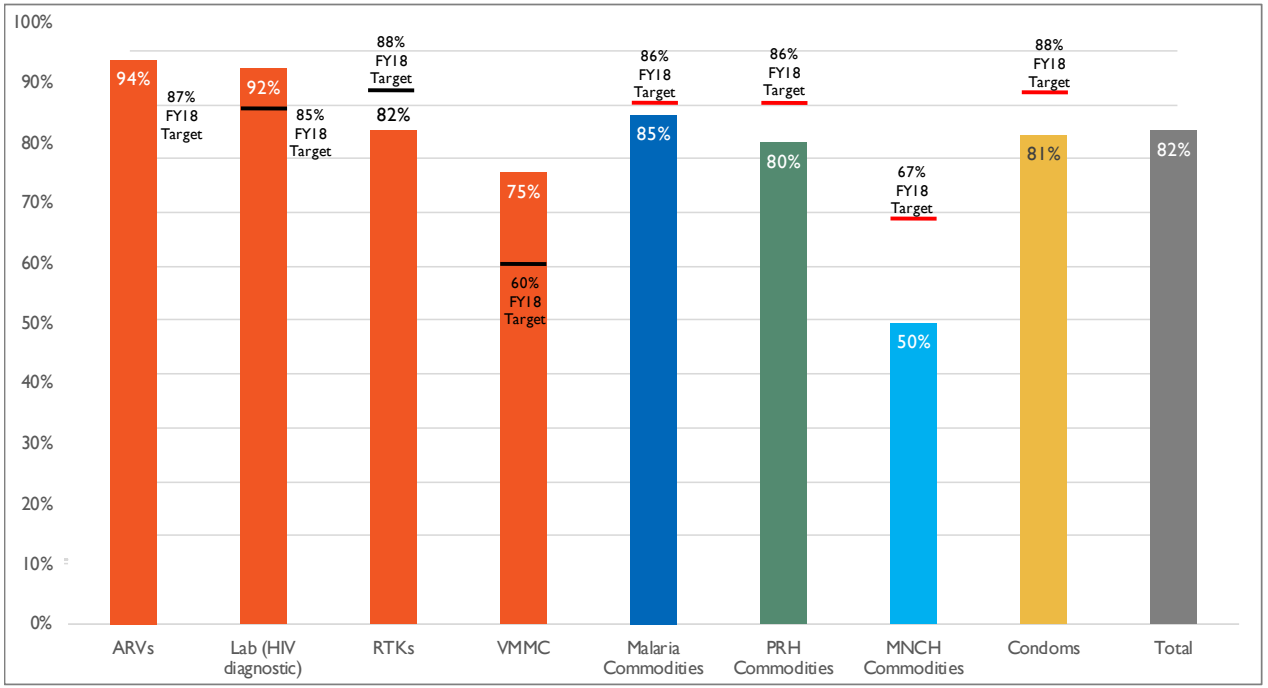
Measure Definition

Numerator: Number of required supply plans that were submitted to GHSC-PSM in the quarter
Denominator: Total number of required supply plans
Purpose: Regular visibility into country supply plans is integral to accurate forecasting, which is at the root of commodity security.

Achievement

Commodity Group	FY18 Target	FY2018 Q4	Year to Date
ARVs	87%	94%	93%
Lab (HIV diagnostic)	85%	92%	96%
RTKs	88%	82%	81%
VMMC	60%	75%	69%
Malaria Commodities	86%	85%	85%
PRH Commodities	86%	80%	73%
MNCH Commodities	67%	50%	50%
Condoms	88%	81%	68%
Total	N/A	82%	80%

Indicator Performance FY2018 Q4



Analysis

- During Q1, the Forecasting and Supply Planning (FASP) technical working group completed the supply plan expectation exercise, establishing the universe of country/commodity supply plans that are required quarterly. The outcome of this exercise is a verified reference point in determining supply plan expectations and a critical tool for the identification of countries on which to focus technical assistance to improve performance.
- Across all commodity groups, 83 quarterly supply plans were submitted, representing 83 percent of the Q4 expectation. This ranged from 94 percent for ARVs and 92 percent for lab (HIV diagnostic), 85 percent for malaria commodities, and 80 percent for PRH commodities, to 50 percent (3 of 6) for MNCH commodities.
- The supply plan submission rate overall is up from last quarter and the raw number of supply plans is up by 7. ARVs, Lab (HIV Diagnostic), and RTKs have all seen decreases while malaria and PRH are both up 8 percent and 13 percent, respectively.
- Cameroon submitted 0 of 3 expected supply plans. This has kept ARVs, Lab (HIV diagnostics) and RTKs from performing at 100% this quarter.

Data Notes

- The required supply plans by commodity group and country are shown on the following page.
- Targets reflect anticipated project performance by end of FY18 (September 30, 2018).

B6. Percentage of required supply plans submitted to GHSC PSM during the quarter

Commodity	Country	Submitted to GHSC PSM
ARV	Botswana	YES
	Burundi	YES
	Cameroon	NO
	Cote D'ivoire	YES
	DRC	YES
	Ghana	YES
	Haiti	YES
	Mozambique	YES
	Nigeria	YES
	Rwanda	YES
	Tanzania	YES
	Uganda JMS	YES
	Vietnam	YES
	Zambia	YES
	Zimbabwe	YES
	Uganda NMS	YES
Lab	Burundi	YES
	Cameroon	NO
	Cote D'ivoire	YES
	DRC	YES
	Ethiopia	YES
	Haiti	YES
	Mozambique	YES
	Nigeria	YES
	Rwanda	YES
	Tanzania	YES
	Uganda JMS	YES
	Zambia	YES
	Zimbabwe	YES
RTK	Botswana	YES
	Burundi	YES
	Cameroon	NO
	Cote D'ivoire	YES
	DRC	YES
	Ethiopia	YES
	Ghana	YES
	Haiti	YES
	Malawi	NO
	Mozambique	YES
	Nigeria	YES
	Rwanda	YES
	Tanzania	YES
	Uganda JMS	YES
	Zambia	YES
	Zimbabwe	YES
	Uganda NMS	NO
VMMC	Malawi	NO
	Mozambique	YES
	Uganda JMS	YES
	Zimbabwe	YES

Commodity	Country	Submitted to GHSC PSM
Malaria	Angola	YES
	Burkina Faso	YES
	Burundi	YES
	Ghana	YES
	Kenya	NO
	Madagascar	NO
	Malawi	YES
	Mozambique	YES
	Nigeria	YES
	Rwanda	YES
	Tanzania	YES
	Uganda JMS	YES
	Zambia	YES
PRH	Burundi	YES
	DRC	NO
	Ethiopia	YES
	Ghana	YES
	Haiti	YES
	Kenya	NO
	Madagascar	NO
	Malawi	YES
	Mozambique	YES
	Nepal	YES
	Nigeria	YES
	Rwanda	YES
	Tanzania	YES
	Uganda JMS	YES
	Zambia	YES
MNCH	Ghana	NO
	Haiti	NO
	Madagascar	NO
	Mozambique	YES
	Rwanda	YES
	Zambia	YES
Condoms	Cote D'ivoire	NO
	DRC	YES
	eSwatini	NO
	Ethiopia	YES
	Ghana	YES
	Haiti	YES
	Malawi	YES
	Mozambique	YES
	Nepal	YES
	Nigeria	YES
	Rwanda	YES
	Senegal	NO
	Tanzania	YES
	Uganda JMS	YES
	Zambia	YES
	Zimbabwe	YES

B7. Percentage of total spent or budgeted on procurement of commodities for public sector services by the government, USG, or other sources

Measure Definition

Numerator: Total budgeted or spent on health care commodities by a specific stakeholder in a country
Denominator: Total budgeted or spent on health care commodities in a specific country

Indicator Performance

	Country	Host Country	USG	Global Fund	Other	Total
HIV/AIDS	Angola	$6,569,149		$4,379,433		$10,948,582
	Botswana		$6,958,462			$6,958,462
	Burundi	$1,200,000	$1,494,914	$1,979,001		$4,673,915
	Cameroon		$736,941			$736,941
	Central American region	$8,923,051		$2,257,340		$11,180,391
	Ethiopia		$11,400,339	$83,230,642		$94,630,981
	Ghana	$10,794,472	$7,708,139	$13,245,137		$31,747,748
	Haiti		$11,903,125			$11,903,125
	Indonesia	$53,978,667				$53,978,667
	Lesotho	$6,901,833				$6,901,833
	Malawi		$7,829,762			$7,829,762
	Mozambique		$33,111,334	$42,896,000	$525,317	$76,532,651
	Namibia	$10,241,821	$17,275	$8,788,222		$19,047,318
	Nigeria	$2,082,964	$140,550,411	$10,058,989		$152,692,364
	Rwanda		$20,241,756			$20,241,756
	Uganda	$25,010,905	$99,385,104	$51,001,650		$175,397,659
	Vietnam		$8,136,015			$8,136,015
	Zambia	$11,259,768	$58,000,000	$53,495,515	$146,867	$122,902,149
	Zimbabwe	$21,112,365	$25,501,280	$126,347,232		$172,960,877
Malaria	Angola	$33,692,300	$4,687,954			$38,380,254
	Burkina Faso	$6,039,040	$11,020,528	$10,537,296	$5,979,744	$33,576,608
	Burundi	$2,682,798	$4,541,748	$669,838		$7,894,384
	Cameroon		$7,145,000			$7,145,000
	Ethiopia		$23,457,879	$12,893,371		$36,351,250
	Ghana		$9,851,000	$13,342,987		$23,193,987
	Guinea		$2,279,995	$1,614,853		$3,894,848
	Liberia		$1,698,360			$1,698,360
	Malawi		$6,627,923			$6,627,923
	Mali	$2,421,905	$9,318,602	$755,580	$44,287	$12,540,375
	Mozambique		$17,133,386	$11,936,761	$1,475,723	$30,545,871
	Niger		$4,243,284			$4,243,284
	Rwanda		$6,480,311			$6,480,311
	Uganda	$2,137,223	$8,432,029	$37,703,267		$48,272,519
	Zambia	$9,743,147	$7,620,276	$10,427,117		$27,790,540
	Zimbabwe		$2,499,152	$1,268,991	$106,318	$3,874,460

	Country	Host Country	USG	Global Fund	Other	Total
Family Planning and Reproductive Health	Angola	$1,143,773				$1,143,773
	Burundi	$53,820		$12,986	$4,025,082	$4,091,887
	Ethiopia				$11,234,535	$11,234,535
	Ghana		$3,500,000		$2,300,000	$5,800,000
	Guinea		$28,937		$1,435,055	$1,463,992
	Haiti		$1,313,510			$1,313,510
	Liberia		$615,223			$615,223
	Malawi		$2,929,549			$2,929,549
	Mali		$294,459		$501,780	$796,238
	Mozambique	$203,706	$4,095,563		$1,977,012	$6,276,280
	Nepal	$2,315,220	$1,833,000			$4,148,220
	Nigeria	$2,000,014	$5,235,021		$16,467,660	$23,702,695
	Pakistan	$25,510,000				$25,510,000
	Rwanda		$1,810,129			$1,810,129
	Uganda	$3,027,086	$7,255,851	$2,928,082	$3,700,531	$16,911,549
	Zambia	$628,223	$1,500,000		$7,810,421	$9,938,644
MNCH	Ethiopia				$5,057,960	$5,057,960
	Haiti		$915,946			
	Mozambique	$966,296	$743,685		$118,893	$1,828,874
	Zambia	$2,484,529	$500,000			$2,984,529
Other	Ethiopia	$207,266,392				$207,266,392
	Liberia		$73,831			$73,831
	Uganda	$44,051,800	$979,671	$28,860,694	$1,725,180	$75,617,345
	Zambia	$19,104,311				$19,104,311

Data Notes and Analysis

- In many countries, spending and budgeting records were not available from other funders, especially for health elements in countries where GHSC-PSM is not operating a corresponding TO. Centralized procurement tracking across all funders and commodity types is also not usually available. As a result, data for most countries and health elements cannot be considered complete.
- Data aggregation for the purpose of producing percentages and other comparative analyses is not possible due to missing data (leading to incomplete totals for denominators), a mix of budget and spending data, and a mix of annual reporting periods across countries (USG fiscal year, local government fiscal year, calendar year, etc.). Some percentage breakdowns for countries with more complete data are shown on the following page.
- In general, the USG is the largest funder of HIV/AIDS commodities across countries, contributing about 43 percent of the reported totals. USG also contributes about 43 percent of the reported totals for malaria funding, with the Global Fund contributing the second largest amount (35 percent).
- Family planning commodities are largely funded by local governments and other donors (28 percent and 44 percent of these reported totals, respectively).
- Empty cells in the table to the left indicate that data are not available or accessible. Funders may or may not have spent or budgeted funds in these countries and health areas.

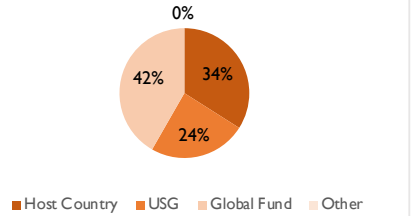
B7. Percentage of total spent or budgeted on procurement of commodities for public sector services by the government, USG, or other sources

Measure Definition

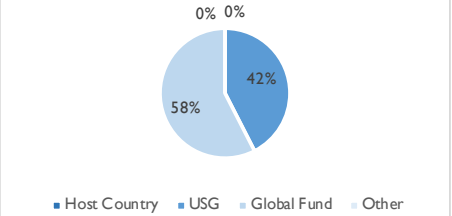
Numerator: Total budgeted or spent on health care commodities by a specific stakeholder in a country.
Denominator: Total budgeted or spent on health care commodities in a specific country.

Indicator Performance

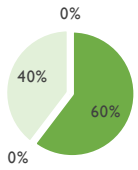
Ghana - HIV/AIDS



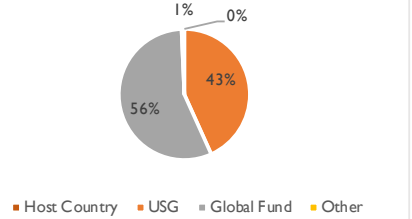
Ghana- Malaria



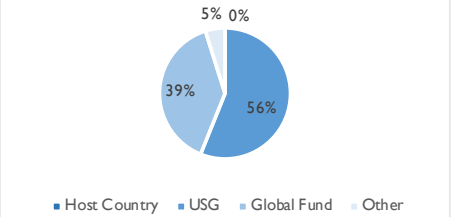
Ghana- PRH



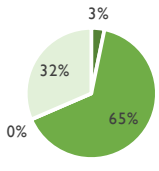
Mozambique- HIV/AIDS



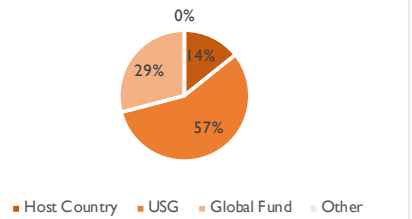
Mozambique- Malaria



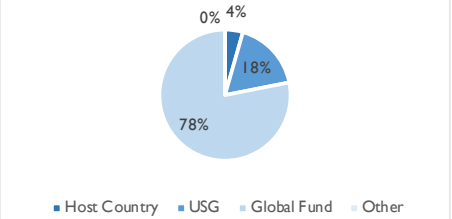
Mozambique- PRH



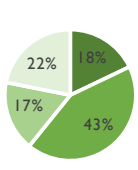
Uganda- HV/AIDS



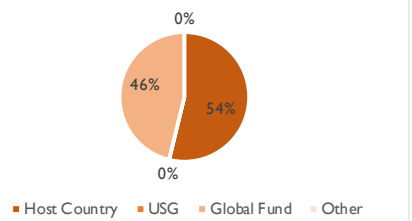
Uganda- Malaria



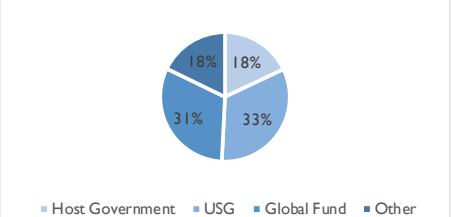
Uganda-PRH



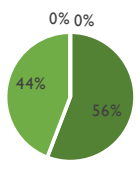
Namibia- HIV/AIDS



Burkina Faso - Malaria



Nepal - PRH



Analysis

- The "other" funding source for Ghana's PRH program is the UNFPA
- Mozambique data show the amount budgeted for commodity procurement. The USG represents between 40% and 65% of the amount budgeted for commodities for each task order.
- The "other" funding category for Burkina Faso included the World Bank (8%), Malaria Consortium (4%) and the Kingdom of Saudi Arabia (5%)

B7. Commodities by Funding Source

Country Analysis	
Angola	TO1 financial figures were extracted from the HIV Angola Quantification report 2016-2018 Final. For this FY18 reporting period, we are reporting the total amount budgeted for the calendar year 2018. For this period, the government of Angola budgeted US$6,569,149 and the Global Fund (GF) has budgeted US$4,379,433 for HIV treatments. In total, US$10,948,582 was budgeted for the 2018 calendar year, with the government contributing 60 percent and GF 40 percent. Figures for TO2 were retrieved from the Angola Malaria Quantification report 2017-2020, updated in April 2018. For this FY18 reporting period, we are reporting the total amount budgeted for the 2018 calendar year. The government budgeted US$33,692,300 (70 percent of the total budgeted) for malaria treatments. In total, US$48,131,858.28 was budgeted for the 2018 calendar year. For FY2018, USG through PMI budgeted a total of US$4,687,954. This amount was planned in the FY17 Malaria Operational Plan. Figures for TO3 were retrieved from the Angola Contraceptive Forecast Report 2016-2018 Final. For this FY18 reporting period, we are reporting the total amount budgeted for the calendar year 2018. For this period, the budgeted amount of US$1,143,773 came from the Government of Angola.
Botswana	The US government has provided funding for some HIV products, notably dolutegravir and TLD. However, the majority of ARV products are procured by the Government of Botswana, for which commodity budget or spending figures are not available.
Burkina Faso	The majority of funding for malaria commodities came from a combination of USG and Global Fund donations (each at about 30 percent), while the remainder was equally split between host government funding and "other" funding (each 18 percent), comprising funding from the World Bank, Malaria Consortium, and the Kingdom of Saudi Arabia. The host government's share of funding increased from 12 to 18 percent since reported last year.
Burundi	Data represent budgeted figures for each health element. The Global Fund is the largest funding source for HIV, at 42 percent, followed by the US government and Government of Burundi. The US government has a larger share of malaria commodity funding, at 58 percent, followed by the Burundi government and a small share from the Global Fund. On the family planning side, almost all commodities are funded by UNFPA.
Cameroon	Data represent GHSC-PSM budgets for HIV and malaria commodities. The project was not able to access government or Global Fund budgets or spending data to gain a more complete picture of commodity funding in the country.
Ethiopia	In Ethiopia, a total of US$346,066,841 was spent for procurement of health commodities for public sector services. Out of this, the Ethiopian government contributed about 60 percent (all in the category of other essential medicines); the Global Fund, USG, and other sources had a share of 28 percent, 8 percent, and 5 percent, respectively. The government did not contribute to the procurement of HIV/AIDS, malaria, family planning and reproductive health, and maternal and child health commodities. The Global Fund covered the majority (88 percent) of HIV/AIDS commodity procurement while the USG covered the remaining 12 percent. On the other hand, USG allocated 51 percent of the budget spent for malaria product/commodity procurement the Global Fund covered 49 percent. More than 87 percent of the budget spent for family planning commodities was allocated by other sources (i.e., SDG fund), and around 13 percent was covered by the USG. Maternal and child health commodities were procured with a total of US$5,057,960 allocated from the SDG fund. On the other hand, the Ethiopian government has spent a total of US$207,266,392 to procure other essential medicines in the last year (July 2017-June 2018).
Ghana	The amount budgeted for commodities is provided for TO1, TO2 and TO3 since these are budgeted and procured through central level funding. However, TO4 commodities are not budgeted for procurement at the central level, so funding for this task order was not available.
Guinea	According to budgets, the USG represented just over half of all funding (59 percent) for malaria commodities, while Global Fund made up the remainder. For FP/PRH commodities, the vast majority of funding (98 percent), according to budgets, was allocated by UNFPA.
Haiti	Haiti only has access to GHSC-PSM data on spending for commodities (for HIV/AIDS-- $11.9 million, FP/PRH--$1.3 million, and MNCH--about $915,000) for FY2018.
Indonesia	Indonesia was only able to report the amount budgeted by the host government as this information is sensitive and was not available for the other funding sources, such as Global Fund. The amount budgeted is for HIV/AIDs and STD drug procurements and comes from the Directorate General of Pharmaceutical and Medical Devices in the MoH.
Lesotho	Generally, funding for ARVs is split 70 percent procured by the host government and 30 percent by Global Fund. This year, however, ARV funding was 100 percent from the host government as Global Fund was between funding cycles.

Country Analysis	
Liberia	Data represents FY2018 USG spending through GHSC-PSM only. Spending in the "other" category was for Ebola products.
Malawi	Figures represent GHSC-PSM spending on commodities in FY2018. The team is unable to access government or other donor data to provide a more complete picture of the commodity funding landscape.
Mali	For malaria commodity funding, 74 percent of spending came from the USG, 19 percent from the host country government, and 6 percent from the Global Fund. For FP/PRH, the USG spent 37 percent of the funds, the host government spent 0 percent, and "other" spent 63 percent. The Ministry of Health has pledged to contribute 10 percent of spending for FP/PRH commodities.
Mozambique	Most of the funding for medicines for FY18 was provided by Global Fund and USAID. The host government purchased contraceptives and maternal and child health health commodities. Other donors include UNICEF (purchased ACTs, Fansida and chlorohexidine gel), UNFPA (purchased condoms and contraceptives), and DFID (purchased condoms).
Namibia	Data represent funding for ARVs and RTKs for the annual period from April 2017-March 2018. Global Fund contributions, as a proportion of overall spending, have increased substantially from the previous period, from 13 percent to 46 percent of all funding. This support is only available until the end of 2018, at which point the Government of Namibia will cover the full cost. GHSC-PSM has contributed to cost estimates to assist in the mobilization of funds.
Nepal	During FY18, the Government of Nepal budget was US$2.3 million and USG budgeted US$1.8 million. Additional information on other funding sources is not available at this time.
Niger	Niger was only able to report on GHSC-PSM-procured malaria commodities, of which the total spent was $4,243,284.
Nigeria	In FY18 the Government of Nigeria increased funding for ARVs and family planning commodities. Advocacy to the Minister of Health and the Ministry using the result of the 2017 quantification for HIV/AIDS commodities resulted in the government funding third line ARVs. However, this does not represent the total spend/budget in country, as some data were unavailable at the time of reporting.
Pakistan	TO3 commodities are completely financed by the Government of Pakistan. During the last fiscal year, they budgeted US$21,510,000 for FP commodities.
Rwanda	Complete date were not available in time to report on each element of this indicator.
Uganda	The data show that the following was spent per funding source: 23 percent by the Government of Uganda, 37 percent by the US government, 38% by the Global Fund, and 2 percent by other sources. Expenditure by health element shows 55 percent for HIV/AIDS, 15 percent for malaria, 5 percent for reproductive health, and 24 percent for all other essential medicines.
Vietnam	This represents the USG funding commited in the COP for FY2018.
Zambia	Host government funding represented 6 percent of the total amount budgeted for FP/PRH commodities, 9 percent for HIV/AIDS, 35 percent for malaria, 83 percent for maternal and child health, and 100 percent for other essential medicines. For HIV/AIDS commodity funding, the 91 percent not funded by the host government was split approximately in half between USG and the Global Fund. Maternal and child health was largely funded by the host government, with the remaining 17 percent coming from the USG.
Zimbabwe	The largest contributor to HIV commodities in Zimbabwe is the Global Fund at 73 percent, with the remaining share roughly split between the Government of Zimbabwe and USG contributions. For malaria, USG contributes the most at 65 percent, the Global Fund 33 percent, and the remaining sourced from local funds.

B9. Supply Chain Technical Staff Turnover Rate

Measure Definition

Numerator: Number of supply chain technical staff who left the active health labor force in the last year
Denominator: Total number of supply chain technical staff at the beginning of the year

Indicator Performance and Country Analysis

Performance and Country Analysis		
Angola	9%	Angola carried out a survey at central level at the central medical stores, CECOMA. The survey targeted heads of departments at this site. From the eleven (11) senior positions identified, only one position had turnover identified.
Burkina Faso	3%	Burkina Faso reported on supply chain turnover at the central, regional health directorate, and district levels, where turnover was 17, 20, and one percent, respectively.
Burundi	6%	At the central level, the technical staff turnover rate at CAMEBU and the Directorate of Pharmacies, Medicines and Laboratories (DPML) is fairly low, at 8.2 percent. At the district pharmacy level, it is only 3.9 percent. This is an advantage for the health system, as it suggests that staff trained in supply chain technical skills are remaining in place to apply these skills.
Ethiopia	10%	There were 460 technical supply chain employees in Ethiopia's Pharmaceutical Fund and Supply Agency (PFSA) this past year. Out of these, 45 (17 at central and 28 at subnational levels) left the organization this year, accounting for 10 percent. The turnover was higher at central level (14 percent) compared to PFSA branches (8 percent). This is higher as compared to last year which had stood at 8 percent. The increase might have been caused by the staff reorganizing due to the business process re-engineering which might have disappointed some staff. Also, relatively better payment and motivation in the private sector attracts experienced professionals from the PFSA.
Ghana	5%	Though a human resource management information system is not functional in country, Ghana was able to obtain information from the Stores, Supply and Drug Management Division of the Ghana Health Service (GHS). At the central level data was limited to persons involved in providing supply service at the Stores, Supplies and Drug Management Division of the GHS and Supply Chain Experts at the National Malaria Control Program, the HIV/AIDS Control Program and the Family Planning Program. The regional level data was limited to the Regional Medical Stores Manager, Regional Supply Officer, Regional Deputy Director of Pharmaceutical Association and Regional Deputy Director of Administration.
Indonesia	10%	At the central level, two (of 14) supply chain technical staff left the Sub-Directorate HIV (NAP) due to staff rotation. They were transferred to a different sub-directorate and section. Staff rotation in the MOH is common. At the subnational level 1, one (of 17) supply chain technical staff left the position. This was also due to rotation. All staff that left their position due to rotation are still working in the MoH, but no longer on supply chain.
Lesotho	5%	Of the 431 staff members involved in supply chain at central and sub-national levels, 24 left the workforce.
Madagascar	9%	Madagascar assessed its supply chain turnover rate at the PhaGDis (district pharmacy level), and found that out of 114 personnel who were in their positions at the start of the year, 10 had left by the end of the year (9 percent).
Malawi	50%	The supply chain technical staff turnover rate at the Health Technical Support Service Department at the Ministry of Health was 50 percent. This represents only four central-level positions, of which two were vacated.
Mali	0%	GHSC-PSM Mali worked with the Human Resources Manager at the National Pharmacy of Mali (PPM) to collect this data, with the source being the staff payroll list. Since its creation, the PPM has been striving to provide optimal supply chain services, particularly with regard to the acquisition of essential health products and their distribution to its customers. However, in delivering these services, the PPM faced a number of challenges, including a low level of service for essential commodities, inadequate funding and insufficient human resource capacity (both in terms of numbers and skills). This past year, no personnel left the workforce, and in fact three positions were added at the central level, bring the number to 55 positions.
Mozambique	1%	Of the 175 supply chain technical staff at the Central Medical Store, one staff member left the health workforce during the year.
Niger	0%	Niger assessed supply chain staff turnover at the central and subnational levels. At the central level, among the National Malaria Control Program, the Directorate of Pharmacy and Traditional Medicine (DPM/MT), and among the National Office of Pharmaceutical and Chemical Products (ONPPC), the turnover rates were all zero percent (out of a total of 15 personnel). At the regional level, the DPM/MT also reported no turnover out of 7 personnel.

Performance and Country Analysis		
Pakistan	0%	Data for this indicator was assessed at provincial and district level. The supply chain workforce loss ratio was zero for the central, sub-national (provincial), and sub-national 2 (district) levels during the FY 2017-18. Out of 52 personel at the provincial level (Punjab and KP), No turnover was reported. Out of 1179 personel at the district level (Punjab and KP), no turnover was reported.
Uganda	2%	For Uganda, this indicator was asssesed at central level and specifically at JMS, there were 49 staff at the beginning of the year and one staff left the organization. This a relatively stable supply chain entity. where staff attrition is minimal. Health workers with supply chain expertise include pharmacists, dispensers, cold chain technicians, laboratory staff, and health administrative cadres

Data Notes

- Many countries had difficulty accessing workforce data.
- This indicator measures the workforce loss ratio for individuals with supply chain expertise and does not represent workforce loss of the public health or health sector workforce at large.

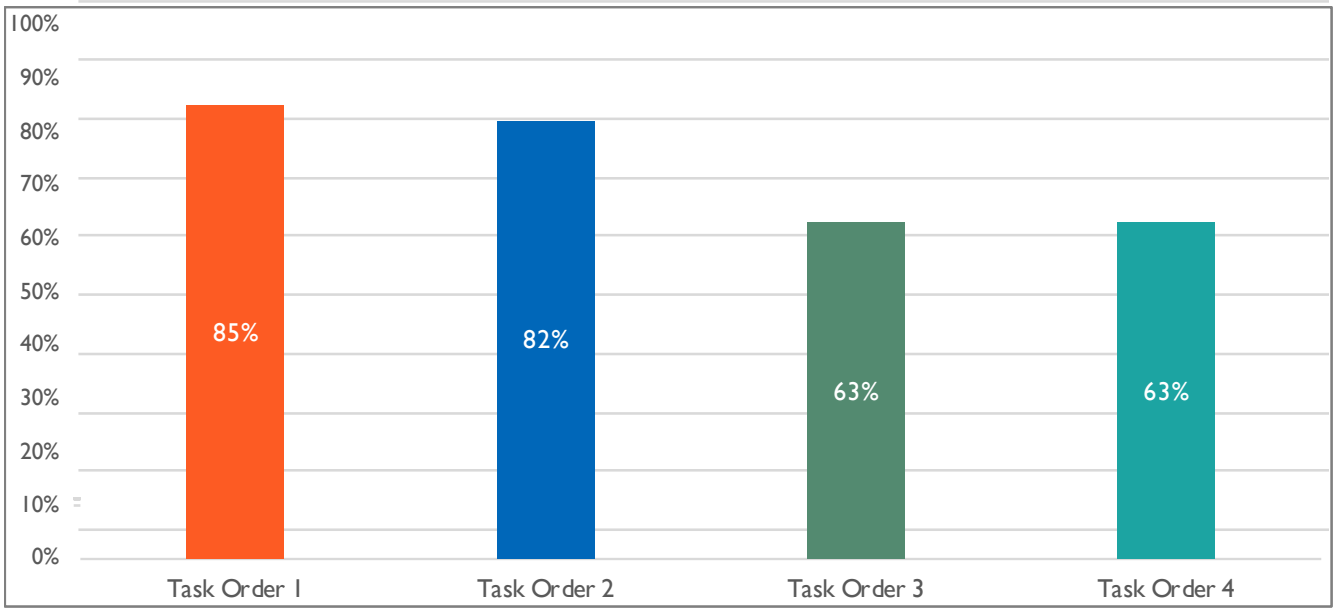
B10. Percentage of GHSC-PSM-supported countries that have a functional logistics coordination mechanism in place

Measure Definition

Numerator: Total number of countries with a functional logistics coordination mechanism in place as determined by a qualitative assessment
Denominator: Total number of countries supported by GHSC-PSM for technical assistance

Task Order	Annual Target	FY2018
TO1	N/A	85%
TO2	N/A	82%
TO3	N/A	63%
TO4	N/A	63%
All TOs	N/A	75%

Indicator Performance



Analysis

- GHSC-PSM has introduced a revised methodology for assessing this indicator. Previously, the scoring system allocated points for the existence of the logistics mechanism; that is no longer included.
- This annual indicator includes 20 countries for TO1, 17 countries for TO2, 16 countries for TO3, and 8 countries for TO4. Some countries have reported a cross-cutting mechanism, and this will count toward each Task Order's totals.
- See data notes for the exact categories/attributes assessed for this Indicator. The maxmimum score is 11, with 8 points being the cut off for a mechanism being functional.

Data Notes

- The following criteria were assessed and taken into account when determining whether a country's logistics coordination mechanism is counted as "functional": 1) Formal legislative or ministerial decree establishing the entity, 2) participation of the relevant host country government agency (Ministry of Health, National Malaria Control Program, National AIDS Control Program, National Reproductive Health/Family Planning agency or equivalent), central medical stores (or their equivalents), and relevant donors, private sector entities, NGOs, and civil society organizations; 3) holding a meeting at least quarterly with good representation from the mechanism's contributing actors; 4) developing policies, procedures, and action plans; and 5) showing evidence of adherence to policies and procedures, implementing action plans, and following up on and addressing issues raised at previous meetings.

B10. Percentage of GHSC PSM supported countries that have a functional logistics coordination mechanism in place

Country Analysis	
Angola	Angola has reported on three separate logistics coordination mechanisms. For TO1, the mechanism scored 6.3/11, which is not enough to be deemed functional. Major limitations for the coordination mechnanism are the lack of a ministerial decree and no terms of reference. For TO2, the mechanism scored 5.8/11, which is not enough to be deemed functional. Major limitations for the coordination mechnanism are no ministerial decree establishing it, little to no development of polices, and terms of reference which are incomplete. For TO3, the mechanism scored 7.2/11, which is not enough to be deemed functional. Major limitations for the coordination mechnanism are no ministerial decree establishing it and variable performance on the other cateogories. TO3 was the closest to the cut off of 8.
Botswana	The logistics coordination mechanism for HIV/AIDS in Botswana is rated functional.
Burkina Faso	Burkina Faso's logistics coordination mechanism was rated as functional, although several key representatives were not available to be interviewed. There is a decree authorizing the creation of the coordination mechanism and technical committees for priority health programs.The national logistics coordination body meets twice a year, while the technical committees meet quarterly.
Cameroon	The logistics coordination mechanisms for both HIV/AIDS and malaria are rated functional in Cameroon.
Burundi	Burundi has a logistics coordination unit, authorized by the Ministre de la Santé Publique et de la Lutte contre le Sida. The unit has thematic subgroups organized for different health areas and for laboratories. The groups meet regularly and make decisions for the improvement of the supply chains in these areas. While these groups are functional, more can be done to document and complete follow up actions after decisions are made.
El Salvador	El Salvador reported a score of zero. Currently there is no coordination mechanism in place. Much of the function of this mechanism is completed through other avenues.
Ethiopia	GHSC-PSM in Ethiopia assessed its logistics coordination mechanism at various levels of supply chain management. A total of 12 key informants from MoH (4), PFSA (4), and regional health bureaus (4) were interviewed using a structured checklist, and the data were aggregated using the GHSC-PSM standard scoring tool. The logistics coordination mechanism at the national level was found to be functional. The national coordination platform is led by PFSA with regular participation from the MOH disease programs, central medical store, LMU within MOH, and other NGOs and donors. Members of the mechanism had regular monthly meetings, and the meetings focused on identifying challenges and bottlenecks that hindered supply chain management in the country. Various action plans were developed and implemented by the technical working group members in the past year. In general, the coordination platform can be considered well-functioning and effective at the national level.
Ghana	Ghana has several coordination mechanisms in country: an overarching one that spans the program areas and ones specific for TO1 and TO3. For the purposes of this indicator, we used the overarching logistics coordination mechanism because they provide oversight to all program ares. The logistics coordination mechanism was rated as functional as it met at least four times in the past year, has a TOR completed and approved, and has policies and procedures developed and that are adhered to.
Guatemala	Guatemala reported on its HIV logistics coordination mechanism. It has reported a score of 8/11 with all of the major required components in place. The scoring allows for some elements to be in progress. Opportunities for score improvements exist in finalization of the terms of reference and strong representation of various stakeholers on the committee. Guatemala did report regular meetings, development of policies, and adherence to those policies in the country.
Guinea	Guinea determined its malaria logistics mechanism to be functional, while its FP/PRH mechanism was not determined to be functional.
Honduras	Honduras has earned a perfect score of 11 for its HIV logistics coordination mechnanism. It has a government decree, completed terms of reference, has broad and active participation, and regularly develops and implements policies and procedures.
Haiti	The logistics coordination mechanism for HIV/AIDS in Haiti was found to be functional. It meets quarterly and includes key participants from the Ministry of Health and several other partners. The FP/PRH logistics coordination mechanism, on the other hand, is not yet functional. This year, three committee meetings were held with the Ministry of Health and partners in an attempt to reinvigorate the committee. The committee worked on an action plan for finalizing key documents and protocols.

Country Analysis	
Lesotho	Lesotho determined their Supply Chain Technical Working Group (SCTWG) not to be functional. The SCTWG is formally established, with a consensually agreed upon terms of reference. All appropriate stakeholders are included in the membership list (MOH programs, Supply Chain Coordinating Unit, development partners, implementing partners, etc.), and meetings have been held each quarter this year. However, the forum has no real policy-making authority, nor the authority to enforce any decisions taken. Participation has not been regular.
Liberia	No data is provided for Liberia. Logistics coordination work is ongoing. No mechanisms were rated this year.
Malawi	Logistics coordination mechanisms are in place for all four health areas in Malawi, with strong functionality in HIV and malaria. These units meet frequently and have developed HIV Clinical Management guidelines to enhance compliance, and Transparency and Accountability guidelines to improve malaria commodity accountability. GHSC-PSM is supporting the MOH to reinvigorate the FP/RH and maternal and child health mechanisms, through regular meetings and developing action plans.
Mali	Mali's integrated logistics coordination mechanism was determined to be functional. The committee was established by ministerial decree in 2013. It includes a sub-committee responsible for quantification with technical working groups by program. The Technical Coordination and Monitoring Committee for the Management of Essential Medicines (CTCSGME) met in June to validate the results of the supply plan updates and to present the stock situation for family planning, malaria, and anti-tuberculosis commodities, and for ARVs and the basket of commodities for the maternal and child health programs. A second meeting was held to validate the quantification results and the procurement plan for the TO2, TO3, and TO4 products. One of the highlights of the meeting was the massive presence of participants not only during the quantification process, but also at the general meeting. The meeting generated a lot of discussion about additional activities needed to improve the committee, such as updating the list of members, defining committee directives, and identifying social marketing activities to better coordinate activities.
Mozambique	Each program area has its own coordination mechanism, all of which have been rated functional. The mechanisms for TO1 and TO2 both have a formal TOR, met at least four times in the past year, and have policies and procedures that have been developed and adhered to. While the TO3 and TO4 mechanisms also met four times a year and had at least one policy or procedure that was developed, the policy or procedure did not show as much evidence of adherence and did not have a representative from the SCMU/LMU in the mechanism. The TO3 mechanism also did not have a TOR that was developed; it is currently in development.
Nepal	Nepal has reported on an integrated mechanism for TO3 and TO4. Using the assessmen tool, the mechanism scored 4.4/11, which is not enough to be deemed functional. Major limitations for the coordination mechnanism are: the lack of a government decree establishing it, the lack of development of policies and procedures, and the lack of evidence of adherence and follow up on relevant policies and procedures.
Niger	Niger has a logistics coordination mechanism that is in the process of being rolled out; therefore it was assessed as non-functional.
Nigeria	The logistics coordinating units for TO1, TO2, TO3 are all functional, and the respective GHSC-PSM Technical Working Groups (GHSC-PSM TWG) are actively coordinating supply chain activities through regular meeting to improve the supply chain system. However, there is no functional GHSC-PSM TWG for TO4 (MNCH).
Pakistan	Pakistan has reported on an integrated mechanism for TO3. Using the assessment tool, the mechanism score 9.5/11. This is sufficient to deem the logistics coordination mechanism as functional, with all of the major required components in place to support its operations. Key informant interviews were conducted with key provincial government leaders regarding their views on the effectiveness and utility of the logistics coordination mechanism prevalent through the Country Engagement Working Group (CEWG) meetings. The leadership acknowledged the existence of this mechanism and appreciated its performance and utility.
Rwanda	A functional logistics mechanism is in place within Rwanda. The CPDS comprises members from GSHC-PSM, Ministry of Health, UNFPA, RBC, MPPD, and USAID, and it meets regularly.
South Sudan	South Sudan's logistics coordination mechanism was rated functional as it has a formal legislative or administrative status, a TOR that has been completed and approved, relevant stakeholders as members, held at least four meetings in the last year, and has policies or procedures that have been developed and adhered to.
Uganda	Uganda has reported on an integrated mechanism for TO1, TO2, and TO3. The logistics coordination mechanism has earned a score of 10/11, enough to deem it functional. The active, well-established mechanism had broad particpation and regularly creates and implements policies. It is only missing a government or ministerial decree to earn a perfect score.

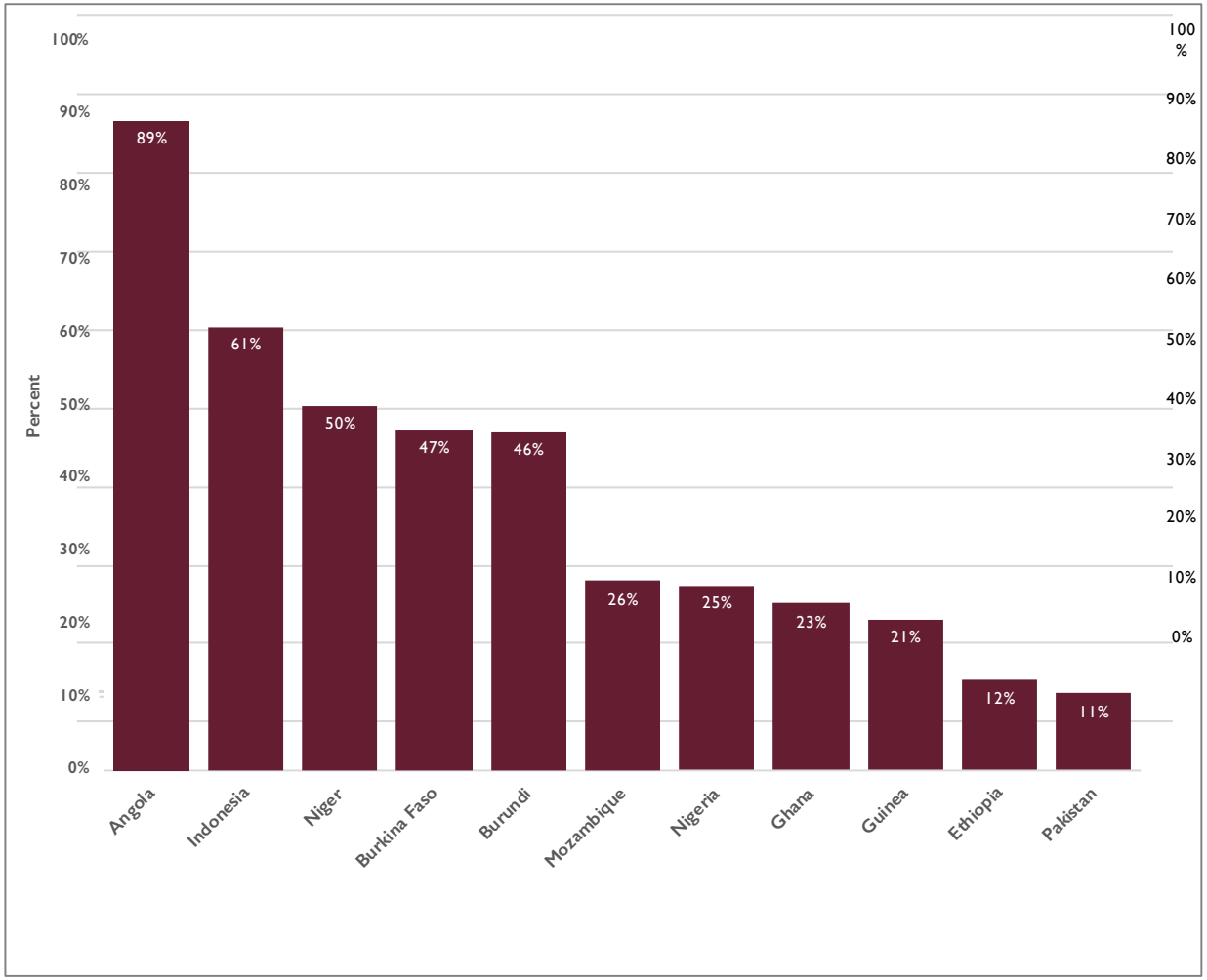
Country Analysis	
Zambia	The project conducted five key informant interviews covering different health element areas and determined that all health element areas of Zambia's logistics coordination mechanism are functional. While no formal legislation or decree has established the committee, there is an approved terms of reference, and technical working groups meet at least four times a year. All key actors participate in the mechanism. Informants cited numerous areas of policy and implementation that were followed through on. For example the coordination mechanism updated the National Lab Strategic Plan, approved viral load machines, finalized a VMMC communication strategy, and launched the PrEP framework. Family planning launched a communications strategy and rolled out Sayana Press as a new product. The procurement and supply chain team made a decision on which electronic system will be used for logistics management. Health sector supply chain strategies and implementation plans were updated, and an e-health strategy was launched.
Zimbabwe	Zimbabwe's logistics coordination unit, which oversees supply chain issues for both HIV/AIDS and malaria, is rated functional, with a legal mandate, good representation from relevant stakeholders, and quarterly meetings. While there is some evidence of follow up and adherence to action plans, policies and procedures are still in the early stages of development.

B11. Percentage of leadership positions in supply chain management that are held by women

Task Order	Annual Target	Achievement FY2018
TO1	N/A	60%
TO2	N/A	42%
TO3	N/A	18%
TO4	N/A	7%
Cross cutting	N/A	26%
All TOs*	N/A	29%

Numerator: Number of leadership positions in supply chain management that were held by women in a specified time frame in countries where GHSC-PSM is providing technical assistance related to workforce development
Denominator: Total number of leadership positions held in a specified time period in countries where GHSC-PSM is providing technical assistance related to workforce development

Indicator Performance



Analysis

- In Nigeria, 40 percent of supply chain leadership position are held by women at the central level (2 out of 5 positions). At the subnational level (the directorate at pharmaceutical services and leadership of state LMCUs), approximately 24 percent of positions (17 out of 70) are held by women. Overall, 25 percent of leadership positions reviewed are held by women.

- In Pakistan, data for this indicator were collected from KP and Punjab provincial government officers through GHSC-PSM provincial teams. The percentage of leadership positions at the provincial level is 10.5 percent, which has decreased from 13 percent of 2017. The 10.5 percent represents 4 of a possible 38 leadership positions that were included in the data collection.

- In Ethiopia, out of 73 occupied management-level supply chain technical positions within the Pharmaceuticals Fund and Supply Agency (PFSA), women held only 9 of these positions (12 percent) as of September 2018. However, this constitutes a 3 percentage point improvement from last year. The percentage of women in leadership positions is higher at central level than at regional PFSA hubs. The 12 percent result still falls far short of the expected 50-50 ratio of men to women. The slight improvement in the figures, however, can be attributable to the large awareness creation work performed by PFSA with the support of GHSC-PSM. These interventions include leadership training for women, training-of-trainers on gender issues, and staff orientation programs at PFSA hubs.

Data Notes

- "Leadership positions in supply chain management" refers to public sector directors or other heads of units responsible for public health commodity supply chain policy, implementation, or administration at the national level. In countries with decentralized supply chains, where significant autonomy and leadership responsibilities are devolved to lower levels, this definition may also include positions one subnational level below the national level.

B12. Mean absolute percent consumption forecast error, with forecast bias variant

Measure Definition

Mean abosolute percent error (MAPE)
Numerator: Absolute value of the difference between the actual quantities of products consumed at SDPs during the annual period minus the forecasted consumption for the annual period
Denominator: Sum of the actual quantities of products consumed during the annual period

Forecast Bias variant is calculated using the actual (not absolute) value of the difference between quantities forecasted and quantities consumed at or issued to the SDPs. Where products have been overconsumed compared to the forecast (positive bias), MAPE and forecast bias will be the same. Where products have been underconsumed compared to the forecast (negative bias), forecast bias will be the negative of MAPE. Negative forecast bias is indicated in the MAPE tables below with a (-) notation. Where there is no notation, MAPE and bias are the same.

	Countries	Angola	Botswana	Burkina Faso	Burundi	El Salvador	Ethiopia	Ghana	Guatemala	Guinea	Haiti	Honduras	Lesotho	Madagascar	Malawi	Mali	Mozambique	Namibia	Nigeria	Rwanda	Uganda	Vietnam	Zambia	Zimbabwe
HIV/AIDS	First-line Adult ARVs		(-)12%		3%	(-)10%	(-)24%	(-)18%	0%		(-)15%	(-)6%	4%				1.0%	2%	10%	1%	(-)2%	2%	3%	(-)13%
	Second-line Adult ARVs		25%		(-)36%	(-)11%	(-)37%	(-)34%	12%		9%	(-)7%	7%				2%	(-)3%	(-)17%	(-)2%	16%	(-)3%	(-)7%	(-)30%
	First-line Pediatric ARVs		(-)31%		10%	(-)1%	(-)9%	(-)224%	(-)7%		(-)6%	(-)31%	(-)13%				(-)18%	52%	2%	4%	(-)17%		(-)37%	(-)90%
	First RTKs				49%	1%	55%	(-)70%			1%		23%				4%	11%	(-)16%	11%	(-)115%		23%	23%
	Second RTKs				13%		(-)22%	(-)205%			16%		10%				(-)13%	79%	(-)8%	(-)12%	(-)35%		(-)40%	(-)30%
	Tie-breaker RTKs						16%						11%					69%	(-)52%		(-)86%			19%
	Male Condoms*						24%				(-)10%		73%		(-)84%		(-)19%	(-)35%		(-)7%	12%		(-)103%	8%
	Female Condoms*												44%		(-)112%		5%			25%	(-)232%		(-)40%	12%
	EID Consumables						(-)481%												(-)16%	4%	50%			
	EID Reagents						(-)88%				(-)34%		(-)451%				29%		(-)26%	(-)4%	(-)17%		27%	47%
	Viral Load Consumables						13%												(-)16%	(-)6%	86%			
	Viral Load Reagents					(-)3%	(-)44%				(-)3%		(-)57%				24%		(-)2%	19%	0%		(-)11%	22%
	Ready-to-use Therapeutic Foods (RUTF)						73%						16%											
Malaria	First-line ACTs (AL 6X1)	(-)126%		23%			41%	(-)55%		15%					23%	(-)9%	(-)12%		0%	12%	(-)8%		68%	33%
	First-line ACTs (AL 6X2)	2%		81%			44%	(-)48%		(-)3%					26%	41%	2%		(-)24%	(-)2%	10%		52%	40%
	First-line ACTs (AL 6X3)	13%		(-)500%			73%	(-)52%		5%					15%	(-)5%	17%		(-)42%	(-)20%	(-)94%		31%	33%
	First-line ACTs (AL 6X4)	50%		(-)460%			41%	12%		(-)22%					20%	(-)102%	(-)13%		5%	4%	(-)90%		32%	26%
	First-line ACTs (AS/AQ 100/270mgx3)	(-)9948%		(-)240%	(-)64%			53%						(-)29%					(-)44%					
	First-line ACTs (AS/AQ 100/270mgx6)	(-)2046%		(-)121%	(-)53%			11%						(-)14%					(-)54%					
	First-line ACTs (AS/AQ 25/67.5mg)	(-)451%			(-)71%			30%						(-)193%					(-)25%					
	First-line ACTs (AS/AQ 50/135mg)	(-)738%			(-)52%			45%						(-)160%					(-)7%					
	Rapid Diagnostic Tests for Malaria	(-)3399%		(-)47%	(-)119%		14%	(-)24%		8%				(-)243%	23%	(-)69%	(-)32%		(-)58%	(-)16%	(-)14%		19%	(-)6%
	Sulphadoxine-pyrimethamine (SP)	(-)74%		(-)58%	(-)92%			(-)26%		23%				(-)258%	13%	(-)53%	20%		(-)125%				(-)148%	(-)2%
	LLINs			(-)43%						(-)77%						(-)68%	23%				(-)46%			

B12

- Annual period reported for this indicator may vary by country depending on forecasting schedules. Periods may include USG fiscal year, host country fiscal year, calendar year, etc. Countries report on the most recent annual period for which data is available.
- *Male and female condoms are reported under both TO1 and TO3 in countries where both task orders are operating.
- Task order and project-wide average perfomance is not calculated due to challenges in interpreting aggregated data.

B12. Mean absolute percent consumption forecast error, with forecast bias variant

	Countries	Burundi	Ethiopia	Ghana	Guinea	Haiti	Madagascar	Malawi	Mali	Mozambique	Nepal	Nigeria	Pakistan	Rwanda	Uganda	Zambia
	Copper-bearing Intrauterine Devices	(-)15%	(-)30%	36%	(-)90%	26%	46%	36%	(-)362%	(-)101%	(-)374%	32%	2%	26%	31%	45%
	Calendar-based Awareness Methods								(-)42%			(-)856%		(-)45%		
	Depot Medroxyprogesterone Acetate 104 mg/0.65 mL									41%					(-)41%	
	Depot Medroxyprogesterone Acetate 150 mg Vial, SR	12%	(-)46%	21%	(-)23%	(-)2%		(-)14%	(-)102%	(-)25%	(-)106%	(-)25%	(-)16%	(-)36%	10%	50%
	Norethisterone Enanthate			28%								7%				(-)18%
	Etonogestrel 68 mg/Rod, 1 Rod Implant	(-)20%	(-)129%	35%			(-)41%	(-)13%				0%	(-)672%	28%	21%	24%
	Levonorgestrel 75mg/Rod, 2 Rod Implant		(-)172%	25%	(-)40%	15%		(-)64%	(-)138%	0%	(-)262%	21%	33%	16%	81%	43%
	Levonorgestrel/Ethinyl Estradiol 150/30 mcg + Fe 75 mg, 28 Tablets/Cycle	9%	(-)37%	74%	(-)37%	3%	(-)36%		(-)84%		(-)595%	(-)42%	(-)16%	(-)24%	(-)39%	8%
	Levonorgestrel/Ethinyl Estradiol 150/30 mcg 28 Tablets/Cycle							24%		(-)37%						
	Levonorgestrel 0.75 mg, 2 Tablets	(-)9%	(-)16%					(-)27%		50%			49%			
	Levonorgestrel 1.5 mg, 1 Tablet														(-)30%	
	Levonorgestrel 30 mcg 35 Tablets/Cycle	0%	(-)2%	25%	(-)129%		(-)154%	62%	(-)306%	(-)49%		-38%	(-)430%	(-)9%	42%	(-)816%
	Male Condoms*	(-)55%	24%	(-)33%	(-)65%	(-)10%	(-)48%	(-)84%	(-)312%		(-)215%	(-)70%	(-)40%	(-)7%	12%	(-)103%
	Female Condoms*	(-)30%		(-)28%				(-)112%	(-)161%		(-)259%	27%		25%	(-)232%	(-)40%
MCH	Oxytocin (10 IU Injectable)		(-)545%				(-)957%			40%	(-)724%			(-)131%		62%
MCH	MgSO4 (50% Injectable)		(-)139%				(-)613%			(-)40%	(-)95%			-122%		(-)35%
MCH	Injectable Gentamicin		(-)1393%				(-)175%			(-)10%	(-)307%					(-)183%
MCH	ORS+zinc (Together)		(-)458%								(-)52%					
MCH	Chlorhexidine Gel		(-)149%							(-)47%	(-)145%					
MCH	Amoxicillin (125mg or 250mg Dispersible Tablets)		83%							2%	(-)183%			(-)76%		(-)539%
MCH	Zinc (Alone)									(-)500%				(-)132%		53%
MCH	ORS (Alone)													37%		(-)842%

Data Notes

- Annual period reported for this indicator may vary by country depending on forecasting schedules. Periods may include USG fiscal year, host country fiscal year, calendar year, etc. Countries report on the most recent annual period for which data are available.
- *Male and female condoms are reported under both TO1 and TO3 in countries where both task orders are operating.
- PRH method-level, task order and project-wide average perfomance is not calculated due to challenges in interpreting aggregated data.

B12. Absolute Percent Error - granular level analysis	
Angola	Angola's analysis is based on an adjusted quantification conducted in April 2018. Consumption data were not available for this calculation. As a proxy, AMD (average monthly distribution) from warehouses was used in the calculation for the calendar. Examining performance individually by product, the most accurate malaria product is the AL 6x2 with 2.37 percent and Al 6x3 with 13.24 percent, and the furthest away from the ideal value is ASAQ 100/270mgx3 with 9948.4 percent. ASAQ presentations had the worst results from all malaria treatments ranging from 451.4 percent to 9948.4 percent.
Burkina Faso	Due to the recent and ongoing shift in antimalarials from AS/AQ to AL, including the very recent introduction of AL6x3 and 6X4, those products showed very large forecast errors, as high as 500 percent. Absolute percent forecast error for the remaining products were 47 percent, 58 percent, and 43 percent for RDTs, SP, and LLINs, respectively.
Burundi	Most malaria and family planning products were underconsumed compared to the forecasts, while HIV products typically had greater consumption.
El Salvador	El Salvador's analysis is based on a 12-month period from October 2017 to September 2018. Actual consumption data were used for the calculation. El Salvador had a strong performance across all TO1 tracer categories. Accuracy on products ranged from just 1 percent error for first line pediatric ARVs and RTKs to 10 percent and 11 percent for first line and second line adult ARVs, respectively.
Ethiopia	GHSC-PSM has supported quantification of commodities for priority programs. Forecasts for essential HIV, malaria, family planning/reproductive health, and maternal and child health products are produced during annual quantification exercises. PFSA hubs issue data for health facilities taken from consumption data (LMIS reports) to calculate the forecast error indicator. The result shows that the overall forecasting error was 139 percent. The forecast error varies widely by task order, ranging from the highest forecast error for MCH commodities (461 percent) to the lowest forecasting error for HIV/AIDS program commodities (74 percent). The forecasting error was 43 percent and 57 percent for malaria and FP commodities, respectively. ARV drugs had a forecasting error of 23 percent, which is acceptable as it falls within the 25 percent limit set by PFSA. For most of the tracer commodities, the forecast bias variant is negative, showing overforecasting of program commodities. Some potential reasons for this overforecasting include: 1) Some products are not integrated into the IPLS system and the products are pushed to a limited number of health facilities; 2) There is an overall shortage of some products at the national level; or 3) Misaligned distribution of commodities among PFSA hubs and health facilities.
Ghana	Ghana reported indicator B12 using SDP consumption or regional level issues data, depending on task order and tracer product. The forecasts were conducted in late 2016 or early 2017 and span the 2017 calendar year.The MAPE for all products was near or below the ideal 50 percent, except for pediatric ARVs and OraQuick, which anticipated higher consumption than reported. The actual quantity consumed for each was far lower than anticipated because of stockouts reported during the period and an overly ambitious forecast.
Guatemala	Guatemala's analysis is based on a 12-month period from August 2017 to July 2018. Actual consumption data were used for the calculation. Guatemala had strong performance across all TO1 tracer categories. Accuracy on products ranged from just 0.37 percent error for first line Adult ARVs and RTKs to 6.63 percent and 11.61 percent for first line pediatric ARVs and second line adult ARVs, respectively.
Guinea	Guinea's forecast bias for malaria products ranged from -3 percent (AL 6X2) to -77 percent (LLINs). For FP/PRH commodities, it ranged from 23 percent for injectables to 129 percent for progestin-only pills.
Haiti	Haiti maintained an absolute percent forecast error of less than 35 percent for all tracer products, with only EID reagents reaching close to that level of error, at 34 percent APE. Even given the transition to TLD, the forecast error for TDF was only -15 percent.
Honduras	Honduras' analysis is based on a 12-month period from August 2017 to July 2018. Actual consumption data was used for the calculation with the forecast conducted in May 2017. Guatemala had strong performance across all TO1 tracer categories. Accuracy on products ranged from just 6.27 percent error for fist line Adult ARVs and 6.96 percent for second line Adult ARVs to 31.21 percent for first line pediatric ARVs.
Lesotho	Lesotho reported this indicator using issues and distribution data, depending on tracer product. The forecasts were conducted in October 2017 for the period October 2017 through September 2018. The MAPE for all products except most-used EID reagent was near or below the ideal 50 percent. EID reagents forecasted far more than was actually consumed due to poor procurement planning and procurement of lab commodities.
Madagascar	Madagascar reported a forecast bias range for malaria commodities of -29 for adult AS/AQ, to -258 percent for SP. With the exception of progestin-only pills (-154 percent forecst bias), all other FP/PRH commodities had an error rate within the acceptable level of +/- 50 percent.
Malawi	Malawi saw underforcasting compared to consumption for many products, including all malaria products and some family planning products. Underforecasting may be due to assumptions that did not factor in consumption by partners conducting outreach programs. GHSC-PSM supported the MOH to review and update forecast data in September, which should improve forecast accuracy.

B12. Absolute Percent Error - granular level analysis	
Mali	Mali's forecast bias among malaria products varied widely, ranging from -5 percent for AL 6X3, to -102 percent for AL 6X4. Forecast bias was much higher for FP/PRH products, ranging from -42 percent for calendar-based awareness methods, to -362 percent for copper IUDs.
Mozambique	Mozambique's forecast bias for most products remained at or below 50 percent. For zinc, though, the absolute percent forecase error was 500 percent, with the actual quantity forecasted far exceeding the amount consumed. The MNCH program intended to increase availability and use of zinc this year; however, at the health facilities demand remains low.
Namibia	Forecast error was low for adult ARVs and first RTK because they are consumed in large quantities. The forecast was less accurate for the pediatric ARV and the confirmatory and tie breaker RTKs because of the low quantities required and relatively larger buffer stocks that need to be maintained across the system.
Nepal	Nepal conducts annual forecasts but because of lags in reporting, only nine months of consumption data are available; therefore, the forecast is adjusted to reflect the nine-month period. Additionally, the reporting rate in Nepal is ~50 percent, so consumption data have been adjusted to project *what it would be* if there was 100 percent reporting. The best performing products from TO3 & TO4 are Depot Medroxyprogesterone Acetate 150 mg Vial, SR with 106 percent error and ORS+zinc (together) with 52 percent error. The worst performing products from TO3 & TO4 are Levonorgestrel/Ethinyl Estradiol 150/30 mcg + Fe 75 mg, 28 Tablets/Cycle with 595 percent error and Oxytocin (10 IU injectable) with 724 percent error.
Nigeria	For TO1 commodities, forecast accuracy was generally within acceptable limits for all tracer products except Stat-Pak, with poor forecast accuracy likely caused by the need to have a minimum of one pack in all health facilities regardless of consumption. For TO2 commodites, the forecast errors for ACTs were mostly within the acceptable limits except for AL3, AA3 and AA4. Generally, the consumption for ASAQs has been on the decline which suggest declining demand for this product category and thus a higher forecast error. For TO3 commodities, the forecast error for most contraceptives were within the acceptable limits. For Levonorgestrel/Ethinyl Estradiol Pill, the high error rate was likely due to the commodity being in short supply due to delayed shipments from the 2017 supply plan. For male condoms, the forecast includes a 40 percent provision for NGOs which do not report consumption data, thus leading to a high forecast error in consumption data.
Rwanda	First line ARV, second line ARV, and first line Pediatric ARVs all saw a high forecast accuracy (-1%, 2%, -4%, respectively). Female condoms saw a large error due to a larger uptake from family planning campaigns and outreach activities. Higher demand of both 1 rod and 2 rod implants also contributed to high error rates for those products. TO4 commodities saw the highest level of forecast error in FY18.
Pakistan	Pakistan's forecast erorr is based on a 12-month period from October 2017 to September 2018. The overall bias for PRH products was -36 percent for the period. The most accurate product was Copper-bearing IUDs with 2.37 percent error, and the least accurate product was Etonogestrel 68 mg/rod, 1-rod implant with 671.68 percent error.
Uganda	Uganda's analysis is not based on consumption data but rather issue data from the central level warehouse. The forecast was conducted in September 2017 for the fiscal year starting in October. For TO1, the most accurate product was Viral Load reagents at 0.40 percent and the least accurate product was female condoms at -232 percent. For TO2, the most accurate product was AL 6x1 with -8.24 percent error and the least accurate was AL 6x3 with -94.09 percent error. For TO3, the most accurate product was Depot medroxyprogesterone acetate 150 mg vial, intramuscular with 10.49 percent error and the least accurate product was Levonorgestrel 75mg/rod, 2-rod implant with 81.26 percent error.
Vietnam	Vietnam's analysis is based on a six-month period from March to August, 2018. Actual consumption data are used for the metric. While only reporting on two products, the accuracy is excellent. A TO1-only country, Vietnam has 2 percent error for first line Adult ARVs and -3 percent error for second line Adult ARVs.
Zambia	Consumption rates were low for health elements that showed a high average mean absolute percentage forecasted error. For example, use of many FP/PRH products (such as female condoms and Copper IUDs) has been low due to low demand from clients. Forecast errors for first and second-line adult ARVs were very low, however, despite the transition from TLE to TLD.
Zimbabwe	Malaria consumption exceeded forecasts for all ACT products, due to higher than anticipated consumption during the peak period. Elevated error for pediatric ARVs is not wholly representative, due to the change in regimen. Forecast error for most other products fell within or close to the target band of 25 percent error.

C1. Number of innovations (including operations research studies) that were developed, implemented, or introduced and are related to health commodity market or supply chain best practices

Measure Definition

Number of innovations: An innovation refers to new technologies, new products, new approaches, and/or operational research studies developed, implemented, or introduced during the period of reporting.

Task Order	Achievement FY2018 Q4	Achievement Year to Date
TO1	6	12
TO2	2	15
TO3	3	10
TO4	0	1
Cross Cutting	9	20
All TOs	20	48

▸ Target not required for this indicator.

Description of Innovation		
Global/Country	Type of Innovation	Brief Description
TO1		
Burundi	New product	Dried blood spot kits have been purchased and arrived in Burundi in Q3. The kits are now being used to transport blood samples for viral load testing to Ngozi hospital laboratory. Previously, whole blood samples needed to be transported via cold chain to the lab and tested within six hours of being collected. The new DBS kits can store collected blood samples for more than 60 days at room temperature, alleviating the storage and transportation constraints imposed by the previous system. USAID and GHSC-PSM will continue to support the supply of these kits with PEPFAR funding.
Lesotho	New approach	GHSC-PSM provided STTA to develop various tools to assist the central medical stores in monitoring all costs related to each of the functions of their warehouse operations. This activity-based cost analysis has led to increased efficiency and cost containment, and has allowed the central medical stores to maintain the mark-up that they charge for storage and distribution, in spite of moving from district delivery to "last mile" delivery direct to all of the facilities in country.
Lesotho	New technology	GHSc-PSM provided STTA to assist the central medical stores in developing specifications and managing the software development firm for an enhanced warehouse management system. This system allows for streamlining warehouse operations through the use of handheld devices to replace previously manually conducted processes such as receiving, picking and packing and dispatch. It also provides for continuous cycle counting, avoiding shutting down warehouse operations to conduct physical counts.
Lesotho	New approach	The nationwide roll-out of electronic reporting and requisitioning system is complete, replacing the manual paper-based system. Under this new system, facilities use tablets to upload a limited number of data points via the DHIS2 platform, and the Informed Push module calculates AMC and quantity to order, reducing the reporting burden on facility staff, as well as reducing the potential for mathematical errors. GHSC-PSM was involved in system design, training, supervision, and orienting district staff in data extraction and analysis.
South Sudan	New product	During this quarter and following discussions on the introduction TLD (Tenofovir, Lamivudine and Dolutegravir) as a preferred first line ARV in place of TLE (Tenofovir, Lamivudine and Efavirenz), TLD and Dolutegravir are now officially accepted for use in the country, and TLD has been added as a first line treatment into the National HIV/AIDS Treatment guidelines.
Rwanda	New Product	During this quarter, two new ARV products were introduced: TLD (Tenofovir, Lamivudine and Dolutegravir) 50/300/300mg tablets and (DTG) Dolutegravir 50mg tablets.
TO2		
Burkina Faso	New product	GHSC-PSM in Burkina Faso supported the introduction of rectal artesunate for the first time, for the treatment of severe malaria. The treatment can be administered by community health workers before patients are transferred to a health facility. This product and approach were piloted in districts within the Sahel region.

Description of Innovation		
Global/Country	Type of Innovation	Brief Description
Cameroon	New approach	In collaboration with the Ministry of Health, the project introduced a new delivery tracking system to ensure effective commodity delivery during seasonal malaria chemoprevention (SMC) campaigns. Last mile delivery is challenging during these rainy season campaigns due to road infrastructure and communication limitations. The new approach included the creation of a joint project/MOH task force, close collaboration and advance preparation with 3PLs, daily communication of delivery statues, and use of an Excel dashboard for analysis, adjustments, and delivery verification.This approach enabled the delivery, confirmation, and documentation of 5,381,600 full therapeutic courses for 1,629,083 children in all the 478 health facilities of the north and far north regions for 2018 SMC campaign within 10 days, as planned.
TO3		
South Sudan	New product	Sayana press was introduced into the FP/RH kits during FY18 Q4.
Pakistan	New technology	To take LMIS to a new horizon, first version of Mobile App (Android) has been developed for cLMIS data entry users. This app will soon be launched in one district's SDPs, and later it will be rolled out in all SDPs in Pakistan. In addition to user's convenience, it will help to improve data quality and timely reporting.
Pakistan	New technology	GHSC-PSM Pakistan has developed an "in built decision intelligence" in the LMIS system for "Stock Optimization." The biggest challenge in any health supply chain is to maintain the right stock levels at SDP levels to provide uninterrupted supplies. The new functionality of "Stock Optimization" suggests to the end user how SDPs with overstock could fill the stock gaps at understocked SDPs, at the same time achieving more optimal stock levels themselves. The system is also generating compliance and stock optimization alerts to relevant district managers to take actions accordingly.
TO4		
There were no TO4-specific innovations implemented this quarter.		
Cross Cutting		
Ghana	New approach	GHSC-PSM introduced the use of social media platforms to support the implementation of key country interventions, particularly the last mile distribution and LMIS implementation. The WhatsApp platform is restricted to discuss and resolve issues that affect the implementation of these interventions. For example, the WhatsApp platform for a region implementing LMD is used to inform health facilities of the distribution schedule, the movement of the vehicle, the delivery of commodities, and receiving feedback for rapid resolution of identified challenges. The LMIS WhatsApp platform is used to circulate meeting times, system development updates, and process information among others. This low-cost technology is supporting the implementation of major supply chain interventions by providing beneficiaries with a common platform for information use and dissemination.
South Sudan	New technology	PipeLine software has been introduced in the central warehouse. This software is expected to help generate optimal procurement and delivery schedules for ARVs and malaria commodities. Previously, the warehouse was using the m-supply system which was only used for inventory management. Pipeline advises on shipments scheduling and pipeline action.
Ethiopia	Operations Research	GHSC-PSM supported a PFSA distribution network analysis aiming to understand the level of coverage provided by PFSA hubs to the facilities they serve. A total of eight participants from GHSC-PSM, as well as hub mangers from Mekelle and Dire Dawa PFSA participated in the distribution network analysis assumption workshop. The participants defined some basic requirements for network analysis such as PFSA's SDP coverage in terms of travel days and distance from the hub, average travel time per day, and average km/hr on gravel and asphalt roads. The assumptions defined during the workshop were presented to and approved by PFSA management and USAID. Using the assumptions identified and key data elements from PFSA and the GHSC-PSM field office, the effectiveness of current route mapping, distribution networks, and requirements for additional hubs were analyzed. The network analysis helped PFSA to understand how changing the number of hubs would impact coverage, given a certain benchmark. PFSA utilized the assessment findings to set a strategic direction that will decrease the number of PFSA hubs down to 10 in the coming years.

Description of Innovation		
Global/Country	Type of Innovation	Brief Description
Ethiopia	New approach	GHSC-PSM, PFSA, and the Ministry of Health developed a "quick-win" initiative that shares stock status update information – including commodities at risk of stockout and expiry – through an e-mail group, Viber (a secure messaging app), and regular weekly meetings. The quick-win initiative teams include members from MoH and PFSA, GHSC-PSM, regional health bureaus, PFSA hubs, and health facilities. GHSC-PSM deployed an inventory analysis team to work with PFSA and other stakeholders to conduct bi-weekly (every two weeks) stock analysis and requisition analysis at PFSA and health facilities and facilitate rapid stock transfer and refill to prevent stockouts, expiry, and other supply risks.
Malawi	New approach	GHSC-PSM supported the Ministry of Health to roll out ForLab (version 2), a tool for quantification of lab products. Quantification of lab products has long been fragmented among the MOH and development partners owing to limited capacity and lack of guiding tools. As part of the roll out, a new lab Forecasting and Supply Planning team has been set up at MOH and trained on the use of ForLab. The FASP team is now able to conduct quantifications on its own, with minimal external technical support. The Malawi lab FASP team has also developed a road map and a plan for using ForLab for the 2019 lab quantification exercise. This new approach is expected to strengthen coordination and integration for lab commodity procurements moving forward.
Mali	New approach	The warehouse-in-a-box project is one of GHSC-PSM Mali's major activities. This involves the construction of a new prefabricated pharmaceutical warehouse for the Pharmacie Populaire du Mali (Pharmacy of Mali) to improve its storage capacity and help it transition to globally-recognized storage procedures. The different phases of the project are as follows: -Design phase, -Supervision of foundation construction, -Acquisition of warehouse materials (steel, coatings, shelving, handling equipment, A-C, etc.), and -Installation, supervision and transfer. The steel installation and the cladding are almost complete. The next stage will include finishing the installation of the coating, beginning work on the floor of the warehouse, finalization of the floor of the warehouse, beginning installation of the shelving, beginning installation of the air conditioning, starting the electrical installation, and starting the fire protection installation. Overall the project is 75 percent complete.
Mali	New technology	OSPSANTE is a web-based dashboard early warning system that collects, aggregates, and analyzes data on malaria cases and commodities, family planning basket drugs, and maternal and child health. DHIS2 is an integration platform of the environmental statistical information system (SISE) developed by the University of Oslo, Norway. It is a flexible and open source web platform that can be configured to adapt to the needs of each country. It allows multiple and controlled access to different networked users. Understanding the link between DHIS2 and OSPSANTE is a fundamental step for the continuation of activities leading to this interoperability between the two tools. This is why the technical committee for the implementation of the DHIS2 at its monthly meeting on March 10, 2017 recommended holding a session to present on OSPSANTE and the development of an action plan that takes into account all the activities necessary for the interoperability of the two tools. To make the LMIS portal functional in DHIS2, the DPM, with technical and financial support from GHSC-PSM, held a test workshop on interoperability with actors from the referral health centers of commune V, the hospital of Mali and the central PPM. As a component of pharmaceutical sector strengthening, the DPM, with GHSC-PSM support, led a training of actors at the regional and district levels on data entry in the LMIS report developed for DHIS2.
Rwanda	New technology	Rwanda began the initial stages of implementing GS1 in the country. Currently GHSC-PSM is engaging with Ministry of Health leadership as well as other stakeholders to begin conversations on what that implementation process will look like and to build stakeholder buy-in and ownership. GHSC-Rwanda is currently building awareness of the global standards and traceability within the country to enable a common baseline of knowledge among key stakeholders who will be involved in all stages from the vision and strategy to the development and implementation plan.
Zimbabwe	New approach	The Zimbabwe field office worked with GHSC-PSM consortium partner IBM to develop a commodity availability early warning system (EWS). The new tool allows simulation of shipment statuses, commodity expiries, and consumption. It produces a dashboard for high-level visual analysis. The EWS tool will help the Ministry of Health and Child Care (MOHCC) take proactive steps in cases of shipment delays, commodity expiries, and changes in consumption. It will also be used at Natpharm to estimate incoming shipments, allowing the agency to plan future resource usage.

C2. Number of people trained by supply chain functional area

Measure Definition

Number of people trained. "People trained" refers to any type of participant, student, or learner in a training event, regardless of its duration. People trained may refer to different categories of participants (e.g., physicians, nurses, social workers).
Purpose: This indicator measures supply chain training activity. It provides insight into whether the project is making progress toward its capacity-building objectives and can help track progress from one year to the next.

Task Order	Achievement FY2018 Q4	Achievement Year to Date
TO1	875	3,218
TO2	1,067	4,278
TO3	-	2,600
TO4	30	255
Cross TO	7,840	14,969
All TOs	9,812	25,320

Indicator Performance

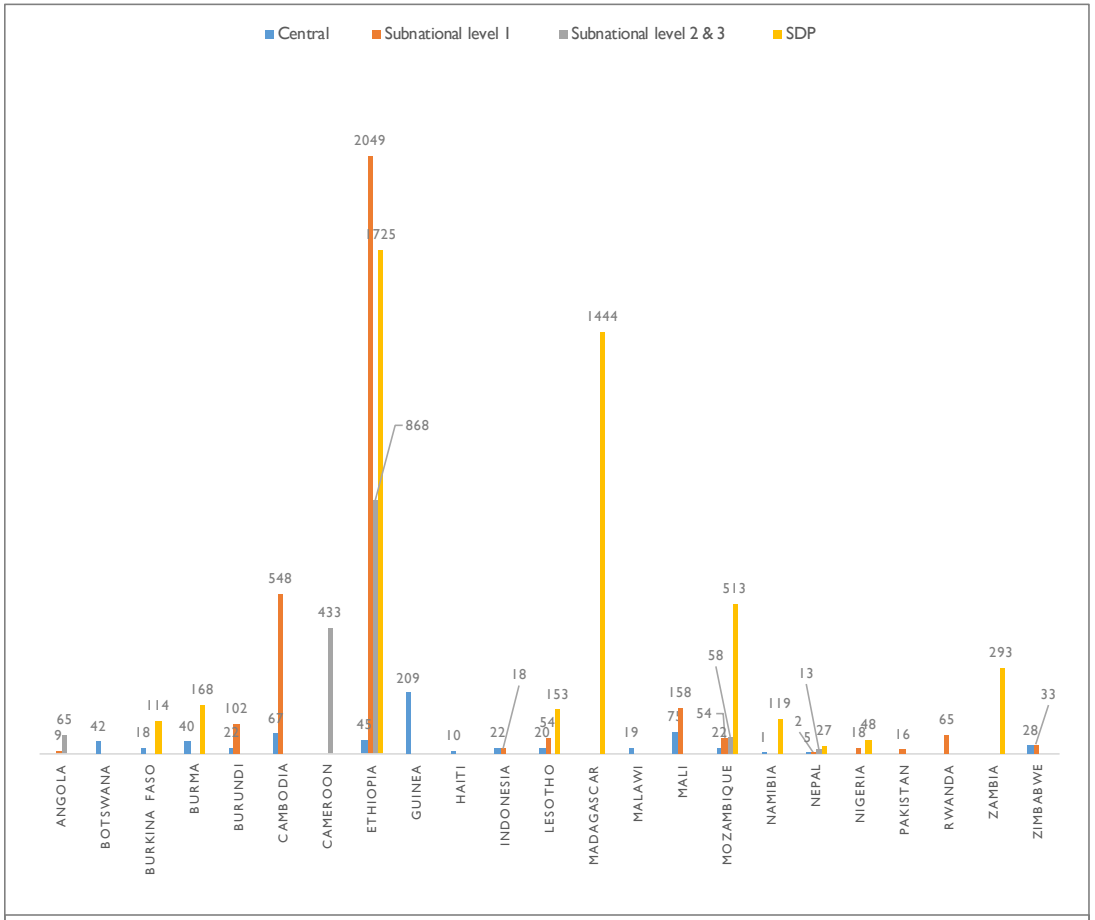
	C2. Number of people trained	Central	Subnational Level 1	Subnational Level 2 & 3	SDP
HIV	**Task Order 1**				
	Forecasting and Supply Planning	69	18		
	Procurement	10			
	Quality Assurance				
	Warehousing and Inventory Management	34	33	19	119
	Transportation and Distribution				
	MIS	33	54		153
	Governance and Financing				
	Human Resources and Capacity Development	22	44		218
	Monitoring and Evaluation	1	18		
	Strategy and Planning	30			
Malaria	**Task Order 2**				
	Forecasting and Supply Planning				
	Procurement				
	Quality Assurance				
	Warehousing and Inventory Management		557	46	48
	Transportation and Distribution				247
	MIS				114
	Governance and Financing				
	Human Resources and Capacity Development				
	Monitoring and Evaluation	18			
	Strategy and Planning	37			
PRH	**Task Order 3**				
	Forecasting and Supply Planning				
	Procurement				
	Quality Assurance				
	Warehousing and Inventory Management				
	Transportation and Distribution				
	MIS				
	Governance and Financing				
	Human Resources and Capacity Development				
	Monitoring and Evaluation				
	Strategy and Planning				

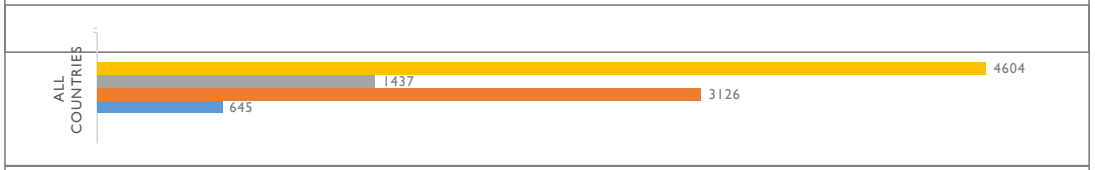
	C2. Number of People Trained	Central	Subnational Level 1	Subnational Level 2 & 3	SDP
MCH	**Task Order 4**				
	Forecasting and Supply Planning				
	Procurement				
	Quality Assurance				
	Warehousing and Inventory Management				
	Transportation and Distribution				
	MIS				
	Governance and Financing				
	Human Resources and Capacity Development		30		
	Monitoring and Evaluation				
	Strategy and Planning				
Cross TOs	**Cross TO**				
	Forecasting and Supply Planning	25			
	Procurement		1206		
	Quality Assurance		437		
	Warehousing and Inventory Management	69	279	23	1928
	Transportation and Distribution				
	MIS	236	285	481	302
	Governance and Financing				888
	Human Resources and Capacity Development	61	41	313	587
	Monitoring and Evaluation		124	555	
	Strategy and Planning				

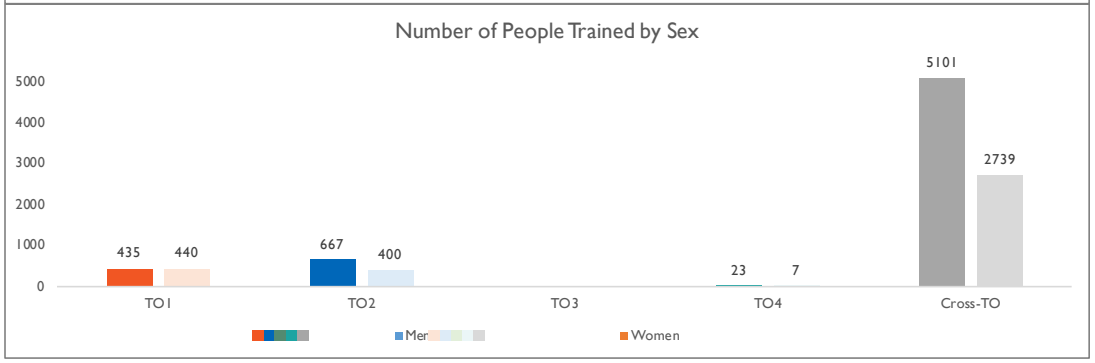
Data Notes

- The number of participants in trainings that were TO-specific are presented in the TO boxes, while trainings that covered multiple TOs are presented as such.
- To demonstrate the number of people trained by funding source, participants in trainings that covered multiple TOs were divided according to the TO funding split in each country. Those participants were added to the TO-specific participants to determine the number of people trained by funding source. These data are presented on the following page.
- Target not required for this indicator.

C2. Number of people trained by task order, country, sex, and funding source

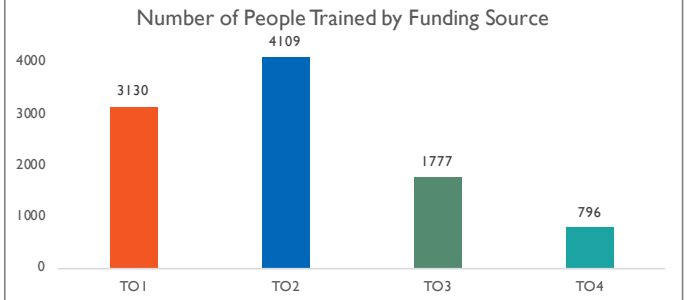






Analysis

- In Ethiopia, GHSC-PSM provided Health Supply Chain Management trainings in 17 thematic areas to 4,687 health professionals (3,237 male and 1,450 female) on the fundamentals of logistics management, the proper management of laboratory reagents, QMS, health supply chain management M&E skills, good dispensing practices, and management of pharmaceuticals as well as the use of essential logistics data for supply chain decisions. These trainings strengthen the health supply chain practice of HIV/AIDS, malaria, FP/RH and MCH health commodities and pharmaceuticals at different levels of the health supply chain management system. This represents the highest quarterly number of health professionals trained to date.
- In Zambia, the project trained 293 MoH staff in all the logistics systems (129 women, 164 men), representing an increase from the 166 individuals trained last quarter. The trainings focused on supply chain logistics for HIV test kits, ARVs, and essential medicines.
- The project conducted several notable trainings in Mali this quarter. Firstly, several teams were trained in quantification and the use of the Quantimed, Reality check, and Pipeline software. They were trained to conduct the quantification independent of project support. Secondly, in conjunction with the transition from existing warehouse space into the new warehouse-in-a-box and the transition to the SAGE warehouse management software, the project trained National Pharmacy of Mali personnel in purchasing, warehousing, and storage management. Finally, to support the efforts for interoperability between the OSPSANTE (LMIS) and DHIS2, the project supported a training of actors at the regional and district levels on data entry into the new LMIS report developed in DHIS2 in several districts. Participants were selected based on their direct involvement in the production of the data, data entry, or review of logistical data vis a vis the nutrition module in the OSPSANTE tool.
- In Burkina Faso, 99 men and 33 women were trained: 114 on MIS and 18 in monitoring and evaluation (on how to conduct the revised End Use Verification survey).
- GHSC-PSM Guinea trained 158 men and 51 women at the central level on the new e-LMIS.
- In Haiti, a procurement workshop was held with local suppliers to address their challenges and to prepare them for GHSC-PSM's new process for managing the turnover tax, which ensures that the project's practices are consistent with government policy concerning tax exemptions. Representatives of eight suppliers attended.



*Participants in trainings that covered multiple TOs were divided according to the TO funding split in each country. Those participants were added to the TO-specific participants to determine the number of people trained by funding source.

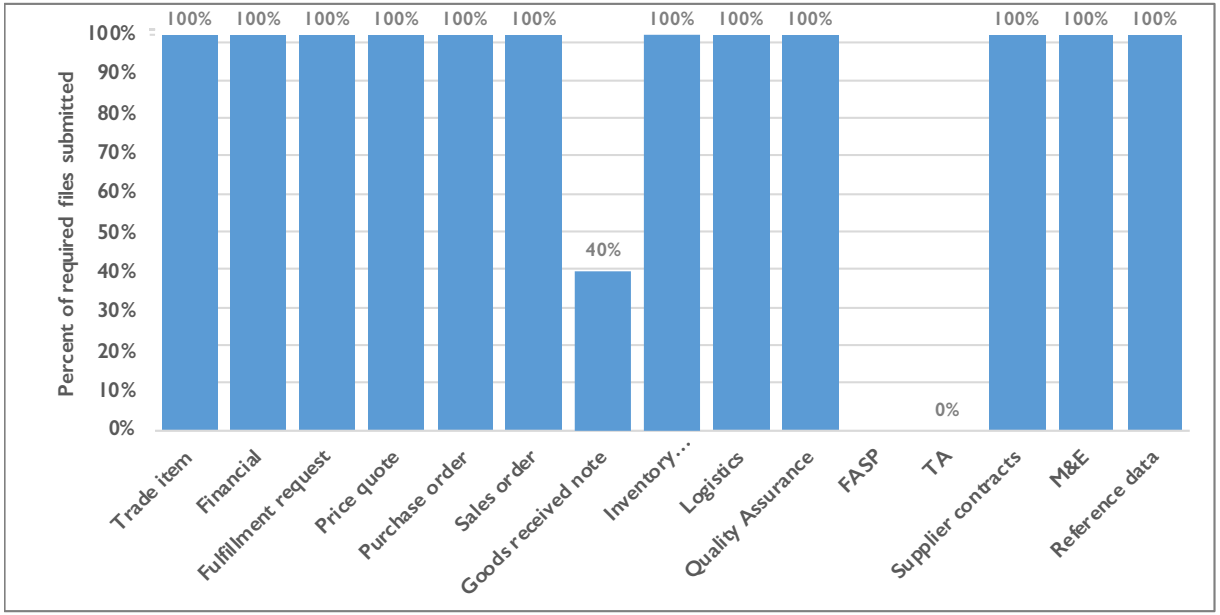
C4. Percentage of required files submitted to BI&A in the reporting period

Measure Definition

Numerator: Number of required files submitted to BI&A during the quarter
Denominator: Total number of files required for submission to BI&A during the quarter
Purpose: This indicator measures the completeness of GHSC-PSM's data submissions to GHSC-BI&A. Required files and data elements fall into a wide range of categories, from purchase orders and fulfillment requests to forecasting and supply planning.

	FY18 Target	Achievement FY2018 Q4	Achievement Year to Date
All Task Orders	TBD	84%	83%

Indicator Performance



Analysis

- GHSC-PSM decreased its data submission rate to BI&A this quarter. Submission rates have decreased from 92 percent in Q3 to 84 percent in Q4.
- GHSC-PSM's performance has largely remained the same since last quarter. Due to a reporting error, the TA files were excluded last quarter from the denominator. This artificially increased the performance for the quarter. Submission rates for all categories have stayed the same with the exception of trade item files. GHSC-PSM is now submitting all required trade item files as required by BI&A.

Data Notes

- The USAID Global Health Supply Chain Program-Business Intelligence and Analytics (GHSC-BI&A) mechanism is a data warehouse and analysis platform that integrates data across USAID's family of GHSC projects.
- Data requirements, including file types, data elements, submission formats, and frequency, are governed by the *BI&A Information Specification for Implementing Partners* (the "Infospec"). Exceptions may be specified by USAID.

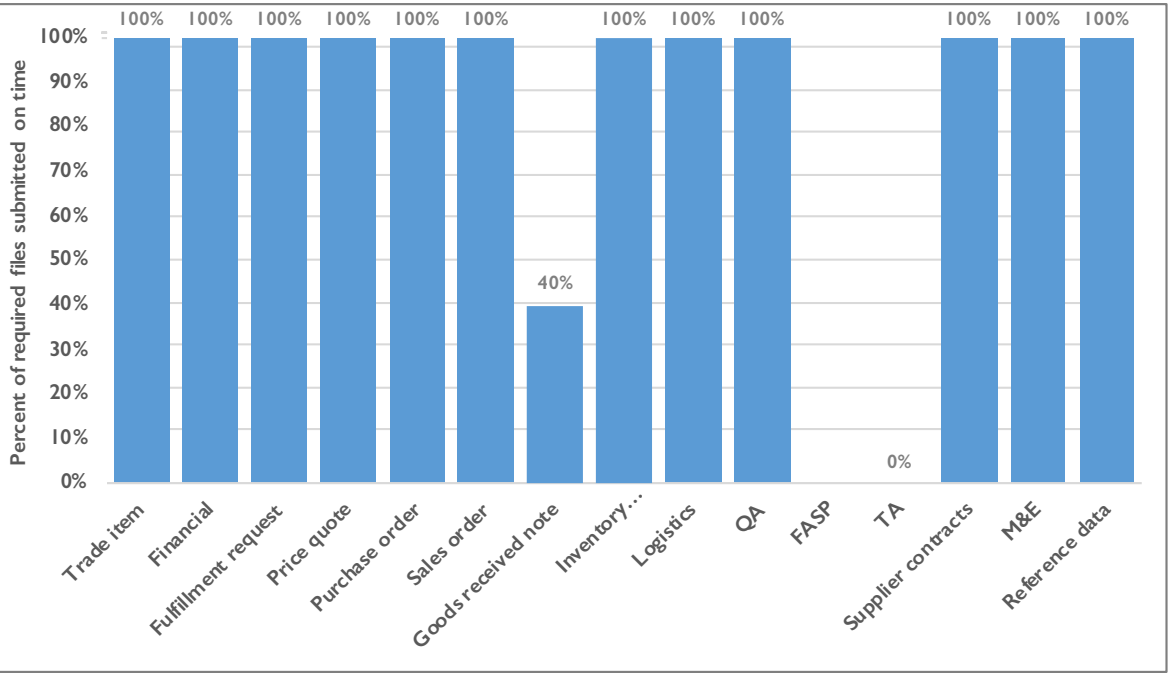
C5. Percentage of required files timely submitted to BI&A in the reporting period

Measure Definition

Numerator: Number of required files timely submitted to BI&A during the quarter.
Denominator: Total number of files required for submission to BI&A during the quarter.
Purpose: This indicator measures the timeliness of reporting to BI&A. Depending on the information category, submissions can be due on a daily, monthly, or annual basis.

	FY18 Target	Achievement FY2018 Q4	Achievement Year to Date
All Task Orders	TBD	84%	83%

Indicator Performance



Analysis

- GHSC-PSM decreased its data submission rate to BI&A this quarter. Submission rates have decreased from 92 percent in Q3 to 84 percent in Q4.
- GHSC-PSM's performance has largely remained the same since last quarter. Due to a reporting error, the TA files were excluded last quarter from the denominator. This artificially increased the performance for the quarter. Submission rates for all categories have stayed the same with the exception of trade item files. GHSC-PSM is now submitting all required trade item files as required by BI&A.
- GHSC-PSM submits all requried files on time, thus the timeliness rate reflects the submission rate for the quarter.

Data Notes

- The USAID Global Health Supply Chain Program-Business Intelligence and Analytics (GHSC-BI&A) mechanism is a data warehouse and analysis platform that integrates data across USAID's family of GHSC projects.
- Data requirements, including file types, data elements, submisson formats, and frequency, are governed by the *BI&A Information Specification for Implementing Partners* (the "Infospec"). Exceptions may be specified by USAID.
- Four out of eight trade item files named in the Infospec have also been excluded from the indicator as "not applicable" to GHSC-PSM's current business processes.

C7a. Percentage of product lost due to expiry while under GHSC-PSM control (product loss percentage)

Measure Definition

Numerator: Total value of product lost due to expiry during the quarter
Denominator: Average inventory balance (in USD) during the quarter
Purpose: This indicator tracks products lost due to expiry while in a warehouse controlled by GHSC-PSM, including global regional distribution centers and in-country medical stores. It is key for monitoring good warehouse and distribution practices, such as "first expired first out" (FEFO).

Indicator Performance

Task Order	Country	Supply Chain Level	Site of Loss	Tracer Category	Total Value of Loss (USD)	Loss Denominator (USD)	Loss Percentage
TO1 HIV/AIDS	Haiti	Central	Storage	ARVs, Lab reagents	$ 133,720.17	$ 12,760,125.96	1.05%
TO1 HIV/AIDS	Nigeria	Central	Storage	ARVs, Lab reagents	$ 128,842.01	$ 55,580,594.99	0.23%
TO1 HIV/AIDS	RDC	GSC	Storage	Adult ARV	$ 4,119.50	$ 28,280,865.00	0.0146%
TO1 HIV/AIDS	RDC	GSC	Storage	Pediatric ARV	$ 9.50	$ 28,280,865.00	0.00000034%
TO2 Malaria	Nigeria	Central	Storage	RDTs	$ 14,251.49	$ 9,008,774.54	0.16%

Analysis

▸ Loss percentages due to expiry in the RDCs were generally very small this quarter, maintaining consistent performance from the previous quarter. Expiries also have not fluctuated in GHSC-PSM-managed warehouses in Haiti or Nigeria.

Data Notes

▸ Losses are reported during the quarter that the loss value was determined, which may be later than the period when the loss occurred.
▸ Target not required for this indicator.

C7b. Percentage of product lost due to theft, damage, or other causes while under GHSC-PSM control (product loss percentage)

Measure Definition

Numerator: Total value of product lost due to theft, damage, and other causes during the quarter.
Denominator for losses in storage: Average inventory balance (in USD) during the quarter.
Denominator for losses in transit: Total value (in USD) of product delivered during the quarter.
Purpose: This indicator tracks products lost in a warehouse controlled by GHSC-PSM, in transit to such a facility, or in transit to the customer, within a specified time. Damage can occur due to human error such as lack of adherence to cold chain requirements, or unavoidable causes such as natural disasters.

Indicator Performance

Task Order	Country	Supply Chain Level	Site of Loss	Type of Loss	Tracer Category	Total Value of Loss (USD)	Loss Denominator (USD)	Loss Percentage
TO1 HIV/AIDS	Haiti	Global	Transit	Damage	RUTF	$ 4,366	$ 3,862,616	0.1%
TO1 HIV/AIDS	Nigeria	Global	Transit	Damage	Adult ARVs	$ 71,971	$ 22,569,775	0.3%
TO1 HIV/AIDS	Nigeria	Global	Transit	Damage	Adult ARVs, Pediatric ARVs, Laboratory	$ 18,016	$ 23,111,459	0.1%
TO1 HIV/AIDS	Nigeria	Global	Transit	Damage	Laboratory	$ 528	$ 35,574,828	0.0%
TO1 HIV/AIDS	Rwanda	Global	Transit	Damage	Adult ARVs	$ 158	$ 3,529,289	0.0%
TO1 HIV/AIDS	Rwanda	Global	Transit	Damage	Adult ARVs, Pediatric ARVs, Laboratory	$ 4,161	$ 2,545,914	0.2%
TO1 HIV/AIDS	Tanzania	Global	Transit	Damage	Laboratory	$ 1	$ 23,542,923	0.0%
TO1 HIV/AIDS	Uganda	Global	Transit	Missing product, Damage	VMMC, Adult ARVs	$ 2,732	$ 10,051,115	0.0%
TO1 HIV/AIDS	Uganda	Global	Transit	Missing product	Laboratory	$ 2,112	$ 3,322,471	0.1%
TO1 HIV/AIDS	Zambia	Global	Transit	Damage	Laboratory	$ 894	$ 34,104,667	0.0%
TO1 HIV/AIDS	Zimbabwe	Global	Transit	Damage	Condoms	$ 3,959	$ 6,032,710	0.1%

Analysis

▸ **There is a notable increase in the number of losses included in this report, compared to previous reports. Many of these incidents were reported to th Improvement system in earlier quarters, but are reported now that final loss values have been determined. The project's use of its Continual Improvement system has also matured, as the staff become more experienced with the system and become more proactive about submitting incidents for tracking and investigation. The Risk Management team has also made a push to process insurance claims in recent months, which has pushed more incidents through the resolution process.**

▸ The most common forms of product loss continue to be damages or discrepancies that occur during transit through the global supply chain, and which impact relatively small proportions of GHSC-PSM's order volume. These types of losses are typical for large supply chain operations. All losses noted above have been submitted as insurance claims, replaced by the vendor, or reimbursed by the logistics provider, with one exception where the vendor did not accept responsibility for improper packaging. No further awards have been made to this vendor, for this and other performance reasons.

Data Notes

▸ Losses are reported during the quarter that the loss value was determined, which may be later than the period when the loss occurred. Incidents reported to the Continual Improvement sytem this quarter may appear in future reports.
▸ Targets are not required for this indicator.

C7b. Percentage of product lost due to theft, damage, or other causes while under GHSC-PSM control (product loss percentage)

Measure Definition

Numerator: Total value of product lost due to theft, damage, and other causes during the quarter.
Denominator for losses in storage: Average inventory balance (in USD) during the quarter.
Denominator for losses in transit: Total value (in USD) of product delivered during the quarter.
Purpose: This indicator tracks products lost in a warehouse controlled by GHSC-PSM, in transit to such a facility, or in transit to the customer, within a specified time. Damage can occur due to human error such as lack of adherence to cold chain requirements, or unavoidable causes such as natural disasters.

Indicator Performance

Task Order	Country	Supply Chain Level	Site of Loss	Type of Loss	Tracer Category	Total Value of Loss (USD)	Loss Denominator (USD)	Loss Percentage
TO2 Malaria	Belgium RDC	Global	Transit	Damage	mRDTs, Other Pharma	$ 6,495	$ 6,316,839	0.1%
TO2 Malaria	DRC	Global	Transit	Missing product	LLINs	$ 1,720	$ 3,371,504	0.1%
TO2 Malaria	Ethiopia	Global	Transit	Missing product	LLINs	$ 986	$ 8,760,000	0.0%
TO2 Malaria	Guinea	Global	Transit	Damage	Other pharma	$ 206	$ 241,479	0.1%
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TO2 Malaria	Madagascar	Global	Transit	Missing product	LLINs	$ 3,948	$ 12,920,025	0.0%
TO2 Malaria	Nigeria	Global	Transit	Missing product	LLINs	$ 18,281	$ 8,343,829	0.2%
TO2 Malaria	Nigeria	Global	Transit	Damage	ACTs	$ 237	$ 6,893,615	0.0%
TO2 Malaria	Nigeria	Global	Transit	Damage	ACTs, Other Pharma	$ 1,636	$ 7,466,740	0.0%
TO2 Malaria	Nigeria	Global	Transit	Damage	mRDTs	$ 11,349	$ 15,336,948	0.1%
TO2 Malaria	Rwanda	Global	Transit	Damage	Severe Malaria Medicines	$ 2	$ 1,613,640	0.0%
TO2 Malaria	Rwanda	Global	Transit	Damage	Severe Malaria Medicines	$ 42	$ 106,800	0.0%
TO2 Malaria	Rwanda	Global	Transit	Missing product	mRDTs	$ 9,900	$ 3,322,471	0.3%
TO2 Malaria	South Africa RDC	Global	Transit	Damage	ACTs	$ 480	$ 1,069,540	0.0%
TO3 FP/RH	Bangladesh	Global	Transit	Missing product	Implants	$ 30,600	$ 1,146,560	2.7%
TO3 FP/RH	Cameroon	Global	Transit	Damage	Injectables	$ 3,060	$ 85,000	3.6%
TO3 FP/RH	Uganda	Global	Transit	Damage	Injectables	$ 82,368	$ 3,580,902	2.3%

Analysis

▸ Incidents on Task Order 2 are similar to those reported for TO1. Missing products, or discrepancies between POD quantities and physical counts of products received, are more common on LLIN shipments with significant order quantities. These are typically replaced by the suppliers, while damages are submitted for insurance claims.

[redacted]

▸ Loss percentages on Task Order 3 were generally higher than the other TOs. One pallet of injectable contraceptives went missing on a shipment to Bangladesh. A shipment of injectables for Uganda was damaged by water when a cyclone hit the port of Oman. A Cameroon order also experienced water damage. All three incidents have been submitted for insurance claims.

Data Notes

▸ Losses are reported during the quarter that the loss value was determined, which may be later than the period when the loss occurred. Incidents reported to the Continual Improvement sytem this quarter may appear in future reports.
▸ Targets are not required for this indicator.

C8. Number of global advocacy engagements in support of improved availability of essential health commodities

Measure Definition

Number of global advocacy engagements. This measures the number of engagements of any kind at the global level that involve improved availability of essential health commodities.

Task Order	Annual Target	Achievement FY2018 Q3-4	Achievement Year to Date
TO1	N/A	4	8
TO2	N/A	1	4
TO3	N/A	4	14
TO4	N/A	0	0
Cross cutting	N/A	4	9
All TOs	N/A	13	35

Description of Advocacy Engagement	
Name of Engagement	Brief Description
Task Order 1-HIV	
Coordinated HIV/AIDS Supplies Group Meetings	PPMR-HIV team assisted USAID and the Global Fund in organizing the first Coordinated HIV/AIDS Supplies (CHAS) Group meeting in May 2018 and another in-person meeting in Washington, DC in June 2018, aimed at ensuring consistent ARV supplies through global collaboration and data sharing with the Global Fund.
GS1 Netherlands Wholesaler Meeting	GHSC-PSM's GS1 Global Standards Team Lead co-hosted a meeting with GS1 Netherlands, Denmark, and Germany and invited all USAID pharmaceutical wholesalers to attend to review the GHSC-PSM procurement requirement and GDSN implementation, and to discuss wholesaler-specific barriers and mitigation strategies.
IAS 2018	GHSC-PSM attended the International AIDS Society Meeting in Amsterdam, participating in key plenary and side-meetings relevant to supply chain, market dynamics, and product innovations. In addition, GHSC-PSM, in partnership with WHO, held an official side-meeting event which advocated for clear communication and careful planning for the introduction of new ARV products, such as TLD.
CPhI North America (April 23-24, 2018)	GHSC-PSM met with pharmaceutical industry stakeholders to build relationships and gain market intelligence.
Task Order 2-Malaria	
CPhI China (June 20-22, 2018)	Market Dynamics Specialist participated in CPhI conference to build strategic relationships and gain market intelligence from key GHSC-PSM suppliers and suppliers of APIs.
Task Order 3-PRH	
Global Family Planning Visibility and Analytics Network	Numerous GHSC-PSM staff participated in task forces associated with the launch of the Global FP VAN including the data-sharing and data-management task forces as well as the Steering Committee, technical task force, and super user groups. This includes a five-day workshop in November 2017 hosted by Proctor & Gamble as well as the design workshop hosted by the E2Open, the GlobalFPVAN software provider, in June 2018.

Description of Advocacy Engagement	
Name of Engagement	Brief Description
Cross cutting	
GS1 Healthcare Conference, Bogota 2018	Attended by four representatives from ARTMIS, GSC, and HSS, participants learned about foundational elements of the GS1 standards, met with US commercial wholesalers to learn about implementation in a similar GPO environment, discussed implementation in Latin America with a focus on local suppliers, and met with suppliers to advance data synchronization via the GDSN.
GS1 Healthcare Conference, Addis Ababa, 2018	Attended by four representatives from HSS, GHSC-PSM hosted an exhibiton table on the project's work, presented on the draft global traceability in the Regulatory Think Tank, and prepared and presented a poster presentation on the GDSN opportunity for global health. HSS team members also visited a local manufacturer to discuss opportunities and challenges with GS1 implementation. The HSS team also organized and attended a series of side meetings for Rwanda, Angola, Nigeria, Ghana, Malawi, and Cameroon with field offices, regulators, USAID representatives, and GS1 staff to discuss traceability commitment, strategy, and implementation based on learning from the event.
GS1 Work Planning meeting with Field Offices	After the GS1 Healthcare Conference in Addis, GHSC-PSM hosted a side meeting with USAID HQ, USAID activity managers, and GHSC-PSM field offices to summarize takeaways and lessons learned from the event, review the country implementation guidance document, and brainstorm activities for FY19 workplans in participating countries.
World Bank Global Steering Commitee on Quality Assurance of Medicines	GHSC-PSM's Global Standards Team Lead participates in quarterly GSC meetings at the World Bank to present to the broader donor community and the Private Sector Advisory Council on USAID/GHSC-PSM progress for global standards implementation and report out on ongoing country activities. This forum provides the opportunity to identify areas for collaboration and to bring other organizations into USAID/GHSC-PSM activities - for example, document input and review, GS1 Africa conference organization, and participation in national traceability workshops as relevant to various stakeholders.

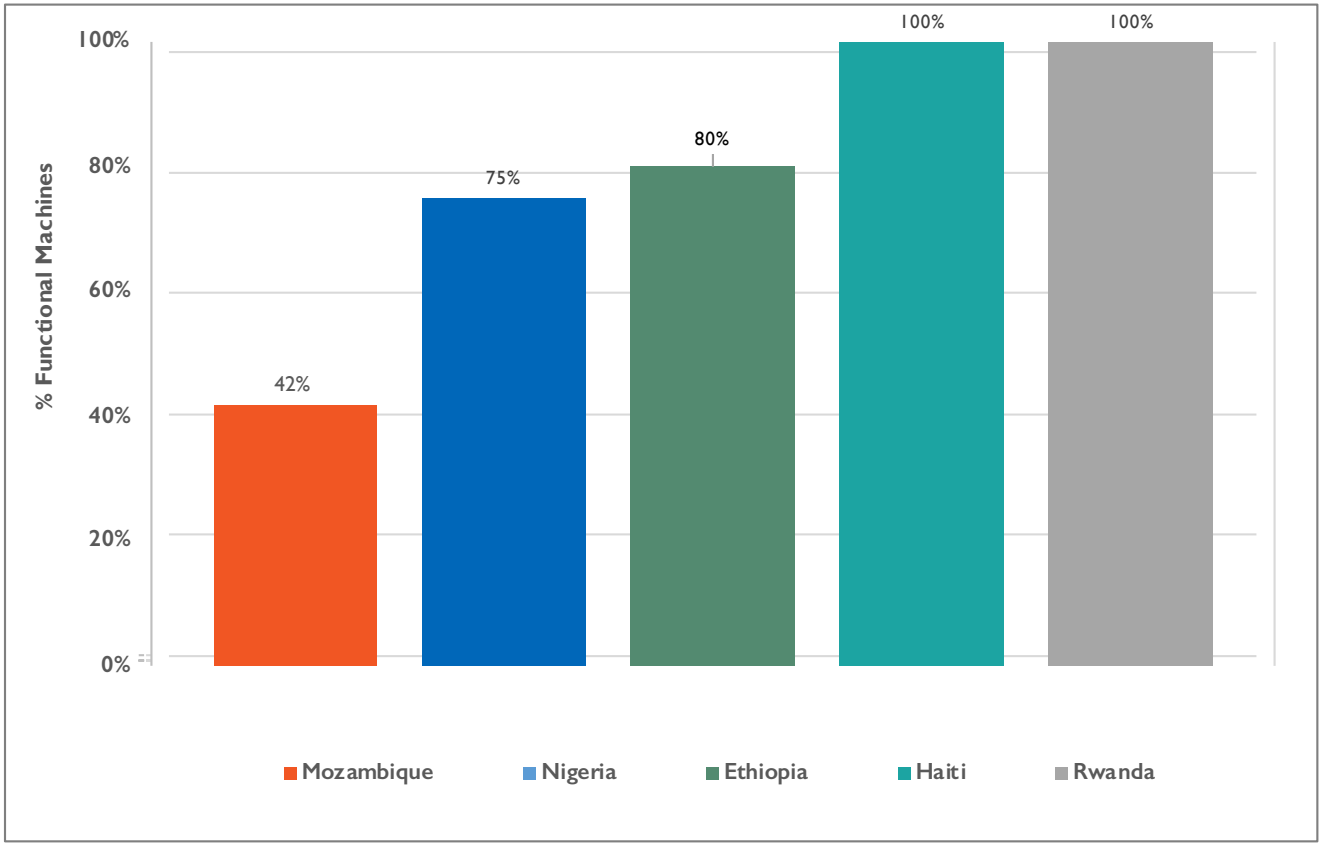
C10. Percentage of GHSC-PSM procured or supported molecular instruments that remained functional during the reporting period

Measure Definition

Numerator: Total number of GHSC-PSM-procured or supported molecular instruments that remained functional during the reporting period
Denominator: Total number of molecular instruments in the country that were procured or are supported by GHSC-PSM
Purpose: This indicator helps to understand potential impacts of supply chain activities on patient services, in this case specifically early infant HIV diagnosis and viral load testing for HIV patients. It reflects the effects of global procurement to influence service agreements and manufacturer response. It also can reflect whether in-country systems strengthening efforts are contributing to improved capacity to manage equipment in the health supply chain.

	Achievement	
	FY2018 Q4	Year to Date
TO1	74%	75%

Indicator Performance



Analysis

- In Nigeria, 10 machines recorded downtime this quarter, ranging from 2 to 32 days. A faulty uninterruptable power supply accounted for 62 days in downtime. PCR equipment is serviced annually and repaired as needed. All eight facilities with instrument malfunctions contacted Roche for repair, and all were responded to. As of the end of the quarter, all reported malfunctions were addressed, and the equipment is now up and running. The biggest risk factor for most instruments in Nigeria is the erratic
- Mozambique saw a total of 238 days out of service among its 24 instruments. While only 42 percent of instruments remained functional the whole quarter, this amounted to only 11 percent of instrument-days out of service. The instruments experienced a wide range of problems, such as hardware or software errors, barcode errors, sensor damage, and others. GHSC-PSM plans to organize Roche and Abbott operator trainings on site, as well as super user trainings.
- Ethiopia experienced malfunctions in 4 out of its 20 molecular instruments during the quarter, representing an improvement from 60 percent to 80 percent functionality since last quarter. One lab was under renovation for all 90 days, and another machine has just been installed and is expected to start operations this quarter.
- Molecular instrument maintenance contracts that were previously under GHSC-PSM's management have now been transferred to other partners. Burundi is therefore no long reporting on this indicator.

Data Notes

- Total number of supported instruments for each country is as follows: Ethiopia - 20; Haiti - 6; Mozambique - 24; Nigeria - 40; and Rwanda - 19.
- Targets for this indicator will be set in each country.

C11. Number of supply chain policies, regulations, strategies, or SOPs developed or updated with GHSC-PSM assistance	
Country	
Burkina Faso	This quarter, GHSC-PSM helped to update the terms of reference for the National Procurement Coordination Commission.
Burundi	The Supply Chain Operational Plan was validated by the medicines working group in September and approved soon after by the Ministry of Health. The Waste Management Plan was also validated and approved in September.
Ethiopia	GHSC-PSM Ethiopia supported several policy and SOP updates this quarter. It supported PFSA in revising its pharmaceutical supply transformation strategic plan. This involved providing technical input and evidence such as a distribution network coverage analysis, transportation assessment, human resource development strategy, inventory analysis, and a warehouse improvement assessment, among others. Also this quarter, the project assisted the Ethiopian Health Insurance Agency to develop a "Policy on Medicines Selection, Pricing and Reimbursement." The project participated in conducting an assessment and development of the policy through several consultative meetings. The policy provides general guidance on setting a price for medicines, on medicine selection for different types of health facilities, and on the reimbursement of out-of-pocket expenditure for patients for whom medicines are not available at public health facilities. The policy will improve health financing, greater affordability of medicines for patients, and increased availability of drugs in public health facilities. Additionally, the project worked with the Ministry of Health to develop an in-service training curriculum related to pharmacy service and supply chain management. The curriculum takes into account critical performance gaps identified during supportive supervision visits, routine performance reports, and assessments. Inadequate programmatic knowledge on HIV/AIDS, malaria, and RMNCH programs was identified as the key factor affecting the supply chain and pharmacy services. Also, there were gaps in inventory management practices, product selection and quantification, and dispensing practices.
Guinea	In Guinea, the project supported development of the Procedures Manual for Drug Registration for the National Directorate of Pharmacy and Medicine, as well as developing a user guide for the new e-LMIS.
Haiti	With GHSC-PSM support, implementation of the National Supply Chain Strategic Plan's (SNADI 2017-2022) operational plan is currently underway.
Mali	In Mali, GHSC-PSM together with the Ministry of Health held a workshop to develop a standard operating procedures manual for drug quantification in health programs, including both government and social marketing sector representatives. A draft SOP is now available which describes the steps for program quantification and identifies the types of data needed, the program quantification tools, and the procurement planning tools by program. This document will serve as a basis for each program's quantification technical groups within the quantification sub-committee. The discussions also led to the development of an operational plan to clarify roles and responsibilities of the quantification sub-committee groups.
Data Notes	
▸ No target is required for this indicator.	

President's Malaria Initiative standard indicators for annual reporting

Number of Products Purchased with USG Funds					
Indicator #	**Measure Definition**	**FY2016**	**FY2017**	**FY2018**	**FY2019**
3.1.3.1-3	Number of artemisinin-based combination therapy (ACT) treatments purchased with USG funds	5,939,540	50,933,485	109,005,780	
3.1.3.1-6	Number of malaria rapid diagnostic tests (RDTs) purchased with USG funds	4,850,000	53,414,100	113,657,040	
3.1.3.2-2	Number of insecticide-treated nets (ITNs) purchased with USG funds	6,358,974	33,997,513	60,921,412	
3.1.3.4-2	Number of sulfadoxine-pyrimethamine (SP) tablets purchased with USG funds	3,233,050	39,269,800	49,862,850	
NA	Number of Sulfadoxine-Pyrimethamine + Amodiaquine (SP/AQ) co-blisters purchased with USG funds			18,221,325	

Data Notes

- Data presented are for GHSC-PSM-supported countries only.

D. Denominator Annex

Countries	Angola	Botswana	Burkina Faso	Burma Non-GHSC-PSM-supported	Burundi Non-GHSC-PSM-supported	Cameroon	Ethiopia	Guinea	Haiti	Indonesia	Lesotho	Madagascar	Madagascar Non-GHSC-PSM-supported	Malawi	Mali	Mozambique	Namibia	Namibia Non-GHSC-PSM-supported	Nigeria	Rwanda	Uganda	Zambia	Zimbabwe
B1. Stockout Rate at SDPs																							
Tracer Products																							
First-line Adult ARVs	9	32		3	702	412	1033		143	12	141			624		1389	15	49	2456	531	224	419	1356
Second-line Adult ARVs	9	32		3	93		174		143	7	137			475		519	15	49	624	507		396	1272
First-line Pediatric ARVs	5	32		2	291	23	865		143	5	115			617		1135	15	49	961	461	198	356	1266
First RTKs	9	32			809	509	268		143	12	126			646		553	15	49	3036	527	233	1946	1595
Second RTKs	9	33			646	408	241		143	12	124			639		537	15	49	2415	420	228	633	1595
Tie-breaker RTKs							22			12	117						15	49	1415		208		1595
Male Condoms	8	24			733		615		201		60			608		442	6	31	2339	464		1736	1636
Female Condoms	8	20			358						73			381		148	6	31	1552	168		613	1614
Ready-to-use Therapeutic Food (RUTF)							478				89										160		
EID Reagents		5		2			16				1					8			21	6	1	11	3
EID Consumables		20		2			228												21	6			
Viral Load Reagents		15		3			18				3					24			21	9	1	13	8
Viral Load Consumables				3			29												21	9			
First-line ACTs (AL 6X1)	9		1805			61	394	507						670	1121	586			3159	515		1503	1513
First-line ACTs (AL 6X2)	8		1805			63	423	507						671	1108	569			3324	524		1460	1513
First-line ACTs (AL 6X3)	9		1805			59	279	507						668	1045	534			3056	467		1463	1501
First-line ACTs (AL 6X4)	11		1805			71	643	507						674	1114	564			3345	537		1473	1556
AL Inability to Treat	12		1805				720	507						667	1102	598			3408	557	154	1499	1566
First-line ACTs (AS/AQ 25/67.5 mg)					699	70						1054	808						1844				
First-line ACTs (AS/AQ 50/135 mg)					733	68						1145	880						1685				
First-line ACTs (AS/AQ 100/270 mg x 3)			1805		729	68						1056	831						1696				
First-line ACTs (AS/AQ 100/270 mg x 6)			1805		736	66						1056	855						1639				
Rapid Diagnostic Tests for Malaria	12		1805		797	88	302	507				1230	932	674	1111	579			3310	478	154	1657	1549
Sulphadoxine-pyrimethamine (SP)	1		1805		711	97		507				833	641	657	1096	485			2796		165	1539	710
LLINs			1805		749	96		507				466	460	546	1065	179			1839				

*Out of cycle

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D. Denominator Annex

Countries	Burundi Non-GHSC-PSM-supported	Ethiopia	Guinea	Haiti	Madagascar	Madagascar Non-GHSC-PSM-supported	Malawi	Mali	Mozambique	Nigeria	Pakistan	Rwanda	Uganda	Zambia	*Nepal (FY18 Q3)
B1. Stockout Rate at SDPs															
Tracer Products															
Injectable Contraceptives	733	949	394	201	1081	834	588	1084	503	2472	9612	446	205	1245	2502
Depot Medroxyprogesterone Acetate 104 mg/0.65 mL, Subcutaneous									126						
Depot Medroxyprogesterone Acetate 150 mg Vial, Intramuscular	733	949	394	201	1081	834	588	1084	495	2414	9612	446	205	1357	2502
Norethisterone Enanthate										2398				661	
Implantable Contraceptives	695	923	394	201	749	610	553	1065	270	1156		456		660	1036
Etonogestrel 68 mg/Rod, 1 Rod Implant		855			749	610	540			1100		408		238	
Levonorgestrel 75mg/Rod, 2 Rod Implant	695	670	394	201			470	1065	270	828		438		883	1036
Combined Oral Contraceptives	728	869	394	201	1055	805	566	1067	409	1992	9612	371		1667	2477
Levonorgestrel/Ethinyl Estradiol 150/30 mcg + Fe 75 mg, 28 Tablets/Cycle		869	394	201	1055	805		1067			9612	371		1667	2477
Levonorgestrel/Ethinyl Estradiol 150/30 mcg, 28 Tablets/Cycle	728						566		409	1992					
Copper-bearing Intrauterine Devices	550	765	394	201	352	370	157	1044	189	431	8342	315		123	647
Emergency Oral Contraceptives	646	833					262		138						
Levonorgestrel 0.75 mg, 2 Tablets	646	833					262		138						
Progestin-only Pills	654	738	394		640	557	460	978	407	2043		448		633	
Levonorgestrel 30 mcg, 35 Tablets/Cycle	654	738	394		640	557	460	978	407	2043		448		633	
Male Condoms	733	615	394	201	587	524	608	1054	442	2339	9612	464		1736	2453
Female Condoms	358				280	341	381	990	148	1552		168		613	
Calendar-based Awareness Methods				201	375	340		1043				311			

* Out of cycle

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D. Denominator Annex

Countries	Angola	Botswana (Non-GHSC-PSM-supported)	Burkina Faso	Burma (Non-GHSC-PSM-supported)	Burundi (Non-GHSC-PSM-supported)	Cameroon	Ethiopia	Ghana	Guinea	Haiti	Indonesia	Lesotho	Liberia	Madagascar	Madagascar (Non-GHSC-PSM-supported)	Malawi	Mali	Mozambique	Namibia	Namibia (Non-GHSC-PSM-supported)	Nepal	Nigeria	Pakistan	Rwanda	Sierra Leone	South Sudan	Uganda NMS	Uganda JMS	Vietnam	Zambia	Zimbabwe	B6 Only: Cote D'Ivoire	B6 Only: Democratic Republic of Congo	B6 Only: Kenya	B6 Only: Senegal	B6 Only: Swaziland	B6 Only: Tanzania
B2. Stocked According to Plan																																				
Task Order 1	42	36		23	276	54	150	261		18	12	33				14		252	48			9		241		6		36	6	18	10						
Task Order 2	570		7	2	497	95	90	324	7				24	622		14	6	252				10		155				18		12	6						
Task Order 3	684				8		144	296	6	18			25	415		18	8	321			25		16	273				30		18							
Task Order 4							108							23		12	7	252			31			155						12							
B3. LMIS Reporting Rate																																					
Task Order 1	9	33		3796	966	821	1239			151	12	145				699	136	1484	15	49		3368		586				306		2135	1806						
Task Order 2	12		2,301	3790	976		1045		510					1606	1548	699	1225	598				3537		586				657		2184	1705						
Task Order 3					976		1166		453	217				1572	1520	699	1225	503				2765	12927	590						2184							
Task Order 4							1166							1546	1435	699	1225	573						566						2184							
B6. Supply Plan Updates																																					
ARVs		1			1	1		1		1								1				1		1			1	1	1	1	1	1	1				1
Lab (HIV diagnostics)					1	1	1			1								1				1		1				1		1	1	1	1				1
RTKs		1			1	1	1	1		1						1		1				1		1			1	1		1	1	1	1				1
VMMC																1		1										1			1						
Malaria commodities	1		1		1			1						1		1		1				1		1				1		1		1	1				1
PRH commodities					1		1	1		1				1		1		1			1	1		1				1		1			1				1
MNCH commodities								1		1				1				1						1						1							
Condoms							1	1		1						1		1			1	1		1				1		1	1					1	1

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