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# GLOBAL HEALTH SUPPLY CHAIN PROGRAM – TECHNICAL ASSISTANCE SOUTH AFRICA

## Year 3 Annual Report

This document is made possible by the generous support of the American people through the United States Agency for International Development (USAID) under the terms of Contract No. AID-OAA-I-14-00035, Task Order No. AID-674-TO-16-00002. The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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# ACRONYMS

| | |
|---|---|
| AMD | Affordable Medicines Directorate |
| AMR | Antimicrobial Resistance |
| APP | Annual Performance Plan |
| ARC | Africa Resource Centre |
| ARV | Antiretroviral |
| CCMDD | Central Chronic Medicines Dispensing and Distribution |
| CDCS | Country Development Cooperation Strategy |
| CHAI | Clinton Health Access Initiative |
| CMS | Council for Medical Schemes |
| CMU | Contract Management Unit |
| DALRRD | Department of Agriculture, Land Reform and Rural Development |
| DO | Development Objective |
| DPSA | Department of Public Service and Administration |
| DSMS | Depot Stock Management System |
| EC | Eastern Cape |
| EDP | Essential Drugs Programme |
| EML | Essential Medicines List |
| ERC | Expert Review Committee |
| ETCC | ePrescribing Technical and Compliance Committee |
| GHSC-TA | Global Health Supply Chain Program – Technical Assistance |
| GP | Gauteng Province |
| GPCC | General Practitioner Care Cell |
| HOPS | Head of Pharmaceutical Services |
| HR | Human Resources |
| HRD | Human Resource Development |
| HTA | Health Technology Assessment |
| IMAT | Improved Medicine Availability Team |
| ISP | Information Systems and Projects |
| KPI | Key Performance Indicator |
| KZN | KwaZulu-Natal |
| MAC-AMR | Ministerial Advisory Committee on Antimicrobial Resistance |
| MHPL | Master Health Product List |
| MMDS | Medicine Master Data System |
| MOU | Memorandum of Understanding |
| MPC | Master Procurement Catalogue |
| NDoH | National Department of Health |
| NEMLC | National Essential Medicines List Committee |
| NHC-SC-PS | National Health Council Sub-committee for Pharmaceutical Services |
| NHC-TAC | National Health Council Technical Advisory Committee |
| NHI | National Health Insurance |
| NHLS | National Health Laboratory Service |
| NSC | National Surveillance Centre |
| NW | North West |
| OHS | Occupational Health and Safety |
| PDU | Pharmacy Dispensing Unit |
| PHC | Primary Health Care |
| PMPU | Provincial Medicine Procurement Unit |

| | |
|---|---|
| PTC | Pharmaceutical and Therapeutics Committee |
| SAHPRA | South Africa Health Products Regulatory Authority |
| SIMA | Strategy for Improved Medicine Availability |
| SOP | Standard Operating Procedure |
| STG | Standard Treatment Guideline |
| SVS | Stock Visibility System |
| TA | Technical Assistance |
| TB | Tuberculosis |
| TEE | Tenofovir/Emtricitabine/Efavirenz |
| TLD | Tenofovir/Lamivudine/Dolutegravir |
| TOR | Terms of Reference |
| TWG | Technical Working Group |
| USAID | United States Agency for International Development |
| UAT | User Acceptance Testing |
| WMS | Warehouse Management System |

# EXECUTIVE SUMMARY

## INTRODUCTION

South Africa remains at the center of the global AIDS epidemic and has one of the highest burdens of tuberculosis (TB) in the world. An efficient and effective health supply chain that improves medicine availability is critical to addressing that disease burden. With this in mind, the United States Agency for International Development (USAID) launched the Global Health Supply Chain Program – Technical Assistance (GHSC-TA) in South Africa in September 2016. The program provides technical assistance to the South African government to strengthen public health systems and supply chains to advance an AIDS-free generation and contribute to the achievement of universal health coverage.

GHSC-TA provides technical assistance directly to the Affordable Medicines Directorate (AMD) of the National Department of Health (NDoH), as well as to the pharmaceutical services directorates of the Provincial Departments of Health. The overall aim of the program is to assist the government in improving access to, and availability of the medicines and related commodities needed to prevent and treat HIV/AIDS, TB, and associated conditions and disorders.

Medicine availability is one of the main challenges which must be addressed as it has a direct impact on improving health outcomes for the South African people. Sometimes, health establishments do not have adequate medicine stock on hand to meet patient needs. When this happens, patients have to return to the health establishment, at considerable personal expense and inconvenience, to collect their medicine— requiring time and resources they may not always have. In response, addressing constraints and improving medicine availability is a core objective of South Africa's NDoH. GHSC-TA works with the NDoH to design and implement innovative solutions to transform the South African health supply chain. Simultaneously, the program is working with Provincial Departments of Health across South Africa to increase medicine availability countrywide. By improving health supply chain visibility, the program also supports public health establishments' efforts to more accurately anticipate patients' needs and positon sufficient stocks of medicines where and when required.

## PURPOSE OF THIS DOCUMENT

This Year 3 Annual Report details GHSC-TA program activities and achievements by objective and provides results for each of the six objectives against key performance indicators (KPIs), where possible.

## YEAR 3 ACTIVITIES AND ACHIEVEMENTS

Year 3 activities were largely focused on strengthening the health supply chain from a national perspective. These activities, segmented into eight main projects, represent capacity building interventions across multiple areas. The projects described were underpinned, as required, by the following enabling functions: stakeholder engagement, communication, workforce management, change management, and training and development. A high-level overview of project activities and accomplishments for each objective follows:

### OBJECTIVE 1: IMPROVE SELECTION AND USE OF MEDICINES

GHSC-TA assisted the NDoH in finalizing the National Guideline for the Management and Use of Formularies and the AMD Medicine Master Data Policy; developing the National Guideline for the Establishment and Functioning of Pharmaceutical and Therapeutics Committee (PTCs) in South Africa; developing Terms of Reference (TOR) for three sub-committees of the Ministerial Advisory Committee on Antimicrobial Resistance (MAC-AMR); finalizing Memoranda of Understanding (MOUs) between the

NDoH and private laboratories, the National Health Laboratory Service (NHLS), and the Department of Agriculture, Land Reform and Rural Development (DALRRD); developing the AMD Conflict of Interest Policy; and making four medicine selection decisions using Health Technology Assessment (HTA) inputs.

## OBJECTIVE 2: SUPPORT OPTIMIZATION OF THE SUPPLY CHAIN

GHSC-TA project activities increased capacity and skill at a national level and within four provincial demand planning teams, generated demand plans reviewing actual and future volumes in comparison to the original contracted volumes for all items on contract, and developed a Proof of Concept (POC) for supply planning in four health establishments in North West (NW).

## OBJECTIVE 3: STRENGTHEN GOVERNANCE

GHSC-TA assisted AMD with the revision of regulations relating to pharmacy support personnel published in terms of the Pharmacy Act, as well as the finalization of regulations which make continuing professional development obligatory for all pharmacy personnel. In addition, team members supported the development of an ePrescribing system, and produced 154 governance documents, of which 64 (42%) have been approved by NDoH.

## OBJECTIVE 4: IMPROVE WORKFORCE MANAGEMENT

GHSC-TA designed three organizational structures - Information Systems and Projects (ISP) and Contract Management Unit (CMU) at NDoH and the new Pharmaceutical Services organizational structure in NW. GHSC-TA assessed, revised, and submitted 61 job descriptions to better align roles and responsibiities within each of these organizational structures. To date, 15 job descriptions (25%) have been approved and 11 of the approved job descriptions have been advertised and recruitment efforts begun. In addition, GHSC-TA developed a revised organizational structure for AMD designed to support implementation of National Health Insurance (NHI).

## OBJECTIVE 5: STRENGTHEN INFORMATION SYSTEMS AND INFORMATION MANAGEMENT

GSHC-TA supported development of the online Master Health Products List (MHPL) aimed to standardize medicine master data. Data visualization was improved by creating and refining the 45 dashboards that comprise the National Surveillance Centre (NSC). In addition, in Year 3, GHSC-TA observed an increase in the number of sites reporting to the NSC by 129 facilities from 3,604 in 2018 to 3,733 in 2019; observed 3,274 clinics and 364 hospitals nationwide regularly reporting to the NSC; and observed a 20% increase in national reporting rates from 2018–2019 at primary health care (PHC) sites reporting via the Stock Visibility System (SVS).

## OBJECTIVE 6: IMPROVE FINANCIAL MANAGEMENT

GHSC-TA assisted with the development of pharmaceutical budgets for all nine provinces for the 2020–2021 budget cycle with drill-down to health establishment level—an effort that includes budget projections for more than 4,000 health establishments each with a total number of products ranging from 671–2,657.

# INTRODUCTION

South Africa remains at the center of the worldwide AIDS epidemic, with an estimated 7.9 million[1] people living with the disease. In addition, the country has the third-highest burden of TB internationally.[2] An efficient and effective health supply chain that improves medicine availability is critical to addressing that disease burden. With this in mind, the United States Agency for International Development (USAID) launched the Global Health Supply Chain Program – Technical Assistance (GHSC-TA) in South Africa in September 2016. The program provides technical assistance to the South African government to strengthen public health systems and supply chains to advance an AIDS-free generation and contribute to the achievement of universal health coverage.

GHSC-TA provides technical assistance directly to the AMD of the NDoH, as well as to the pharmaceutical services directorates of the Provincial Departments of Health. The overall aim of the program is to assist the government in improving access to, and availability of the medicines and related commodities needed to prevent and treat HIV/AIDS, TB, and associated conditions and disorders.

The GHSC-TA implementing team is led by Guidehouse LLP (formerly PricewaterhouseCoopers Public Sector LLP) and includes PwC South Africa, Resolve, 4Africa Abaluleki (Pty) Ltd, and Banyan Global.

## PROGRAM OBJECTIVES

To this end, the program is tasked with the following six objectives:

- Objective 1: Improve Selection and Use of Medicines
- Objective 2: Support Optimization of the Supply Chain
- Objective 3: Strengthen Governance
- Objective 4: Improve Workforce Management
- Objective 5: Strengthen Information Systems and Information Management
- Objective 6: Improve Financial Management

In addition, GHSC-TA assists AMD in implementing the Strategy for Improved Medicine Availability (SIMA) (2016-2021), which encompasses five core functions - selection of medicine and technologies, contracting of suppliers, management of the supply chain, contract management in accordance with the applicable requirements and conditions of contract, and the promotion of rational medicine use.

These functions are supported by five enabling functions: governance, workforce management, information systems and management, financial management, and education and research. Interventions are aimed at strengthening both core and enabling functions with a view to continuous improvement.

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*1 South African National AIDS Council, Annual Performance Plan 2019-2020.*

*2 https://www.usaid.gov/south-africa/global-health*

This work directly supports the USAID/South Africa Country Development Cooperation Strategy (CDCS) results framework by supporting Development Objective (DO) 1- Health outcomes for South Africans improved, as well as the NDoH SIMA and the NDoH Annual Performance Plans (APPs).

## YEAR 3 OVERVIEW

GHSC-TA activities in Year 3 were largely focused on strengthening the health supply chain from a national perspective. The activities, segmented into eight main projects, represent capacity building interventions across multiple functional areas. These projects, described below, were supported by stakeholder engagement, communication, workforce management, change management, and training and development.

1. **IT Strategy and Landscape**. Analyze IT Landscape and develop an IT Roadmap.
2. **Master Data Management**. Assist AMD in defining the Medicine Master Data System (MMDS) in collaboration with the contracted service provider responsible for development. This system incorporates the MHPL, location hierarchy, and formulary management tool.
3. **Results Framework and Key Performance Indicators (KPIs)**. Develop a results framework and KPIs aligned to the SIMA and support the implementation of the agreed KPIs.
4. **Visibility, Analytics, and Dashboards**. Enable rapid analysis and visualization of supply chain data to support improved operational and financial decision making.
5. **Supply Chain Systems**. Design, implement, promote use of, and transition supply chain systems and applications.
    - Implementation of gCommerce. Support the gCommerce implementation in provinces to replace existing warehouse management systems (WMSs).
    - RxSolution Maintenance and Support. Support and maintain existing RxSolution installations' reporting to the NSC and transition responsibility of management to appropriate stakeholders. Assist with improving the quality of data reported to the NSC.
    - Implementation and Development of Stock Visibility System (SVS). Support SVS implementation and developing further enhancements to the system.
    - Re-platform of RxSolution. Provide technical assistance related to the functionality and architecture of the RxSolution rebuild, in collaboration with the Council for Scientific and Industrial Research (CSIR).
6. **Supply Chain Strengthening**. Conduct supply chain interventions to strengthen core supply chain activities.
    - Demand, Supply and Distribution Planning. Develop and implement appropriate processes and human resource capability and recommend appropriate technologies to support demand, supply, and distribution planning.
    - Provincial Supply Chain Systems Strengthening. Establish Provincial Medicine Procurement Unit (PMPU) roles and functions, while building capabilities to perform supply chain interventions to strengthen core supply chain activities in the provinces.
7. **Department Structure and Strengthening Intervention**. Strengthen, improve, and capacitate the AMD to act as a focused directorate able to quickly and efficiently respond to the demands imposed by the rollout of strategic interventions.

8. **Governance**. Provide technical assistance in the implementation of relevant structures and processes to improve governance and the development of policy and legislation.

   - Implementation of PuLSe. Support the implementation of PuLSe in the Licensing Unit of AMD and with external stakeholders.
   - Strengthening Medicine Selection and Use. Develop and implement policies, guidelines, tools, and approaches to support (evidence-based) selection and rational use of medicine.
   - Other Governance Interventions**.** Provide support in the development and implementation of policies and legislation to facilitate medicine availability at all levels.

Throughout Year 3, GHSC-TA collaborated closely with AMD to promote a shared understanding of, and alignment of proposed activities with, the priorities of NDoH. Wave Governance and Program Implementation Team meetings have further contributed to the desired collaboration with counterparts at AMD and other implementing partners.

### WAVE GOVERNANCE PROCESS

From the onset, GHSC-TA recognized the importance of intentional collaboration with other donor-funded activities and NDoH programs to ensure the sustainability of interventions and support South Africa's journey to self-reliance. To this end, GHSC-TA contributed to the design and implementation of the Wave Governance process and actively promotes its implementation.

Wave Governance is an innovative coordinating mechanism that encourages collaboration, identifies synergies, and promotes accountability among donors and NDoH implementing partners. Wave Governance meetings are held quarterly.

## YEAR 3 ACHIEVEMENTS

Table 1 provides a high level overview of Year 3 projects and their key achievements.

*Table 1: Key Year 3 Achievements*

| YEAR 3 KEY ACHIEVEMENTS | |
|---|---|
| OBJECTIVE 1: IMPROVE SELECTION AND USE OF MEDICINES | |
| 1. | Finalized National Guideline for the Management and Use of Formularies and AMD Medicine Master Data Policy |
| 2. | Developed National Guideline for the Establishment and Functioning of Pharmaceutical and Therapeutics Committee (PTC) in South Africa |
| 3. | Developed Terms of Reference for three sub-committees of the MAC-AMR |
| 4. | Signed MOUs between the NDoH and private laboratories, and the NHLS |
| 5. | Developed AMD Conflict of Interest Policy |
| 6. | Made four medicine selection decisions made using HTA inputs |

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|---|
| OBJECTIVE 2: SUPPORT OPTIMIZATION OF THE SUPPLY CHAIN |
| 7. Increased capacity and skill at a national level and in four provincial demand planning teams |
| 8. Conducted tender forecasting for seven contracts |
| 9. Conducted in-contract demand planning for all items on contract |
| 10. Developed and conducted a proof of concept for the new informed push approach to supply planning and replenishment in NW |
| OBJECTIVE 3: STRENGTHEN GOVERNANCE |
| 11. Assisted with revision of regulations to the Pharmacy Act to enable the introduction of a new cadre of pharmacy support personnel |
| 12. Assisted with the finalization of regulations to the Pharmacy Act, which make continuing professional development obligatory for all pharmacy personnel |
| 13. Supported the development of an e-prescribing system |
| 14. Produced 154 governance documents of which 64 (42%) have been approved by NDoH |
| OBJECTIVE 4: IMPROVE WORKFORCE MANAGEMENT |
| 15. Developed a revised organizational structure for AMD aligned to the future implementation of NHI |
| 16. Assessed, revised, and submitted 61 job descriptions to align to the organizational structures; to date, 15 job descriptions (25%) have been approved and 11 of the approved job descriptions have been advertised to support recruitment efforts |
| 17. Designed organizational structures for ISP and CMU in line with the SIMA |
| 18. Finalized the pharmaceutical services organizational design in NW |
| OBJECTIVE 5: STRENGTHEN INFORMATION SYSTEMS AND INFORMATION MANAGEMENT |
| 19. Provided TA to the development of the online MHPL and the capturing of medicines which appear on national contracts, to standardize medicine master data elements to be used across all systems |
| 20. Improved data visualization through the creation or improvement of 45 dashboards comprising the NSC |
| 21. Observed increase in the number of sites reporting to the NSC by 129 facilities from 3,604 in 2018 to 3,733 in 2019 |
| 22. Observed more than 3,200 clinics and 370 hospitals nationwide regularly reporting to the NSC |
| 23. Observed 20% increase in national reporting rates from 2018–2019 at primary health care (PHC) sites reporting via SVS |
| OBJECTIVE 6: IMPROVE FINANCIAL MANAGEMENT |
| 24. Assisted with the development of pharmaceutical forecasts and budgets for all nine provinces for the 2020–-2021 cycle down to the facility level, which included over 4,000 health establishments with the total number of products ranging from 671–2,657 |

## PROGRESS TOWARDS GOAL – INCREASED MEDICINE AVAILABILITY

As described above, improving health supply chain performance is critical to driving increased medicine availability—a key enabler of improved health outcomes for the South African people. To monitor

progress towards the program's overarching goal, GHSC-TA measures the percentage availability of medicines which appear on the NDoH Master Procurement Catalogue (MPC) at health establishments.

During the reporting period, overall medicine availability at health establishments was 88% and 84% at clinics and hospitals respectively, which fell below the 93% target for Year 3 as shown in Figure 1 and Figure 2. This was largely due to supplier-related constraints affecting several medicine items (particularly vaccines, antiretroviral (ARV) therapy, anti-TB therapy, and various other medicine categories), impacting on medicine availability at health establishment level. These challenges were as a result of delays in the awarding of contracts, or in some cases non-awarding of contracts. As a result, the NDoH established the Improved Medicine Availability Team (IMAT) to address these supplier-related issues. The purpose of the IMAT is to utilize the various data sources available to the NDoH to identify items affected by supplier constraints, compile lists detailing affected medicines, and devise remedial action in collaboration with the provinces.

*Figure 1: Percentage availability of Master Procurement Catalogue items at health establishments: Public Health Care Clinics*

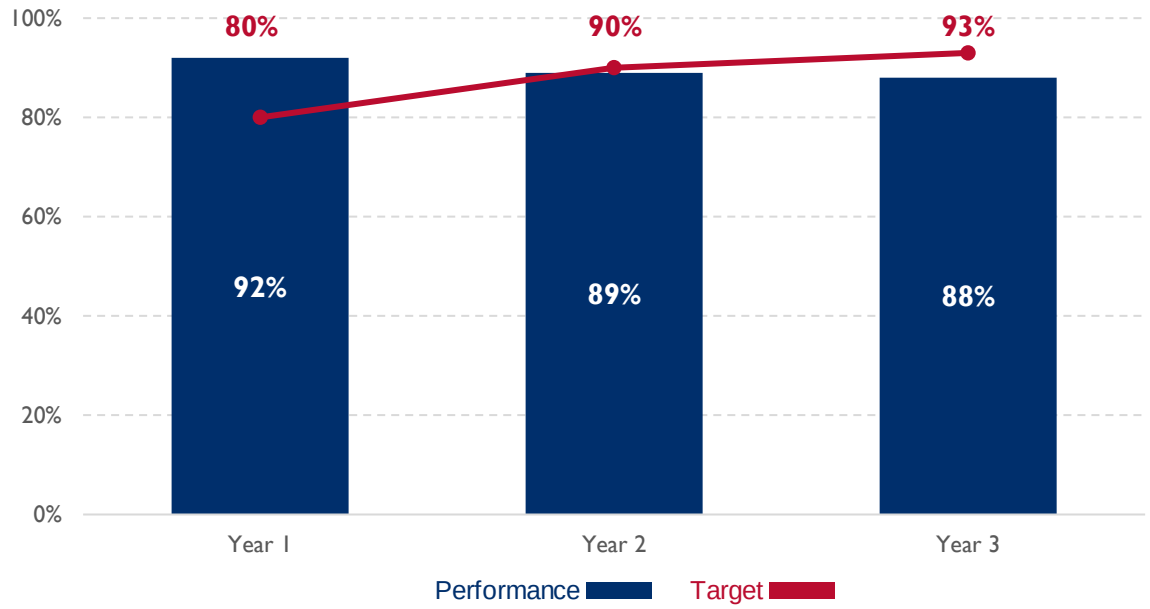


*Figure 2: Percentage availability of Master Procurement Catalogue items at health establishments: Hospitals*

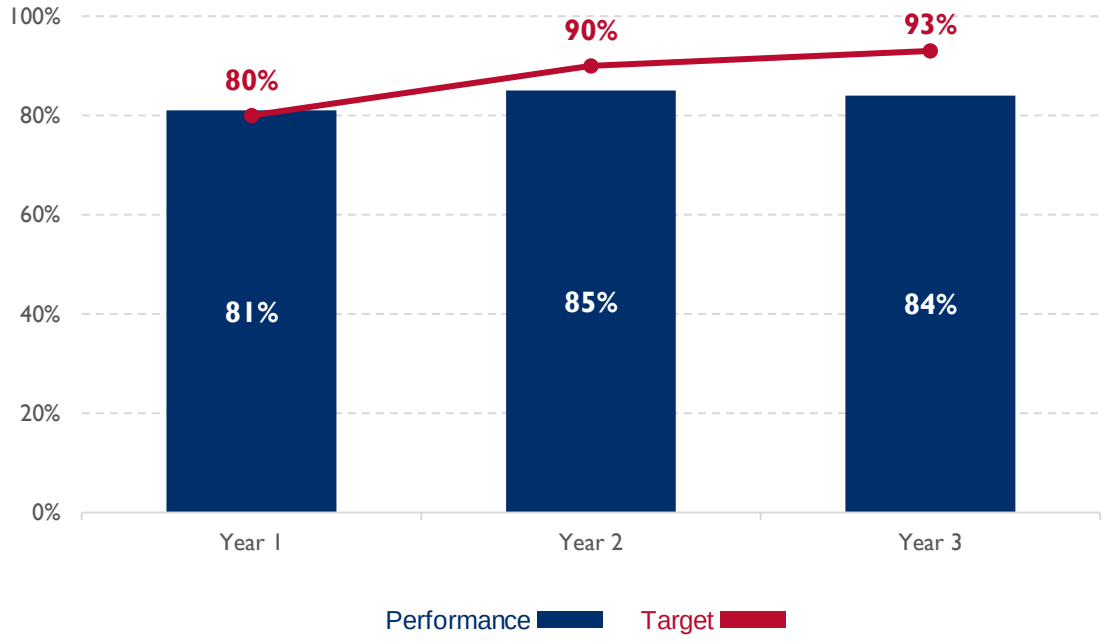


PHOTO CREDIT GRADY REESE

## IMPROVE SELECTION AND USE OF MEDICINES

South Africa's unique disease burden shapes the country's national health priorities, health system design, and health funding structures. As with most health care systems globally, the country has limited funds available for servicing the health care needs of the population, including for medicines and medical-related health technologies. Limited funds must be allocated according to an evidence-based approach in order to provide the best quality health care to all South Africans.

In addition, it is important that South Africa's public health care system is able to match the medicine available to patients' needs. Many South Africans who require care and treatment for HIV/AIDS, TB, and other diseases look to public health care facilities to provide the medicines they need. The AMD, through the relevant governance bodies, is responsible for supporting the selection of medicines for patients nationally, as well as making sure these medicines are accessible and available when and where they are required.

## ACTIVITIES AND ACHIEVEMENTS

### STRENGTHEN MEDICINE SELECTION AND USE

GHSC-TA is working with the AMD to strengthen medicine selection and rational use to provide an accountable mechanism to support decision-making related to the funding, cost, and use of health interventions, technologies, and services in South Africa that will be funded under NHI.

**Health Technology Assessments.** In South Africa, the Essential Medicines list (EML) and Standard Treatment Guidelines (STGs) are developed and maintained by the ministerially-appointed National Essential Medicines List Committee (NEMLC) supported by the Essential Drugs Programme (EDP) of the AMD. This process requires the performance of medicine reviews and costing analyses to support decisions about which medicines will be included in the EML. As the country moves towards NHI, the scope of the selection of medicines will need to expand to include HTAs. HTA is defined by the World Health Organization (WHO) as "*the systematic evaluation of properties, effects, and/or impacts of health technology. It is a multidisciplinary process to evaluate the social, economic, organizational, and ethical issues of a health intervention or health technology.*"[3] HTA systems are needed to ensure efficient prioritization and evidence-based decision-making on which medicines and other health technologies to fund.

In Year 3, at the request of the Director of AMD, GHSC-TA relaunched TA to support the establishment of structures and processes to conduct HTAs after government funding was made available to assist in the establishment of an HTA system. GHSC-TA assisted the AMD in strengthening the current medicine review process through the NEMLC, as well as the establishment of a structure to conduct HTAs through the following activities:

- Drafting a **business plan** to outline the objectives, activities, and key outputs utilizing the HTA funding secured by AMD. The business plan outlined activities to support the establishment of an agency to conduct HTAs and improve NDoH capacity to conduct HTAs.
- Developing a **comprehensive HTA stakeholder database** to identify a diverse range of individuals and organizations for communication regarding HTA activities. Development of the database was aimed to strengthen communication and awareness of upcoming HTA activities and enable a collaborative environment to leverage existing resources across different health care sectors in the country.
- Drafting **Terms of Reference (TOR) for services to be contracted** using available funding. These TOR were aimed at providing the scope and requirements of discrete services related to strengthening the current medicine selection process and the incorporation of medical devices and other health technologies into the selection process. The TOR including purpose, scope, key activities, key outputs, and timelines for:
  - Development of HTAs to be performed on priority topics to assess for possible inclusion of medicines and other health technologies within the proposed national health service benefits package under NHI;
  - Development of a prioritization framework to ensure that medicines and other health technologies are prioritized and reviewed in a transparent and effective manner;

[3] *World Health Organization. Health technology assessments.* https://www.who.int/health-technology-assessment/about/Defining/en/

  - Restructuring the STGs to create efficiencies in the review process, including standardization of the format and reordering of disorders across levels of care into disorder groups; and

  - Drafting a Reviewers' Manual to provide a standardized, structured method and useful tools for the conducting and appraisal of an HTA within the current resource setting in South Africa.

- **TORs for HTA Bid Specification and Evaluation Committees** were developed to outline the purpose, composition, function, and responsibilities of these committees which would support the NDoH in the evaluation of proposals for contracting of service providers to perform services related to HTA (including those mentioned above).

- GHSC-TA provided technical assistance in shaping and establishing an **HTA Technical Working Group (TWG)**. The TWG will be comprised of experts in medicines, medical devices, laboratory tests, and clinical guidelines, with the purpose of supporting the AMD in determining the strategic direction for the establishment of HTAs. In addition, GHSC-TA developed the TOR for the TWG.

**Governance Frameworks: Policies, Guidelines, and Processes**. In addition to supporting HTA, GHSC-TA is working with the AMD to strengthen the policy framework so that, as the country transitions to NHI, the selection and use of medicines and health technologies will be strengthened, improving the health and wellbeing of South Africans. In Year 3, GHSC-TA developed policies and guidelines to strengthen evidence-based medicine selection and the rational use of medicines. Key outputs are described below:

- The **National Guideline for the Establishment and Functioning of Pharmaceutical and Therapeutics Committees (PTCs) in South Africa** aims to promote rational selection and use of medicines by providing guidance and tools to support the functioning and strengthen governance of PTCs at provincial, district, and institutional levels. PTCs are non-statutory, multidisciplinary, advisory committees which promote "the rational use of medication through the development of relevant policies and procedures for medication selection, procurement, distribution, and use and through the education of patients and staff".[4] The guideline is undergoing final revision following stakeholder engagement and is expected to be signed off by the end of 2019.

- The **National Guideline for the Management and Use of Formularies** outlines the development, management, and use of formularies by PTCs. It defines a formulary as a "*continually updated list of medicines and related information, used in the diagnosis, prophylaxis, or treatment of disease and promotion of health, to satisfy the needs of the majority of the population served by a particular health establishment/s.*" The guideline is aimed to create more transparency, efficiency, and equity in the management of formularies across the public sector. Following stakeholder review, the guideline was approved by NEMLC and the National Health Council Sub-committee for Pharmaceutical Services (NHC-SC-PS) and submitted to the National Health Council Technical Advisory Committee (NHC-TAC) for final approval.

- The **AMD Medicine Master Data Policy** defines the concept of medicine master data in the context of the public sector and provides guidance in the development, management, and

*4 Management Sciences for Health. 2012. MDS-3: Managing Access to Medicines and Health Technologies. Arlington, VA: Management Sciences for Health.*

use of such master data by systems and stakeholders. Approval was granted by the NHC-SC-PS to submit the guideline to NHC-TAC for final approval.

*The National Guideline for the Management and Use of Formularies, together with the National Guideline for the Establishment and Functioning of PTCs and the Medicine Master Data Policy, will assist in defining and standardizing the method of development, maintenance, and use of formularies at all health establishments in the country. Formularies will be based on a set of master data managed by the MMDS currently under development.*

- The **AMD Conflict of Interest Policy** assists with the management of potential conflict of interest of individuals appointed to committees working under the auspices of AMD. The policy was approved by the NEMLC.

**Antimicrobial Resistance (AMR).** AMR is a growing public health concern in South Africa. Antiviral resistance and AMR threaten the ability of the Government of South Africa to treat and prevent infections caused by microorganisms and viruses including HIV and TB. The WHO estimates that more than half of all medicines are inappropriately prescribed, dispensed, or sold, and that half of those used are taken incorrectly: "The overuse, underuse, and misuse of medicines results in wastage of scarce resources and threatens the health of individuals and communities in every country."[5]

In Year 3, GHSC-TA expanded its activities to support the Government of South Africa in combating AMR. GHSC-TA assisted the MAC-AMR to align the revised National Strategic Framework on AMR to the National AMR Strategy implementation plan. GHSC-TA also developed TORs for three MAC-AMR sub-committees which focus on data surveillance, education, and the "One Health" approach to facilitate a collaborative and integrated approach to animal and human AMR interventions. GHSC-TA also led the development of MOUs between AMD and the private laboratories, the NHLS, and the DALRRD to establish terms for information-sharing and collaboration in the fight against AMR. The program provided technical assistance with the antimicrobial use analysis and results to inform the 2019 National Antimicrobial Use Surveillance Report. This report is targeted at policy decision-makers and provides antimicrobial use information from across the country up to and including 2018 data. It provides a display and trend analysis of both animal and human antimicrobial consumption and use in order to influence policy towards effecting a reduction in AMR.

## OUTCOME LEVEL RESULTS

The program's theory of change hypothesizes that by supporting AMD efforts to perform HTAs and leverage their outputs, the Government of South Africa will demonstrate improvements in the selection and use of medicines. In efforts to test these assumptions, GHSC-TA monitored four annual KPIs. This section provides an overview of the progress and results observed against these KPIs through the end of Year 3.

### KPI 1. NUMBER OF MEDICINE REVIEWS CONDUCTED BY EXPERT REVIEW COMMITTEES

KPI 1 examines the maturity of the medicine selection process utilized by measuring the number of medicine reviews conducted which result in recommendations to the NEMLC. Due to a decision by AMD to deprioritize HTA support in Year 2, measurement of KPI 1 was hindered by the suspension

*5 Combating Antimicrobial Resistance. United States Agency for International Development. June 2, 2019.*

of the implementation of HTA activities in Year 2 and data confidentiality constraints impacting GHSC-TA's ability to report performance against this indicator.

## KPI 3. NUMBER OF RECOMMENDATIONS ON MEDICINE SELECTION MADE UTILIZING HTA OUTPUTS

The program seeks to measure the percentage of expert review committee (ERC) recommendations to NEMLC which utilize HTA outputs. Due to HTA activities being placed on hold by AMD in Year 2, technical assistance for medicine selection decisions using HTA outputs was limited to four reported medicine selection recommendations using HTA outputs. These included recommendations regarding the use of tretinoin, long-acting beta antagonists, fondaparinux, and flucytosine.

While the program can report on the number of recommendations made using HTA outputs, it is not possible to identify the total number of medicine reviews conducted as noted above under KPI 1. It is thus not possible to report on the percentage of recommendations made using HTA outputs.

## KPI 4. NUMBER OF FORMULARIES GENERATED

By measuring the number of formularies generated, GHSC-TA will understand the extent to which medicine selection decisions are made visible and transparent, promoting rational use of medicines. At the launch of GHSC-TA, provinces were reporting the availability of provincial formularies to the Pharmaceutical Services Dashboard. As of Year 2, however, this dashboard is no longer accessible due to a change in the hosting platform, affecting GHSC-TA's ability to reliably report performance against this indicator.

## KPI 5. PERCENTAGE OF EXPENDITURE ON NON-ESSENTIAL MEDICINES

KPI 5 highlights the implementation of the STGs and EML and effective management of formularies by measuring the percentage of expenditure on non-EML items. This data was reported by provinces on the Pharmaceutical Services Dashboard. As noted above, this dashboard is no longer accessible, affecting the ability to report performance against this indicator.

PHOTO CREDIT GRADY REESE

## SUPPORT OPTIMIZATION OF THE SUPPLY CHAIN

The South African health supply chain, specifically the procurement and distribution of medicines, has relied on outdated and inefficient systems and processes. Procurement and distribution of medicine have been challenged by limited linkages and coordination of efforts between the national and provincial levels. Given the current and expected medicine expenditures and 95-95-95 targets, the need to generate efficiencies and savings within the procurement and distribution functions of the supply chain are increasingly important. Through strengthening the Department of Health's capabilities and introducing efficient and uniform processes across all levels of the medicine supply chain, GHSC-TA supports supply chain optimization, improved planning processes and end-to-end visibility thus enabling better oversight and decision-making.

### ACTIVITIES AND ACHIEVEMENTS

#### DEMAND, SUPPLY, AND DISTRIBUTION PLANNING

GHSC-TA works with the NDoH to produce innovative processes, tools, and workforce training that is transforming demand forecasting and planning resulting in more analytically-defensible national level demand forecasts. Concurrently, GHSC-TA is collaborating with Provincial Departments of Health to improve their demand, supply, and distribution planning in order to increase medicine availability countrywide.

**Tender forecasting.** At the beginning of Year 3, support of tender forecasting efforts, previously supported by the Clinton Health Access Initiative (CHAI), was transferred to GHSC-TA. Tender forecasting is the process of establishing a medium- to long-term forecast to inform future procurement activities. New contracts are based on volumes agreed upon during the tender forecasting process. GHSC-TA worked with AMD to do the forecasting for seven contracts (including for TB, anti-infective, oncology, and immunological agents).

Forecasting for **seven contracts,** including the contract for tuberculosis, were successfully completed.

**In-contract demand planning.** GHSC-TA supported in-contract demand planning by generating demand plans to review actual and future volumes in comparison to the original volume for which a contract was awarded. To ensure optimization of the demand planning process, it is important to review any variances, with suppliers, providing an opportunity for the NDoH to re-contract additional volumes needed when the forecast is higher than the amount originally contracted, or flag risks of overproduction when the forecast is lower. In Year 3, GHSC-TA expanded in-contract demand planning to include all 14 medicine contracts, including the HIV, TB, and family planning commodity contracts. The focus of this work was to provide the AMD CMU with a forecasted projection of the future requirement for each commodity. GHSC-TA developed an Excel-based tool to visualize these variances, which in the future will be replaced by a dashboard. Following these activities, the CMU engaged with several suppliers to share future projections for selected commodities with the aim of improving the supply of medicines throughout the country.

While supporting tender forecasting and in-contract demand planning, GHSC-TA sought to build the capacity of the NDoH and transition responsibility to the department over time. Over the course of the year, GHSC-TA trained a Quantitative Analyst (within AMD) on generating statistically-based forecasts using Forecast Pro (aoff the shelf ). GHSC-TA also developed a forecast enrichment process with a corresponding set of 14 enrichment reference guides to support demand planning team efforts. Enrichment information is a critical component of an accurate forecast as it adds insights from other sources to make evidence-based decisions and improve forecast accuracy. Enrichment information is typically provided by the EDP as well as other national programs including HIV, TB, and the Expanded Program on Immunization.

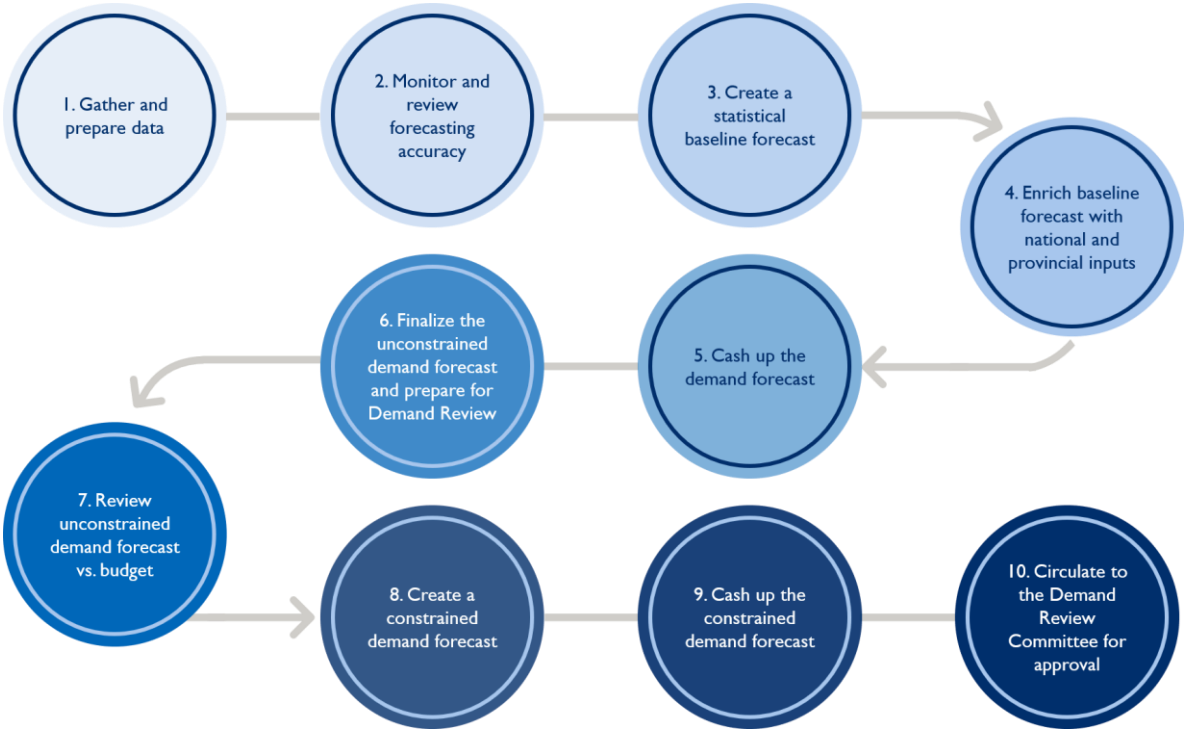
**Design of centralized demand planning unit.** GHSC-TA provided assistance in designing a centralized demand planning unit at the national level. Currently, provinces generate forecasts independently. The core function of the centralized demand planning unit will be to generate forecasts on behalf of the provinces. The team will collect the data, perform the detailed statistical analysis, and ensure collaboration between NDoH and the provinces to further enrich the forecast. The demand forecast will be reviewed and signed off by the province prior to distribution to stakeholders. As part of this effort, GHSC-TA developed job descriptions outlining the required roles and responsibilities of the centralized demand planning unit. These job descriptions are under review by the NDoH Human Resources (HR) department.

**Provincial Demand Planning.** Demand planning involves combining statistical forecasting techniques and judgment to construct demand estimates for medicines to fulfil forecasted patient

needs. Accurate demand planning has a profound impact on health outcomes, quality of life, and a nation's economy. It improves medicine availability, improves budget planning, reduces the cost of inventory, reduces the cost of distribution, and improves supplier engagement, among other benefits. In South Africa, demand planning will also improve the availability of medicines used to fight HIV/AIDS, TB, and other diseases.

At the beginning of Year 3, GHSC-TA realized that there was a greater need among provincial Departments of Health to understand the benefits of demand planning. To establish an evidence base, GHSC-TA drew upon industry standards and best practices to develop a business case for demand planning. The program piloted the provincial demand planning process in the Eastern Cape (EC). A POC was developed following the pilot activity. The demand planning process, documented in the Demand Planning Guideline, is a ten step process spanning from data gathering and cleaning, statistical forecasting, data review and enrichment, to cashing up of the forecast. The provincial demand planner is responsible for completing the first nine steps of the process which is shown in Figure 3.

*Figure 3: Demand Planning Process Steps*




The provincial demand planner then feeds constrained and unconstrained demand forecasts to the demand review committee for approval. The committee is responsible for approving and making recommendations on the unconstrained and constrained demand plan. While the composition of the committee may vary, the committee must include provincial and district representation, as well as representatives from Finance.

At the conclusion of Year 3, the demand planning process was rolled out in four provinces: EC, NW, Gauteng (GP) and KwaZulu-Natal (KZN). As a result of these efforts:

- Steering committees were established and committee members selected in the four provinces.
- 21 provincial department of health staff (nine men and 12 women) were trained in KZN on the overall demand planning process on March 14, 2019. Additional Forecast Pro training was held on April 3, 2019 for three individuals (one man and two women).

- Demand review meetings, involving cross-functional teams, were established in all four provinces to review and approve the demand plans. A total of ten meetings were held across the four provinces.
- Provincial forecasts were generated for all 14 contracts including ARVs, TB, and vaccines.

The demand planning process has been rolled out in four **provinces**.

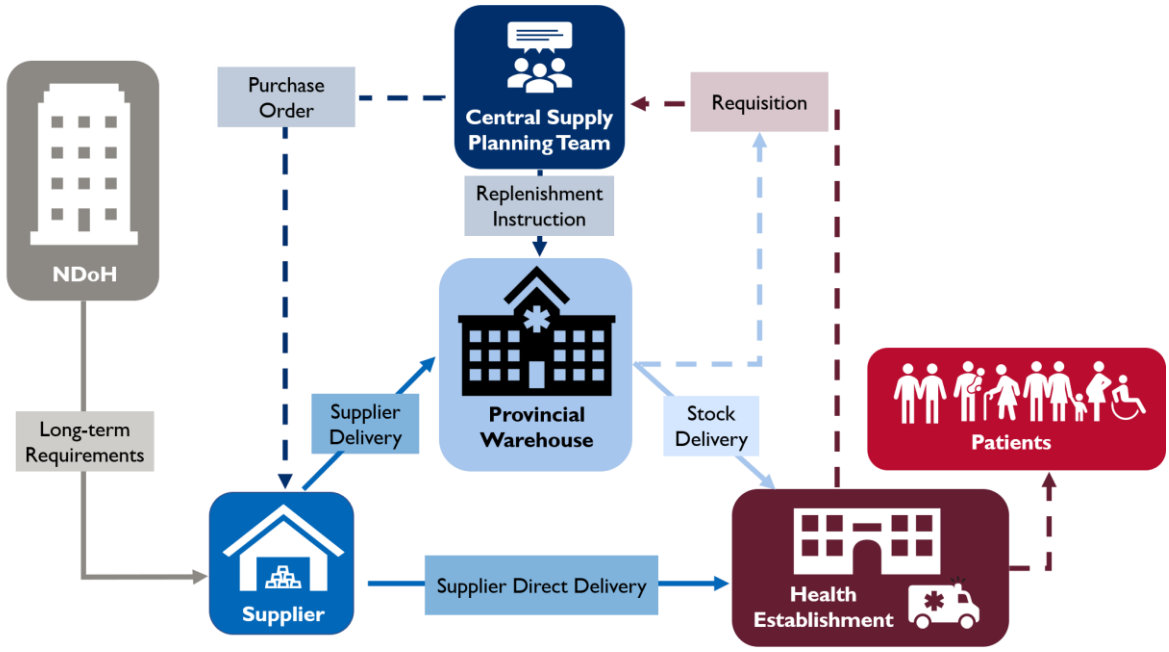
To promote sustainability, GHSC-TA developed a Demand Planning Process Handover Guide. In Year 3, the handover process was initiated in the EC.

**Supply Planning.** Following the development of an established and approved demand plan, supply planning seeks to satisfy the demand forecast to ensure that the right commodities are available at the right time for patients. For Provincial Departments of Health, supply planning is essential as it seeks to replenish inventory levels by delivering optimal stock levels to meet patient needs. Currently, many health establishments create, submit, and process orders using a manual, paper-based process which introduces opportunities for error and adversely impacts resource constrained health establishments.

In Year 3, GHSC-TA obtained approval from AMD to proceed with a POC for a newly-designed "informed push" supply planning and replenishment process. The new approach automates supply planning and replenishment where facilities capture their current stock on hand and receive, through systems such as RxSolution or SVS, an automatically generated recommended order based on analytically sound minimum/maximum levels set for each item in that health establishment.

The order is then sent to the health establishment's supply point for replenishment. Supplies are then delivered to the health establishment via supplier direct delivery or from the provincial warehouse. Figure 4 depicts the Informed Push Supply Planning and Replenishment Process which is further explained in the callout box below.

*Figure 4: Informed Push Supply Planning and Replenishment Process*




The initial POC for supply planning was conducted in NW. In collaboration with the NW Department of Health, GHSC-TA selected four health establishments to test the informed push approach to supply planning and replenishment—two using SVS and two using RxSolution. A key part of the POC was GHSC-TA's developing and testing a stock calculator tool that determines the optimal minimum/maximum (min/max) stock levels for each item at each of the four facilities. This new min/max information served as a key input to the reorder process for all four facilities and their supplying hospitals throughout the duration of the POC.

For the two RxSolution clinics, the program worked with Aurum (the PEPFAR partner supporting the district) to plan and execute a five-day training effort building capacity and enabling facility personnel to use the system independently. The training proved highly successful with users at both sites quickly able to send automated orders to the supply sites for processing. In the coming year, GHSC-TA will continue to explore opportunities to partner with district support partners to accelerate use of RxSolution and adoption of the informed push model for supply planning and replenishment.

## THE INFORMED PUSH MODEL AND STOCK CALCULATOR

To support the "informed push" process, GHSC-TA developed a basic stock calculator tool to determine the desired minimum and maximum stock levels to inform the reorder process for individual health establishments. The informed push process includes:

1. A health care establishment must first capture their stock on hand. An automated recommended requisition will be generated based on their current stock and their pre-set min/max levels. This "recommended requisition" will be reviewed by the establishment team and adjusted, where required. Prior to sending to the Provincial Supply Chain Team for processing, the recommended requisition must be signed off by the central supply plan team.
2. The Provincial Supply Chain Team will review the requisition and adjust, where required. The team will then route a replenishment instruction to the Provincial Warehouse for delivery to the establishment or send a purchase order to the supplier for a direct delivery to the establishment.
3. If the replenishment instruction calls for Provincial Warehouse resupply, the Provincial Warehouse creates a requisition which will be reviewed by the Provincial Supply Chain Team and then a purchase order will be placed on the relevant suppliers to replenish Provincial Warehouse stocks.
4. The health care establishment receives ordered commodities via applicable source—either stock delivery from the provincial warehouse or supplier direct delivery.

In Year 3, GHSC-TA utilized the stock calculator at each of the four test sites applying the enhanced RxSolution or SVS. Additionally, the program supported replenishment planning at two hospitals in North West province. Utilizing the stock calculator, current stock levels were compared to the desired minimum/maximum levels. Based on this observation, the program found that the existing and desired stock levels did not vary significantly.

By integrating these tools and processes into the supply planning process, GHSC-TA is able to support NDoH in reducing the burden on health care establishment personnel and time spent on non-patient facing activities and decreasing the opportunities for errors. This ultimately contributes to increasing the quality of care provided to patients.

The informed push POC proved highly successful, with all four sites achieving desired POC success criteria and personnel able to leverage automated order generation based on analytically sound min/max levels. Doing so reduced total time spent managing inventory, and freed clinic personnel to spend more time providing patient care.

## SUPPLY CHAIN STRENGTHENING

GHSC-TA is supporting the Government of South Africa to optimize the health supply chain through strengthening provincial supply chain structures and operating models related to supply chain planning services, ordering and payment, and replenishment and distribution of medicines. Together, these efforts increase implementation of sustainable interventions; support core supply chain functionalities, including the design, maintenance and improvement of the supply chain system; and ultimately improve medicine availability and patient access to treatment.

**Strengthening Provincial Supply Chain Structures in North West.** In 2018, NW was placed under administration by the national government. GHSC-TA was requested to focus on strengthening provincial medicine supply chain structures and processes in the province.

At the end of Year 2, GHSC-TA conducted an assessment in NW to understand the provincial supply chain and identify strengths and areas for improvement. The findings and recommendations were presented by GHSC-TA to the NW Head of Pharmaceutical Services (HOPS) in September 2018. The report was also disseminated to key stakeholders at national and provincial levels. Following the dissemination of the assessment, it was agreed that the recommendations shown in Figure 5 would form the basis for Year 3 activities aimed at strengthening the supply chain in NW:

*Figure 5: Principle recommendations for strengthening the NW public health supply chain*


In efforts to improve **depot service delivery**, GHSC-TA focused on six functions: infrastructure, health information systems, processes, financial management, leadership and governance, and workforce management.

- **Infrastructure.** One of the findings of the assessment was the lack of adherence to Occupational Health and Safety (OHS) standards in the depot (NW Mmabatho Medical Stores). In efforts to improve OHS, GHSC-TA supported revitalization of the OHS committee. Over the course of the year, committee members were elected and assumed responsibility for addressing OHS issues including lack of personal protective equipment and absence of health and safety training and procedures.

- **Health Information Systems.** One of the challenges identified in the depot was that orders were extracted from RxSolution and manually recaptured into the warehouse management system, Depot Stock Management System (DSMS). The process of recapturing data was not only tedious, but also had inherent data quality risks. In Year 3, GHSC-TA assisted with the implementation of an interface between DSMS and RxSolution to improve the efficiency and effectiveness of the ordering process. In the new process, order files are extracted and emailed to the order processing team who import these files into DSMS, eliminating recapture of data and reducing associated risks.

- **Process.** The assessment found that 12 of the Standard Operating Procedures (SOPs) required by the South Africa Health Product Regulatory Authority (SAHPRA) were not available. GHSC-TA revised 62 SOPs which were handed over to the Depot Management Team for implementation.

- **Financial Management.** One of the key challenges affecting the availability of medicines is the processing of payments, with suppliers often waiting for payment well beyond the legislated payment period. In Year 3, GHSC-TA conducted a review of the medicine and medical supplies

payment process. The program then redesigned a centralized payment process with a series of recommended changes that minimized and/or eliminated processes that add little to no value. This new centralized payment process reduces form redundancies and duplication of activities across the financial systems, reallocates levels of authority, and eliminates manual tracking of information. The Chief Financial Officer approved the redesign. The transition to the new process began in April 2019 under the leadership of the administrator.

- **Leadership and Governance.** GHSC-TA proposed the use of a quality management system (QMS) per ISO 9001 as it was found during the baseline assessment that the NW were not compliant with the minimum prescribed requirements. A QMS approach was used to address all non-compliant arears ranging from management responsibility, resource management, product realization and monitoring, measurement and analysis.

  A Pharmaceutical Services Operational Plan aligned to the NW APP was developed, approved and submitted to the NW Acting Chief Director for Emergency and Clinical Services.

  GHSC-TA provided support with the development of the TOR of the Provincial PTC, which is responsible for the development of a provincial medicine formulary.

- **Workforce Management.** In the NW, workforce management interventions focused primarily on developing organizational structures, redesigning the depot's organogram in accordance with Department of Public Service Administration (DPSA) requirements, and aligning financial resources to new structures. GHSC-TA conducted an assessment to measure the existing and required qualifications for each position on the recommended structure.

  A major achievement during the reporting period was the approval of the Provincial Pharmaceutical Organizational Design by the acting HOPS, Acting Depot Manager, AMD Representative, and the National Administrative Team. The proposed structure was presented to the NW Member of the Executive Council for Health with recommendations on correcting staffing level anomalies. The proposed pharmaceutical organizational design has been incorporated in the Provincial Department of Health's overall structure and circulated by the Office of the Premier to provincial staff for input. Successful consultation sessions were held with staff.

  In Year 3, GHSC-TA developed a training program and proposed framework aligned to the provincial Human Resource Development (HRD) Guidelines. The training program and proposed framework, approved by the HRD Deputy Directors and depot management, strives to improve workforce skills and competencies. Training was conducted in the following areas: OHS, SOPs, good warehouse practice, change management, NSC usage, stock-take processes, and HR administration.

The **provincial supply chain** in NW was characterized at the time of the assessment by high inventory carrying costs, extended delivery lead times, underutilization, and unnecessary risk at stock holding and handling points. In efforts to increase efficiencies and cost-effectiveness, GHSC-TA sought to optimize distribution planning by recommending changes to delivery routes and schedules and increasing the number of hospitals receiving supplier direct deliveries, as well as the number of commodities available for direct delivery. GHSC-TA developed a third party transportation Request for Proposal and finalized the direct delivery strategy and guidelines. These guidelines focused on the identification of items and health establishments to be included in the expansion of direct deliveries as well as the supporting administrative processes to improve document flow, management, and supplier payment. In Year 3, direct deliveries to Mahikeng Provincial Hospital were piloted to assess the impact on delivery lead times, depot operations, and the costs associated with double handling and handling related damage.

At the end of Year 3, GHSC-TA completed the NW intervention handover process to the team comprised of the Acting Chief Director for Emergency and Clinical Services, the Administrator, Acting HOPS, and Acting Depot Manager. The handover included a final meeting to report progress and discuss challenges as well as a package of electronic files containing all intervention documents.

***"[There had been] significant improvements in the stabilization of the distribution of medical and medical related items supported by an availability of close to 80% of these items at any one time."***

***- Dr. Nkosazana Dlamini-Zuma, Minister of Cooperative Governance and Traditional Affairs***

## TLD TRANSITION

Tenofovir/Lamivudine/Dolutegravir (TLD) is a new and innovative ARV therapy used to treat HIV. The Government of South Africa has identified eligible "first line" patients to transition from Tenofovir/Emtricitabine/Efavirenz (TEE) to TLD. At the end of Year 3, a decision was taken to postpone the TLD transition until December 2019, as the National ARV Treatment Guideline had not yet been signed off.

GHSC-TA is working closely with the NDoH, the HIV program, and other implementing partners (including CHAI and Africa Resource Centre (ARC)) to support the transition to TLD in South Africa. GHSC-TA is assisting the NDoH with designing the high-level demand and supply model, the provincial rollout of the transition, and the NDoH's communication strategy to introduce TLD to patients. The demand and supply model, developed in collaboration with AMD, is comprised of four distinct elements: the national demand model, the provincial demand model, the supply model and the TLD dashboard. These tools seek to track patient eligibility for transition and the availability of TLD, TEE, and other items related to the transition as well as providing information regarding quantities needed.

At the request of the NDoH TLD task team, GHSC-TA developed a specialized **TLD dashboard**. The dashboard will be used to track medicine availability of items related to the transition on national, provincial, district, and health establishment levels. The dashboard includes data relating to the number of patients on ART (TROA), and will allow users to track selected items and support medicine availability at all levels.

### PROVINCIAL TLD STEERING COMMITTEES

Provincial TLD Steering Committees were established in each province to provide support, guidance, and oversight of progress on issues relating to the transition from TEE to TLD. The committees are the primary body responsible for addressing any challenges associated with the supply of medicine and related products for the TLD transition as well as reporting provincial medicine availability.

**Provincial rollout of the transition.** In efforts to guide the rollout of the TLD transition activities to the provinces, GHSC-TA worked with the provincial TLD steering committees to develop nine provincial project plans. These plans are designed to assist the 16 TLD Champions across all provinces in supporting the implementation and completion of TLD transition activities. The project plan will also assist with risk identification and time/resource management. Once approved at the provincial level, the plans will guide implementation of the transition.

**Change management plan.** The transition from TEE to TLD is a significant change within the South African health supply chain. To assist in preparing, supporting, and helping in the transition, GHSC-TA as part of the TLD task team is supporting a change management and stakeholder engagement approach designed to drive efficient use of resources, measure and track performance, and strive for best-in-class operations across the board.

- A **National Training Plan** was developed in January 2019 by the NDoH and CHAI to train all provincial health care workers on the updated ARV Treatment Guidelines. GHSC-TA is working closely with CHAI to assist the Provincial Regional Training Centers with the development of provincial training plans to support roll-out of the guideline.
- Discussions were held with the Central Chronic Medicines Dispensing and Distribution (CCMDD) project services providers, the NDoH, Project Last Mile, and the TLD Task Team to explore the provincial phasing options for all CCMDD patients. A **National CCMDD Transition Algorithm** was developed by the NDoH CCMDD project lead and shared with the TLD task team to integrate into the national and provincial demand model.

**Communication Plan.** Following a request by the provincial HOPs that communication between NDoH and the PDoHs be improved, GHSC-TA worked with ARC on the introduction of an AMD-TLD newsletter. The newsletter serves as a communication platform to share information with all stakeholders and provincial partners of AMD initiatives. By the end of Year 3, four editions of the newsletter had been circulated.

## OUTCOME LEVEL RESULTS

GHSC-TA hypothesizes that by supporting activities to improve contracting and contract management, as well as working with AMD to improve visibility and analytics to strengthen planning processes, the Government of South Africa will demonstrate improvements in the security of medicine supply and the strengthening of demand planning, supply planning, and inventory management. In efforts to test these underlying assumptions, GHSC-TA identified and routinely monitors six annual KPIs. This section provides an overview of the progress and results observed against these KPIs through the end of Year 3.

### KPI 7 AND 8. PERCENTAGE OF ARVS AND MASTER PROCUREMENT CATALOGUE ITEMS (EXCLUDING ARVS) DELIVERED BY SUPPLIERS WITHIN CONTRACTUAL LEAD-TIME

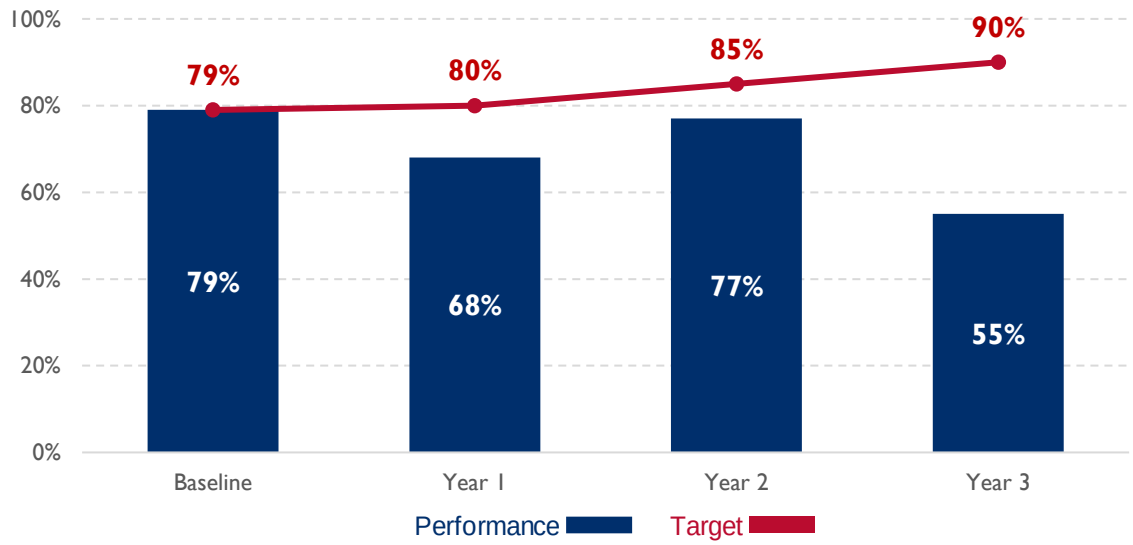
By measuring the percentage of medicines, both ARVs and non-ARV MPC items delivered by suppliers within the contractual lead-time, the program seeks to understand the impact of supply chain strengthening activities. At the end of Year 3, the program found that 55% of ARVs were delivered by suppliers within the contractual lead time. This demonstrates a 24% decline in performance since baseline and the lowest performance since the launch of GHSC-TA.

In Quarter 1 of Year 3, 67% of ARVs were delivered on time, however, this declined to 55% by the end of the year shown in Figure 6. The decline in performance can be partially attributed to a series of supply challenges at four large ARV suppliers affecting overall performance. The five suppliers had average lead times ranging from 20 to 77 days, which is well above the 14 days stipulated in the contract. In addition, the overall shortage of lamivudine-containing items due to a global shortage of the active pharmaceutical ingredient is another major contributing factor to performance against this KPI. In Quarter 4 of Year 3, the new ARV contract came into effect. Contract changes historically result in an increased lead time in the two to three months after commencement.

In spite of this challenge, medicine availability at primary healthcare (PHC) level for ARVs across the country was maintained above 91% throughout Year 3.

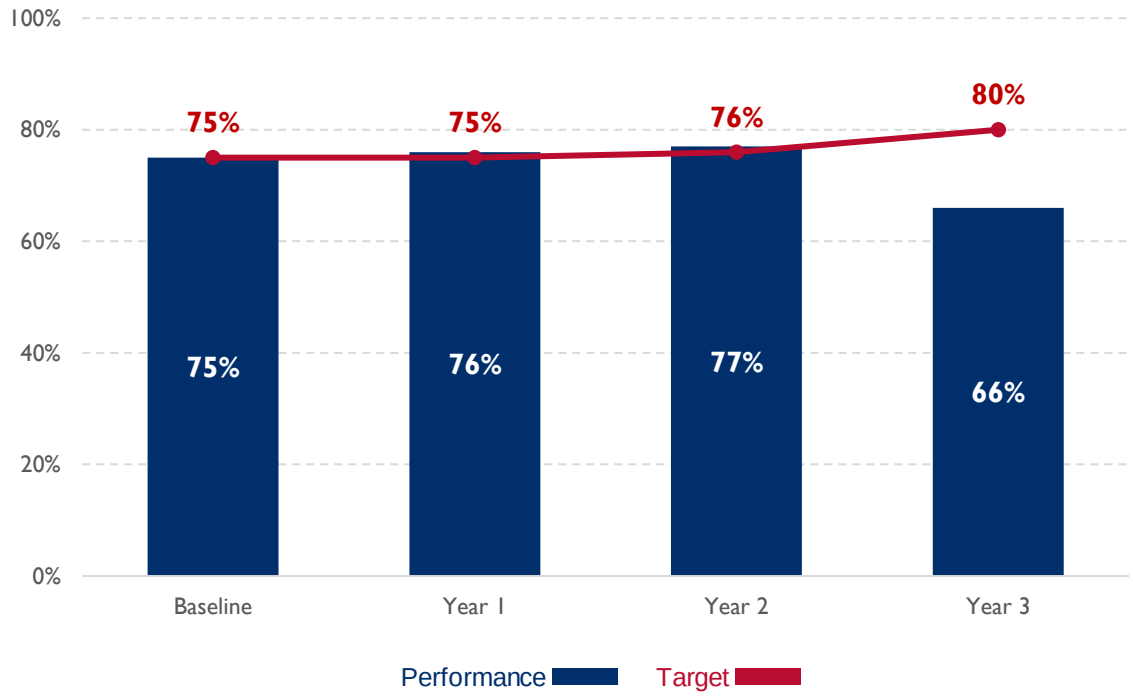
Although there was a decrease in performance, the program did observe an increase in the number of ARV suppliers submitting data to the RSA Pharma database. By the end of Year 3, 12 suppliers were submitting data to the database. Improvements in reporting increase the quality and reliability of data informing KPI 7. Despite the fact that improvements in data reporting may affect the level of performance, it also increases the quality and reliability of data informing the indicator.

*Figure 6: Percentage of ARVs delivered by suppliers within contractual lead-time*




With regard to the delivery of non-ARVs (KPI 8), 66% of MPC medicines (excluding ARVs) were delivered within contractual lead time. Similar to ARV deliveries, performance demonstrated a decline against prior performance and is below the Year 3 target of 80% as shown in Figure 7.

*Figure 7: Percentage of MPC medicines excluding ARVs delivered by suppliers within contractual lead-time*



The increase in average lead time for MPC medicines (excluding ARVs) from 14 days in Year 2 to 15 days in Year 3 contributed to the overall performance on the KPI. In addition, approximately one third of suppliers, representing a significant percentage of the national volume, experienced supply challenges during t he last quarter o f Year 3. Due to the increase in lead time, the on-time delivery performance from suppliers decreased from 77% to 66% as depicted in Figure 7 above. Q3 of Year 3 saw the highest percent achieved with 73% of medicines delivered within the contractual lead time. Furthermore, increased lead time can be attributed to the fact that two large contracts, accounting for 43% of MPC items, were awarded in Year 3.

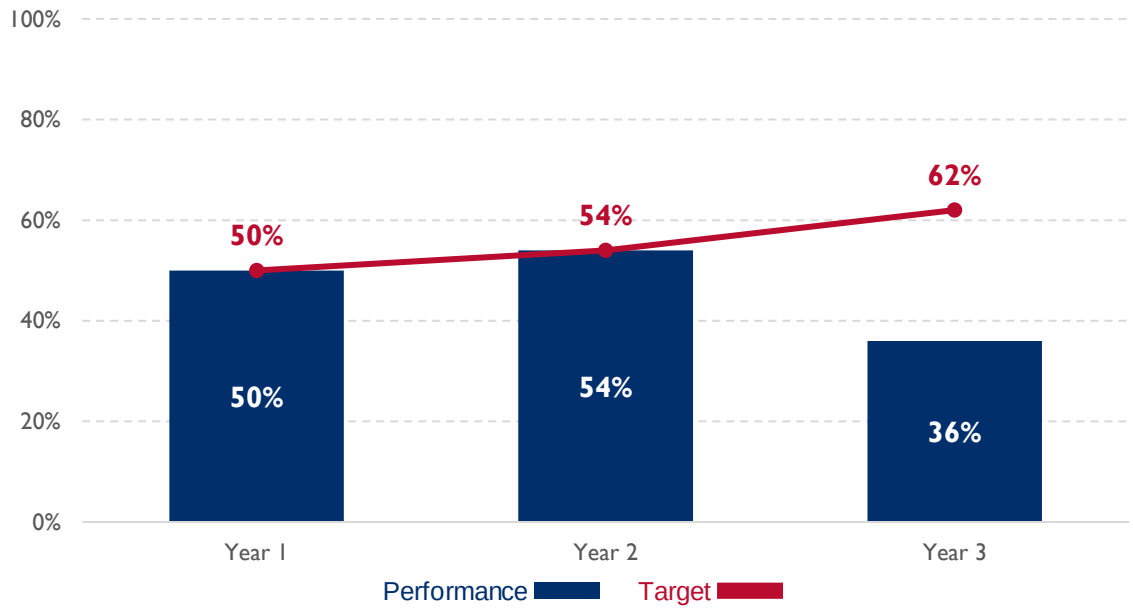
Similar to supplier ARV reporting, GHSC-TA observed an increase in the number of suppliers submitting data on MPC items delivered within contractual lead-time. At the end of Year 3, 86% or 62 of the 70 suppliers were reporting data to the RSA Pharma database.

## KPI 9. PERCENTAGE OF FORECAST ACCURACY ON TENDERS

GHSC-TA activities and accomplishments contribute to the design, maintenance, and improvement of the supply chain. The program utilizes the outcome level indicator of Forecast Accuracy on Tenders (KPI 9) to measure the contribution of demand planning towards optimisation of the supply chain.

In Year 3, a forecast accuracy of 36% was reported as shown in Figure 8. This figure reflects forecast accuracy prior to implementation of the new approach to demand forecasting. The impact of GHSC-TA's work in this area will only be measurable once the contracts, where the new approach was applied, are in use. The first contracts using the new approach commenced in July and October 2019.

*Figure 8: Percentage of forecast accuracy on tenders*

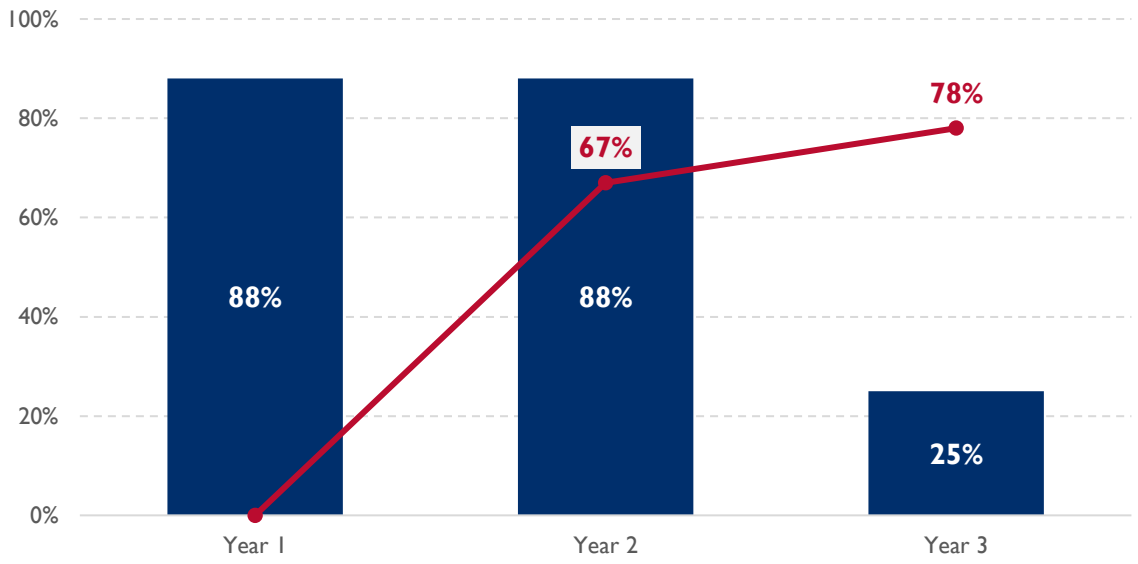



## KPI 10. PERCENTAGE OF ASSISTED PROVINCES DEMONSTRATING IMPROVEMENTS IN PERFECT ORDER FULFILMENT (ON TIME IN FULL) FOR ORDERS PLACED ON SUPPLIERS

As a standard measurement of supply chain management, the program also seeks to measure the percentage of assisted provinces demonstrating improvements in perfect order fulfilment (for orders placed on suppliers). At the end of Year 3, performance dropped to 25% (two out of eight provinces) shown in Figure 9. Notably, MEDSAS, a WMS, is unstable resulting in incidents of down-time, causing

delays in order processing which resulted in extended order cycle times. The indicator is also negatively impacted by supplier lead time, which, as indicated above, has experienced a decrease in compliance with contractual agreements.

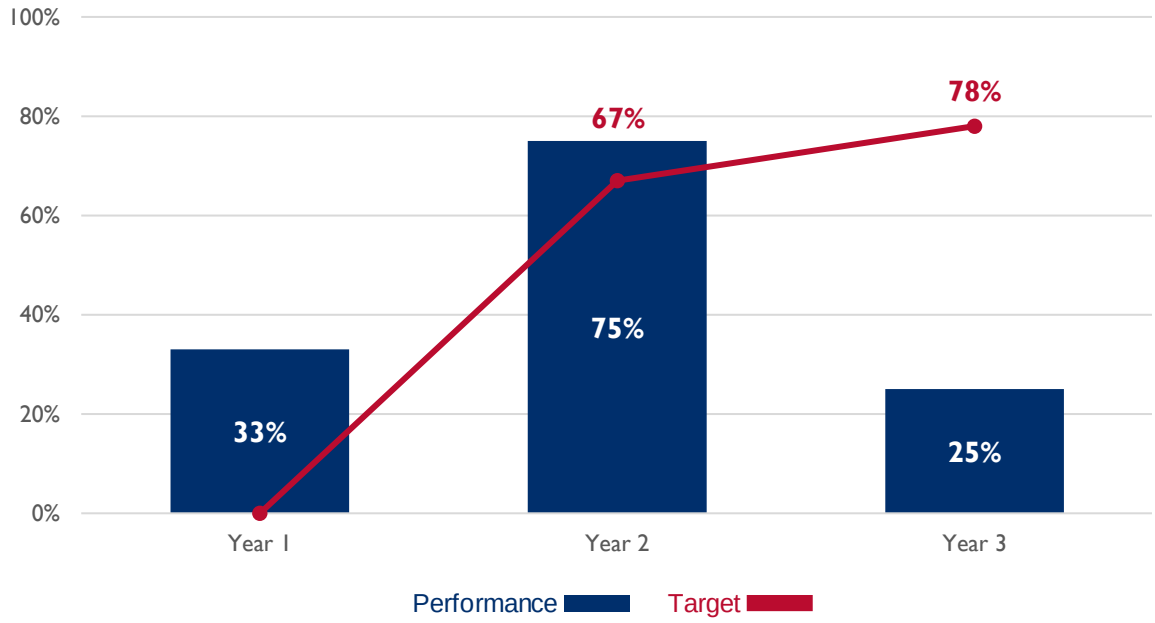
*Figure 9: Percentage of assisted provinces demonstrating improvements in perfect order fulfillment (OTIF) for orders placed on suppliers*




## KPI 11. PERCENTAGE OF ASSISTED PROVINCES DEMONSTRATING IMPROVEMENT IN ORDER FULFILMENT CYCLE TIME FOR ORDERS PLACED ON SUPPLIERS

Out of the percentage of assisted provinces demonstrating improvements in order fulfilment cycle time (for orders placed on suppliers), two of the eight assisted provinces (25%) demonstrated improvement, as shown in Figure 10. This outcome is consistent with the decreased compliance with contractual lead-times.

*Figure 10: Percentage of assisted provinces demonstrating improvement in order fulfillment cycle time for orders placed on suppliers*



## KPI 14. PERCENTAGE OF IDENTIFIED MPC MEDICINES DELIVERED TO DESIGNATED HOSPITALS VIA DIRECT DELIVERY

In Year 3, the data required to inform the performance of this indicator was not available.

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## STRENGTHEN GOVERNANCE

One of the functions of the AMD is to provide oversight and set policy with respect to pharmaceutical services provided in South Africa. Support provided by GHSC-TA includes assisting the AMD and provincial pharmaceutical services in improving governance by strengthening the policy and legislative framework, establishing appropriate governance structures, and building capacity to provide the necessary oversight. As policies are the mechanism by which the SIMA is translated into action and reforms institutionalized, a key role of GHSC-TA is to provide TA in the development of relevant policies and legislation necessary for implementation of strategic priorities and interventions.

## ACTIVITIES AND ACHIEVEMENTS

### IMPLEMENTATION OF PULSE

The PuLSe system was designed to enable health care providers to apply for and manage dispensing licenses and permits issued in terms of the Medicines and Related Substances Act 101 of 1965, and yellow fever licenses issued in terms of the International Health Regulations, online. The implementation of PuLSe contributes to the overarching goal of improving medicine availability by strengthening governance and improving the management of workforce certifications.

In response to delays in procuring a secure hosting platform for PuLSe, the NDoH identified the opportunity for the system to be hosted by the Council for Medical Schemes (CMS). GHSC-TA provided TA in drafting various governance documents: the proposal in this regard, an MOU, and a non-disclosure agreement. These documents will assist in establishing a mutually-beneficial working relationship between the AMD and CMS. By the end of the period, the documents were under review by CMS. In the interim, CMS acquired and configured servers in preparation for transition of the system. GHSC-TA also provided assistance to AMD in establishing maintenance and support contracts for PuLSe. Assistance was also provided with aligning the medicine lists supplied to permit holders with the latest version of the STGs and EML. Following inputs from the South African Nursing Council and other regulatory stakeholders, the medicines list will be finalized.

Activities supporting the implementation of PuLSe were fully transitioned to the AMD at the end of Year 3.

### POLICY AND LEGISLATION

GHSC-TA conducted several activities in Year 3 to support the development and revision of policies and legislation as an enabler for medicine availability. Most notably, the program supported activities in the areas of e-prescribing, medicine barcoding, contracting, and contract management.

**Continuing Professional Development (CPD) Regulations.** In Year 3, public comment received on the CPD regulations was consolidated and reviewed. The regulations were published as a mechanism to ensure that pharmacists and pharmacy support personnel stay up to date with changes in practice standards and remain competent, thus contributing to improved health outcomes and patient safety. A Socio-economic impact assessment was completed by a team including AMD, SAPC and GHSC-TA and the regulations published for implementation.

**Pharmacy Support Personnel Regulations.** GHSC-TA provided support in amending the three sets of regulations to enable practice, education and registration. The purpose of the regulations was to establish a new category of pharmacy support personnel (Pharmacy technicians) and to align scopes of practice and to service delivery needs. The regulations were submitted to the State Law Advisors for review and the team comprising of GHSC-TA, AMD and SAPC finalized the review and consolidation of comment received. In addition, the team drafted an explanatory note, to be attached to the regulations which have been finalized and submitted for publication for public comment

**Pharmacy Premises Licensing**. GHSC-TA reviewed and consolidated public comments received on the Guidance for the issuing of licensing for pharmacy premises published in the Government Gazette in December 2017. The purpose of this guidance document is to assist applicants to submit an application for a license for pharmacy premises and to understand the criteria used to evaluate applications. Support was also provided to AMD in presenting the revised Guidance document to the DDG: NHI and inputs received incorporated.

**Section 22A (15) Permit.** Provided TA to AMD in addressing various concerns raised by the SAPC with regard to the issuing and management of Section 22A(15) permits which enable nurses to supply certain medicines to patients. To assist in addressing some of these concerns, the current application form for these permits was revised, the list of medicines which can be supplied was amended and guidelines relating to the issuing and management of permits drafted. The revised application form and guideline are under review by the task team which comprises of AMD, GHSC-TA, SAPC and South African Nursing Council (SANC).

**E-prescribing.** In Year 3, GHSC-TA provided input on legal considerations and the drafting of a e-prescribing policy as an input into the development of the e-prescribing system (for more information refer to the section on RxSolution, Refresh and Re-platform). The objective of the policy is to define the concept of electronic prescribing, outline the business rules, and describe the expected roles and responsibilities of the various health care professionals involved. The policy will drive implementation of the e-prescribing system which has multiple benefits including the availability of prescription data and the promotion of the rational use of medicines. The program also developed the TORs for the two sub-committees of the E-prescribing Technical and Compliance Committee (ETCC). These sub-committees are tasked with supporting the technology and specification review aspects of the e-prescribing system. During a workshop held in January 2019, the TORs were approved in addition to the prioritized business requirements for the first release of the minimum viable product. In the last quarter of the year, GHSC-TA provided input on the electronic prescription that to be generated by the system.

**Medicine Barcoding.** GHSC-TA prepared a barcoding discussion paper, which outlines the purpose, benefits, and process of implementing barcoding of all medicines available for sale in South Africa. It was agree at a meeting held between SAHPRA, AMD and GHSC-TA that SAHPRA take the lead in the establishment of a TWG and the development of the required guideline. GHSC-TA developed the first draft of the guideline related to barcoding with a specific focus on the inclusion of a 2D barcode or data matrix and the GS1 standards. The document will provide guidance on requirements for the implementation of barcoding, based on global best practices. The draft was submitted to AMD.

**Contracting.** In efforts to promote the security of supply of essential medicines, including ARVs and medicines used in the prevention and treatment of TB, GHSC-TA supported AMD in revising the template for the Special Requirements and Conditions of Contract template. The template outlines the legislative requirements and framework for contracting, as well as the conditions of contracts, the price breakdown for items, and review cycles. The use of a standard template will assist in improving security of supply by providing standardized rules for the assessment of bids and the monitoring of supplier performance.

Due to the recent transition of contracting from National Treasury to AMD, further work is underway to strengthen the contracting process which involves the development of bid specifications, the advertising of tenders, the closing of bids, the evaluation and adjudication of bids and contract award. GSHC-TA is providing operational support to the AMD in the contracting process.

**Contract Management.** GHSC-TA supported with the development of the TOR informing the IMAT process designed to address the supplier-related constraints.

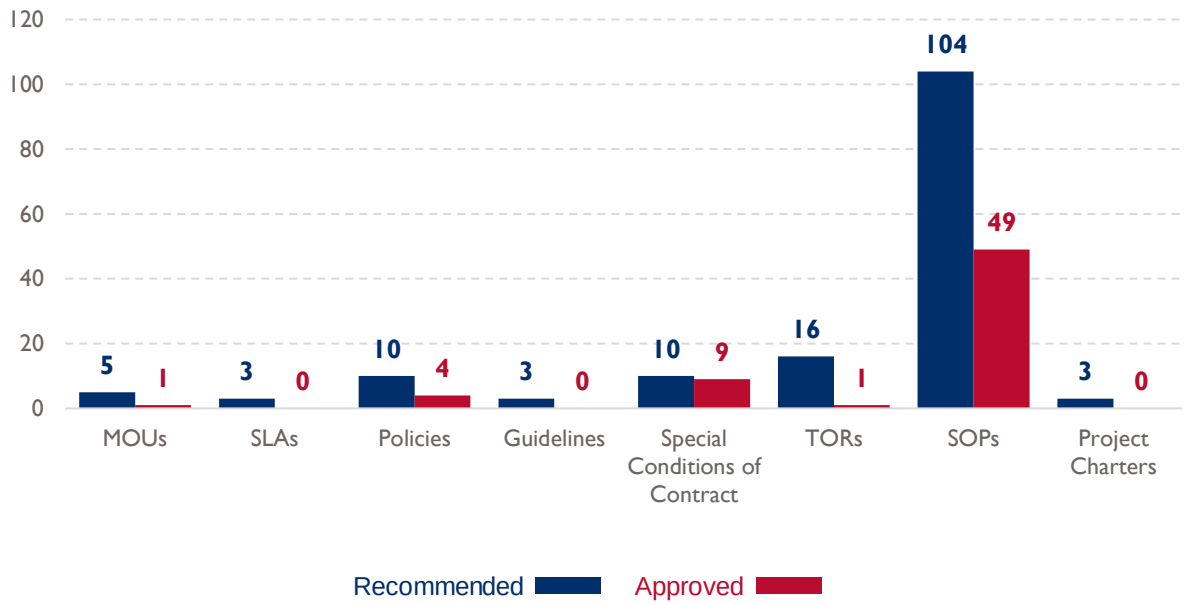
**Citizen Reporting Call Centre.** GHSC-TA provided TA in the development of the first draft of the concept note for the AMD App Supported Citizen Stock-out Reporting Call Centre. This initiative will enable citizens to have a mechanism to report any stock-outs experienced at health establishments. The concept note is currently being reviewed by the NDoH. The drafting of the AMD

App Supported Citizen Stock-out Reporting Call Centre business case has also been completed and shared with AMD and prospective service providers.

## GOVERNANCE OUTPUTS

GHSC-TA supported the development and implementation of governance documents and tools supporting all key objectives of the program. In total, 154 governance documents including MOUs, service level agreements (SLAs), policies, guidelines, special conditions of contract, TORs, SOPs, and project charters were developed. At the end of Year 3, 64 documents (42%) had been approved as shown in Figure 11.

*Figure 11: Governance Outputs*




## OUTCOME LEVEL RESULTS

GHSC-TA hypothesizes that by increasing the capacity of the AMD to develop and institutionalize policies and legislation and implement good governance practices in coordination and engagement with key stakeholders, the AMD will demonstrate an increased application of good governance principles resulting in improved policies, implementation plans, and standard operating procedures. In efforts to measure the extent to which GHSC-TA's intervention strengthened governance across the AMD, GHSC-TA developed a maturity model. As part of the endline assessment, the program will measure the extent to which the assisted AMD organizations demonstrated improvement in governance maturity. Please see the GHSC-TA base period endline assessment report.

PHOTO CREDIT USAID

## IMPROVE WORKFORCE MANAGEMENT

To strengthen the workforce and organizational structures within AMD to perform the functions necessary to improve medicine availability and support implementation of the SIMA, GHSC-TA assisted the AMD in developing a revised organizational structure aligned to the future implementation of NHI. This will enable quick and efficient responses to the demands imposed by the rollout of new strategic interventions. Additionally, GHSC-TA has supported the development of job descriptions, performance management documents, and interaction models for both interim and final structures. Year 3 activities focused broadly on AMD, as well as the CMU and ISP unit within AMD.

## ACTIVITIES AND ACHIEVEMENTS

### DEPARTMENTAL AND STRUCTURE STRENGTHENING

**AMD.** In Year 3, GHSC-TA designed a draft NHI end-state, organizational structure for AMD. This work included job descriptions, performance management documents, capability maps, and an interaction model.

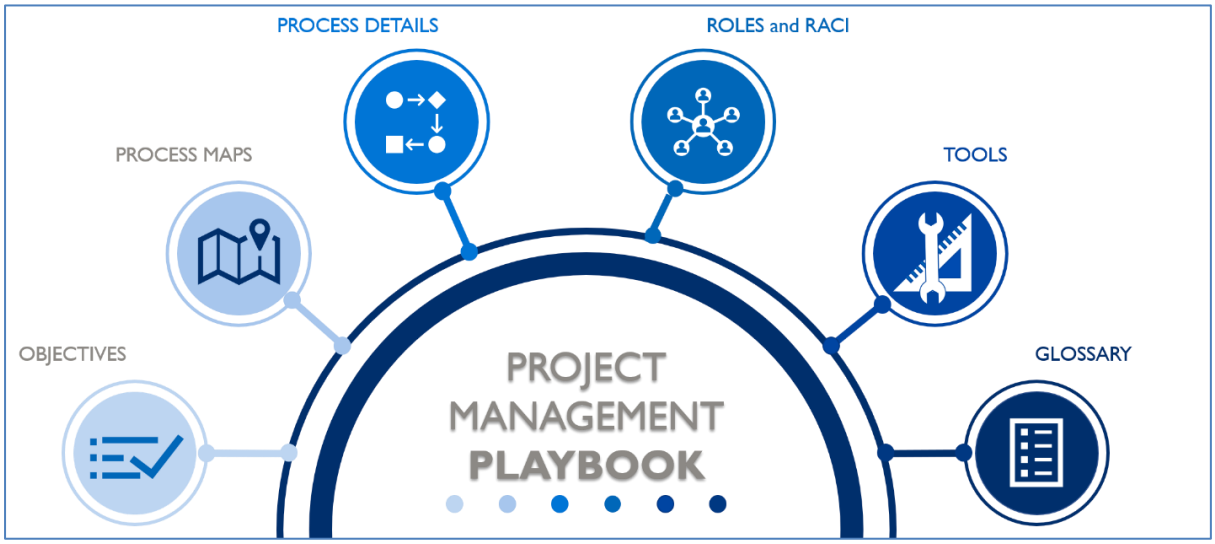
**CMU.** Efforts to ensure the continuous optimisation of the CMU were also conducted in Year 3. This included regular "touch base" meetings (huddles), coaching, and quarterly assessment of CMU performance and outcomes. Formal training on the CMU curriculum was completed in Year 3. The training focused on reporting, utilization of the NSC dashboards, and leadership accountability. Ownership of future huddles and coaching sessions was transferred to the CMU leadership team.

Due to a number of resignations in the unit, a resource from GHSC-TA was identified to support the CMU unit in the interim until new appointments are made.

**ISP.** In Year 3, GHSC-TA also supported workforce management activities for ISP. Activities were largely focused on implementing and monitoring the new ISP design including structures, processes, job descriptions, performance management, stakeholder engagement plans, and an induction pack. GHSC-TA also developed the Project Management Playbook shown in Figure 12, which includes various processes and templates to be used as part of any project and outlines the role and responsibilities of project managers. This playbook also formed the basis for training initiatives. Over the course of the year, 10 knowledge sharing sessions were conducted in collaboration with the ISP team. GHSC-TA also conducted a number of coaching, mentoring, and huddle sessions designed to support the project managers and improve their understanding of the playbook in line with their roles and responsibilities.

Furthermore, GHSC-TA assisted ISP with communication initiatives, such as engagement sessions, pulse check surveys, email communications, ISP newsletter, and posters.

*Figure 12: Project Management Playbook*

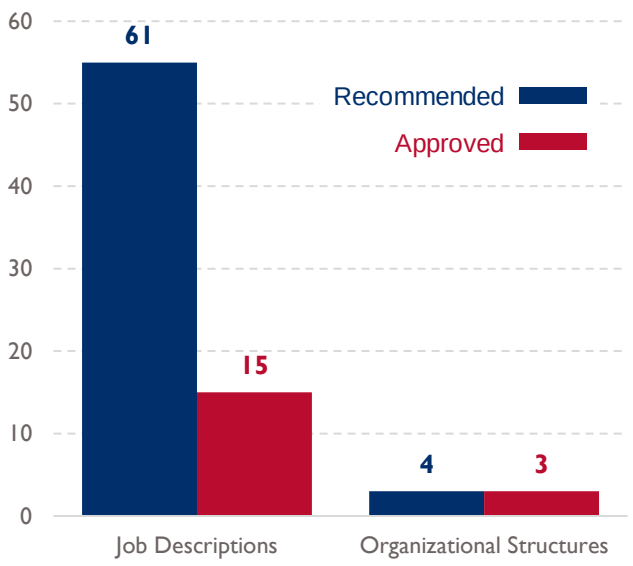


## OTHER WORKFORCE MANAGEMENT INTERVENTIONS

In addition to workforce management interventions within AMD, CMU, and ISP described above, workforce management is cross-cutting in nature and is integrated into activities across the other key objectives of the program. Please see references to workforce management interventions throughout the report.

As a result of the activities conducted through GHSC-TA's intervention, Figure 13 shows a total of 61 job descriptions have been developed, with 15 approved and 11 advertised for recruitment purposes. In addition, three organizational structures have been developed and approved.

*Figure 13: Workforce Management Outputs*




## OUTCOME LEVEL RESULTS

GHSC-TA hypothesizes that by supporting the AMD to develop a set of standardized structures, roles, competencies, and performance management together with institutionalization of a change management program and upskilling and mentoring of staff, the AMD will foster an improved culture aligned with proactive patient-centric decision making and enhanced leadership management and technical skills. In efforts to measure the extent to which GHSC-TA's intervention strengthened workforce management, GHSC-TA developed a maturity model. As part of the endline assessment, the program will measure the extent to which assisted organizations demonstrated improvement in workforce management maturity.

PHOTO CREDIT PIXABAY

## STRENGTHEN INFORMATION SYSTEMS AND INFORMATION MANAGEMENT

Information systems are critical to support the AMD strategy to improve evidence-based decision making leading to support improved medicine availability. It is therefore necessary that an IT architecture roadmap is developed to inform AMD decision-making with respect to the systems required to enable effective management of the medicine supply chain.

Beyond organizational governance, GHSC-TA supports data governance and management of master data elements that are crucial to the vision of the AMD and allowing interoperability of information systems. Further, the team continues to support and recommend enhancement to existing systems, analytical processes, and dashboards used by AMD and provincial pharmaceutical services for daily transactions and informing decision-making and continuous improvement.

## ACTIVITIES AND ACHIEVEMENTS

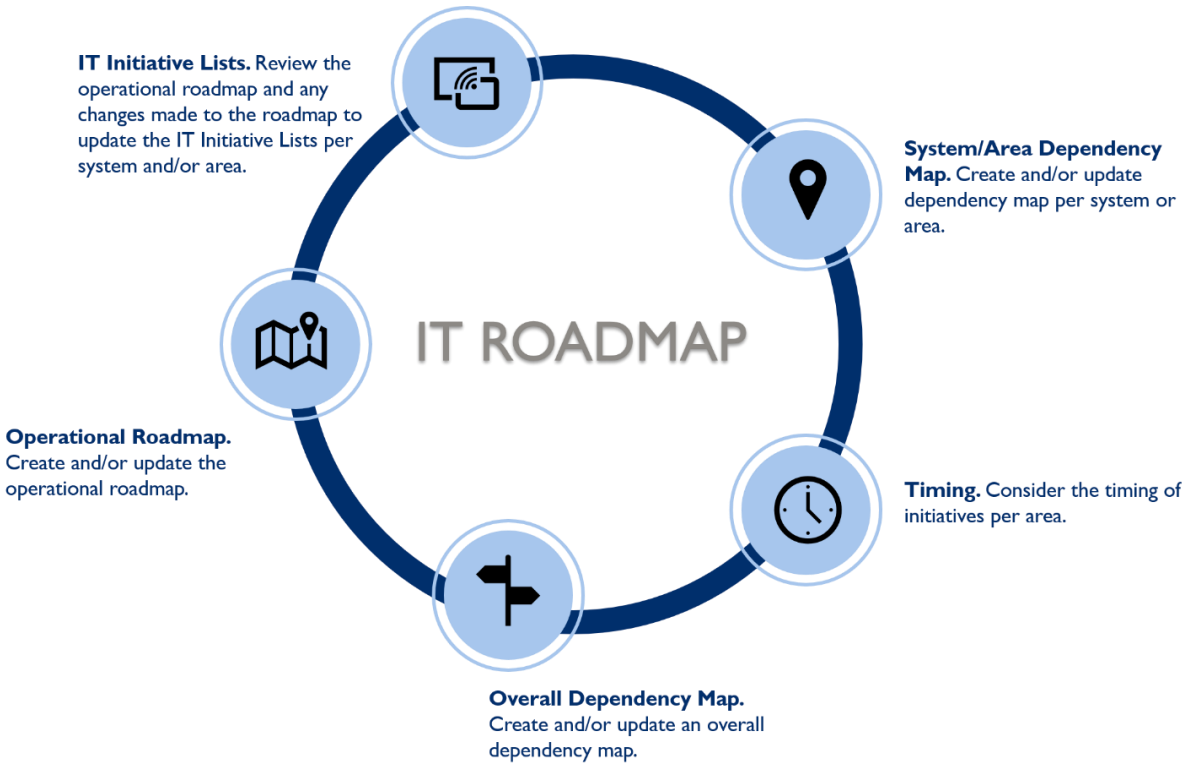
### IT STRATEGY AND LANDSCAPE

The development and delivery of an IT strategy and landscape are instrumental in developing systems to improve accountability and increase both the availability and visibility of data to inform decision-making at national and provincial levels. In addition, an IT strategy and landscape serve as a critical enabler of health supply chain performance and form a cornerstone of successful delivery of the SIMA. In Year 3, GHSC-TA activities focused on an analysis of the AMD IT landscape and development of an IT strategy and roadmap. In efforts to ensure the sustainability of the strategy, the program also built capacity within AMD to assume ownership and maintenance of these activities and the associated documentation moving forward.

**AMD IT Strategy and Roadmap.** Working with the AMD IT Manager, GHSC-TA supported the development of the AMD IT Strategy and Roadmap which illustrates the IT initiatives required to achieve the desired future AMD IT landscape. The AMD IT Strategy and Roadmap includes:

- An **analysis of the current state** of AMD's IT landscape examining the IT environment from the perspectives of strategy, processes, people, and technology. As a result of the analysis, GHSC-TA produced an IT landscape diagram categorizing the systems identified.
- An **IT strategy** which identifies the core IT systems to be used and illustrates the interoperability and technology standards for these systems. The strategy also outlines an IT operating model describing the components required when managing IT development, as well as the day-to-day maintenance of an IT system. The IT operating model draws on findings from an analysis of leading standards for IT service management, the Information Technology Infrastructure Library (ITIL), and NDoH IT policies.
- The **IT Roadmap** shown in Figure 14 considers each system and the development initiatives required to support the AMD roadmap, illustrating the dependencies and planned timing of each initiative.

*Figure 14: IT Roadmap*




The AMD IT Strategy and Roadmap was reviewed during a workshop facilitated by GHSC-TA and should be approved at the next IT Steering Committee meeting which will be convened by the AMD.

**AMD Capacity Building**. In Year 3, GHSC-TA facilitated coaching sessions with the AMD IT Manager as part of the process of handing over management of the IT Strategy and Roadmap to AMD.

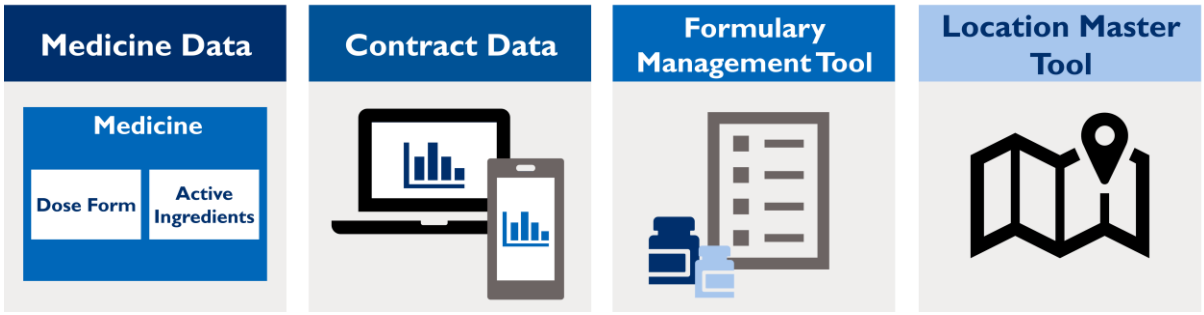
## MASTER MEDICINE DATA SYSTEM

The AMD is working towards ensuring that medicine master data can be exchanged and processed between different devices and systems, and across networks within the medicine supply chain. The MMDS, which is under development, will provide a centralized, uniform set of master data relating to medicine. The goal is for information systems to read medicine master data from this pool via system interfaces to achieve seamless interoperability across systems used in the supply chain. The availability of a set of uniform master data will support improved efficiencies at all levels of the health care system and facilitate visibility via the NSC, ultimately contributing to improvements in medicine availability.

GHSC-TA is providing support to elicit system requirements and reach agreement on definitions of master data-related elements, documenting requirements and preparing conceptual data designs. In Year 3, GHSC-TA provided TA in the development of specifications and implementation of modules of the MMDS.

MMDS is comprised of four components shown in Figure 15: Medicine Data, Contract Data, a Formulary Management Tool, and a Location Master Tool.

*Figure 15: Four components of MMDS*




- The **Medicine Master Tool** enables the development of a medicine including the International Non-Proprietary Name (INN), strength, and dosage form using repositories (static master data lists) and disaggregated data. The medicines created will be used as the foundation to inform the MHPL, Contract Master Tool, and Formulary Management Tool.
- The **Contract Master Tool** supports processes to record summary details of contracts concluded with suppliers of medicines, such as supplier details, price, and minimum order quantity.
- The **Location Master Tool** serves as a central component to the Formulary Management Tool by recording the details of organizational units (provinces, districts, or sub-districts) and details of establishments. A formulary links a medicine to an organizational unit or establishment.
- The **Formulary Management Tool** provides the technology to operationalize the National Guideline for the Management and Use of Formularies by enabling the development, management, and use of formularies for all provinces, districts, sub-districts (as applicable), and health establishments.

In Year 3, GHSC-TA completed data preparation and assisted with capturing all data relating to medicines (1,160 medicines), for which there are national contracts, to inform the online MHPL. This involved working closely with AMD through extensive planning of how medicines would be set up in the system and the rules to be applied, as well as substantial rework and verification of medicine description structures. Following the initial set-up, GHSC-TA completed user acceptance testing (UAT) to test the features of the system and assisted with feedback to the developers on changes required.

To further support the utilization of medicine data, GSHC-TA also developed the MHPL Capture Business Rules, as well as the first version of the MHPL process maps and SOPs. The business rules document provides the rules to be used when adding a new medicine to the MHPL. Development of the Location Master Tool is complete, and the tool is undergoing UAT. During the period, GHSC-TA also worked with AMD on the development of the specifications for the Formulary Management Tool.

## RESULTS FRAMEWORK AND KEY PERFORMANCE INDICATORS (KPIS)

In efforts to support the success and utilization of the NSC and Provincial Surveillance Centers (PSC), GSHC-TA conducted activities to expand the capacity of NSC and PSC users. Through having processes for monitoring and reporting, users across the supply chain are empowered to conduct advanced analytics and make better evidence-based decisions to support increased medicine availability.

Year 3 activities focused on establishing sustainable national and provincial surveillance capabilities for users to analyze, interpret, and use data to improve decision-making. Specifically, GHSC-TA led the creation of a set of provincial KPIs, developed a governing structure for the NSC, and established SOPs to support the functionality of the NSC and PSC.

**Provincial Key Performance Indicators.** GHSC-TA developed performance indicators across three high-level tiers within the provinces: pharmaceutical services, warehouse management, and medicine procurement. The KPIs were developed and workshopped with GHSC-TA and AMD before being presented to provinces in the NHC-PS-SC meeting. These indicators were further discussed with representatives from several provinces including Mpumalanga (MP) Limpopo (LP), Northern Cape (NC), and Free State (FS).

**NSC and PSC Governance Structure.** GHSC-TA proposed a governance framework that contextualizes the roles of the NSC within the AMD organization. This framework is based on the principles of quality management and outlines key areas of focus, starting with understanding the legal framework within which AMD operates, management responsibility, resource management, operations management, and monitoring, measurement, and analysis. Additionally, specific NSC processes and associated roles and responsibilities for the NSC were developed. While the structure was approved by the AMD, implantation of the structure is depending on AMD restructuring and other organizational changes expected with the implementation of NHI.

In alignment with the NSC structure, GHSC-TA also proposed roles and responsibilities to support the PSC. In March 2019, the PSC roles and responsibilities were approved by the AMD. Individuals at both the provincial and district levels were identified to fulfill the approved roles and responsibilities. At the conclusion of Year 3, seven provinces have nominated candidates to assume these roles.

**Standard Operating Procedures.** To accompany the approved NSC and PSC structures, GHSC-TA developed 13 SOPs to support the process of reviewing and escalating medicine availability challenges to the relevant stakeholders so that these challenges are addressed in a timely manner. The SOPs are aimed at AMD, provincial, and district levels. The SOPs are currently under review by the AMD.

Additionally, the program built capacity within AMD and the provincial units to utilize the NSC and PSC and apply the established governing structures through trainings, workshops, and follow-up sessions.

- In Year 3, GHSC-TA delivered four **coaching sessions** to the AMD Governance Unit. The four sessions focused on the Governance Framework, Risk Management, and the Plan, Do, Check, and Act methodology.
- GHSC-TA developed **workshop and training** in Year 3 to support the roll-out of the NSC and PSC. The aim of the workshop is to empower licensed users to access and use the data provided on the NSC and PSC dashboards as part of routine monitoring of medicine availability. The workshops sensitized licensed users on how to navigate and operate the system. Agreement was reached on coordinating activities associated with the PSC rollout and AMD IMAT initiative, which is aimed at establishing a communication strategy between AMD and the provinces to engage and proactively manage issues related to medicine availability and supply challenges.

One NSC workshop with AMD and NSC licensed users was conducted in August 2019. PSC workshops were conducted in seven provinces with a total of 109 participants in GP, EC, FS, KZN, MP, NC and NW.

- Following the PSC workshops, GHSC-TA facilitated **post engagement exercises** with the provincial teams in GP and KZN. The post engagement exercises focused on three key areas: utilizing the dashboards to understand medicine availability, developing a provincial plan to institutionalize the use of dashboards, and customizing decision trees as part of the PSC capability. The decisions trees were developed to guide users to determine a medicine availability challenge root cause and reach an appropriate response or intervention.

## VISIBILITY, ANALYTICS, AND DASHBOARDS

The NDoH, through the AMD, is driving the implementation of an outcomes-based framework to improve medicine availability across the country. This framework seeks to assist policy makers and implementers in understanding the linkages in the national health supply chain, dependencies, and change trajectories through end-to-end data visualization and analytics.

The NSC lies at the heart of this intervention. In 2015, the NDoH created the NSC to provide visibility of medicine availability across all levels of the public health supply chain. The NSC enables monitoring of medicine availability against a common set of indicators by visualizing the data that suppliers and health establishments provide in a way that can help to inform the medicine supply chain decision-making processes.

GHSC-TA, in collaboration with the AMD, provincial departments, and district health services, is enhancing and strengthening the NSC through the integration of standardized processes that drive monitoring, evaluation, and escalation of medicine availability-related issues. GHSC-TA is also supporting the expanded use of the NSC by additional supply chain actors, while increasing the number of health establishments submitting medicine availability data.

In Year 3, to improve supply chain visibility from available data sources, GHSC-TA continued developing and optimizing NSC dashboards to enable actionable insights and more informed decision-making. In total, GHSC-TA led the development of nine new dashboards:

- Developed the **Medicine Availability Depot Dashboard** showing medicine availability at the provincial warehouses for which data is available: Gauteng, Northern Cape, North West, Free State, KwaZulu-Natal, Eastern Cape, Mpumalanga, and Limpopo.
- Created the **Provincial Estimates Tracker Dashboard** to monitor the accuracy of medicine forecasts that provinces provide for each tender and how each province then orders against these forecasts monthly, thus assisting to monitor provincial forecasting accuracy, thereby allowing for appropriate interventions and continuous improvement.
- Developed the **Medicine Availability: Integrated Dashboards** for National and Provincial Departments of Health. This integrated view provides visibility of medicine availability from supplier to clinic level in a single view, achieved by consolidating the SVS, RxSolution, depot, and supplier data sources. This is a significant development as it assists to achieve the desired outcome of end-to-end visibility of medicine availability.
- Conducted a data needs analysis to develop the **90:90:90 Dashboard** and created a conceptual view of this dashboard. However, before more progress can be made, additional

data is needed in order to complete this dashboard. GHSC-TA is working with AMD and the programs to gain access to the relevant data.

- Developed a **General Practitioner Care Cell (GPCC) and Pharmacy Dispensing Unit (PDU) Dashboard** showing medicine availability for the USAID-funded GPCC and PDU projects.
- Created a draft version of the **Demand Planning Dashboard**, which will go live as provincial demand plans are agreed upon and finalized. The demand planning dashboard allows users to gauge demander ordering performance against approved demand plans, as well as monitor supplier performance against contracted demand volumes.
- Completed the development of the **TEE/TLD Transition Dashboard**. Associated provincial demand plans were integrated into the dashboard. Finalization will take place once demand plan facility locations are matched to the NSC facility locations master tool. Given the need for reliable contraception in women of childbearing age transitioning to TLD, a view of the availability of contraceptives is included in this dashboard.
- Developed a high-level plan to integrate with the **SVS database** to allow for a daily refresh of the SVS data providing near real-time information about medicine availability. This is being done in an effort to facilitate the switch from the TEE fixed dose combination to TLD.
- Developed the **Global Fund Supply Chain KPI Dashboard** to support AMD-required monthly KPI reporting. The calculations used in the dashboard were aligned with the Global Fund expectations and KPI.
- Developed the **Usage/Views Monitoring Dashboard** to monitor the activity of NSC license holders to track what information is being utilized and thereby assist in identifying potential improvements to the dashboards and training needs.

All dashboards developed have considered future developments in line with the IT Strategy and allow for integration with the MHPL.

GHSC-TA further supported the maintenance and optimization of the existing 36 dashboards with 899 different drill-down views, including:

- Redeveloping the **Supplier Management Dashboard** to facilitate increased usage, including defining the process of integrating with the RSA Pharma database for daily refresh of the dashboard. CHAI has indicated that the development work on RSA Pharma should be completed by the end of the calendar year.
- Developing the **Minimum/Maximum Report** under the Medicine Availability: Integrated Dashboard, which reflects current stock on hand compared to configured minimum and maximum stock levels, as determined by stock movement and estimated patients' numbers. This report assists to determine if the stock on hand reported is sufficient to cover patient demand and is a significant enhancement from merely understanding if the health establishment has the medicine in stock or not.

GHSC-TA assisted AMD with the procurement of the initial 67 licenses required to access the NSC. By the end of Year 3, AMD procured an additional 200 licenses, with GHSC-TA procuring 30 licenses for use by programme personnel for a total at 297. Of the 297, 180 have been assigned to unique users, significantly increasing the number of stakeholders with the access and ability to monitor medicine availability.

## SUPPLY CHAIN SYSTEMS

Technology and information systems are critical enablers of health supply chain performance and form a cornerstone of the successful delivery of the AMD SIMA. Key activities performed in support of this objective include supporting the development and deployment of information systems, including gCommerce, RxSolution, and SVS.

**Implementation of gCommerce.** To assist in the implementation of gCommerce, GHSC-TA provided TA to AMD and the Provincial Departments of Health to develop collective user requirements for system enhancements and planning for implementation of the gCommerce WMS in priority provinces. SITA was responsible for implementation, training, and the change management required for gCommerce implementation. In Year 3, user requirement specifications and an implementation plan for the supplier portal was developed. GHSC-TA conducted UAT together with provincial users for development priorities including the direct delivery module, stock take module, supplier portal, the advanced picking and packing process, and the 52-week planner.

Over the course of the program's base period, GSHC-TA supported the launch of gCommerce in two provinces, NC and LP. While the program began supporting the rollout of gCommerce across the remaining seven provinces, it was resolved at the NHC-SC-PS meeting held in December 2018 that further deployment of gCommerce be postponed pending an independent review and audit of the system to assess if architecture, functionality, usability, dependencies, and support from SITA are sustainable. The DPSA was requested by AMD to assess the architecture and functionality of gCommerce.

Furthermore, in April 2019, the Limpopo Department of Health decided to suspend use of the gCommerce WMS application and transition back to the use of Pharmaceutical Distribution System (PDSX), the system used previously. The province sited the instability of gCommerce, as well as challenges relating to the management of non-pharmaceutical items, as factors contributing to this decision. In May, a decision was taken not to continue with implementation of gCommerce.

Following these developments, GHSC-TA was requested to investigate and document the current situation relating to the use of WMSs in all provinces, with a view to preparing a situation analysis and developing a future strategy and business case for implementation of alternate systems. A situation analysis was developed outlining challenges experienced with WMS in use in the various provinces and the associated risks to the supply of medicines.

GSHC-TA continued to support the NC in stabilizing the current version of the gCommerce WMS and finalizing the financial year-end results. Ongoing assistance was also provided to National Treasury with the loading and maintenance of health-related contracts to enable the availability of upto-date contract data in gCommerce.

**RxSolution Refresh and Re-Platform**. This sphere comprises three areas of activity, namely, completion and ongoing support of the reporting API, maintaining stock related aspects of the current version of RxSolution in the interests of data quality and reporting effectiveness, and assisting the AMD-appointed contractors with the rebuilding of RxSolution onto a new technology platform ("re-platforming").

GHSC-TA made enhancements to improve the stability of the **reporting API tool** created and installed in the FS in Year 2 and assisted with further rollout of the tool. The reporting API tool is an automated data collection and redistribution tool used to collect data from RxSolution data stores. The tool submits data to a centralized repository without any manual intervention across available

data channels e.g., provincial Wide Area Networks (WANs) or the internet. The software is installed with an accompanying data collection database per province, metropolitan municipality, or as communication network structures dictate. The NSC system then reads reporting data from these databases.

In response to challenges across provincial IT environments, a second middleware API Tool was designed in Year 3 to accommodate sites with connectivity too poor for the initial API tool, enabling:

- Sites to install a tool locally that automatically generates and emails reporting data files to a central email address. The reporting server then automatically locates the email and harvests the data.
- The generated file to be emailed manually to the reporting server and harvested in the same way.

Maintaining stock-related aspects of the current version of RxSolution involves harmonizing master data across RxSolution by **MMDS integration** with RxSolution. Such integration will realize various benefits, such as improving the ability to aggregate data across reporting sites, reducing the need for data cleansing at the NSC, and improving opportunities for integration with other systems that use the MMDS as the basis for data structuring. In Year 3, GHSC-TA reviewed the MMDS API specifications and confirmed suitability for RxSolution integration.

GHSC-TA provides TA to the AMD and their appointed contractor for the rebuilding of RxSolution onto a new technology platform (referred to as "**re-platforming**"). The first RxSolution module selected for re-platforming is the prescribing module for which a first version (minimal viable product) has been created.

GHSC-TA supplied detailed specifications of the current functionality of RxSolution to form the initial basis for specifications for the re-platformed system and worked closely with the AMD and their contractor to develop new specifications, notably participating in the project steering committee and assisting to coordinate and participate in the ETCC. In addition, GHSC-TA assisted with UAT and planning for the rollout of the re-platformed prescribing module.

**RxSolution Maintenance and Support.** GHSC-TA assisted the AMD in improving data collection and monitoring of medicine availability via the NSC. Examples of further technical assistance provided at the provincial level are shown below:

- Extended the RxSolution footprint by assisting with new implementations of RxSolution at 28 sites in the EC, bringing the number of RxSolution sites to more than 500.
- Assisted data quality and reporting effectiveness by aligning master data across sites by means of data cleanup activities at 33 RxSolution sites.
- Assisted with embedding processes of regular manual data extraction and manual submission of reporting data to the NSC from facilities with insufficient connectivity to support automated reporting (or use of the reporting API is not yet feasible due to server constraints). A total of 135 new manual reporting sites were added: GP (60), EC (32), KZN (19), LP (19), FS (3), NW (1), and NC (1), bringing the total number of sites reporting manually to 505.
- Extended the footprint of the reporting API by working with provinces and metropolitan municipalities to install and configure the API software and install the data collection database/s. The number of new facilities connected for submitting reporting data via the

reporting API increased by 139: KZN (53), EC (31), NW (22), MP (14), FS (8), LP (3), and Ekurhuleni Metro in GP (8), to a total of 154 across 8 provinces. (Note: sites may currently be submitting data manually and via the reporting API. In Year 4, GHSC-TA will assist facilities to discontinue manual reporting where connectivity infrastructure has proven sufficient to support regular automated data submissions.)

- Trained new users on optimal system usage with a focus on product master clean-up and demand planning with on-site training being provided at 79 health facilities in EC, 15 hospitals in NC, and multiple facilities in NW and KZN. Support was also provided to the RxSolution "Champions" in GP and LP.
- Additional technical assistance was provided to GP and NW to support implementation of RxSolution interfaces with provincial warehouse management systems to enable orders from hospitals using RxSolution to interface directly with the WMS.
- Conducted activities and engagements to assist AMD with institutionalizing RxSolution at the provincial level through the transition of functional and technical support and maintenance responsibilities to provinces. During the reporting period, transition activities were concluded in each of the nine provinces. The provincial sign-off of the transition was collected from all provinces except for Free State and Gauteng.

**Implementation and Development of SVS.** During Year 3, GHSC-TA shifted focus to supporting the development of enhancements to existing SVS functionality. The majority of maintenance activities relating to the visibility functionality were successfully transitioned to the NDoH to be managed internally. The GHSC-TA support for the visibility component, provided to the NDoH prior to the transition, contributed to a 20% increase in national reporting rates, which have remained consistently at or above 90% at PHC facilities using SVS.

SVS has enable more reliable access to life-saving HIV/AIDS, TB and other essential medicines.

Year 3 activities focused on expanding the supply chain transactional functionality available on the SVS application. In Phase II of the project, the functionality was developed and expanded to allow ordering and receiving of medicines using the same SVS application and device. Initially, the ordering functionality of SVS was designed to integrate with gCommerce. However, as noted above, due to the suspension of further implementation of gCommerce, it was agreed that Phase II development would allow for the ordering (and receiving) functionality to be system agnostic while still allowing for interfacing with other WMSs used in the provinces. Despite the initial delays experienced in finalizing this development work, by the end of Year 3, following increased pressure applied by AMD with support from GHSC-TA, there was a marked improvement in the development progress for both the mobile and web portal, which both reached approximately 95% and 85% completion respectively.

GHSC-TA developed the UAT testing plan to support engagement with end users to test the new functionality. This plan was tested during the first ordering UAT (mobile app and web portal) which was conducted at Thusong Gateway Clinic in NW. This was part of the supply planning proof of concept work looking into implementation of the "informed push" replenishment model at PHC clinics. Comments and change requests subsequently collected during the UAT were consolidated to

inform further refinement of the functionality. Additional UAT of the new ordering functionality is planned to continue in Year 4.

With regard to the receiving functionality of SVS, the non-interfaced version of the receiving functionality was developed and tested with users in GP. Input received was incorporated into the existing UAT report, which already included input from the UAT conducted in Year 2.

GHSC-TA supported the drafting and finalization of a nationwide circular addressing minimum requirements to be applied when selecting an optimal electronic system to use at PHC health establishments to support medicine availability monitoring and medicine supply management. This circular was important for informing appropriate system selection to ensure the continuous flow of medicine availability and supply chain transactional information into the NSC. GHSC-TA also provided technical input towards *ad hoc* system maintenance and change requests throughout Year 3. These activities were largely transitioned to the AMD SVS Project Manager to be managed internally either directly by the Project Manager or through the SVS Steering Committee due to be established in Year 4. GHSC-TA developed the terms of reference and reporting templates to guide this steering committee and will play a key role in supporting implementation thereof.

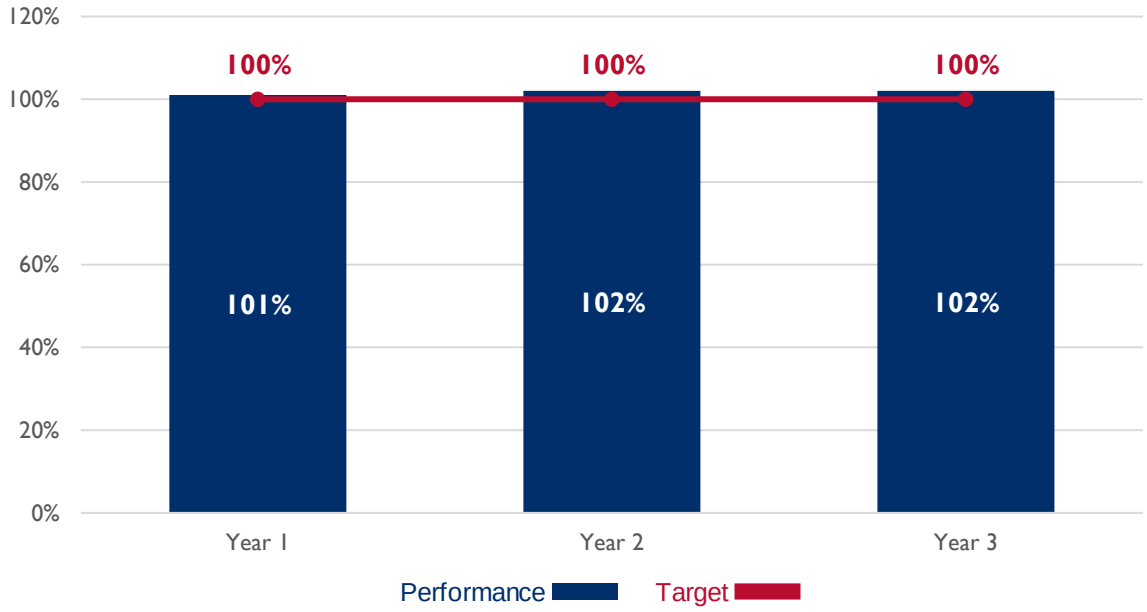
## OUTCOME LEVEL RESULTS

GHSC-TA hypothesizes that by helping to create an IT system landscape and supporting the AMD in the design and implementation of IT systems and the NSC, that the AMD will be empowered to more effectively deploy systems that support AMD strategy and enable evidence-based decision making, which will lead to improved medicine availability.

### KPI 17. PERCENTAGE OF APP TARGET FACILITIES REPORTING STOCK AVAILABILITY TO THE NATIONAL SURVEILLANCE CENTRE DASHBOARD

KPI 17 monitors the percentage of APP target health establishments reporting stock availability to the NSC dashboard. The NDoH increased the APP target in the last quarter of Year 3 to 3,621. Targets for PHC clinics, hospitals, and other medicine storage facilities were set at 3,277, 350, and 44 respectively. At the end of Year 3, a total of 3,697 facilities were reporting stock availability to the NSC dashboard (102%) shown in Figure 16.

*Figure 16: Percentage of APP target facilities reporting stock availability to the National Surveillance Centre Dashboard*




As reporting from sites using SVS is nearing saturation in the eight provinces using SVS, the NDoH is in the process of requesting the Western Cape to begin using similar electronic stock monitoring systems to enable full visibility of PHC clinics countrywide.

PHOTO CREEDIT YOZAYO

# IMPROVE FINANCIAL MANAGEMENT

Strong financial management processes as they relate to medicine procurement are essential for consistent and uninterrupted supply of medicine. Through more streamlined payment tracking and financial reporting processes, the AMD and provincial pharmaceutical services can better monitor and manage the payment of suppliers. Improved demand forecasting and planning processes allow for a more effective manner of calculating medicine budgets and monitoring financial management.

## ACTIVITIES AND ACHIEVEMENTS

### BUDGETING AND FINANCIAL MANAGEMENT

In efforts to promote strong financial management practices, GHSC-TA is supporting the AMD and provincial departments of health to develop a ring-fenced medicine budget and improve the budget forecasting process.

During the Presidential Health Summit held in October 2018, a resolution was made to **ring-fence the medicine budget**. Following the summit, GHSC-TA was tasked to assist with compiling the budgets for each of the provinces using the standard demand planning methodology and statistical forecasting tools described above to inform the creation of a ring-fenced budget. In Year 3, GHSC-TA developed **medicine forecasts and budgets** down to the health establishment level for all nine provinces for the 2020- 2021 budget cycle. Statistical forecasts were created for each medicine at every health establishment. The top 80% of medicines (by value) were reviewed in detail to increase the accuracy of the budgets. These forecasts were enriched with the TLD transition plans and the vaccine forecast that were generated from birth rate information. Some discrepancies regarding which medicines are included or excluded in the product list were found. Items such as accruals, medico-

legal costs, and depot trading accounts were not included in the budget prepared. The budget was extended to enable the measurement of the actual expenditure versus the budget and to map out the interaction models between province, national, and treasury.

The completed budgets were submitted to the HOPS for review and approval. A presentation to the Chief Financial Officers (forum was scheduled for early October 2019 for final approval.

## OUTCOME LEVEL RESULTS

GHSC-TA hypothesizes that building the capacity of the AMD and provincial pharmaceutical services to strengthen financial management will improve use of forecasting and budget information, accounting processes and financial monitoring and reporting. It is expected that prudent financial management processes will support improved medicine availability. GHSC-TA sought to measure the budget and financial management activities at the outcome level through monitoring the submission of payment packs. Unfortunately, there is no performance data to report at this time as GHSC-TA does not have access to the data sources. Originally, the program sought to use the current WMSs to inform this indicator; however, these systems do not provide the necessary data to track the submission of payment packs.

# ANNEX 1. PROGRESS SUMMARY

*Table 5: Key Performance Indicator Progress Summary*

| INDICATOR | REPORTING YEAR | BASELINE VALUE | YEAR 3 PROPOSED TARGET | YEAR 3 ACHIEVEMENT | % YEAR 3 ACHIEVEMENT |
|---|---|---|---|---|---|
| **OBJECTIVE 1 – IMPROVE SELECTION AND USE OF MEDICINE** | | | | | |
| Key Performance Indicator 1: Number of medicine reviews conducted by the Expert Review Committees. | FY19 | N/A | 25 | N/A | N/A |
| Key Performance Indicator 3: Percentage of recommendations on medicines selection utilizing HTA outputs. | FY19 | 0% | 10% | N/A | N/A |
| Key Performance Indicator 4: Number of formularies generated. | FY19 | 0 | 9 | N/A | N/A |
| Key Performance Indicator 5: Percentage of expenditures on non-Essential Medicine List items on the MHPL. | FY19 | N/A | <10% | N/A | N/A |
| **OBJECTIVE 2 – - SUPPORT OPTIMIZATION OF THE SUPPLY CHAIN** | | | | | |
| Key Performance Indicator 7: Percentage of ARVs units delivered by suppliers within contractual lead-time. | FY19 | 79% | 90% | 55% | 61% |
| Key Performance Indicator 8: Percentage of Master Procurement Catalogue medicine units excluding ARVs delivered by suppliers within contractual lead-time. | FY19 | 75% | 80% | 66% | 83% |
| Key Performance Indicator 9: Percentage of forecast accuracy on tenders. | FY19 | N/A | 62% | 36% | 58% |
| Key Performance Indicator 10: Percentage of assisted provinces demonstrating improvements in perfect order fulfilment on suppliers. | FY19 | 0% | 78% | 25% | 32% |
| Key Performance Indicator 11: Percentage of assisted provinces demonstrating improvement in order fulfilment cycle time on suppliers. | FY19 | 0% | 78% | 25% | 32% |
| Key Performance Indicator 12: Percentage availability of Master Procurement Catalogue items at healthcare establishments | PHC FY19 | 78% | 93% | 88% | 95% |

| INDICATOR | REPORTING YEAR | BASELINE VALUE | YEAR 3 PROPOSED TARGET | YEAR 3 ACHIEVEMENT | % YEAR 3 ACHIEVEMENT | | | |
|---|---|---|---|---|---|---|---|---|
| | Hospital FY19 | 78% | 93% | 84% | 90% | | | |
| Key Performance Indicator 14: Percentage of identified Master Procurement Catalogue medicines delivered to the designated hospitals via direct delivery | FY19 | N/A | 70% | N/A | N/A | | | |
| **OBJECTIVE 3 – STRENGTHEN GOVERNANCE** | | | | | | | | |
| No KPIs scheduled to be reported annually | | | | | | | | |
| **OBJECTIVE 4 – IMPROVE WORKFORCE MANAGEMENT** | | | | | | | | |
| No KPIs scheduled to be reported annually | | | | | | | | |
| **OBJECTIVE 5 – STRENGTHEN INFORMATION SYSTEMS AND INFORMATION MANAGEMENT** | | | | | | | | |
| Key Performance Indicator 17: Percentage of APP target facilities reporting stock availability to National Surveillance Centre dashboard | | | | FY19 | 100% | 100% | 102% | 102% |
| Key Performance Indicator 18: Percentage of Data Quality Assessments that receives a passing score | | | | FY19 | N/A | 80% | N/A | N/A |
| Key Performance Indicator 19: Percentage of assisted facilities where gCommerce is utilized | | | | FY19 | 0% | 20% | N/A | N/A |
| **OBJECTIVE 6 – IMPROVE FINANCIAL MANAGEMENT** | | | | | | | | |
| Key Performance Indicator 20: Percentage of payment packs submitted on time[6] | | | | FY19 | N/A | N/A | N/A | N/A |

*6 There is no performance data to report at this time as GHSC-TA does not have access to data sources to inform KPI 20. Originally, the program sought to use the current systems MEDSAS/PDSX to inform this indicator; however, these systems do not provide the necessary data to track the submission of payment packs. The program has designed gCommerce to track the submission time of payment packs and this will be used to inform this indicator as gCommerce goes live within each province.*

## ANNEX 2. SUCCESS STORIES

Three success stories from the GHSC-TA project follow and are formatted to facilitate printing as single page two-sided handouts.

PHOTO CREDIT OPHID TRUST

# NOW YOU SEE IT

## Improving Medicine Availability in South Africa's Provinces

Health establishment workers in South Africa have challenging jobs. Every day, they receive patients in need of essential medicines. The clinicians must provide the life-saving treatment and care that these patients need in the appropriate quantities, but that's not all—they must also contend with intermittent stock shortages. Medicine availability is one of the main challenges to successful health supply chain management and health outcomes in South Africa. Sometimes, clinicians don't have the medicines their patients need on hand. When this happens, the patients often have to return to the health establishment on another day, which takes time and resources that they cannot always spare. For clinicians and other public primary health care (PHC) providers to ensure that they have the correct number and selection of medicines in stock to meet patients' demands, they need an accurate understanding of the need for those medicines in their provinces, districts, and sub districts, as well as an understanding of how stock shortages at other levels of the supply chain may affect their future stock levels.

The United States Agency for International Development (USAID)-funded Global Health Supply Chain Program – Technical Assistance (GHSC-TA) is building the capacity of the National Surveillance Centre (NSC) and the associated Provincial Surveillance Centre (PSC) to improve medicine visibility and availability across South Africa. The National Department of Health conceptualized the NSC in 2015 to provide visibility of medicine availability across all levels of the public health supply chain. The NSC supports medicine availability monitoring by visualizing the medicine availability data that suppliers, provincial depots, and health establishments submit to inform decision-making through agreed medicine availability key performance indicators.

GHSC-TA developed the dashboards as a way for the NSC and PSC licensed users to easily visualize and interpret the data on

***"The dashboards have helped me to submit reports about medicine availability … In collaboration with facilities we can then identify stock problems on certain items …"***

***– Dashboard User***

medicine availability and compare it to the NDOH's strategic objectives and day-to-day operational performance as well as to allow for the timely escalation of medicine availability-related issues to the relevant stakeholders. The data is available for all levels of the supply chain, meaning PSC teams and other stakeholders can pinpoint challenges at the supplier, provincial depot, and health establishment levels that may impact their stock levels.

GHSC-TA didn't just create the dashboards. The program also created a training plan for users of the dashboards. According to one participant, "The dashboards have helped me to submit reports about medicine availability to my supervisor as well as to all facilities. In collaboration with facilities we can then identify stock problems on certain items and investigate whether they [the facility] still need the item, or if the items were incorrectly ordered." The NSC dashboards are a tool for pharmacists and other health establishment clinicians to better inform their decision-making around medicine availability and stock levels management.

Now, PSC users and other provincial medicine availability stakeholders are better informed on how to use the NSC dashboards to quickly resolve medicine availability issues as well as to predict and prevent future shortages. Since the trainings commenced, the number of dashboard users has steadily increased over time, contributing to improved medicine availability and therefore improved health outcomes for South Africa's most vulnerable populations, as they are increasingly able to receive their life-saving medications when and where they need them.

# When Inaccurate Data Can Be Life-Threatening

## Improving Demand Planning at the National Level

PHOTO CREDIT GHSC-TA

A single mother living with HIV in South Africa takes her medicine every day to manage her disease. Even so, she has not managed to achieve viral load suppression. Every two months, she leaves her children with her neighbor, walks two kilometers to the nearest taxi collection point, and takes two taxis to the clinic to collect her medicines. After a three-hour journey, she finally arrives at the clinic. However, when the nurse checks the stock room she finds that, the clinic is out of stock of one of the medicines that she needs, so the mother is told to come back another day.The impact of that stock out on that mother has profound and lasting personal, familial, and societal effects.

The United States Agency for International Development (USAID)-funded Global Health Supply Chain Program – Technical Assistance (GHSC-TA) is working with provincial departments of health across South Africa to increase medicine availability countrywide. GHSC-TA works with the National Department of Health (NDoH) to implement innovative processes, tools, and workforce training that will transform South African supply chain planning. This project will support public health facilities to accurately anticipate patients' needs and help make sure that they keep as many medicines in stock as needed.

GHSC-TA is training staff to perform accurate demand planning that can be used to inform procurement activities and support supplier relationship management. By developing new processes and governance structures GHSC-TA is rolling out a set of interventions to improve demand planning for antiretroviral medicines (ARVs), tuberculosis (TB) treatment, vaccines, and other essential medicines.

***More accurate demand planning enables accurate procurement and improved supplier relationship management.***

There are several reasons why the clinic mentioned at the beginning of the story may not have had the ARVs in stock. Perhaps they had ordered less than they needed to have in stock because of inaccurate projections of demand. More accurate demand planning at the provincial level could help eliminate this issue. Or, perhaps the supplier did not fulfill the facility's order that month because of a missed payment at the depot level. In that case, an accurately generated budget from the NDoH can be used to track actual performance and ensure improved supplier payments, leading to improved product availability. The key is an accurate forecast.

GHSC-TA's demand planning activities have built the capacity of the NDOH to produce accurate demand planning forecasts on its own. Not only does this increase the capacity of the NDoH, but it also improves the sustainability of the process.

Hospital pharmacies and other public health establishments now have an improved projection of which medicines they should keep in stock and at what levels. With support from the NDoH's more accurate demand planning forecasts, these providers can shift their orders to more accurately reflect the necessary stock levels. So, the next time the mother makes the long journey to pick up her medicines, the clinic should be able to provide the necessary treatment without issue.

# DIGITAL SOLUTIONS AT OUR FINGERTIPS

## Using Technology to Improve Medicine Availability in South Africa

PHOTO CREDIT GHSC-TA

Professional Nurse, Mr Tauhlole Masemola, works at Thusong Gateway Clinic, located outside Lichtenburg in South Africa's North West province. Thusong Gateway Clinic, like many other public Primary Health Care (PHC) facilities, is the first stop for health care services for many South Africans. The clinic provides access to care for a variety of conditions and the medicines to treat those conditions, including anti-retrovirals (ARVs) and medicines used to treat tuberculosis (TB). Prior to 2016, Thusong Gateway Clinic relied solely on paper-based systems to keep track of the medicines they had in stock and place replenishment orders. In many cases, use of these inadequate paper-based systems hampered optimal medicine supply management and often contributed to stock-outs. These paper-based systems also made it difficult for the hospital pharmacy that supplies Thusong Gateway Clinic to adequately support inventory management at the clinic using standardized supply planning principles for reordering medicines. As a result, the hospital pharmacy did not always have the medicines required by the clinic when needed – leaving patients at risk of going without treatment.

In 2016 the South African National Department of Health (NDoH) rolled out the Stock Visibility System (SVS) to all primary health care clinics in eight provinces in South Africa. SVS enables the electronic monitoring of stock at even the most remote and rural facilities. SVS is a networked, mobile application and web-based management tool used to proactively manage medicine availability and address stock-outs in the "last mile" of the health care system.

Health care providers like Nurse Masemola regularly record stock levels at their clinics on the SVS application. The data is synchronized in to a cloud-based server where it is available for view by stakeholders at all levels of the supply chain, including the hospitals that supply PHC clinics.

In 2017 the NDoH embarked on efforts to include additional functionality to the SVS mobile application to allow the digital tool to be used to manage other supply chain transactions, namely electronic ordering and receiving of medicines.

The United States Agency for International Development (USAID)-funded Global Health Supply Chain Program – Technical

Assistance (GHSC-TA) has assisted with the implementation and development of SVS since 2016. In addition to this, GHSC-TA is also supporting the NDoH to develop and implement an informed push replenishment management model that is digitally enabled by systems such as SVS. This new approach to replenishment management is being conceptualized, refined and now tested in the North West province with Thusong Gateway Clinic being one of the first sites in South Africa to use the new approach, which combines the use of the new functionality of SVS with this supply planning and replenishment process.

Thusong Gateway Clinic is one of two health establishments in the province where GHSC-TA is testing a new method of stock replenishment using SVS. For Nurse Masemola, the integration of supply planning with the SVS stock capturing process has proved beneficial for improving availability of medicines and therefore the quality of care at the facility.

> ***"[With SVS Using SVS and the informed push replenishment], you always have enough stock. You won't run out."***
>
> ***– Nurse Masemola***

According to him, "[Using SVS and the informed push replenishment], you always have enough stock. You won't run out."

In the past, Nurse Masemola would reorder medicines and other supplies when he noticed they were low in stock or not available at all. When replenishing stock, he determined the reorder quantity based on his many years of experience and personal observations of how many patients were coming to the clinic in need of that particular treatment. That resulted in him sometimes ordering too many or too few medicines as his estimated quantities were not based on actual need. Now, by using SVS as part of his routine process to keep track of the clinic's stock, he can use the new ordering function of SVS to better inform his orders.

SVS relies on inventory management parameters developed by GHSC-TA supply planning activities to inform Nurse Masemola of the recommended order quantities to place for all the medicines used in his clinic. As he captures his stock levels, Nurse Masemola receives alerts where stock is running low, so he knows to reorder these medicines and how much to order. When Nurse Masemola updates the stock level for a medicine that is at or below the minimum stock level, the application automatically prompts him to order enough stock to get his level back up to the maximum stock level to avoid any supply interruptions.

With GHSC-TA support, Nurse Masemola is now fully equipped to better manage stock at Thusong Gateway Clinic using the SVS application. By capturing stock availability and placing replenishment orders electronically, Nurse Masemola is less likely to overlook medicines that could potentially become stocked out if not ordered and more likely to have all the medicines in stock that his patients need. Moving forward, the patients at Thusong Gateway Clinic, and other similar PHC clinics in South Africa where this digitally-enabled replenishment management process used, will receive their medicines on time and when needed, thereby contributing to the successful management of conditions like HIV/AIDs, TB, and other diseases.