



GLOBAL HEALTH SUPPLY CHAIN PROGRAM – TECHNICAL ASSISTANCE SOUTH AFRICA

Year 5 Annual Report

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ACRONYMS

AMD	Affordable Medicines Directorate
AMR	Antimicrobial Resistance
ARC	Africa Resource Centre
ART	Antiretroviral Therapy
ARV	Antiretroviral
BAS	Basic Accounting System
BEC	Bid Evaluation Committee
BSC	Bid Specification Committee
CCMDD	Central Chronic Medicine Dispensing and Distribution
DTIC	Department of Trade Industry and Competition
CMU	Contract Management Unit
EDP	Essential Drugs Program
EML	Essential Medicines List
ERC	Expert Review Committee
GHSC-TA	Global Health Supply Chain Program – Technical Assistance
GoSA	Government of South Africa
HOPS	Head of Pharmaceutical Services
HTA	Health Technology Assessment
IMAT	Improved Medicine Availability Team
KPI	Key Performance Indicator
MAC	Ministerial Advisory Committee
MAC-AMR	Ministerial Advisory Committee on Antimicrobial Resistance
MEDSAS	Medical Supply Administration System
MFL	Master Facility List
MHPL	Master Health Product List
MMDS	Medicine Master Data System
NDoH	National Department of Health

NEMLC	National Essential Medicines List Committee
NHPVS	National Health Private/Public Vaccine System
NICD	National Institute for Communicable Diseases
NSC	National Surveillance Center
PDoh	Provincial Department of Health
PHC	Primary Health Care
PPE	Personal Protective Equipment
PS	Pharmaceutical Services
PST	Provincial Support Team
PTC	Pharmaceutical and Therapeutics Committee
RMU	Rational Medicine Use
SAHPRA	South African Health Products Regulatory Authority
SAPC	South African Pharmacy Council
SCOA	Standard Chart of Accounts
SIMA	Strategy for Improved Medicine Availability
SITA	State Information Technology Agency
SLA	Service Level Agreement
SOP	Standard Operating Procedure
SRCC	Special Requirements and Conditions of Contract
STG	Standard Treatment Guideline
SVS	Stock Visibility System
TA	Technical Assistance
TB	Tuberculosis
TEE	Tenofovir/Emtricitabine/Efavirenz
TLART	Third-Line Antiretroviral treatment
TLD	Tenofovir/Lamivudine/Dolutegravir
TOR	Terms of Reference

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 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 (PDoHs). 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.

PURPOSE OF THIS DOCUMENT

This Year 5 Annual Report details GHSC-TA program activities and achievements from October 2020 through September 2021 by objective and, where possible, provides results for each of the six objectives against key performance indicators (KPIs).

YEAR 5 ACTIVITIES AND ACHIEVEMENTS

Year 5 activities continued to focus on strengthening the health supply chain at the national and provincial levels. At the provincial level, GHSC-TA continued to provide support through the provincial support team (PST), which facilitates the implementation and institutionalization of supply chain reforms in the provinces. In addition, the team continued efforts to support the Government of South Africa (GoSA) in the national response to the COVID-19 pandemic as well as the rollout of COVID-19 vaccines. Program activities are segmented into projects and technical assistance areas, representing capacity-building interventions across multiple functional areas. These activities align with the six program objectives. A high-level overview of activities and accomplishments for each objective follows.

OBJECTIVE 1: IMPROVE SELECTION AND USE OF MEDICINES

GHSC-TA supports the AMD to improve the selection of medicines for patients nationally and ensure these medicines are accessible and available when they are required. During the reporting period, GHSC-TA technical assistance included support related to governance, communications, and the tendering process. GHSC-TA assisted the AMD to develop submissions to the Minister of Health for the appointment of the National Essential Medicines List Committee (NEMLC), the Tertiary and Quaternary Expert Review Committee (ERC) and the NEMLC subcommittee on COVID-19 therapeutics. GHSC-TA also updated the NEMLC terms of reference (TOR) and provided support with governance of the NEMLC, Pediatric ERC and Tertiary/Quaternary ERC meetings.

GHSC-TA assisted the NDoH to review the quality of the Essential Medicines List (EML) Clinical Guide application, drafted the quarterly NEMLC Bulletins to communicate decisions to stakeholders, and developed audience-tailored communication materials for two conferences.

GHSC-TA provided technical assistance with the review of the Health Technology Assessment (HTA) Methods Guide. GHSC-TA performed analyses on the use of albendazole, mebendazole, nystatin, and miconazole on a national basis, and developed a draft pharmacovigilance plan for a donation of dexamethasone for the treatment of patients with COVID-19.

GHSC-TA assisted with meetings related to the antiretroviral (ARV) tender, and developing and consolidating specifications for the tablet tender, processing Third-Line Antiretroviral treatment (TLART) applications, developing a TOR for the Ministerial Advisory Committee on Antimicrobial Resistance (MAC-AMR) Infection Prevention and Control and Stewardship technical working group, and developing the KwaZulu-Natal Provincial Formulary Report. See page 12 for details on Objective 1 activities and progress against related key performance indicators (KPIs).

OBJECTIVE 2: SUPPORT OPTIMIZATION OF THE SUPPLY CHAIN

Through strengthening the NDoH'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 to enable better oversight and decision-making. During the reporting period, GHSC-TA continued demand planning implementation that began in March 2018 in Eastern Cape, North West, Gauteng, and KwaZulu-Natal to institutionalize the demand forecasting process. In this period, GHSC-TA expanded demand planning to two additional provinces: Free State and Limpopo. This work includes establishing demand review committees to review, agree upon, and sign off on future demand volumes. The forecast is at facility/item level per month for the next three years. Further, GHSC-TA generated bottom-up forecasts for all provinces as part of the medicine budget planning process and compiled in-contract demand forecasts to support the Contract Management Unit (CMU) to review actual and projected volumes against the original contract volumes, enabling robust discussions with suppliers. GHSC-TA also supported NDoH in the recruitment process for a centralized demand planning team.

Building on the successful proof of concept in North West, the replenishment planning team expanded the informed push (advised pull) implementation to five sites in the Free State and 12 sites in the North West. To scale up implementation in the Free State, GHSC-TA has continued to work closely with the PDoH to clean and align districts' formularies and depot lists to the Master Health Product List (MHPL), and roll out implementation of optimized min-max levels in three of the five districts in the province. Setting up min-max stock levels on stock management systems is a key input to the advised pull process.

GHSC-TA supported the NDoH with generating a COVID-19 demand forecast, initially updated weekly and subsequently as needed. GHSC-TA support included identifying the medicines required and the number of units per patient, working with the National COVID-19 EPI modelling team to determine the number of patients projected to require treatment. This forecast lift was then added to the baseline forecast to provide a final COVID-19 forecast per province.

See page 16 for details on Objective 2 activities and progress against related KPIs.

OBJECTIVE 3: STRENGTHEN GOVERNANCE

GHSC-TA assists the AMD and provincial pharmaceutical services with improving governance by strengthening the policy and legislative framework, establishing appropriate governance structures, and building capacity to provide the necessary oversight. During the reporting period, GHSC-TA assisted AMD with consolidating public comment received on regulations relating to education, registration, and practice of pharmacy support personnel and commenced reviewing the comments in collaboration with AMD and the South African Pharmacy Council (SAPC). The team also developed the draft guidelines for supply planning and continued strengthening governance related to contracting and contract management, including revising the TORs for relevant governance structures and developing policy principles, standard operating procedures (SOPs) and decision criteria for various processes.

See page 29 for details on Objective 3 activities and progress against related KPIs.

OBJECTIVE 4: IMPROVE WORKFORCE MANAGEMENT

GHSC-TA provides technical assistance to strengthen the workforce and organizational structures within the AMD to perform the functions necessary to improve medicine availability and support the implementation of the Strategy for Improved Medicine Availability (SIMA). During the reporting period, GHSC-TA developed the transition plan for resources supporting AMD as contract managers. The plan included a proposal on the reallocation of supplier portfolios to AMD contract managers, which was accepted by AMD. In addition, GHSC-TA support during the reporting period included training relating to the National Surveillance Center (NSC) and in-contract demand planning tool.

See page 33 for details on Objective 4 activities and progress against related KPIs.

OBJECTIVE 5: STRENGTHEN INFORMATION SYSTEMS AND INFORMATION MANAGEMENT

Information systems based on a robust IT architecture roadmap are critical to improving evidence-based decision making and effective management of the medicine supply chain. GHSC-TA supports data governance and management of master data elements to enable interoperability of information systems. During the reporting period, GHSC-TA supported further development of the Medicine Master Data System (MMDS), including substantial improvements to contracting data, user management, bulk data upload, and improved functionality for compliance with Ideal Clinic Tracer List requirements. GHSC-TA MMDS support also included roll-out of the formulary tool for the Free State provincial formulary and health establishments in Fezile Dabi and Thabo Mofutsanyane districts, with roll-out in Xhariep district underway as of the end of the reporting period. Additionally, GHSC-TA commenced roll-out in Ngaka Modiri Molema district in North West, and completed preliminary data analysis in preparation for roll-out in the Eastern Cape.

GHSC-TA completed the NSC's migration to an improved server and hosting environment. This support involved configuration of the new server, migration of all NSC workbooks to the new server, and the preparation and dissemination of communication packs and the NSC URL and username credentials for NSC users. Migration to the new server provided an opportunity to publish two new dashboards, the demand planning dashboard and the integrated view trend dashboard. Upon approval from AMD, the previous NSC server link was deactivated in February 2021. GHSC-TA also completed migration of all databases that support data loading to the NSC dashboards to the Microsoft Azure

cloud environment. GHSC-TA initiated discussions with AMD about transitioning support and reporting functions to AMD, in preparation for the close-out of the GHSC-TA program.

See page 35 for details on Objective 5 activities and progress against related KPIs.

OBJECTIVE 6: IMPROVE FINANCIAL MANAGEMENT

Due to the close linkages with Objective 2, activities in this area has been integrated into the Demand Planning and Financial Management work stream. Therefore, this report does not include separate reporting on activities and progress under this objective.

INTRODUCTION

South Africa remains at the center of the worldwide AIDS epidemic, with an estimated 7.9 million¹ people living with the disease. In addition, the country has the third-highest burden of tuberculosis (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, USAID launched 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.

The availability of medicine 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, not only is the health of patients jeopardized, but patients must return to the health establishment, at considerable personal expense and inconvenience, to collect their medicines at a future date. 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 public health supply chain. Simultaneously, the program is working with PDoHs to increase medicine availability countrywide. By improving health supply chain visibility, the program also supports public health establishments' efforts to anticipate patients' needs more accurately and position enough stocks of medicines where and when they are needed.

GHSC-TA provides TA directly to the AMD of the NDoH and the Pharmaceutical Services (PS) directorates of the provinces. The program's overall aim 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. In addition, since the outbreak of COVID-19 in South Africa in March 2020, GHSC-TA has been supporting the GoSA in its national COVID-19 response, including roll-out of the vaccination program.

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

PROGRAM OBJECTIVES

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

¹ *South African National AIDS Council, Annual Performance Plan 2019-2020*. August 2019. Available at <https://sanac.org.za/wp-content/uploads/2019/08/Annual-Performance-Plan-201920.pdf>.

² *USAID Where We Work, South Africa, Global Health*. October 19, 2020. Available at <https://www.usaid.gov/south-africa/global-health>.

GHSC-TA activities in support of the six objectives outlined above are segmented into nine main activities, representing capacity-building interventions across multiple functional areas that are shown in Table I.

Table I Activity Descriptions

Activity	Description	Objective
1. Medicine Master Data System	Assist AMD in designing (in collaboration with the contracted service provider responsible for development) and implementing the MMDS. This system incorporates the Master Health Product List (MHPL), location hierarchy, and formulary management tool.	Objective 5
2. National Surveillance Center	Support the operationalization and optimization of the NSC at the national and provincial levels to improve visibility into the performance of the supply chain and strengthen analytics to inform decision making.	Objective 5
3. Supply Chain Systems	Design, implement, transition, and promote the provincial, district, and health establishment utilization of supply chain systems and applications, including advising on the design and implementation of enhancements to the Stock Visibility System (SVS).	Objective 5
4. Demand Planning and Budgeting	Develop and implement appropriate processes, tools, and human resources capabilities at national and provincial levels to implement demand planning. Strengthen both national and provincial structures and processes for budgeting and financial reporting for medicines.	Objective 2
5. Strengthen Medicine Selection and Use	Develop and implement policies, guidelines, tools, and approaches to support evidence-based selection and use of medicines.	Objective 1
6. Governance and Legislation	Support good governance by implementing or strengthening relevant structures within the AMD and PDoHs (supported by the necessary TORs), and develop and/or review legislation, policies, guidelines, processes, and procedures. Advise AMD on contracting with medicine suppliers and associated post-award contract management.	Objective 3

Activity	Description	Objective
7. Tenofovir / lamivudine /dolutegravir (TLD) Transition	Provide supply chain-related support for the transition of eligible patients living with HIV to tenofovir / lamivudine / dolutegravir (TLD) or dolutegravir (DTC) containing products, as appropriate.	Objective 2
8. Replenishment Planning	Design and implement activities leveraging medicine supply management best practices to ensure that essential medicines are available at health establishments through the standardization of medicine master data, strengthening of formulary management, the use of minimum/maximum (min-max) stock levels, and introduction of an advised-pull approach to replenishment planning.	Objective 2
9. Provincial Support	Support supply chain optimization at the provincial level through implementing and institutionalizing supply chain reforms.	All objectives

GHSC-TA assists the AMD with implementing the Strategy for Improved Medicine Availability (SIMA) (2016—2021), which encompasses five core functions: selection of medicine and technologies, contracting of suppliers, supply chain management, contract management per the applicable requirements and conditions of the contract, and promotion of RMU. These core 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.

This work directly supports the USAID/South Africa’s Country Development Cooperation Strategy results framework by supporting Development Objective 1 – Health outcomes for South Africans improved and the NDoH SIMA and the NDoH annual performance plans.

YEAR 5 OVERVIEW

GHSC-TA activities in Year 5 continued to focus on strengthening the medicine supply chain at the national and provincial levels. GHSC-TA also continued to support the GoSA’s COVID-19 response with respect to the medicines and personal protective equipment (PPE) needed by staff and patients. During this reporting period, GHSC-TA worked closely with NDoH and the provinces in the planning and implementation of the national roll-out of COVID-19 vaccines in both the public and the private sector.

The response to COVID-19 has required intensifying GHSC-TA’s supply chain activities and has allowed the program, AMD, and the provinces to test the robustness of processes and tools previously developed. Lessons learned from the pandemic, detailed on page 59, have provided opportunities to strengthen governance and supply chain processes further and, in particular, enhance and expand the NSC and institutionalize its use.

Despite COVID-19, GHSC-TA has managed to implement most planned activities with minimal interruptions or delays, albeit with some adjustments to timelines and reallocation of resources. In Year 5, GHSC-TA revised the structure of existing work streams to ensure alignment with Country Operational Plan COP20 work plan activities. This process led to the establishment of the replenishment planning work stream, the consolidation of the demand planning and financial work streams, and the consolidation of the work streams related to contracting, contract management, and governance.

YEAR 5 ACHIEVEMENTS

Table 2 provides an overview of Year 5 objectives and their key achievements.

Table 2 Key Year 5 Achievements

OBJECTIVE 1: IMPROVE SELECTION AND USE OF MEDICINES
1. Developed submissions for the call for application, extension of terms of office and appointment of the NEMLC and Tertiary and Quaternary ERC.
2. Assisted with the development of a provincial formulary report for KwaZulu-Natal.
3. Developed a TOR for the MAC-AMR Infection Prevention and Control and Stewardship technical working group.
4. Provided secretariat support to the MAC on COVID-19.
5. Performed analyses on the national use of albendazole and mebendazole, as well as nystatin and miconazole.
OBJECTIVE 2: SUPPORT OPTIMIZATION OF THE SUPPLY CHAIN
1. Continued demand planning implementation in four provinces - Eastern Cape, North West, Gauteng and KwaZulu-Natal and expanded to two more provinces - Free State and Western Cape.
2. Developed bottom-up forecasts for all provinces as part of the ring-fenced medicine budget planning process, with budget approval provided by the provincial HOPS.
3. Supported the CMU with supplier engagement, TOR documents, and tools for supporting and standardizing the in-contracting demand forecasting process.
4. Assisted with the design of a central demand planning unit at AMD and the appointment and training of two national demand planners.
5. Working with AMD, used the approved demand forecasting processes to develop medicine forecasts in response to COVID-19.

OBJECTIVE 3: STRENGTHEN GOVERNANCE

1. Consolidated public comment received on the draft regulations relating to pharmacy support personnel.
2. Finalized the Free State Service Level Agreement between the depot and demanders.
3. Developed bid evaluation rules and a meeting minutes template for Bid Evaluation Committee (BEC) meetings.
4. Developed TORs for the national structures tasked with addressing challenges relating to medicine availability - the Improved Medicine Availability Team (IMAT) and IMAT Exploded.
5. Developed policy principles for centralized allocation of stock, conducting supplier due diligence (site visits), and managing supplier non-compliance.

OBJECTIVE 4: IMPROVE WORKFORCE MANAGEMENT

1. Adjusted the Mmabatho Medical Stores structure and key job descriptions based on final input from the North West Administrator and her team.
2. Costed the adjusted North West pharmaceutical services organizational structure and provided to provincial corporate services for inclusion in the ideal structure of the province.
3. Transitioned all workforce management support interventions to the management of Mmabatho Medical Stores, the Administrator, and the Acting Chief Director: Tertiary and Clinical Services.

OBJECTIVE 5: STRENGTHEN INFORMATION SYSTEMS AND INFORMATION MANAGEMENT

1. Supported system development efforts for the MMDS “Ideal Clinic” Tracer List to improve formulary governance.
2. Supported system development efforts for reworking of MMDS user management for improved clarity of roles and segregation of duties.
3. Supported system development efforts for reworking of MMDS contract data structures to better accommodate contract history.
4. Assisted with the roll-out of the MMDS formulary module in Fezile Dabi, Thabo Mofutsanyane and Xhariep districts in the FS with the formularies of 130 facilities now on the system.
5. Created standard operating procedures (SOPs) for medicine and contract data management on the MMDS.

-
6. Increased connections to the RxSolution reporting API to 326 sites across all provinces (excluding the Western Cape).
-
7. Completed the update of three NSC navigation guides to accommodate the transition to the new server, and created four new navigation guides; demand planning dashboard, APP target view, TEE/TLT transition guide, and the AMD scorecard.
-
8. Completed the migration of the NSC to a new and improved server, as well as the migration of the databases feeding into the NSC onto the Microsoft Azure hosting platform.
-
9. Developed the reporting compliance trend views and published these to the integrated view trend dashboard.
-
10. SVS eOrdering rolled out to five sites in the Free State, and 12 sites in the North West.
-
11. “COVID-19 instance” of SVS implemented to assist with the national COVID response.
-

OBJECTIVE 6: IMPROVE FINANCIAL MANAGEMENT

1. Assisted with the development and review of pharmaceutical forecasts and budgets for all nine provinces for the 2021–2022 cycle down to health establishment level for over 4,000 health establishments.

PROGRESS TOWARDS GOAL – INCREASED MEDICINE AVAILABILITY

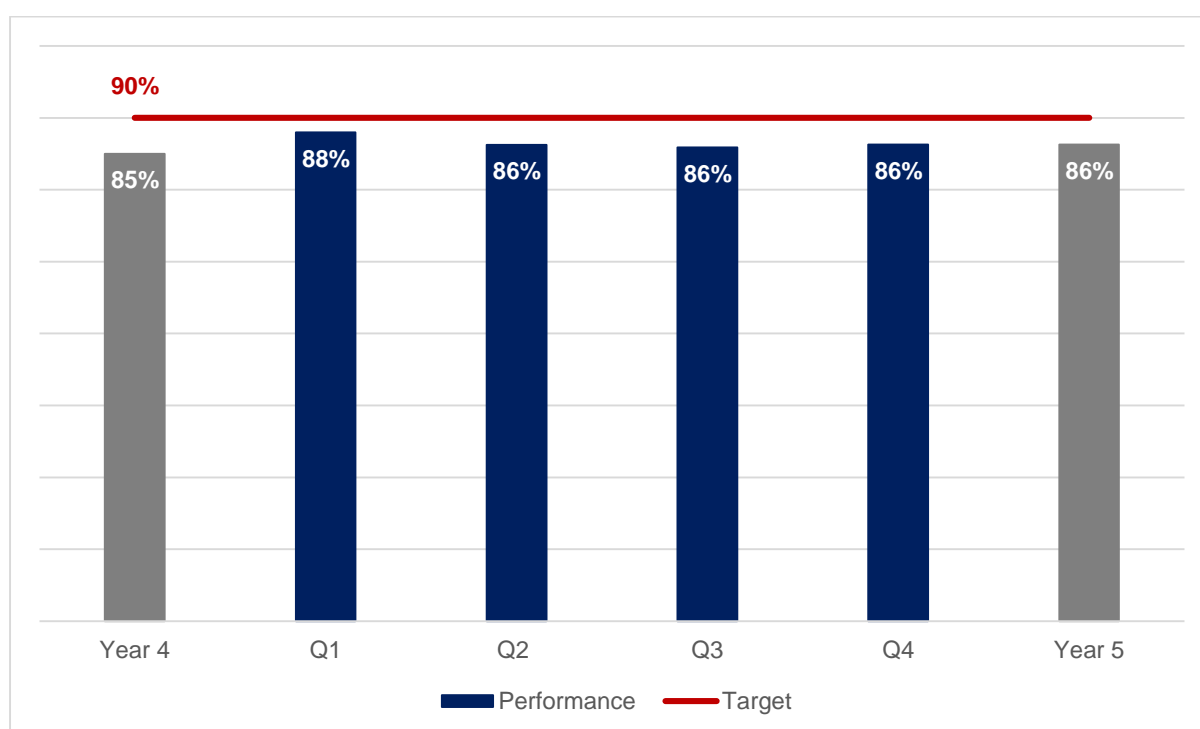
As mentioned previously, the overall aim of the program is to assist in improving access to, and availability of the medicines and related commodities needed to prevent and treat HIV/AIDS, TB, and associated conditions and disorders. Progress in this regard is monitored nationally at all levels of care and is reported via the NSC.

KPI 1. OVERALL PERCENTAGE MEDICINE AVAILABILITY

At the end of Year 5, overall medicine availability, defined as the percentage of active line items with stock available in the bulk medicine storage area(s), medicine room(s), or dispensary which appear on the formulary of the health establishment, was 86 percent (Figure 1) across all commodities, against the NDoH target of 90 percent. Medicine availability was steady throughout the year, fluctuating slightly between 86 and 88 percent, with performance higher at the beginning of the period.

At the health establishment level, medicine availability at primary health care (PHC) clinics was higher at the beginning of the year (88 percent), declined slightly mid-year, and improved by the end of the year (87 percent). On the other hand, hospital performance declined slightly from 85 to 83 percent by the end of the year.

Figure 1 Overall Percentage Medicine Availability in Year 5



In Year 5, GHSC-TA continued to provide tailored assistance to provincial pharmaceutical services through the PST, flagging and addressing issues identified in each province. Free State, Gauteng and KwaZulu-Natal in particular, saw improvements in medicine availability during this period. In quarters 2 and 3, API shortages, production-related challenges, and reduced staff capacity led to increased lead times, and delayed or non-payment of suppliers in some provinces. An ongoing challenge is the lack of customized formularies, particularly at warehouses and hospitals, with GHSC-TA continuing to provide support to address formulary customization issues. Moreover, GHSC-TA provided technical assistance to improve the budgeting process for medicines.

The PST worked with the provinces and the District Support Partners (DSPs) to resolve medicine availability issues and identify collective efforts to support pharmaceutical services and improve availability, particularly in Free State, KwaZulu-Natal and Eastern Cape. In KwaZulu-Natal, GHSC-TA flagged for further investigation by district pharmacy managers, health establishments with out-of-stock items without orders placed. GHSC-TA also helped the HOPS coordinate the framework for the meeting with pharmacy managers on budgeting, reporting compliance, and medicine availability. In the Eastern Cape, GHSC-TA assisted with formulary management and user support, including report writing at some RxSolution sites to improve NSC data quality and reporting compliance.

With the ongoing COVID-19 pandemic, it is essential that patients most at risk of complications due to HIV, TB and other chronic conditions receive the treatment they need. Availability of ARVs remained above target throughout the year, at 93 percent by the end of the year. Availability of TB medicines also remained stable throughout the year. In all provinces, medicine availability challenges were caused by operational issues due to the impact of COVID-19 on provincial personnel and operations.



OBJECTIVE 1: IMPROVE SELECTION AND USE OF MEDICINES

South Africa's unique disease burden shapes its 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 population's health care needs, including medicines and medical-related health technologies. Limited funds must be allocated according to an evidence-based approach to provide the best quality health care to all South Africans.

In addition, South Africa's public health care system must match the medicine available to meet patients' needs. Through the relevant governance bodies such as the NEMLC, the AMD is responsible for supporting the selection and use of medicines for patients nationally and making sure these medicines are accessible and available when and where required.

ACTIVITIES AND ACHIEVEMENTS

GHSC-TA is working with the AMD to strengthen medicine selection and RMU to provide an accountable mechanism to support decision making related to the funding, cost, and use of medicines and health technologies in South Africa. During Year 5, GHSC-TA continued assisting the NDoH to strengthen the selection and use of medicines to support the attainment of universal health coverage.

Health Technology Assessments. During Year 5, GHSC-TA reviewed the new draft Health Technology Assessment (HTA) Methods Guide (Reviewers Manual) for alignment of terminology and concepts with the National Pharmaceutical and Therapeutics Committees (PTC) Guideline and National Formulary Guideline. The program also provided assistance convening stakeholders and supporting the NEMLC discussion on the guide. The program drafted a submission for the Director-General of Health to approve the publication of the public stakeholder consultation notice for the HTA Methods Guide, with the purpose of gathering wide stakeholder input to ensure efficient implementation and quality. GHSC-TA also provided input into an online submission of the 2021 Global Survey on HTA and drafted a submission and letter to inform the Director-General of Health of the survey.

Support to NEMLC and the Expert Review Committees. GHSC-TA assisted with the management of the NEMLC and its ERCs, ensuring continuity in activities related to the selection of medicines onto the EML during the COVID-19 pandemic. This included drafting submissions and letters for the Minister of Health to extend the terms of office of the NEMLC and Tertiary and Quaternary ERC and Pediatric Hospital ERC. The program also assisted the AMD with a call for applications to the new NEMLC and Tertiary and Quaternary ERC and a submission and letters to request provincial members of the Executive Council to nominate an official to the NEMLC. GHSC-TA consolidated applications into a database and, following AMD's review of applicants, GHSC-TA drafted submissions and letters to request the Minister of Health to appoint the Tertiary and Quaternary ERC. GHSC-TA drafted a submission for the Acting Minister of Health in support of the ministerial appointment of the NEMLC subcommittee on COVID-19 therapeutics.

GHSC-TA's support to the governance of the NEMLC, Pediatric ERC and Tertiary and Quaternary ERC meetings included consolidating declarations of interest and drafting quarterly NEMLC bulletins to communicate decisions made at meetings held in March, June, and July. GHSC-TA also helped update the NEMLC TOR to include selection criteria for applicants to the Committee and presented these criteria for ratification to NEMLC at its June meeting. The program updated the declaration of interest forms related to the AMD Conflict of Interest policy to address challenges regarding lack of understanding of the concept of a "commercial entity" by individuals completing the forms. Finally, GHSC-TA drafted a submission for the Director-General to approve the National Policy for Lodging an Appeal Against a Medicine-Related Decision of the NEMLC.

Rational Medicine Use Support. During Year 5, GHSC-TA assisted the AMD with communicating information relating to the Standard Treatment Guidelines (STGs) and Essential Medicines List (EML). This included reviewing the content in the EML Clinical Guide application to ensure data quality on the newly re-platformed application and developing communication materials for dissemination of information to stakeholders. During the period under review, GHSC-TA supported the AMD to develop materials tailored to audiences at two conferences. GHSC-TA developed a presentation entitled "Laying the Foundation – Importance of Governance Tools to Underpin a Medicine Master Data System" presented at the GHSC Conference in November 2020, as well as assisting with a presentation for the ISPOR Conference held in the same month outlining the role of the EDP and NEMLC in the selection of medicines. GHSC-TA conducted an analysis of the provincial usage of albendazole, mebendazole, nystatin, and miconazole. The analysis informed interventions to facilitate the rational use of these medicines. GHSC-TA developed a draft pharmacovigilance plan for a donation of dexamethasone for the treatment of patients with COVID-19. GHSC-TA drafted submissions to the Director-General to approve amendments to the Therapeutic Interchange Policy and in response to stakeholder queries relating to treatment for COVID-19.

GHSC-TA assisted the AMD with convening and supporting the governance of the meetings about the tender for ARVs, including the adult and pediatric regimens, and the development and consolidation of specifications for the tablet tender. GHSC-TA also provided technical support with processing applications for access to third-line antiretrovirals to enable their rational use. GHSC-TA supported the MAC-AMR meetings held in March and July, developed a media release to announce the new committee, and assisted with amending its TOR. GHSC-TA helped convene a meeting of the MAC-AMR Antimicrobial Stewardship technical working group in June and helped draft the TOR for the MAC-AMR Infection Prevention and Control and Stewardship technical working group.

PTC Guideline Development and Implementation. To enable cascading of improved selection and use of medicine in provinces, districts, and health establishments, GHSC-TA continued facilitating the National PTC Guideline's development and implementation. GHSC-TA assisted with the development of the KwaZulu-Natal Provincial Formulary Report, based on an analysis of the formulary against three-year provincial procurement data, incorporating EML status and ABC analysis. This report provides recommendations for amendments to the current provincial formulary for strengthening of RMU and uploading to the Formulary Tool of the MMDS. GHSC-TA also assisted the NDoH to update the PTC Guideline Implementation Plan to assist in the National PTC Guideline roll-out.

OUTCOME LEVEL RESULTS

The program's theory of change hypothesizes that by supporting AMD efforts to perform HTAs and leverage their outputs, the GoSA will demonstrate improvements in the selection and use of medicines. In efforts to test these assumptions, GHSC-TA monitored two KPIs: the number of medicine selection decisions made utilizing health technology assessment processes (KPI 2) and the percentage of assisted pharmaceutical and therapeutics committees with improved operational capacity (KPI 3). This section provides an overview of the progress and results observed against these KPIs through the end of Year 4.

KPI 2. NUMBER OF MEDICINE SELECTION DECISIONS MADE UTILIZING HEALTH TECHNOLOGY ASSESSMENT PROCESSES

This KPI measures the extent to which HTA processes inform decision making by the NEMLC and other relevant committees. Improved decision making is key to determining the medicines and other health technologies funded under NHI. In July 2019, GHSC-TA placed HTA strengthening activities on hold in light of the publication of the NHI Bill, with no progress against this KPI during this reporting period. The program did, however, work with AMD to prepare for HTA as outlined above.

KPI 3. PERCENTAGE OF ASSISTED PHARMACEUTICAL AND THERAPEUTICS COMMITTEES (PTCS) WITH IMPROVED OPERATIONAL CAPACITY

This indicator measures the total number of assisted PTCs, which demonstrate improved levels of operational capacity to perform functions as described in the National PTC Guideline. This is an endline KPI, as a number of interventions must be completed before the final measurement is done. GHSC-TA has supported the development of a PTC guideline, which provides guidance and tools for use by PTCs, with details about the functions, roles, and objectives of PTCs at different levels of care. Self-assessments have been completed for four provinces (Free State, KwaZulu-Natal, Northern Cape,

and Eastern Cape). The NDoH deprioritized activities that contribute to this KPI as a result of the COVID-19 pandemic. The program, however, provided assistance on the development and management of formularies in the Northern Cape and Free State in Year 4 and KwaZulu-Natal in Year 5. Interventions informed by the completed provincial baseline assessments and post-intervention assessment will continue in priority provinces in Year 6.



OBJECTIVE 2: SUPPORT OPTIMIZATION OF THE SUPPLY CHAIN

The current supply chain processes within the NDoH form a foundation for enabling medicine availability across the different health establishments in the country. More than 80 percent of the South African population is dependent on public sector health care, making the effective supply of medicine a life-saving requirement for many. Medicine availability is also the cornerstone for achieving 95-95-95 in the fight against HIV. Optimizing the supply chain starts with creating visibility and then improving supply chain processes. This optimization will generate savings, ensure more effective execution of key processes, and ultimately increase medicine availability. GHSC-TA has been assisting the NDoH in optimizing the supply chain through several initiatives, including establishing medicine master data, managing formularies, creating accurate demand forecasts, effective replenishment planning, and ensuring end-to-end visibility. Governance processes have also been put in place to help make sure that the new approaches become a way of life.

ACTIVITIES AND ACHIEVEMENTS

DEMAND PLANNING

GHSC-TA works with the NDoH to produce innovative processes, tools, and workforce training that result in more accurate demand forecasts. The forecasts are established through a centralized demand planning team based at NDoH. As part of the process, GHSC-TA also collaborates with Programs and PDoHs to enrich the demand forecast and enable the best demand plans possible.

Tender Forecasting. During the period under review, GHSC-TA continued to support NDoH to utilize provincial demand forecasts to calculate future projections for the next tender cycle. NDoH now uses a standard demand forecasting process, to prepare forecasts for tenders in contrast to the previous situation where provinces and units used different processes.

GHSC-TA supported the finalization of ARV forecasted volumes and the oncology volumes for upcoming bid specification meetings, which form part of the contracting cycle.

In-contract Demand Planning. GHSC-TA helped the CMU establish an in-contract demand forecast (ICDF), where actuals and forecasted volumes are compared to the set contracted volumes. The basis of the model is the original contracted volumes and the signed-off “one number” forecast from the Demand Planning team. The developed model is updated monthly to empower CMU to discuss variances with suppliers and take appropriate actions. GHSC-TA finalized the ICDF tool and drafted an SOP and training guide used in the handover process. GHSC-TA also developed TORs to standardize engagements with suppliers.

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 forecasts become the basis for an effective and efficient supply chain, improving medicine availability, and reducing costs. In South Africa, demand planning will also improve the availability of medicines used to fight HIV/AIDS and TB and provide a good base for supply chain planning to ensure medicine availability during pandemics, such as COVID-19.

During the period under review, GHSC-TA continued to support provinces with establishing demand forecasts. The program has entrenched the demand planning process in Eastern Cape, North West, KwaZulu-Natal, and Gauteng. Preliminary work commenced in the Free State and Limpopo, with early engagements also taking place with the Western Cape. The GHSC-TA, demand planning team, continued to work closely with the provincial demand planning coordinators and relevant program teams to establish provincial forecasts. These are compiled for review in the demand review meetings, during which provincial forecasts are agreed. The program completed further data standardization, with data now extracted from Eastern Cape, Free State, Gauteng and Limpopo in a standard format.

This period also saw the first demand planning status review sessions, held with Eastern Cape and KwaZulu-Natal, where the program reviewed the progress of demand planning with the province. GHSC-TA detailed the fundamental process of demand planning, including roles and responsibilities and the commitments required by the provinces. This has proved to be a valuable change management engagement, and both provinces recommitted to championing the success of demand planning.

FINANCIAL MANAGEMENT

Budget Planning. GHSC-TA continued to assist provinces to improve the budget planning process by reviewing the demand planning outputs to forecast budget requirements. During this period, the program finalized the budget forecast for 2021/2022 and undertook a thorough review process with provincial pharmaceutical services and the finance teams. GHSC-TA and AMD presented the budget at the Chief Financial Officer forum on December 8, 2020. The budget was cut by 3.5 percent as per a directive from National Treasury. The adjustments were made, and the final budget was submitted at the end of December 2020.

In 2021 the team assisted provinces with the preparation of pharmaceutical budgets for the 2022/2023 financial year (FY), for approval by the provincial and national chief financial officer(s) (CFOs). Although the intention was to ring-fence pharmaceutical budgets, the National Health Council Technical Advisory Committee is yet to make a policy decision in this regard. Although the budgets will not be ring-fenced, GHSC-TA encouraged provinces to treat their budgets as such, with limited shifts of budgets across line items and improved expenditure monitoring.

Budget Reporting and Monitoring. In the previous year, the GHSC-TA team worked with the NDoH to establish an excel based budget dashboard to track actual expenditure against budget and the forecasted medicine requirement against the remaining budget. This dashboard has now been migrated to the NSC platform for improved visualization and access by the provinces. Once rolled out, the reporting will enable provincial teams to have closer control over expenditure against budget, flag risks of over expenditure and identify opportunities to manage expenditure where the budget has been exceeded. GHSC-TA continues to work to formalize the data submission process.

Budget Task Team. GHSC-TA had previously worked with AMD to establish a pharmaceutical budget planning task team which includes the HOPS and their supporting teams, mainly depot and finance managers. This forum presented an opportunity for the team to discuss a variety of topics, including revisiting the issue of ring-fencing the medicine budget, a crucial step towards effective management of spending against the budget for medicine.

During this period, GHSC-TA established a working group with representatives from KwaZulu-Natal, Gauteng, North West and the Northern Cape. The working group provides recommendations about standardization of the SCOA codes across provinces and maps these codes to the budget expenditure data and budget forecasts generated by the demand planning team. These forecasts are generated at a product level, mapping these to SCOA codes and aligning the forecasts to the reporting mechanism required by the National Treasury, allowing for the comparison of budgets and expenditure across provinces. The GHSC-TA team provided support in analyzing codes and driving discussions to get consensus on the way forward. This work is ongoing.

TLD TRANSITION

Over the past 12 months, GHSC-TA, in collaboration with Africa Resource Centre (ARC), worked closely with the PDoHs, the HIV Program, and other implementing partners to support TLD transition in South Africa. By the end of Year 5, the provinces had transitioned 66 percent of the total remaining on antiretroviral therapy (TROA), as seen through the ‘implied’ dispensing numbers.

In 2019, GHSC-TA developed and implemented a national and provincial demand model to inform the demand for ARVs and other related products during the TLD transition. The provincial forecasts are updated monthly and used to inform the transition's pace provincially and assist the TLD project team in monitoring overall progress. The updated forecast data informs the national and provincial supply plan to facilitate the availability of TLD, TEE, and other items related to the transition. GHSC-TA continued reviewing and updating provincial demand forecasts monthly, considering the need to accommodate the 'holiday dispense' and Three Multi-Month Dispensing (3MMD). ARC uses this input to develop the supply plan shared with ART suppliers. GHSC-TA, in collaboration with ARC, worked closely with suppliers to avoid stockouts of TEE and TLD.

Due to global supply challenges arising from the COVID-19 outbreak, South Africa saw a national shortage of first-line ARVs, TEE and TLD. The GoSA took proactive steps to mitigate the impact of COVID-19 on its HIV program and adopted numerous strategies to minimize clinical visits and promote adherence and retention in care, including multi-month dispensing (MMD) and delivery of patients' medicines to convenient pick-up points. In October 2020, the TLD task team decided to postpone the transition due to ongoing supply challenges reported on TLD. NDoH took a decision to assist the provinces by allocating stock based on TROA to facilitate equitable distribution. The TLD project team utilized data from the NSC and TROA data submitted by each province and allocated stock based on availability from ARV suppliers. Stock levels stabilized over December and January due to a donation received from USAID and Global Fund of the 90-day packs of TLD, with an additional supply of 1.5 million packs also being secured by NDoH from two suppliers.

During this period, GHSC-TA provided ongoing support to the provincial depots in North West, Limpopo, Mpumalanga and KwaZulu-Natal, to improve the availability of TLD and TEE and avoid potential stockouts at health establishments. In North West, GHSC-TA assisted the province to resolve long outstanding payments on the ARV and TB accounts. GHSC-TA also engaged the CMU team to discuss supply challenges on selected contraceptives, TB medication, and pre-exposure prophylaxis (PrEP). The team continued to hold weekly sales and operations meetings with Provincial Pharmaceutical Services and the Strategic Health Program.

TLD Dashboard. GHSC-TA developed a TLD dashboard in 2019 to track medicine availability of items related to the transition at national, provincial, district, and health establishment levels. In March 2020, the team received permission from the HIV Program to include the TROA data in the TLD dashboard, allowing users to calculate weeks of stock cover per item. Provincial stakeholders were able to track their performance, with the dashboard acting as an early warning system to help prevent stock-outs of key items (including TB medicines and contraceptives) related to the transition. Information from the TLD dashboard was used on a weekly basis by the TLD project team to support stock allocations on TLD and TEE, when needed. The dashboard enables stakeholders to manage stock levels at the district and health establishment level, and support redistribution of stock as needed.

Communication. In January 2021, the TLD Project team advised the provinces that stock availability had stabilized and that the transition could proceed. Provinces were, however, awaiting official communication from the NDoH before restarting the transition. The program then saw a substantial drop in TROA and a 20 percent growth on the second line cohort. GHSC-TA and the HIV Program continued to assist the provinces with catch-up plans, including tracing patients to return them to treatment.

GHSC-TA assisted with drafting a memo sent by AMD to the HIV Program requesting provinces to take active steps to achieve 80:20 TLD: TEE by November 2021 and set a clear direction on the use of DTG50 vs LPV/r 200/50. GHSC-TA also supported the development of a further memo to the provincial Head of Departments to request the HAST program and PS units to implement the updated recommendations. Subsequently, a joint memo between AMD and the HIV Program was drafted and sent to stakeholders regarding updates on TLD use in pregnancy. In addition, the team also supported the development of communication plans and facilitated the use of materials and various platforms for effective engagement with all stakeholders.

Training. GHSC-TA, in collaboration with Clinton Health Access Initiative, assisted the HIV Program in updating the first- and second-line training material and the commencement of refresher training in June 2021. The program facilitated updating of the TLD poster and algorithm and shared them with provincial stakeholders to use as a quick reference guide when switching patients to DTG containing regimens.

Preparing for National Scale Up. The TLD project team is in the process of preparing for the national scale up to transition all second-line patients, adolescents, and children to dolutegravir containing regimens. GHSC-TA developed a demand forecast to assist the provinces with the switching of eligible second-line patients. GHSC-TA also updated the TLD training module to include training on second line treatment and supported the development of a new algorithm to assist clinicians when switching patients from the lopinavir/ritonavir combination to DTG because of the stock shortages experienced from June 2020. A letter of recommendation was sent to WHO with the updated training material and algorithm for approval, which was subsequently provided.

Other support provided by GHSC-TA to support the transition continued in Year 5 and included:

- Implementation of the national training and implementation plan for the clinical guidelines with refresher training rolled out provincially, the implementation of provincial mentorship programs and the creation of provincial WhatsApp groups to support clinicians;
- On-going support to provincial TLD steering committee meetings with support shared between GHSC-TA and ARC; and
- Ongoing support to the HIV Program at national and provincial levels with feedback provided in the weekly Phuthuma meetings.

OUTCOME LEVEL RESULTS

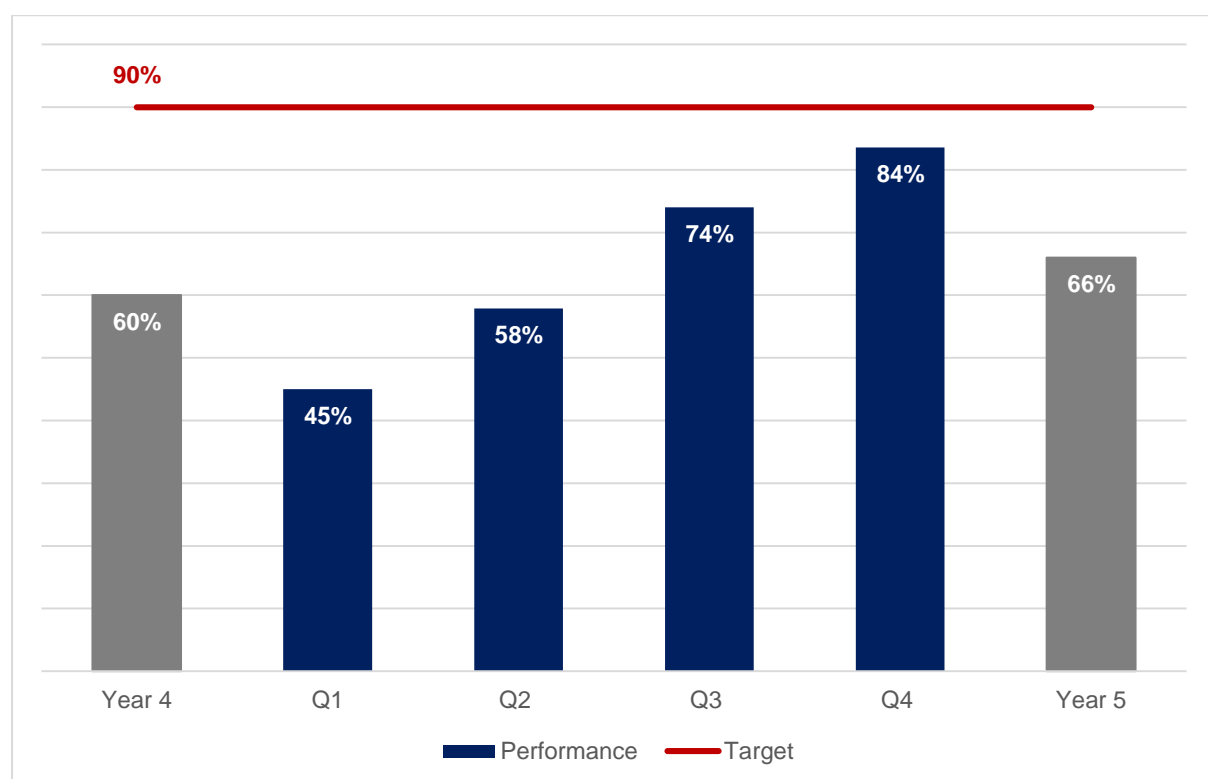
GHSC-TA hypothesizes that by supporting activities to improve the security of medicine supply, strengthen demand and supply planning and inventory management, and improve visibility and analytics, the GoSA will demonstrate improvements. In efforts to test this hypothesis, GHSC-TA monitors eight key performance indicators. This section provides an overview of the progress and results observed against these KPIs through the end of Year 5.

KPI 4. PERCENTAGE OF ANTIRETROVIRAL UNITS DELIVERED BY SUPPLIERS WITHIN CONTRACTUAL LEAD TIME (SUPPLIER PERFORMANCE RELIABILITY – ON-TIME)

This indicator measures supplier adherence to fulfilling orders for antiretroviral units received from demanders within the contractually agreed time.

By the end of Year 5, suppliers delivered 66 percent of ARVs within the contractual lead time of 14 days, up from 60 percent in the previous year but short of the 90 percent target. On-time delivery improved dramatically and consistently to 84 percent in Quarter 4 after a drop to 45 percent in Quarter 1. Reduced performance at the beginning of the year was due to supplier constraints, including disruptions in the global supply chain related to the COVID-19 pandemic. The medicine most impacted was TEE due to the slow transition from TEE to TLD, with TEE suppliers unable to meet demand. The average lead time was 28 days for all provinces. The Improved Medicine Availability Team (IMAT) and the COVID-19 response team established by AMD monitored the situation and recommended appropriate actions. These included engaging with suppliers regularly to improve performance and sourcing from alternative suppliers where contract holders were unable to provide the stock required.

Figure 2 Percentage of Antiretroviral Units Delivered by Suppliers within Contractual Lead-time (Supplier Performance Reliability – On-Time) in Year 5



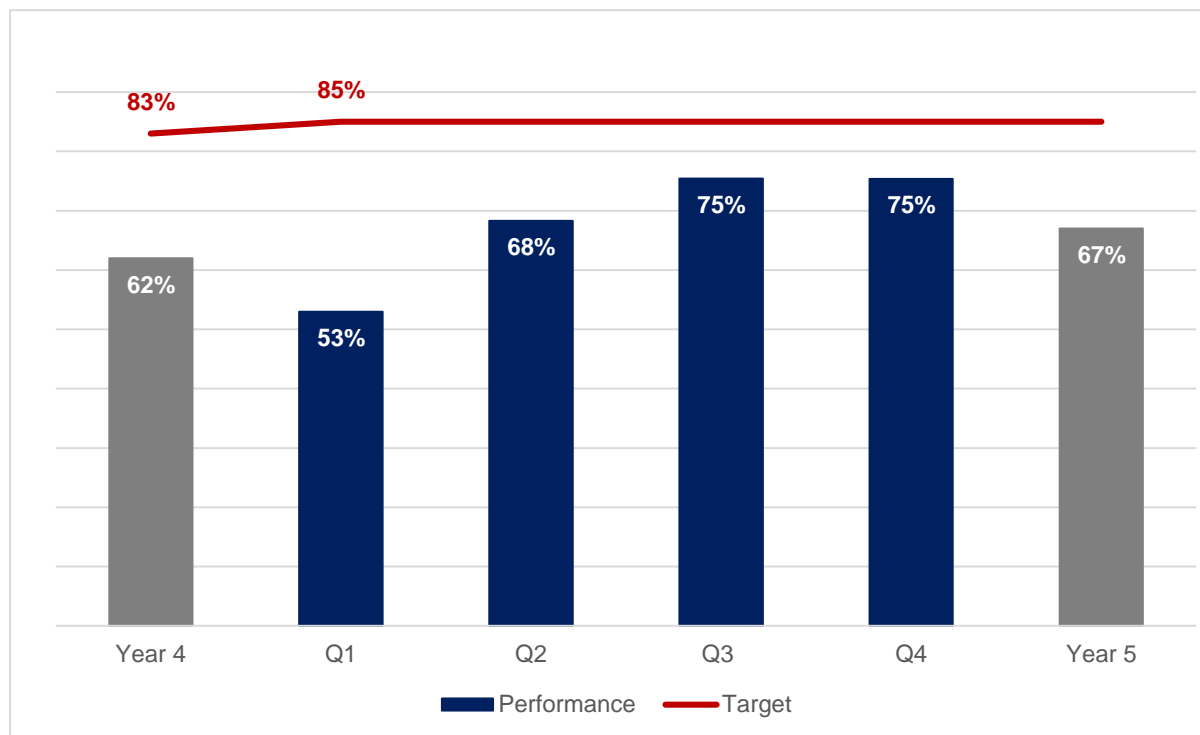
KPI 5. PERCENTAGE OF MASTER HEALTH PRODUCT LIST ITEMS ON TRANSVERSAL CONTRACTS (EXCLUDING ANTIRETROVIRAL) UNITS DELIVERED BY SUPPLIERS WITHIN CONTRACTUAL LEAD TIME (SUPPLIER PERFORMANCE RELIABILITY – ON-TIME)

This indicator measures supplier adherence to fulfilling orders for MHPL items on national transversal contracts (excluding antiretroviral units), received from demanders within the contractually agreed time.

By the end of Year 5, suppliers delivered 67 percent of MHPL items within the contractually agreed time, up from 62 percent in the previous year but short of the 85 percent target. On time delivery improved from 53 percent in Quarter 1 to 75 percent in Quarter 3 and Quarter 4. In the early

quarters, the COVID-19 pandemic affected performance, with some suppliers experiencing constraints for certain categories of medicines, including psychotropic agents and contraceptives.

Figure 3 Percentage of Master Health Product List Items on Transversal Contracts Excluding Antiretroviral Units Delivered by Suppliers within Contractual Lead-time (Supplier Performance Reliability – On-Time) in Year 5

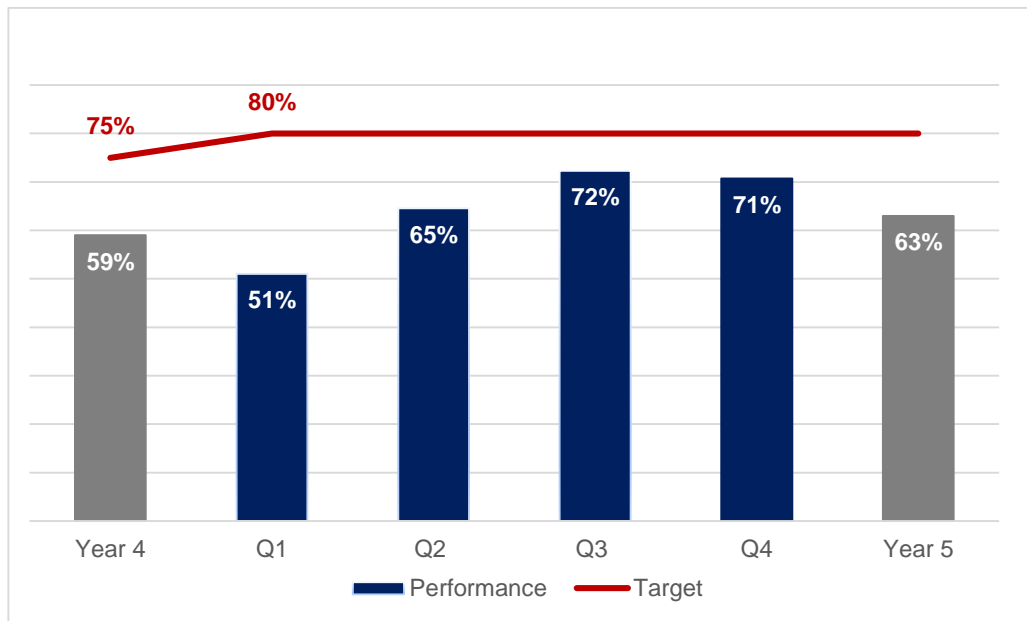


KPI 6. SUPPLIER PERFORMANCE RELIABILITY – PERFECT ORDER FULFILLMENT FOR ORDERS PLACED ON SUPPLIERS (IN-FULL)

This indicator measures supplier adherence to fulfilling orders in full (supplier performance reliability) and drives supply chain reliability and responsiveness. It applies only to items for which a transversal contract has been awarded and does not include items procured on quotation and/or using section 21 of the Medicines and Related Substances Act 101 of 1965.

By the end of Year 5, suppliers fulfilled 63 percent of orders for applicable items in full, up from 59 percent in the previous year but short of the 80 percent target. Supplier performance reliability improved from 51 percent in Quarter 1 to 71 percent in Quarter 4. As was the case with KPI 5, multiple suppliers experienced manufacturing constraints and API shortages due to the COVID-19 pandemic, creating ripple effects across provinces. The IMAT and COVID-19 response team monitored availability challenges and implemented remedial actions to mitigate potential stockouts, such as procuring from alternate suppliers. The CMU, with support from GHSC-TA, continued to engage suppliers frequently.

Figure 4 Supplier Performance Reliability – Perfect Order Fulfilment for Orders Placed on Suppliers (In-Full)



KPI 7: PERCENTAGE OF MASTER HEALTH PRODUCT LIST ITEMS ON TRANSVERSAL CONTRACTS DELIVERED VIA DIRECT DELIVERY TO THE HOSPITALS DESIGNATED BY THE PROVINCE TO RECEIVE DIRECT DELIVERY ORDERS

This indicator measures the percentage of MHPL items on transversal contracts delivered directly to hospitals designated by the province to receive direct delivery orders. This activity is no longer included in the scope of GHSC-TA.

KPI 9. DEMAND FORECAST ACCURACY FOR PROVINCES USING THE DEMAND FORECASTING PROCESS

This indicator measures the accuracy of forecast demand relative to actual volume for provinces where the standard demand planning process has been implemented. It is critical to have high forecast accuracy to avoid stockouts and maintain appropriate levels of inventory.

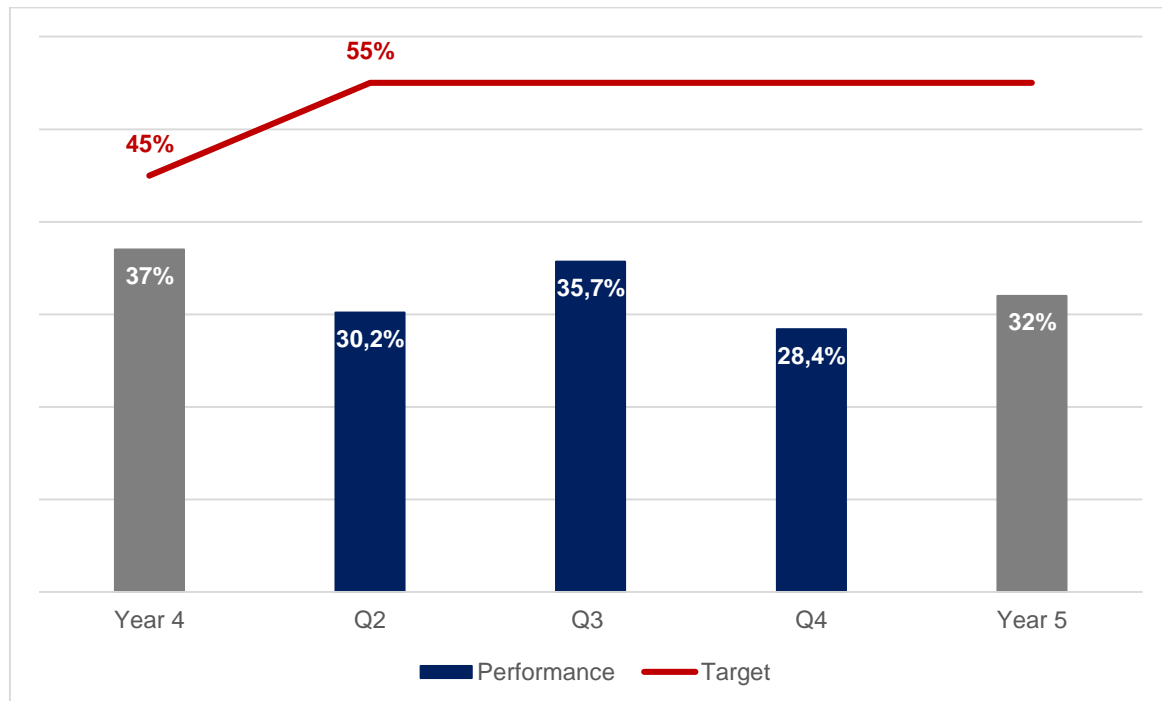
Forecast accuracy is measured based on mean absolute percentage error, which is an absolute variance between forecasted demand and actuals expressed as a percentage of actuals. Data were available across all four provinces, where the demand planning process has been implemented: Eastern Cape, North West, Gauteng and KwaZulu-Natal.

By the end of Year 5, the overall forecast accuracy was reported at 32 percent, below the target of 55 percent. It should be noted, however, that no data was available in Quarter 1 as there were challenges with the SITA not providing the standard historical data to the NDoH.

The decline was driven by the COVID-19 outbreak, with the impact of the pandemic becoming visible in May on TB medicines and vaccines. The impact continued through to the end of Year 5, impacting HIV and TB contracts. GHSC-TA also observed larger TLD volumes issued to health establishments throughout the year. At the same time, TEE dropped lower than forecasted in all provinces because

of stock availability and significant provincial efforts to transition patients from TEE to TLD. The vaccines used in the Expanded Program on Immunization (EPI) have also been low in this period, as patients stayed away from clinics as a result of COVID-19.

Figure 5 Demand Forecast Accuracy for Provinces in Year 5

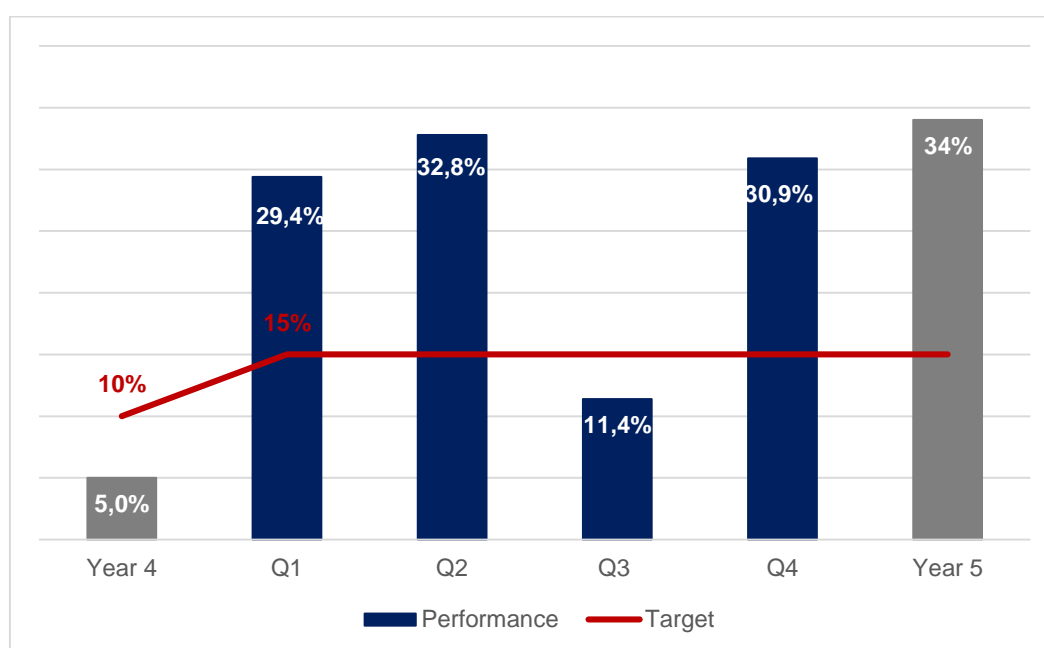


GHSC-TA adjusted forecasts as needed and continued to work with AMD to monitor the situation. The program will also continue to monitor the COVID-19 forecast, tracking volume spikes in demand for COVID-19-related items and declines for non-COVID-19-related items.

KPI 10. FORECAST BIAS FOR PHARMACEUTICAL FORECASTS IN PROVINCES

Forecast bias measures the tendency for actuals to be over or under forecast on a consistent basis for provinces using the demand forecasting process across contracts. It may be either positive or negative and is expressed as a percentage of actuals monthly. The presence of a tendency in either direction requires root-cause investigation and corrective action. By the end of Year 5, the forecast bias was 34 percent, outside the target of less than 15 percent. Performance improved in Quarter 3 but dropped off at the end of the year. As with KPI 9, the COVID-19 pandemic and subsequent lockdown impacted forecasts from May 2021 through the end of the year on all major contracts. The launch of TLD not following the initial or adjusted profiles also impacted both forecast accuracy and bias.

Figure 6 Demand Forecast Bias for Provinces in Year 5

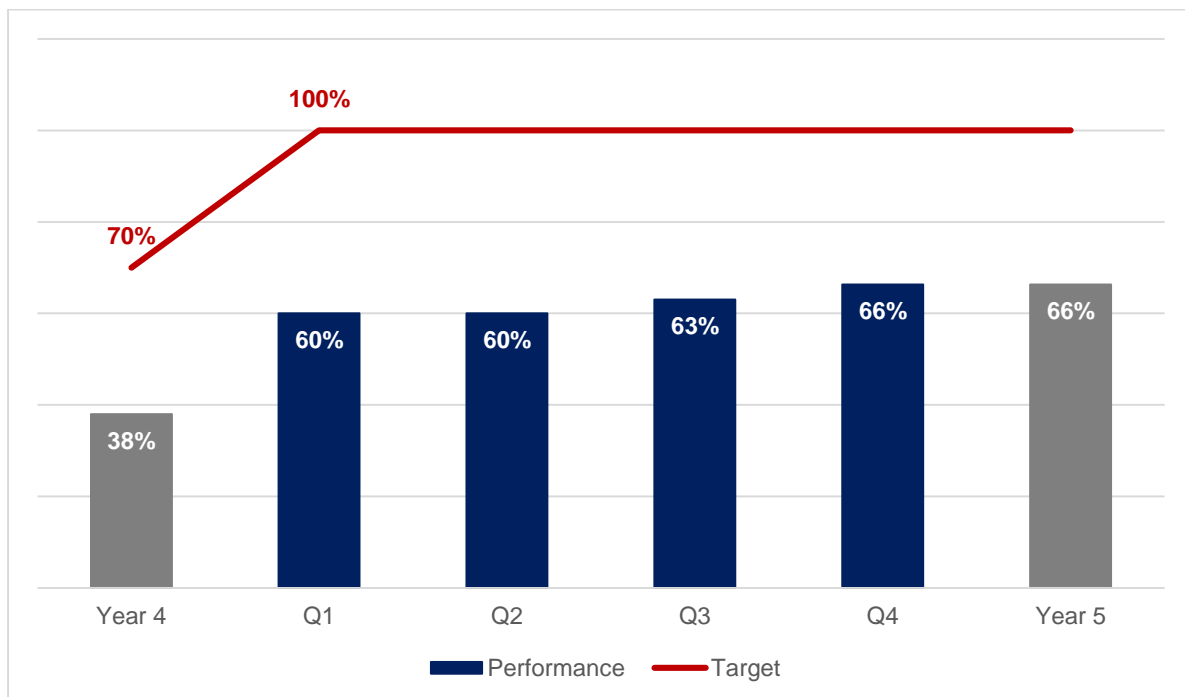


KPI 11. PERCENTAGE OF ELIGIBLE PATIENTS TRANSITIONED FROM TENOFOVIR/ EMTRICITABINE/ EFAVIRENZ TO TENOFOVIR/ LAMIVUDINE/ DOLUTEGRAVIR

This indicator monitors GHSC-TA's support of the transition of eligible patients from TEE to TLD. At the end of Year 5, 66 percent of patients transitioned from TEE to TLD, below the SCTA target of 100 percent. Notably, the primary data source for this indicator, TIER.net, experienced a system error identified in July. TIER.net is designed as a primary health care (PHC) facility-based application to digitize information on ARV and TB patients and is used to track the transition on a provincial basis. When the system experienced challenges, ARC developed a proxy measure - the 'implied dispensing' - to deduce the volume supplied using stock-on-hand information and quantities received. This data is being used to enable reporting on the KPI until the TIER.net issue is resolved.

The transition of patients from TEE to TLD was officially launched in KwaZulu-Natal in November 2019, with performance in Year 4 at 38%. In Year 5, performance against this indicator was steady early in the year but picked up in quarter 3, as shown in Figure 7 below. Concerns relating to the risk for women of childbearing potential of neural tube defects contributed to the initial slow rate of transition. By the end of Year 5, 66% of eligible patients had been transitioned to TLD.

Figure 7 Percentage of Eligible Patients Transitioned from TEE to TLD



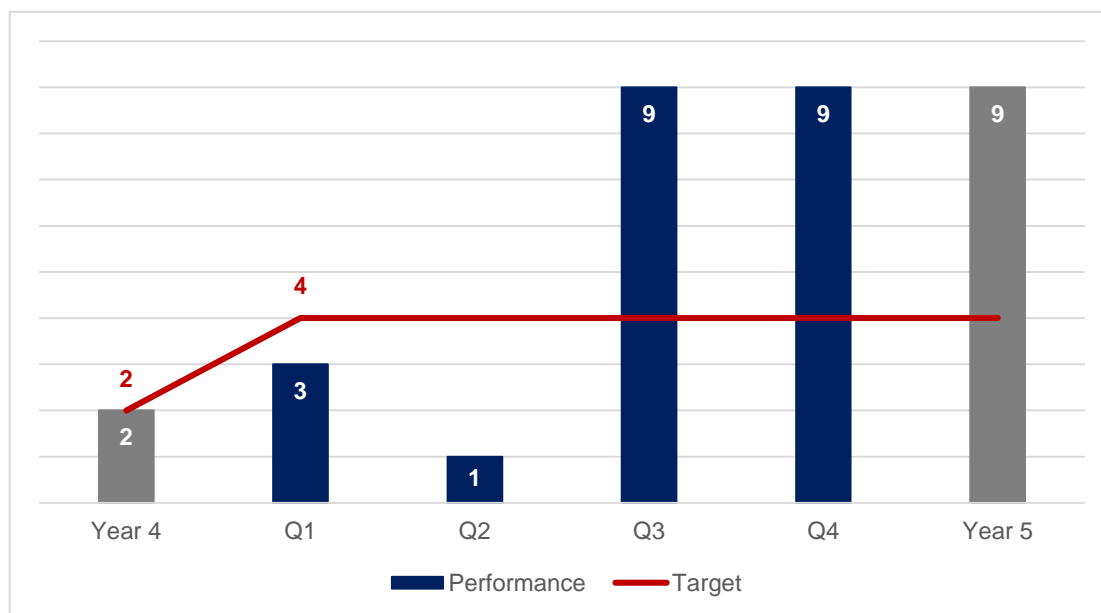
KPI 16. NUMBER OF PROVINCES WHO REVIEW THEIR BUDGET VS. ACTUAL AS DEFINED IN THE NEW BUDGETING PROCESS TO SUPPORT THE RING-FENCED BUDGET

This KPI measures the effectiveness of GHSC-TA support to the development and implementation of budgeting and financial management processes at provincial level.

The demand planning process, developed by GHSC-TA, is being used to support PDoH in establishing an accurate forecast of the medicines required. This forecast is then used to inform the annual pharmaceutical budget. By October 2020, GHSC-TA had trained four provinces (Gauteng, KwaZulu-Natal, Eastern Cape, and Northern Cape) to update the financial dashboard and visualize their own data. In September 2021, GHSC/TA supported three provinces (Northern Cape, Free State, and the North West) to visualize their medicine expenditure to improve monitoring and reporting efforts. The team is working hard to ensure consistency in submission and analysis of data which remains a challenge for some provinces.

At the end of each quarter, as part of the requirements of National Treasury for In-Year Monitoring (IYM), all provinces are required to report on performance against budget and outline projections for the remainder of the year. The report serves as a management tool to improve accountability and focuses managers on the remedial actions required. For supported provinces, the monthly dashboard reviews act as early warning to alert managers of problematic areas and allow them to put control measures in place. Although GHSC-TA has not assisted all the provinces, they are all complying with the IYM requirements which are in line with the budgeting process and guideline.

Figure 8 Number of Provinces who Review their Budget vs. Actual as Defined in the New Budgeting Process to Support the Ring-Fenced Budget

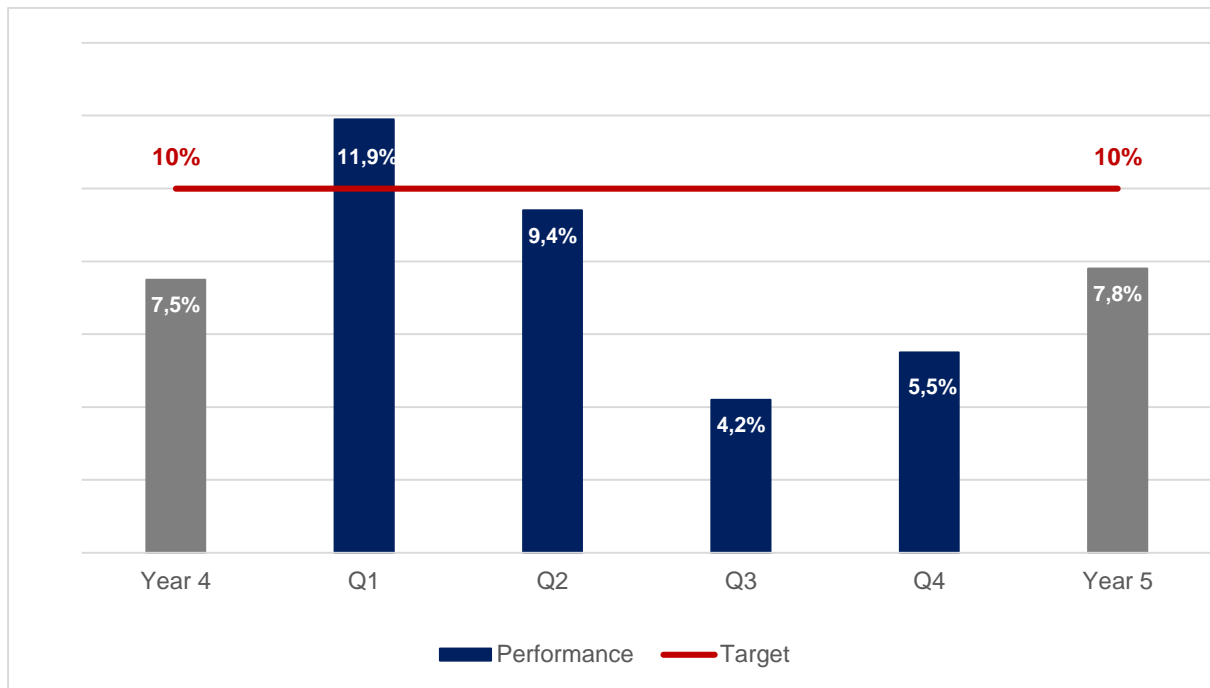


KPI 17. PERCENTAGE OF EXPENDITURE ON NON-ESSENTIAL MEDICINE LIST ITEMS

This indicator measures the percentage of expenditure on medicines which do not appear on the EML approved by the NEMLC. EML medicines are considered as essential for providing health care services to the majority of the population. Medicines which do not appear on the EML may, however, be approved for use by provincial, district or health establishment PTCs. The target is to keep provincial expenditure on non-EML items below 10%.

Previously a lack of data affected reporting on this KPI. In this reporting period, the team used a combination of provincial historic demand planning data and master data from the MHPL to report against this KPI. The performance of the KPI improved hence the non-EML expenditure declined and closed at 7,8% by the end of Year 5, as shown in Figure 13 below.

Figure 9 EML vs Non-EML Spend on Medicine List Items





OBJECTIVE 3: STRENGTHEN GOVERNANCE

One of the AMD functions is to provide oversight and set policy with respect to pharmaceutical services in South Africa. Support provided by GHSC-TA includes assisting the AMD and provinces to improve governance by strengthening the policy and legislative framework, establishing appropriate governance structures, and building capacity to provide the necessary oversight. A key role of GHSC-TA is to provide technical assistance in developing relevant legislation, policies, guidelines, and other governance documents necessary for implementing strategic priorities and interventions.

ACTIVITIES AND ACHIEVEMENTS

GHSC-TA conducted several activities in Year 5 to strengthen governance by developing and revising policies as an enabler for medicine availability and supporting activities to strengthen contracting and contract management. Procurement of medicines for use in South African government hospitals and clinics takes place following a competitive tendering process. The resultant contracts are, therefore, extremely important for medicine availability. Once contracts have been awarded, AMD plays a critical role in monitoring and managing supplier performance. In addition to the management of contracted suppliers, it is important that the performance of all parties, including participating authorities and demanders, are monitored and managed.

Pharmacy support personnel regulations. GHSC-TA provided support in capturing and consolidating the public comment received on amendments to three sets of regulations published in terms of the Pharmacy Act 53 of 1974. The amendments aim to establish a new category of pharmacy support personnel (pharmacy technicians) and align scopes of practice of existing categories to service delivery needs. GHSC-TA is working with AMD and the South African Pharmacy Council to review the comments received.

Supply planning guideline. GHSC-TA developed a scoping document for the supply planning guideline and presented it to AMD for approval. The purpose of the guideline is to provide an overview of supply planning and guidance on replenishment planning solutions for all medicines used in the public sector. Based on the approved scope of the guideline and high-level principles, GHSC-TA has started developing the guideline.

Free State SLA Between the Provincial Depot and Demanders (Health Establishments). GHSC-TA supported the Free State in reviewing the SLA between the provincial medicines depot and demanders by including or amending clauses based on COVID-19 learnings, including for example those relating to direct delivery from suppliers to health establishments. The SLA was finalized and signed by the parties and is valid for three years until March 2024.

Criteria for Registration of Demanders. GHSC-TA completed the development of criteria and requirements for demanders to be registered on warehouse management systems (WMS). The program first consolidated the list of demanders on the various WMS, then drafted criteria to standardize the process across provinces.

Service Level Agreements with SITA. GHSC-TA provided support to AMD with a review of the provincial SLAs with SITA, as well as negotiations relating to an annexure to the SLA between SITA and NDoH to acquire the data required for demand planning and the NSC, as well as the loading of master data relating to NSNs and suppliers. NDoH and SITA reached an agreement and SITA is providing the required services.

Multi-Month Dispensing. MMD is a key differentiated service delivery model for patient-centric services. The approach aims to improve patient retention and adherence while assisting to reduce the burden on health establishments and health care workers by reducing the frequency at which medicines are dispensed to patients. GHSC-TA assisted to identify the policy principles that would inform the roll out of MMD across the country. The program developed a draft MMD Policy in Year 4 to provide the necessary principles and tools to support health establishments in implementing MMD of medicines. In Year 5, the policy was presented to key stakeholders. Feedback is pending.

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 continued to support AMD in developing the specifications for items to be advertised, to the awarding the contracts. These activities included preparing the tender to be published, evaluating bids, and preparing documents for the Departmental Bid Adjudication Committee and final award. GHSC supported AMD with presenting the Bid Specification Committee (BSC) and Bid Evaluation Committee (BEC) TORs to these committees. Both TORs were revised with comments received and subsequently adopted. In addition, GHSC-TA supported the development of SOPs, including those for bid compilation, administrative and technical evaluation. A training manual has also been developed for advertising of bids.

Bid Evaluation Committee (BEC) Meeting Minutes and Rules of Evaluation. GHSC-TA supported AMD in BEC meetings to review and revise the template used to record the minutes of meetings to reflect accurately what was discussed in the meetings. The minute template has been approved and the agenda template updated to align the two documents. The team also assisted with developing rules and principles to be applied in evaluating bids received to support consistency and transparency in this process. The rules have been shared and presented to the BEC for review and subsequently revised based on comment received. The rules were applied when reviewing the ARV bids received.

Criteria for inclusion of items in tenders. GHSC-TA supported the Bid Specification Committee with revising the criteria for inclusion of items in tenders to include how therapeutic classes will be managed in specifications. The purpose of the document is to outline items that can be included and excluded in all tenders and was aligned to the approved therapeutic class policy.

Supplier performance management guideline. GHSC-TA provided support in revising the supplier performance guideline following multiple discussions in COVID-19 response meetings on challenges with supplier performance. The purpose of the guideline is to provide guiding principles and processes on the management of supplier performance for medicines and related medical devices procured on contract and quotation. In addition, the guideline clarifies the roles and responsibilities of AMD and provinces in relation to managing performance of suppliers. The team also provided technical support to the CMU in reviewing and developing SOPs relating to supplier performance management.

Improved Medicine Availability Team. GHSC-TA supported AMD in reviewing and updating the IMAT TOR with input provided by the AMD task team, to accommodate lessons learned in the response to COVID-19. The structure was split into two each with its own TOR - IMAT which consists of AMD members only, and IMAT Exploded which includes provincial representatives. The purpose of IMAT is to identify medicines with supply challenges by generating the “hot list” – a list of medicines with supply constraints - and developing remedial actions. The list is shared and discussed with members of IMAT-Exploded, to collaboratively identify interventions aimed at addressing any medicine supply challenges, improve medicine availability, and reduce the potential impact of stockouts. Both TOR were shared and presented to the members and have been adopted and implemented. The IMAT Exploded TOR has been shared with the National Health Council Subcommittee for Pharmaceutical Services (NHC-SC-PS). Furthermore, GHSC-TA supported the revision of the criteria for inclusion of items on the “hot list”. The program also provided support in revising the IMAT - Exploded minutes’ template and developing a standard agenda and an action tracker template.

Merging of supply tool and hotlist. GHSC-TA supported AMD by merging two tools that were used to manage medicine supply by contracted suppliers and availability in provinces. The ‘hotlist’ is generated by the CMU and is a list of contracted medicines with supply constraints and a stock availability of less than 90 percent. The supply plan is generated by ARC and includes medicines that are on the COVID-19 priority list. The tool aims to track the availability of stock at suppliers and provinces against the demand forecast. The team has handed over the merged ‘hotlist’/supply tool and developed an SOP to support implementation.

Centralized allocation of stock. GHSC-TA supported AMD with developing the guiding principles for centralized allocation of medicines, an additional intervention to address medicine availability

challenges. This approach aims to equitably allocate supplies available to all participating authorities (who require such stock) when there are challenges with a particular item's availability, thus reducing the potential of stock-outs. The draft has been presented to the IMAT- Exploded and shared with provinces for further comment.

Supplier due diligence. GHSC-TA commenced developing the principles for conducting supplier due diligence prior to contract award and during the contract period. The Special Requirements and Conditions of Contract (SRCC) make provisions for AMD to conduct site visits (supplier due diligence) prior to award and during the contract period to assess whether an item is manufactured at the site specified in the bid documentation; the bidder/contracted supplier has at least two months' buffer stock on hand, and the bidder/contracted supplier has capacity for their allocation or adjusted and agreed demand. The purpose of the policy is to clarify the triggers for site visits prior to, and during the contract period. The triggers for site visits prior to contract award have been included in the bid evaluation rules to assist the BEC in recommending site visits consistently when reviewing bids received.

Quarterly supplier performance report. GHSC-TA continued to support AMD with managing supplier performance and mitigating stock-out challenges. The team has developed a template for quarterly supplier performance reports. The purpose of the report is to provide an overview of supplier performance over a three-month period and obtain input from provinces on any other information of which the NDoH should be aware. Additionally, the report will assist in closing the gap between what is reported by suppliers and supplier performance as experienced by provinces.

Management of non-compliance. GHSC-TA continued to refine the policy principles for managing non-compliance of contracted suppliers to the SRCC. The purpose of this work is to identify types of non-compliance letters that may be issued to suppliers as aligned to the supplier performance KPIs outlined in the SRCC and to ensure defaulting suppliers are issued with non-compliance letters. GHSC-TA facilitated a discussion with IMAT to identify how exceptions will be managed. The team has also commenced reviewing and updating templates for issuing non-compliance letters for each KPI. Based on the policy principles, the program has developed an SOP.

OUTCOME LEVEL RESULTS

GHSC-TA hypothesizes that by increasing the AMD's capacity to develop and institutionalize effective 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 embodied in policies, implementation plans, processes, and SOPs. There are no outcome level KPIs reported under this objective.



OBJECTIVE 4: IMPROVE WORKFORCE MANAGEMENT

To strengthen the workforce and organizational structures within AMD and in the provinces to perform the functions necessary to improve medicine availability, GHSC-TA continued to provide TA to AMD.

ACTIVITIES AND ACHIEVEMENTS

Support to the North West: In 2018, the GoSA invoked Section 100 of the South African Constitution in North West, giving national government the power to intervene when a province does not fulfil its obligations regarding legislation or the Constitution. Previously, GHSC-TA had supported the province in addressing human resource challenges, including challenges relating to the organizational design which was affecting work at the Mmabatho Medical Stores. During this reporting period, GHSC-TA began the transition and handover process to the province to support implementation and sustainability of workforce management activities undertaken. GHSC-TA prepared a presentation, at the request of the Administrator, on the Mmabatho Medical Stores' adjusted structure, including key job descriptions. GHSC-TA mapped all staff against the adjusted structure and highlighted positions requiring Department of Public Service and Administration approval. The adjusted pharmaceutical services organizational structure with costing was handed over to the provincial corporate services for inclusion in the ideal structure of the province.

Contract Management transition. GHSC-TA developed the transition plan for resources supporting AMD as contract managers. The plan included a proposal on re-allocation of supplier portfolios to current AMD contract managers. The handover pack was presented to AMD and accepted. A total of 38 suppliers, with 445 line items were handed over to the CMU contract managers. In addition, the hotlist/ supply plan was handed over, including the SOP for updating the tool.

NSC Training and Handover. GHSC-TA completed the final provincial NSC training session virtually with Limpopo NSC licensed users and provincial leadership in November 2020.

GHSC-TA further initiated the handover process for reporting by initiating discussions with the AMD regarding transitioning support functions and reporting functions to AMD. The continuity and handover of NSC functions beyond SCTA were discussed with AMD Management to prepare the handover of the tool to the department.

In-contract Demand Planning Tool. GHSC-TA finalized the in-contract demand planning tool, and drafted an SOP and training guide which was used in the handover process. The program completed training with two of the AMD personnel who completed their first update of the in-contract demand forecast.

Centralized Demand Planning Unit. GHSC-TA continued to assist NDoH to establish and staff a centralized demand planning unit at the national level. Support included providing job specifications, interview guides and assessment tools and resulted in the recruitment of two candidates into demand planning positions at AMD in January 2021. GHSC-TA assisted AMD with on-boarding and training. The two new NDoH demand planners are responsible for generating provincial forecasts for KwaZulu-Natal and North West, with support provided by GHSC-TA. The program is also assisting NDoH with the recruitment of a demand planning manager and additional resources for the unit.

TLD Transition Training. GHSC-TA, in collaboration with CHAI, assisted the HIV Program in updating the first- and second-line training material and the commencement of refresher training in June 2021.

OUTCOME LEVEL RESULTS

GHSC-TA hypothesizes that by supporting the AMD to develop a set of standardized structures, roles, competencies, and performance management practices, along with the institutionalization of change management and the upskilling and mentoring of staff, the AMD will foster proactive patient-centric decision-making and enhanced leadership management and technical skills, thus improving workforce management practices. There are no outcome level KPIs reported under this objective.



OBJECTIVE 5: STRENGTHEN INFORMATION SYSTEMS AND INFORMATION MANAGEMENT

Information systems are critical to support the AMD SIMA. Beyond organizational governance, GHSC-TA supports data governance and management of master data elements crucial to enable interoperability of information systems. Further, the team supports and recommends enhancements to existing systems, analytical processes, and dashboards used by AMD and provincial pharmaceutical services for daily transactions and to inform decision making and continuous improvement.

ACTIVITIES AND ACHIEVEMENTS

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 central repository via system interfaces to achieve seamless interoperability. 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 medicine availability improvements.

GHSC-TA provides support to elicit system requirements and agree on definitions of master data-related elements, documenting requirements, preparing conceptual data designs, and system testing once these requirements are implemented. During the year under review, GHSC-TA continued to provide TA in developing specifications and implementing modules of the MMDS, which consists of four components: Medicine Data, Contract Data, a Formulary Management Tool, and Location Master Tool.

Development. During the year, GHSC-TA continued supporting the AMD-contracted development service provider where the major themes were redevelopment of the contracting data structures to better accommodate contract histories (tracking contracted prices, quantities, etc. over time); redevelopment of user management to introduce several new roles to allow better segregation of duties across the system as more users are now utilizing the system; allowing for mass update and upload functionality to reduce the effort required and improve the usability of the system given that master data typically comprises long lists of data items; configuration of the “Ideal Clinic” Tracer List; and functionality to compare formularies to the Tracer List requirements, highlighting exceptions in order to improve clinic governance. These developments are now live.

Additionally, GHSC-TA advised AMD on structuring and loading additional medicines to align medicine lists with the NSC and SVS and updating formulary management SOPs. The replacement of the legacy Medicine Procurement Catalogue, which was prepared manually, with the MHPL represented a major milestone in the implementation of the MMDS.

NATIONAL SURVEILLANCE CENTER

In Year 5, the team continued to build on optimization and enhancement of the NSC by concluding the NSC server migration, focusing on maintenance of the NSC, and ongoing support of the monitoring function as relevant to health establishment reporting compliance. GHSC-TA activities over this reporting period also included planning for the eventual handover of the NSC and associated responsibilities.

Enhancement of the NSC. Year 5 began with GHSC-TA facilitating improvements to the NSC by completing its migration to an improved server and hosting environment. This work involved configuring the new server, migrating all NSC workbooks to the new server, and preparing and disseminating communication packs and the NSC URL and username credentials for NSC users with AMD. The program initiated a test phase of the NSC on the new server with a smaller group of AMD staff during October 2020, and addressing issues identified during the test phase. GHSC-TA used the opportunity of the migration of the NSC to the new server to publish two dashboards, namely the demand planning dashboard and the integrated view trend dashboard. GHSC-TA continued to support NSC users with accessing the new NSC using the new URL until the end of Quarter 2. The old NSC server link was deactivated at the end of February 2021.

GHSC-TA also supported AMD with the review of a hosting proposal for the new server service provider in March 2021, and, considering the sustainability of the NSC, agreed on the transition of the maintenance and support of the NSC from GHSC-TA to an NDoH contracted service provider, enabling the NDoH to take full ownership of this strategic tool. GHSC-TA will support the transition of maintenance functions to the new service provider. This transition is a significant milestone for GHSC-TA and the NDoH and is a testament to the GHSC-TA’s contribution to strengthening the

South African public health supply chain. The program will continue to provide technical assistance in conceptualizing enhancements to the NSC in Year 6 of the project.

In January 2021 a fault occurred on the Afrihost database server environment. GHSC-TA provided technical assistance in migrating all databases that support data loading to the NSC to the Microsoft Azure cloud environment. GHSC-TA restored and optimized the processes for loading data from RSA Pharma, manual RxSolution data submissions, and manual processing following the migration to the new server. Those processes have performed satisfactorily during the project year. GHSC-TA also migrated and restored the RxSolution API web service layer and database required for automated reporting submissions. Subsequent automated submissions have been successfully received from provincial servers.

GHSC-TA continued monitoring the new hosting environment to optimize the configuration and database environment. Following the migration of all the NSC workbooks to the new NSC server, GHSC-TA configured and set up RxSolution manual database backups on the new hosting environment, and successfully completed a backup test. The program also configured the RxSolution manual database backups to run daily rather than weekly, thus optimizing the backup process given the large database size.

GHSC-TA also supported AMD and provincial IT departments to orientate the remaining provincial servers to the new hosting environment. The program configured all provincial servers and finalized the North West and Limpopo provincial servers with provincial RxSolution API sites submitting data automatically via the API from mid-April 2021.

During Year 5, GHSC-TA continued the daily consolidation and execution of the NSC data flows for daily data submissions from RxSolution (manual submissions and API submissions), depot WMSs, Central Chronic Medicine Dispensing and Distribution (CCMDD) service providers, and PPE data for purposes of the daily NSC refresh in support of the COVID-19 response. A new data receiving process was developed and implemented after SITA stopped providing consolidated Medical Supply Administration System (MEDSAS) data in February 2021. This data receiving process is operative for all depots using the MEDSAS (Eastern Cape, Free State, Gauteng, KwaZulu-Natal and Western Cape). The SITA service was restored in September 2021, with MEDSAS data files being submitted to AMD and GHSC-TA.

In Year 5, GHSC-TA continued with development of enhancements and new views that support the AMD strategy for improved visibility of the availability and use of medicines. Dashboard developments and optimization of data processes feeding into the NSC included the following:

- **PHC Dashboard:** The team re-aligned the historic PHC dashboard views and reports to support the new data tables with this development concluding in October 2020. One of the enhancements was the inclusion of a minimum basket item filter on the PHC views to enable alignment of the PHC reporting compliance calculation to the updated SVS reporting compliance calculation.
- **Integrated Trend Dashboard:** The program investigated the development of reporting compliance trend views. The following developments were completed on the Integrated Trend dashboard.
 - Weekly medicine availability trend dashboards were developed and approved for publishing by AMD in March 2021.

- GHSC-TA completed developments on both the reporting compliance view and the workflows to integrate the filter and calculation for the PHC and Helium minimum basket consideration. These changes were also published to the integrated view reporting compliance report.
- **Demand Forecasting Dashboard:** The demand planning dashboard views were formatted to align with the wider NSC format and layout and was completed in February 2021.
- **PPE dashboard:** The PPE demand plan views and calculations were updated and refreshed per the PPE team requirements in March 2021
- **Finance Dashboard:** GHSC-TA completed initial data analysis and dashboard design requirements in November 2020. The Finance dashboard views were updated and aligned to the latest available data, with final draft dashboards presented to AMD in May 2021. A copy of the dashboard views was shared with AMD and the Northern Cape for review. The data workflows were updated and adapted to accommodate the onboarding of new provinces as their data became available. The budget data for North West and KwaZulu-Natal was added to the finance dashboard. Publication of these views to the NSC is dependent on the approval from AMD and the provincial finance teams as applicable. This approval remains pending.
- **GP Care Cell (GPCC) data:** The submission of data from GPCC sites in the City of Johannesburg was initiated and integrated into the NSC. This data is displayed in line with the original configuration used for the GPCC program.
- **Reporting compliance trend views:** The program developed the reporting compliance trend view and published the view to the NSC in June 2021. Work continued around the min-max dashboard views by incorporating suggested changes.
- **Inactive Items Report for the Integrated Dashboard:** This report enables users to identify facilities (SVS only at this point) that have items on their formularies/SVS device, which have never been updated. The objective is to prompt the facility to update inactive items or remove them from their formularies.

The project further supported the AMD EDP team with data analytics support regarding medicine use for presentations made to NEMLC and the ERC during October and November 2020. The data sets analyzed included: azithromycin, vitamin C injection, colchicine, and vitamin D oral solution.

GHSC-TA reviewed all the NSC dashboard navigation guides to determine if any required updating due to developments on the NSC and server migration. GHSC-TA updated the following navigation guides and submitted to AMD for approval and dissemination in August 2021:

- COVID-19 dashboard navigation guide
- Integrated view dashboard navigation guide
- PPE dashboard navigation guide

GHSC-TA developed the following new navigation guides:

- Demand planning dashboard navigation guide
- APP Target view navigation guide
- TEE/TLD Transition dashboard navigation guide
- AMD scorecard navigation guide

Technical Function Specification. During Year 5, the program initiated work on a variety of technical documents for the NSC, including the NSC technical function specification document, workflow documents, a daily tasks summary, and an NSC design template. The NSC technical function

specification document and workflow documents are aimed at providing a blueprint of how the NSC views were developed and how the flows that execute NSC refresh processes are coded. GHSC-TA submitted the roles and responsibilities document to AMD in Year 4 and updated it in Quarter 2 of Year 5 to align with the updated NSC views. GHSC-TA likewise updated the daily tasks summary to inform the NSC tasks beyond the GHSC-TA project.

The program created an NSC data dictionary for all the data sources that feed information into the NSC. GHSC-TA reviewed and updated the dictionary in August 2021 and will continue to do so until the end of the project. In September, GHSC-TA completed the NSC technical documents detailing the workflow image, statistics, outlines possible challenges, process inputs and outputs, workflow steps and tools for the Integrated dashboard, the COVID-19 dashboards, and the trends views. These technical documents will form part of the comprehensive NSC Technical Specification document GHSC-TA will develop in Year 6 of the project.

Institutionalization of the NSC. GHSC-TA continued to support institutionalization of the NSC by compiling reviews of health establishments' reporting compliance and medicine availability during the year. The program submitted these reviews to AMD weekly and presented them to AMD and the provinces in the weekly COVID-19 response meetings. This weekly engagement with AMD and provinces underscored the importance of reporting compliance and coincided with the stability noted in reporting compliance and an increase in medicine availability during the year. These reports are also shared with the PST, which engages with provincial counterparts to address reporting compliance and medicine availability issues. In addition, the PST assists the provinces by confirming critical items on the list and assisting to address any issues through the escalation protocol. The team also continued to provide support with resolving queries regarding NSC data and reports from AMD and the provinces. In addition, AMD invited GHSC-TA to present medicine availability and reporting compliance as a standing agenda item to provincial procurement staff, pharmacists, and other key stakeholders in the IMAT – Exploded meeting.

The project conducted a workshop on demand planning dashboard navigation with the AMD demand planning team in July 2021. This workshop was geared at providing a refresher on how to use and navigate the demand planning dashboards and capacitate the demand planning team to provide NSC support with provincial counterparts as required.

In May 2021, GHSC-TA discussed with AMD the continuity and handover of NSC functions after GHSC-TA ends. Discussion included the NSC and data server requirements and costs and the resourcing and skills requirements to carry out routine NSC functions. AMD advised that they would provide feedback indicating where assistance was needed. GHSC-TA began the process for handing over support and reporting functions to AMD. The program developed a “how to” guide for compiling the reporting compliance report. GHSC-TA incorporated this guidance pack into the training reference materials for training sessions held with AMD.

SUPPLY CHAIN SYSTEMS

Technology and information systems are critical enablers of health supply chain performance. Key activities GHSC-TA performed in support of this objective during the period under review include supporting the development and deployment of information systems, including RxSolution medicine availability reporting components supporting the NSC (known as the “RxSolution API”) and SVS.

RxSolution. The reporting API and related databases form an automated data collection and redistribution tool that GHSC-TA initially created in Year 2 to collect data from RxSolution data stores supporting the NSC. The tool submits data to a centralized repository without manual intervention across available data channels, such as provincial Wide Area Networks or the internet. During Quarter 1, GHSC-TA assisted with roll-out of the tool to the Northern Cape, thus automating medicine availability reporting for an additional 30 health establishments.

After the server hosting several NSC staging databases, and the national RxSolution API reporting database became inoperable, GHSC-TA migrated these databases to the Microsoft Azure cloud environment. Given the extent of challenges with the previous environment, this migration proved arduous but was ultimately successful. GHSC-TA has completed a specification to describe at a functional level how integration between the MMDS and RxSolution might best be achieved.

Implementation and Development of SVS. GHSC-TA continued to support the enhancement of SVS aimed at adding ordering and receiving functionality to the currently available visibility functionality. With the user acceptance testing (UAT) completed and report finalized, the focus shifted to planning and implementing the eOrdering proof of concept (PoC), focusing on testing the new functionality in a live use case setting within each of the SVS deployed provinces.

GHSC-TA assisted with presenting UAT findings/recommendations to senior AMD management and establishing a mandate to engage provinces and implement the PoC while adhering to recommendations of the UAT report.

The eOrdering PoC is aligned to, and implemented as part of the “advised pull” replenishment planning assistance affected by GHSC-TA. The close relationship at implementation between eOrdering as a tool and the replenishment planning paradigm allows for an efficient feedback loop enabling developers to respond to requirements at facilities quickly. However, from Quarter 3, development efforts have largely moved away from refinement of SVS eOrdering functionality and have focused largely on implementation of the “COVID-19” instance of SVS in response to the pandemic, with implementation of eOrdering continuing to be led by the replenishment planning team.

However, notwithstanding COVID-19 challenges, advised pull with SVS eOrdering system support was implemented in the Free State.

OUTCOME LEVEL RESULTS

GHSC-TA hypothesizes that by supporting the AMD in the design and implementation of IT systems and the NSC, the AMD will be empowered to deploy systems that support the AMD strategy and enable evidence-based decision-making, leading to improved medicine availability. GHSC-TA monitors this expected outcome – improved evidence-based decision making – via four KPIs: percentage of users utilizing the NSC to review medicine availability trends and reports (KPI 12), number of health establishments and warehouses utilizing MMDS as a source of master data (KPI 13), number of health establishments using core supply chain information systems to order and/or receive stock (KPI 14), and percentage of health establishments reporting stock availability to the NSC (KPI 15). The following sub-sections detail Year 5 data, progress against targets, and comparison against previous years for each of these KPIs.

KPI 12. PERCENTAGE OF USERS UTILIZING THE NSC TO REVIEW MEDICINE AVAILABILITY TRENDS AND REPORTS

This indicator measures the frequency with which licensed users access the data available on the NSC dashboards. GHSC-TA has defined utilization as logging on to the NSC at least once a month to review data.

At the end of Year 5, 66 percent of licensed users accessed the NSC dashboards at least once per month, below the target of 80 percent but an increase from 53 percent the previous year. Use of the NSC increased from 53 percent of licensed users in Quarter I, to 66 percent in Quarter 4, as shown in Figure 10. In Quarter I, a dip was observed due to the holiday period (December 2020 - February 2021). In addition, the switch from the previous server to the new server for the NSC resulted in users experiencing some challenges with login credentials resulting in lower user uptake over this period. This challenge was addressed with the vast majority of users being able to access the NSC. In the remaining part of the year the increase could be associated with the continued support and engagements by GHSC-TA through the PST.

Figure 10 Percentage of Users Utilizing the NSC to Review Medicine Availability Trends and Reports

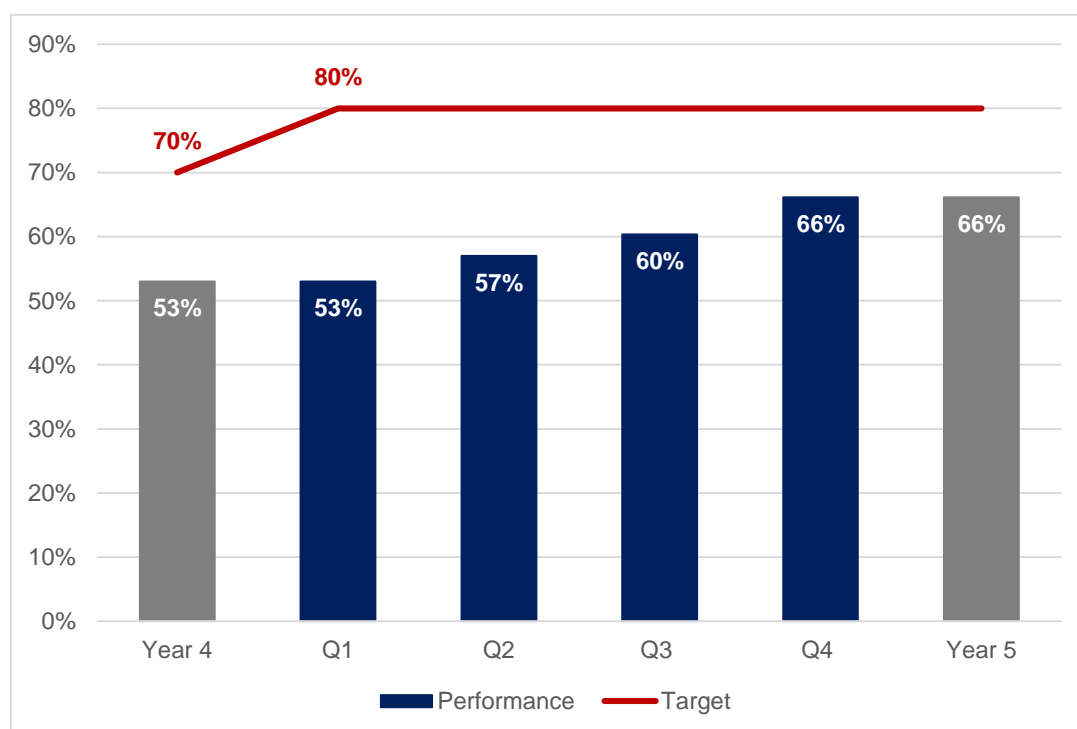
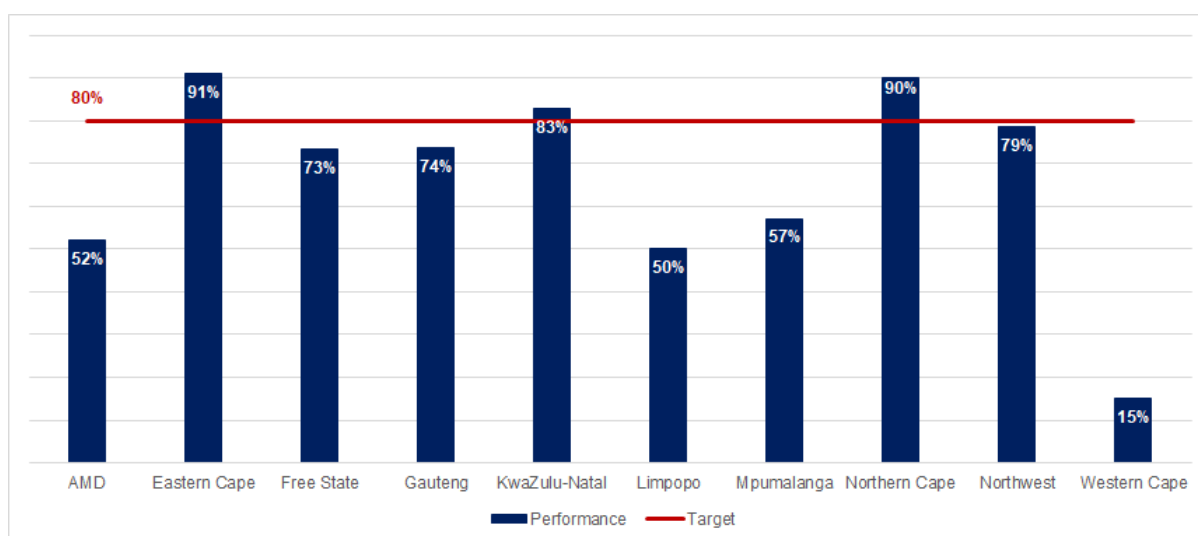


Figure 11 shows significant variation in use across provinces, with Eastern Cape, KwaZulu-Natal and Northern Cape above the 80% target and six provinces and AMD below target.

Figure 11 Percentage of Users Utilizing the NSC to Review Medicine Availability Trends and Reports Disaggregation by Provinces



In most provinces, the reallocation of licenses of inactive users, hosting a number of end-user support webinars, and targeted stakeholder engagements focusing on users with low usage improved performance. In addition, combined reporting of PPE, medicine availability and COVID-19 reporting compliance as well as resolving RxSolution API server challenges also contributed to improvements in usage.

KPI 13. NUMBER OF HEALTH ESTABLISHMENTS AND WAREHOUSES UTILIZING MEDICINE MASTER DATA SYSTEM AS A SOURCE OF MASTER DATA

This indicator measures the number of health establishments (including hospitals and clinics) and provincial warehouses, utilizing MMDS as a source of master data. Two of the core functions of the MMDS are the MHPL and the formulary tool. Utilization is defined as either drawing information from the MHPL to inform practices, or creating a formulary.

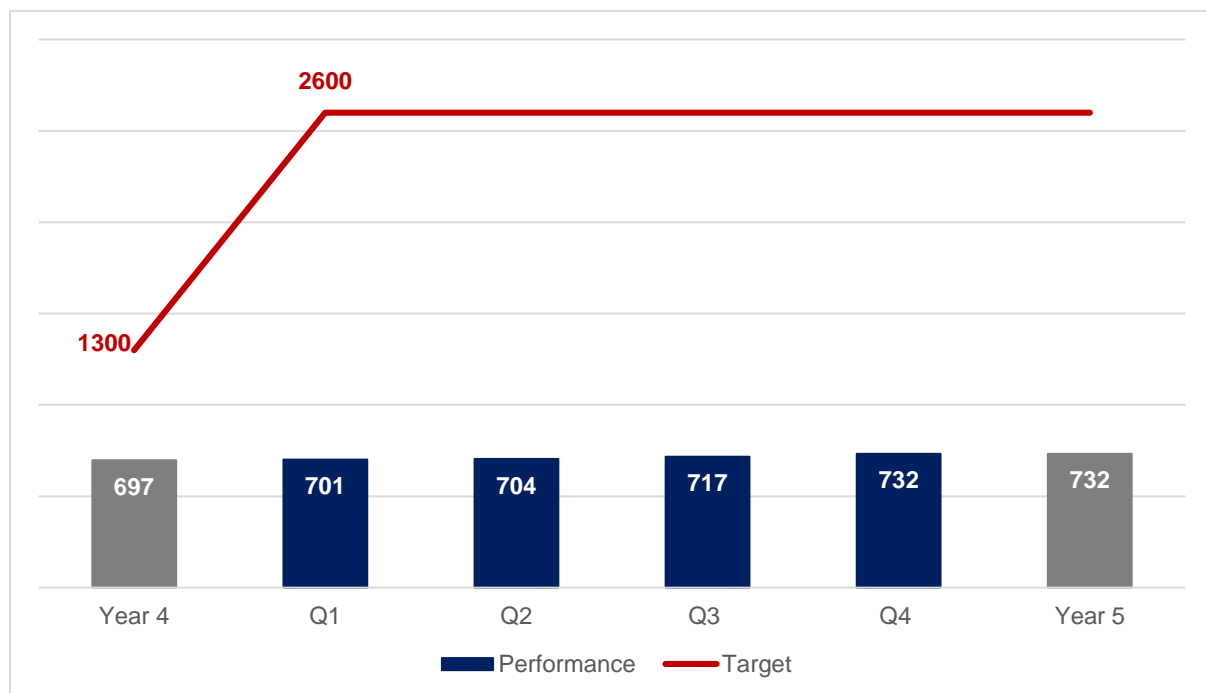
GHSC-TA provided technical support to the MMDS developers to integrate MMDS data into SVS via system-to-system integration, where development work is now complete with the focus moving to the management of the transition with full implementation expected by the end of Quarter 1 of Year 6. GHSC-TA will track and report on this metric when these integrations go live in October 2021.

KPI 14. NUMBER OF HEALTH ESTABLISHMENTS USING CORE SUPPLY CHAIN INFORMATION SYSTEMS TO ORDER AND/OR RECEIVE STOCK

This indicator measures GHSC-TA's support for the expansion of core supply chain information systems including SVS and RxSolution across health establishments. By the end of Year 5, the total number of health establishments using information systems for order management was 732, an increase from 701 reported in Quarter 1, as shown in Figure 12. Notably, performance remains below the target of 2600. During the reporting period a total of 621 health establishments were using RxSolution, 110 were using JAC, and two were using Meditech, as shown in Figure 13. Previously, growth in this metric had come from RxSolution as a core medicine inventory management system for hospitals and CHCs. There is a reduction in the expansion of RxSolution as saturation increases

for the available sites. Further growth is expected to come from the new SVS eOrdering functionality as part of the advised pull replenishment approach that is being rolled out.

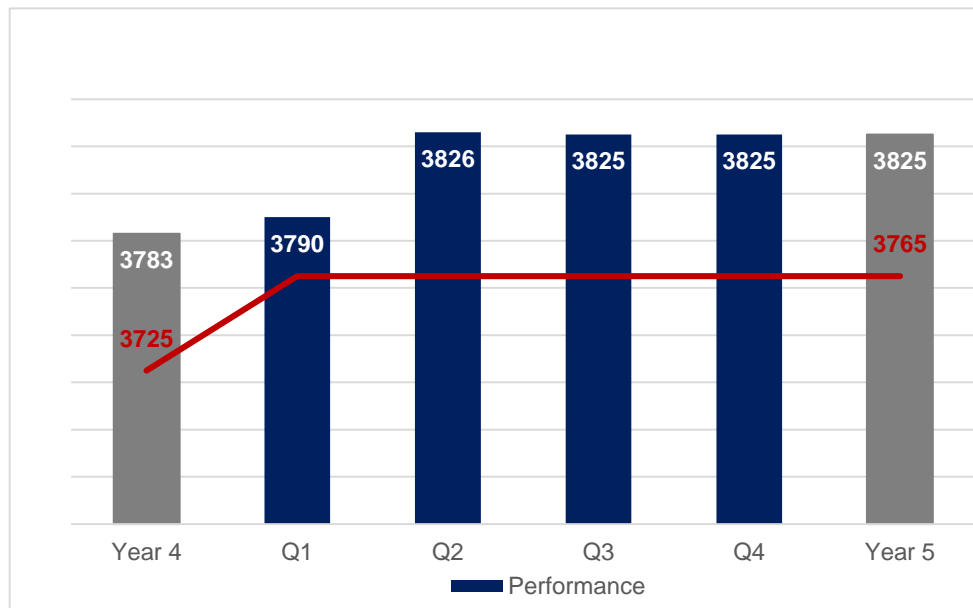
Figure 12 Number of Facilities Using Core Supply Chain Information Systems to Order and/or Receive Stock



KPI 15. REPORTING COMPLIANCE – NUMBER OF HEALTH ESTABLISHMENTS REPORTING STOCK AVAILABILITY TO THE NSC

The reporting compliance KPI shown in Figure 13 below measures the number of health establishments reporting stock availability to the NSC. In Year 5, a total of 3825 health establishments reported stock availability to the NSC. Health facility reporting remained consistent from Quarter 2 to the end of the year. The increase in performance can be attributed to the ongoing support provided to provinces by the PST to improve compliance, routine presentations to the HOPS as part of the COVID-19 response and ongoing dashboard optimization and harmonization.

Figure 13 Number of Health Establishments Reporting Stock Availability to the NSC





PROVINCIAL SUPPORT AND REPLENISHMENT PLANNING

This work aims to streamline and support coordinated implementation of the activities across the various work streams within the GHSC-TA program in the provinces and, in so doing, ensure coordination, alignment, and successful implementation of the various supported supply chain reforms.

ACTIVITIES AND ACHIEVEMENTS

During this reporting period the activities of the team remain significantly impacted by the COVID-19 pandemic, including the nationwide COVID-19 vaccination program. These constraints have meant that not all GHSC-TA's province-facing activities were implemented as planned.

INSTITUTIONALIZATION OF THE NATIONAL SURVEILLANCE CENTER

The PST continued activities to drive NSC institutionalization, including the circulation of bespoke reporting compliance and medicine availability reports, flagging areas of focus, and continuous monitoring of performance on a weekly basis. The team provided direct support to, and engaged with provincial counterparts and the DSPs to highlight challenges and devise solutions. GHSC-TA supported the launch of an information drive to address the dip in NSC usage observed after the switch to the new NSC server. Notably, the NSC walk-through sessions held in the various provinces resulted in a marked improvement in NSC usage rates.

The PST in the Eastern Cape developed a bespoke report which is shared with facilities. Overall reporting compliance stabilized, and medicine availability showed an upward trend across all levels of the supply chain, with a marked improvement in the contraceptive category. This report has also led to more customized formularies at facilities using RxSolution, which in turn improved data submission to the NSC. The maintenance of the provincial API server has been fundamental in improving reporting compliance at hospital level, with community health centers also being added onto the API, enabling automated reporting to the NSC.

In Gauteng, GHSC-TA held a series of NSC walkthroughs with NSC licensees and pharmacy managers. Although not all pharmacy managers have licenses, they know which reports can be requested from their relevant NSC licensee. In addition, 41 clinics were connected to the RxAPI by October 2021. In cases where facilities failed to report via the API, communication was sent to these facilities to encourage them to submit manual reports as back-up.

In KwaZulu Natal, the PST established a framework for engagement and synergy by coordinating and presenting at meetings between DSPs and provincial and district pharmaceutical services. DSPs presented their district activities and further discussions were held on improving medicine availability and reporting compliance, placement of pharmacist's assistants to support medicine availability, expired stock and audit findings and development of KPIs to monitor medicine supply management at DSP supported facilities. In KwaZulu-Natal, an increase in user activity correlated with GHSC-TA follow-ups with non-active users and marketing the benefits of NSC at provincial meetings.

To ensure the timely availability of data to inform medicine supply management, the PST collaborated with the NSC team to develop a *RxAPI Facilities Connectivity Report*, which identifies sites where automatic submission of reports to the NSC have failed. This report aims to optimize reporting compliance among sites submitting data through the RxSolution Automated Reporting API. The PST developed a *RxSolution Automatic Reporting Troubleshooting Guide*, approved by AMD in April 2021. This guide aims to supplement the *RxAPI Facilities Connectivity Report* and build capacity within the provinces to identify and address reporting challenges via the RxAPI. This guide assists users in identifying the cause of reporting downtime and provides suggested remedial action steps. It also guides the relevant person within the provinces to troubleshoot the provincial API in instances where reporting challenges cannot be resolved at site level.

MEDICINE SUPPLY CHAIN MANAGEMENT

The PST provided extensive support for the review and updating of hospital SOPs in KwaZulu-Natal and Mpumalanga. With the assistance of the PST in KwaZulu-Natal, over 100 depot, hospital, and clinic SOPs were reviewed and updated in Quarter 1.

REPLENISHMENT PLANNING

Replenishment planning deals with a combination of activities and processes required to ensure that stock is replenished at the right place at the right time and in the right quantities to meet patients' needs. These activities focus particularly on supporting provincial implementation and institutionalization of good inventory management practices. Some of the key areas covered include standardization of medicine master data, strengthening formulary management processes, and optimizing the use of proven supply planning principles to inform replenishment, which includes

optimizing min-max calculation methodologies and introducing new methods for replenishing stock at health establishments.

MMDS and Formulary Tool. Formularies are essential tools supporting RMU and informing medicine supply management activities. They provide the details of which medicines should be stocked at each health establishment and assist to ensure that these medicines are aligned with the EML and STGs. Over the year, GHSC-TA made significant progress in the Free State, working closely with the district pharmacists in Fezile Dabi and Thabo Mofutsanyana districts, and the Provincial PTC representative to build formularies on the MMDS for the districts and the province, respectively.

The approval and loading of all individualized formularies onto the MMDS Formulary Tool was completed for 46 facilities (PHCs, CHCs and hospitals) in Fezile Dabi district and 84 facilities in Thabo Mofutsanyana district with 130 facility formularies loaded and finalized on the tool. The focus in these districts has now moved to handing over continued maintenance activities and ongoing support to capacitate formulary owners to maintain their formularies on the system.

Additionally, progress was made towards formulary loading in Xhariep district (Free State) and Ngaka Modiri Molema district in North West, as well as preliminary data analysis in the Eastern Cape.

Optimization of Minimum and Maximum Stock Levels. Min-max stock levels are basic stock usage parameters used to inform replenishment management processes. When placing a requisition or purchase order, stock levels are replenished back up to the maximum level to ensure sufficient stock until the next order cycle. This year, GHSC-TA continued to make significant strides towards operationalizing the optimized methodology for calculating min-max stock levels. The POC work initiated in the North West in Year 4 was expanded in the Free State, focusing on Fezile Dabi. This work was scaled up to the rest of the province resulting in min-max levels optimized and implemented on SVS facilities in the rest of Fezile Dabi, and Xhariep district. In addition, the team developed min-max reports on the NSC to support proactive management of medicine availability and stock keeping in line with the set min-max levels. These parameters along with the min-max reports under development on the NSC, will go a long way to empower managers to manage the supply and use of medicines proactively.

Engagements to commence this work in the Eastern Cape and scale up work in the North West have also begun, with the support from the HOPS and operational teams.

Advised Pull. The informed advised pull process, implemented by GHSC-TA, helps to create a standard approach to replenishment planning at health establishments. This process is enabled through optimization of the min-max stock level calculation applied to the customized formulary of a health establishment and enabled electronically through the use of SVS 2.0 or RxSolution. During the period under review, GHSC-TA finalized the Free State POC report which was received successfully by both the province and the NDoH with an agreement to expand the work to the rest of the province. To this end, the program has focused efforts on ensuring recommendations from the POC are addressed and developing transition/training packs based on the trainer methodology to ensure quick traction of the work in the rest of the province. In the North West, advised pull was implemented in a further 12 sites bringing the total facilities to 16. Initial planning engagements have been held with the Eastern Cape who is keen to implement the solution. The team continues to work with the governance workstream to firm up the national policy on replenishment planning.

OTHER ACTIVITIES

Provincial activities in support of demand planning remained focused on supporting the routine demand planning review meetings in provinces where this work has been initiated, including facilitating stakeholder engagement. Provincial activities relating to RMU have been deprioritized, and will recommence as soon as feasible.

OUTCOME LEVEL RESULTS

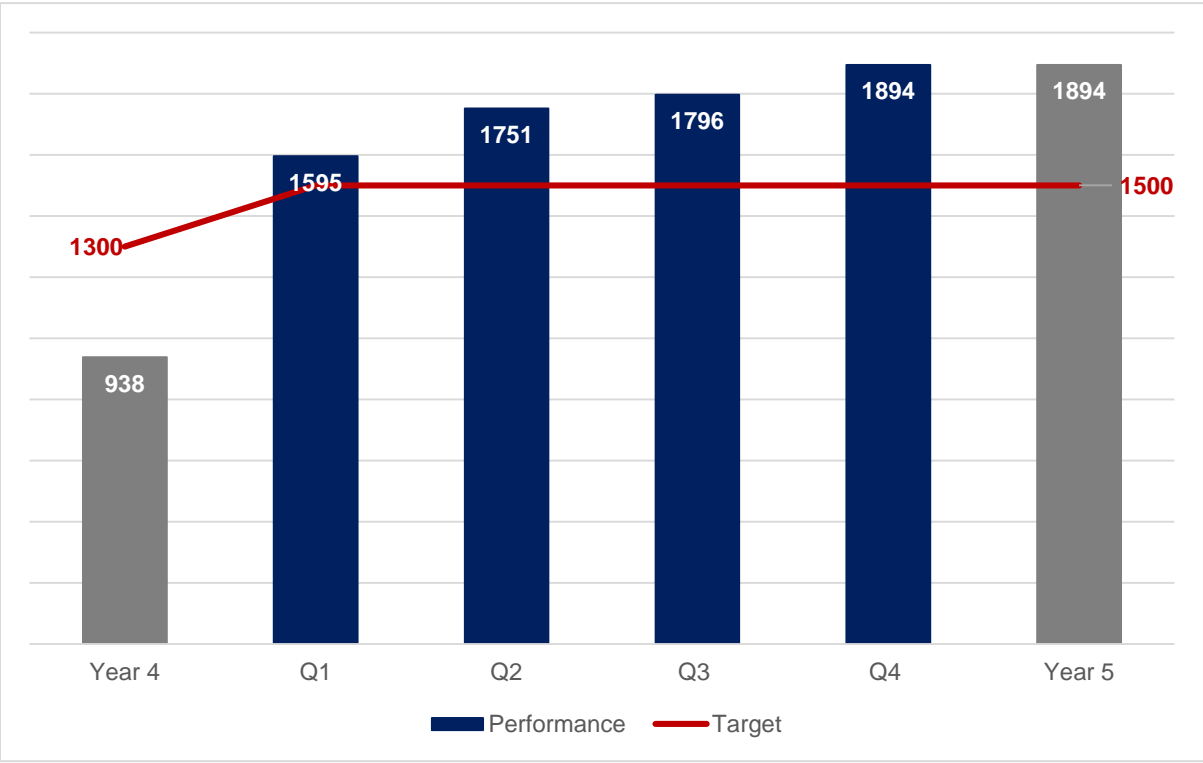
KPI 8. NUMBER OF HEALTH ESTABLISHMENTS AND WAREHOUSES WITH CONFIGURED MINIMUM AND MAXIMUM (MIN-MAX) STOCK LEVELS FOR STOCKED MEDICINES BEING REPORTED TO THE NATIONAL SURVEILLANCE CENTER

This indicator measures GHSC-TA activities that contribute to the configuration of min-max stock levels.

By the end of Year 5, 1,638 clinics and 282 hospitals configured min-max stock levels on either the SVS and/or RxSolution systems³, bringing the Year 5 total to 1,894 against a target of 1,500. Performance increased from 938 in the beginning of the year to 1894 by the end of the year, as shown in Figure 15. In Quarters 1, 2 and 3, the increase in performance was largely due to a combination of provincial efforts to better manage min-max levels and GHSC-TA assistance to provinces in improving and standardizing their min-max calculation methodology. In Quarter 4, the improvement in performance is mainly associated with completing the process to upload optimized min-max levels for SVS sites in the Fezile Dabi and Xhariep districts in the Free State.

³ 26 health establishments use both systems.

Figure 14 Number of Health Establishments and Warehouses with Configured Minimum and Maximum (Min-Max) Stock Levels for Stocked Medicines Being Reported to the NSC





SUPPORTING THE GOVERNMENT OF SOUTH AFRICA IN THE RESPONSE TO COVID-19

GHSC-TA provides TA to the GoSA to strengthen public health systems and supply chains to advance an AIDS-free generation, increase medicine availability, and contribute to the achievement of universal health coverage.

An effective supply chain is key to a consistent and uninterrupted supply of medicines to meet patient demand. Supply and demand planning is aimed at forecasting potential disruptions to the supply chain. However, rapidly evolving global pandemics can be difficult to forecast, giving them the potential to have a negative impact on health outcomes, quality of life, and a nation's economy. The global COVID-19 pandemic has the ongoing potential to cause challenges in the availability of medicines used to fight HIV/AIDS, TB, and other diseases.

Over and above medicines, it is critical to limit the spread of the disease and protect both patients and health care workers. To this end, the need for a reliable supply of PPE is also of paramount importance. A key response to the COVID-19 pandemic is the global roll out of effective vaccines. In South Africa, GHSC-TA is providing comprehensive TA to the NDoH, provincial DoH, the private

sector and other stakeholders including Business South Africa, in the planning and implementation of the roll out of the COVID-19 vaccination program.

OBJECTIVES

The first COVID-19 case detected in South Africa was on March 5, 2020. As of September 30, 2021, the number of confirmed cases stood at 2,902,672, an increase of 928,700 (47 percent) in the previous three months. GHSC-TA is supporting the NDoH, AMD and provinces with numerous COVID-19 related activities, thereby assisting to ensure that routine health services continue during the pandemic. The NDoH has tasked GHSC-TA to coordinate the vaccine logistics, ensuring the availability of vaccines and related ancillary items at public and private vaccination sites.

APPROACH AND ACHIEVEMENTS

GHSC-TA has continued to assist the NDoH in mitigating the impact of the COVID-19 outbreak in South Africa on the medicine and related medical products supply chain and assisting in responding to the demand for medicines and vaccines to manage the disease.

SUPPORT FOR THE MAC ON COVID-19

In addition to working with AMD, GHSC-TA also supported the MAC on COVID-19, a non-statutory advisory committee appointed by the Minister of Health to provide high-level strategic advice to the Minister and the Director-General of Health on the management of the COVID-19 outbreak in South Africa. During Year 5, GHSC-TA continued providing secretariat support to the MAC on COVID-19 and its sub-committees. The program assisted in convening meetings, documenting proceedings, and drafting over 50 advisories to the Minister of Health on COVID-19 related issues. The program also assisted with the communication of advisories to the Incident Management Team of the NDoH. GHSC-TA performed an analysis of the implementation of all advisories and developed reports and presentations to the previous Minister and Acting Minister of Health, and the new Minister of Health to introduce the mandate and function of the MAC on Covid-19.

COVID-19 RESPONSE TEAM

In response to the pandemic, AMD assembled a national and provincial COVID-19 response team. During this period, GHSC-TA continued to support AMD in weekly meetings (the AMD preparatory meeting and the provincial stakeholders meeting), reviewing the demand and supply of Covid-19 medicines.

GHSC-TA also supported the EDP and the demand planning team to generate forecasts of medicine requirements to treat patients presenting with COVID-19 and for items where security of supply was a challenge. The demand plan is published periodically and is based on anticipated medicine requirements, patient projections, and baseline demand forecasts. Weekly monitoring continued and COVID-19 infection numbers were shared with the core team and the provincial task team. The GHSC-TA team continued to work closely with the South African COVID-19 Modelling Consortium to ensure that updated information was built into the forecasts, which were shared with the supply planning team to review supply shortages and advise provinces regarding increased stock holding required.

GHSC-TA continued to support the NDoH and PDoH with the daily refreshing of the COVID-19 dashboards. The COVID-19 dashboards provide medicine availability and reporting compliance information using product categorization as determined by the COVID-19 response team. Categories include COVID-19 priority list items, COVID-19 treatment items, chronic medicines, and non-COVID-19 medicines. The program assisted with query resolution and the monitoring of reporting compliance and medicine availability, which was presented to provincial and national stakeholders on a weekly basis.

GHSC-TA further supported the COVID-19 response by developing additional MAC dashboard views consisting of national and provincial level information. The program submitted these views, showing the seven-day moving average of daily hospital admissions and in-hospital deaths.

PERSONAL PROTECTIVE EQUIPMENT

Due to the COVID-19 pandemic, the international demand for PPE increased, resulting in challenges in PPE supply for health care workers.

In South Africa, the contracted suppliers were unable to keep up with the demand. GHSC-TA assisted NDoH in drafting specifications for a supplementary tender for PPE apparel. This work was done in collaboration with various entities, including the South African Health Products Regulatory Authority (SAHPRA); the National Regulator for Compulsory Specifications (NRCS), the governing body for import registration of respiratory masks and hand sanitizers; the Department of Trade Industry and Competition (DTIC), responsible for localization and manufacturing; and National Treasury, the custodian of the transversal tenders.

GHSC-TA, whilst in constant communication with National Treasury, monitored the progress of awards to keep provinces informed on further availability. GHSC-TA continued to provide dedicated support to resolve challenges relating to the supply and equitable distribution of the PPE, acting as a link between the NDoH, National Treasury, contracted PPE suppliers, and provinces to improve PPE availability.

Furthermore, GHSC-TA supported the NDoH and PDoH with supplier performance management, working with Treasury to monitor the two main PPE contracts (RT32 Apparel and Respirator Masks / RT76 Gloves).

GHSC-TA changed the PPE forecast to reflect updates to the Infection Prevention Control (IPC) guidelines. The PPE forecasts assist the PDOH to manage their PPE stock availability. GHSC-TA continued to work with suppliers and provincial finance teams to overcome supply blockages due to non-payment.

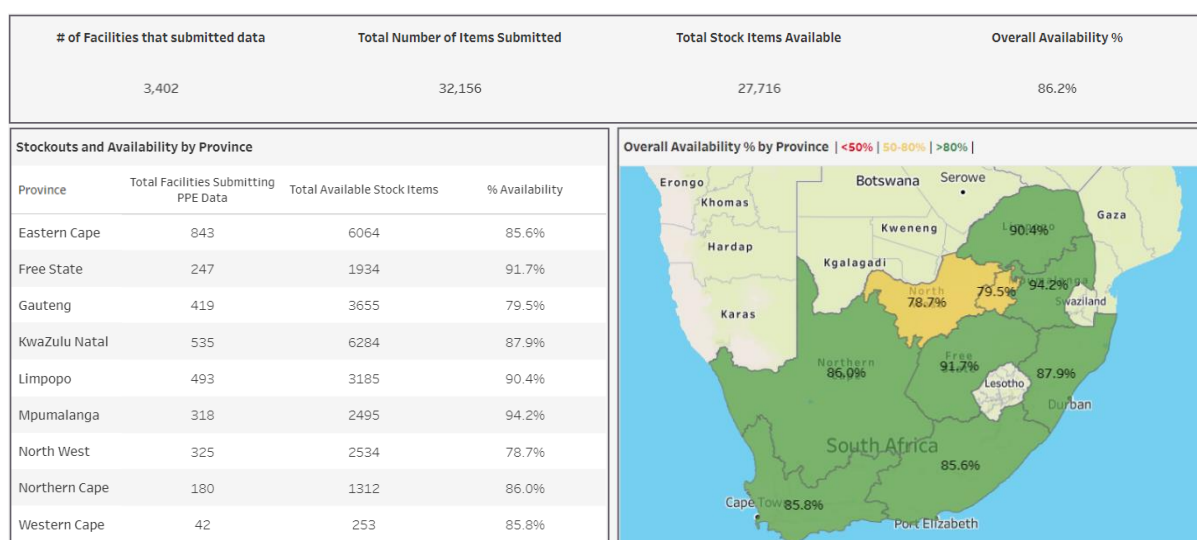
To improve provincial PPE oversight, GHSC-TA compiled a weekly provincial PPE information presentation detailing PPE availability, highlighting gaps in supply, and providing information on actions to mitigate items out of stock at the depot and health establishment levels.

OUTCOME LEVEL RESULTS

To monitor the performance of the PPE supply chain, GHSC-TA developed PPE-specific indicators, including the percentage availability of PPE at health establishments and the percentage of health establishments complying with PPE reporting requirements.

The first indicator reflects the availability of PPE in all health establishments (PHC clinics, CHCs, hospitals, and PPE distribution centers) weekly. This information assists stakeholders in identifying current stock-on-hand quantities and proactively reducing shortages and stock-outs of PPE by looking at stockholding against the forecast. This indicator is intended to monitor PPE inventory across different levels of the national supply chain and is shown in Figure 15.

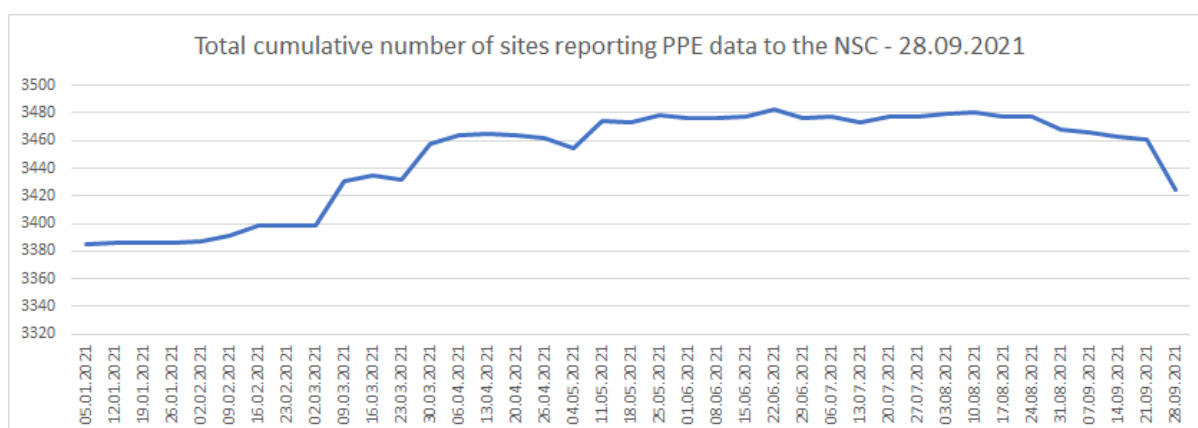
Figure 15 Availability of PPE across Provinces



By the end of Year 5, availability of PPE items as specified in the IPC guidelines across all provinces was 86.2 percent against a target of 90 percent. GHSC-TA consistently collaborated with provincial PPE coordinators to assist where possible in unblocking procurement and supply obstacles.

The second indicator, **PPE reporting compliance**, shows how many health establishments and distribution centers report PPE data to the NSC. For this reporting period 3,402 of 3,709 health establishments (92 percent) submitted data to the NSC. However, consistency in reporting remains the greatest challenge. GHSC-TA continued to support the NDoH to ensure improved PPE reporting compliance by working with provincial PPE appointed coordinators and other key stakeholders, assistance that will continue moving forward.

Figure 16 Total Cumulative Number of Sites Reporting PPE



ROLL-OUT OF COVID-19 VACCINES

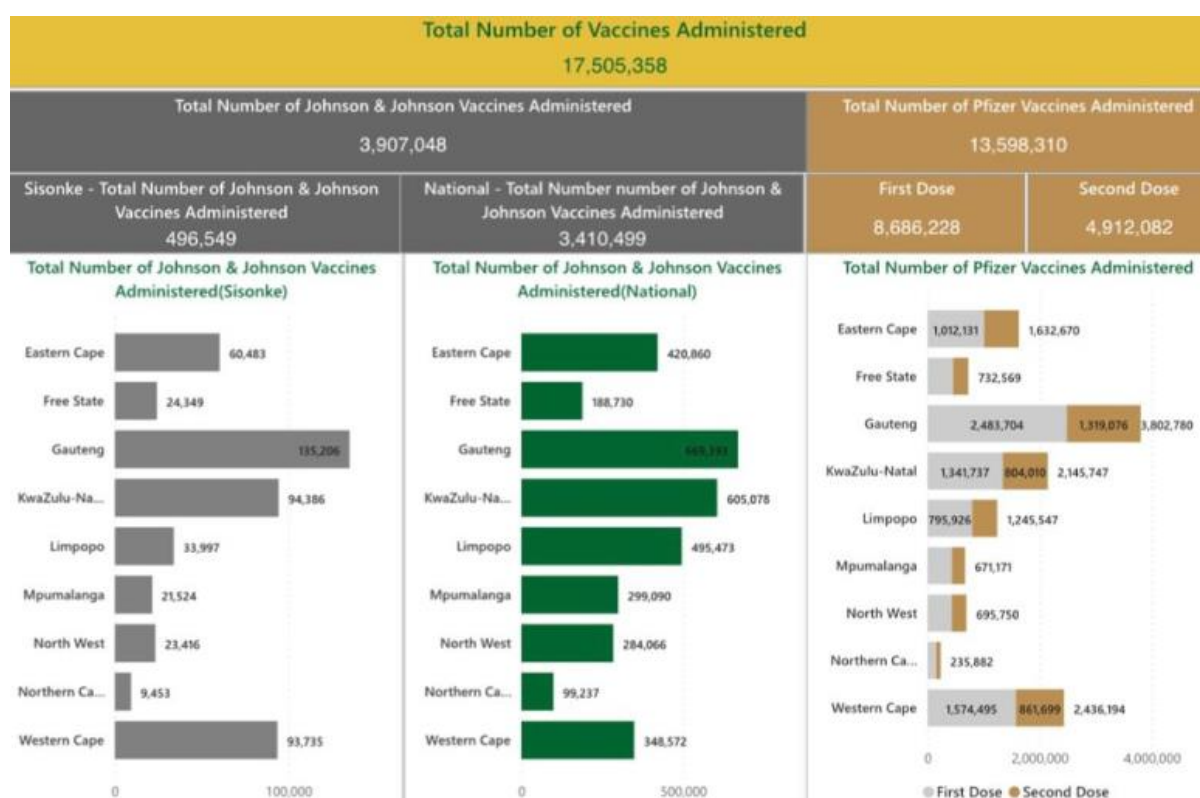
In November 2020, GHSC-TA was requested by the NDoH to coordinate the logistics related to the national vaccine program. This includes inbound shipments, management of vaccine distributors and outbound logistics from central storage to vaccine distribution or vaccination sites in the public and private sectors. This work included assistance to the Sisonke Program, a phase 3b clinical trial that saw 496,000 health care workers receiving the Johnson and Johnson vaccine before the national program commenced. Furthermore, GHSC-TA was requested by Business for South Africa (B4SA) to provide a resource specifically aimed at coordinating private sector vaccine logistics.

GHSC-TA assisted with the development of the special conditions of contract for the tender for vaccine distributors. GHSC-TA further assisted with the due diligence of short-listed suppliers for the tender, providing expert technical assistance related to vaccine warehousing and distribution capabilities.

GHSC-TA created a supply, allocation and distribution team to vet and manage all vaccine orders. From May 2021 through September 2021, GHSC-TA coordinated 32 deliveries from the vaccine suppliers, Johnson and Johnson, and Pfizer, amounting to 33,881,620 doses. GHSC-TA's COVID-19 supply and distribution team vetted and processed 4,823 orders, resulting in the administration of 17,505,358 vaccine doses.

GHSC-TA developed the National Health Private/Public Vaccine System (NHPVS). This application enables public and private sectors to submit vaccine orders electronically, improving coordination, management, and governance. The NHPVS consolidates data provided by the four leading private sector ordering systems, making the ordering process for vaccines more efficient. Furthermore, functionality was developed to enable public sector institutions to place orders electronically. This provides for a sustainable solution for the multi-sectoral ordering of vaccines.

Figure 17 Total Number of Vaccines Administered

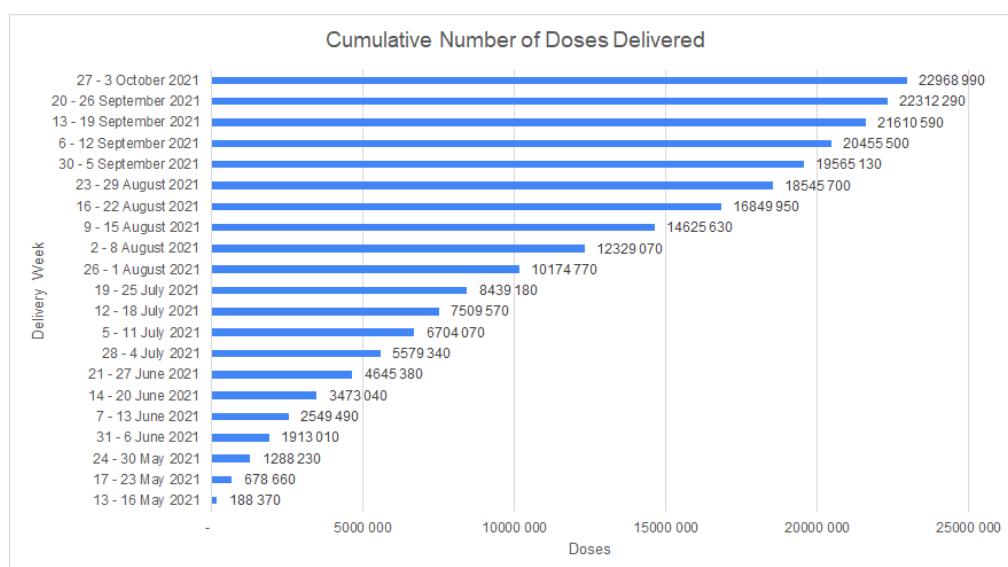


Vaccination site typology and approval. During the reporting period, GHSC-TA assisted the NDoH with the design of the service delivery platform and the description of the different sites where vaccination services can be provided, including primary vaccination sites and different types of outreach services (fixed, temporary, and mobile). The team also worked with the NDoH and the South African Pharmacy Council on implementation of the use of section 22A(15) of the Medicines and Related Substances Act 101 of 1965 (the Medicines Act) to enable various organizations to acquire, possess, use, and supply COVID-19 vaccines and the medicines needed to manage any adverse reactions as part of the vaccine roll-out. GHSC-TA developed the application form for permits, the permit template, and the supporting SOP. By the end of the year a total of 3251 permits had been issued.

Supply and distribution. During Year 5, GHSC-TA laid a solid foundation for the vaccine supply and distribution platform, implementing the following tools and processes:

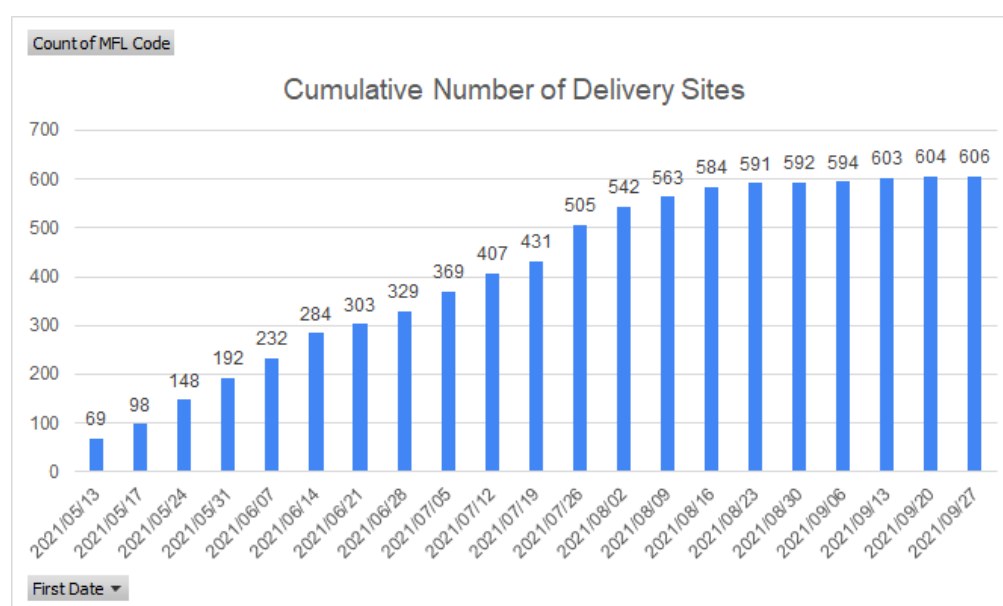
- **Purchase Order Control.** This tool takes in purchase order information from delivery sites and collates a purchase order, where they can be rationed and then placed on the NDoH appointed distributors.
- **Vaccine Distribution** COVID-19 vaccines have been delivered in large quantities over the past several months. By 30 September 2021, 68% of all vaccines received had been distributed to vaccination sites and 76% of these had been administered to patients.

Figure 18 Cumulative Number of Doses Delivered



- Growth in Vaccine delivery sites** Since the start of the vaccine roll-out, the number of vaccine delivery sites increased from 69 sites in the first week to a total of 606 sites. This resulted in a growth of 778.26 percent over six months. GHSC-TA facilitated the onboarding process for all 606 sites.

Figure 19 Cumulative Number of Delivery Sites



- Safe and secure movement of Vaccines** GHSC-TA coordinated the weekly engagements between the vaccine distributors and the National Joint Operational and Intelligence Structure (NATJOINTS) to ensure the safety and security of vaccines on arrival and throughout the supply chain. All new vaccine shipments are escorted from the airport to the distributors, and all outbound shipments to vaccination sites or primary distribution sites are accompanied by

South African Police Service vehicles. Furthermore, the South African Air Force has assisted with reaching remote destinations in the shortest possible time.

- **Inventory planning** GHSC-TA coordinated the inbound shipments with the distributors and determined the correct volume of vaccines to be supplied to each distributor to serve the customer base. GHSC-TA provides the contract management function of the vaccine distributors on behalf of the NDoH.
- **Vaccine Reconstitution:** GHSC-TA assisted the NDoH in sourcing the specific diluent for the reconstitution of one of the COVID-19 vaccines in use. The NDoH published a request for quotations which was awarded upon registration by SAHPRA and was readily available. GHSC-TA, together with the NDoH, also offers assistance in collaboration with the supplier of the vaccine and the supplier of the diluent for supply of this item to other African states upon request.
- **Vaccine Ancillary Items.** Due to the international vaccination rollout, the ancillary items required were in short supply. GHSC-TA provided dedicated support to resolve challenges relating to the supply and distribution of the ancillary items required to administer the vaccines. The program acted as a link between the NDoH, National Treasury, contracted suppliers, and provinces. GHSC-TA worked with National Treasury's contracted suppliers to ration orders when necessary to ensure equity in supply across both the public and private sectors. All restrictions have since been lifted as quantities are sufficient for the program. Continuous monitoring of availability, supplier performance through National Treasury and addressing challenges as they arise at facility level is ongoing.
- **SVS COVID-19 Vaccines Instance.** In response to the COVID-19 pandemic and vaccine roll-out program, GHSC-TA provided extensive support to the NDoH with the rollout of the SVS COVID-19 instance to monitor vaccines and ancillary items at sites in both the public and the private sector and address possible challenges.
- **On the ground SVS support.** GHSC-TA provided ongoing support to ensure that sites were appropriately equipped to report on SVS COVID-19 and assisted with technical challenges. Group training sessions and one-on-one sessions were provided to empower site staff and champions on enrolling and reporting on SVS COVID-19, detailing the reporting requirements for vaccines, ancillary items and diluents. Basic troubleshooting steps to follow to address challenges at site level were included. The PST provided Vaccine Dashboard and SVS web portal walkthroughs and/or training with groups and individuals throughout the public sector to strengthen capacity within PDoH to effectively monitor COVID-19 vaccine reporting and availability data to ensure the coordinated and equitable distribution of the vaccine in the roll-out. The training has improved overall adoption to 76 percent, with public facilities at 78 percent adoption and private facilities at 75 percent adoption.

To improve data quality and reporting compliance, the PST commenced with targeted group sessions during Quarter 4 where discrepancies on SVS COVID-19 data and overall reporting compliance were flagged. During these sessions, the basic principles of SVS COVID reporting and the importance of adhering to reporting requirements were presented.

- **COVID-19 Vaccine Toolkit.** To support the roll-out and implementation of the COVID-19 vaccine, GHSC-TA has reviewed and finalized SOPs and job aids that support good practice and governance in the handling and management of COVID-19 vaccines at sites. These tools cover everything from the receipt of vaccines, to storage and handling, to the distribution of vaccines to secondary sites whilst maintaining the cold chain and integrity of the vaccine. In addition, the program is supporting efforts by the NDoH to build a central repository of

material and supporting tools on the Knowledge Hub to be easily accessible by implementers in both the private and public sectors. By the end of the period, GHSC-TA had finalized numerous job aids, a total of 22 SOPs, (with 16 approved and six pending finalization) as well as other related governance documentation.

- **COVID-19 Vaccine Pharmacovigilance.** GHSC-TA assisted the National Immunization Safety Expert Committee (NISEC) with monthly Vaccine Safety scientific reports on events reported following COVID-19 vaccinations. The reports included detailed analysis of the data received by SAHPRA and are used to inform discussions of the MAC on Vaccines.

LESSONS LEARNED

Supply challenges at the various phases of the COVID-19 vaccine program. On reflection, the vaccine program has moved through three distinct phases, each with its own unique supply challenges. The lessons learned here may assist other countries in their vaccine programs. The phases are as below:

- **Constrained supply.** During this phase, there was insufficient supply to meet demand. Doses need to be allocated equitably using appropriate data to make the relevant allocations to both sectors, provinces and districts. A rapid turnaround time from receipt to distribution is required.
- **Constrained vaccination capacity.** During this phase, supply increased, but there was insufficient capacity to store and administer vaccines. Supply needs to consider not only demand but capacity to provide vaccination services.
- **Waning demand and vaccine hesitancy.** Once all “vaccine eager” persons are vaccinated, the demand decreases sharply. Demand was, however, bolstered by rapidly opening vaccination to more age groups. Ultimately though, the supply begins to overtake the demand. This phase sees an increased volume of vaccines stored centrally and an increased risk of wastage due to expiry. During this phase, careful negotiation with suppliers is required to defer shipments while considering the terms and conditions of the supply agreements. Appropriate allocation of inbound and outbound shipments to vaccine distributors is required to avoid breaching storage capacity. Facilitation of the redistribution of vaccines between sites is required to avoid wastage during expiry. This requires careful planning and appropriate infrastructure to avoid cold chain excursions.

Suboptimal reporting compliance of COVID-19 vaccines – Sub-optimal reporting compliance of COVID-19 vaccines was observed in some public health facilities at the beginning of the vaccine program. To address poor reporting compliance, GHSC-TA provided active surveillance of non-reporting facilities daily, developed relationships and engaged with stakeholders, assisted facilities with troubleshooting, and did presentations at provincial meetings. This resulted in improved reporting compliance. A lesson learned was that the creation and expansion of resilient programs is achieved through clear communication of goals and processes for stakeholder buy-in (top management/operational staff). In addition, although processes and technology are essential, people/behaviors serve as the catalysts to initiate and sustain change. Ongoing consultation, flexibility, collaboration and strong leadership are also key to driving and sustaining change.

Group Training sessions not beneficial for some individuals - Large group trainings on SVS were not effective for many participants. The intervention by the PST in Mpumalanga involved coordinating smaller group and one on one trainings with users. This led to effective engagement and better reporting on SVS COVID-19. The lesson learned was that smaller groups showed a better grasp of information shared. Further, the one-on-one sessions could be “tailor made” to address challenges of individuals and smaller groups. In future, both methodologies should be used to enhance learning.

Master data utilized to create an orderly vaccine distribution system - At the start of the pandemic, the vaccine distribution system was chaotic. Provinces and private groups had no structure, and stock was sometimes sent to the wrong place. GHSC-TA implemented several measures to create order in the vaccine distribution system, such as order planning, NHPVS, and order deadlines. This resulted in an orderly vaccine distribution system with governance processes in place. An important

lesson learned was that master data is crucial in building an orderly vaccine distribution system in the pandemic era. Having reliable master data in one central place has allowed the team to set up the COVID-19 Vaccine Control Tower and improved all governance processes.

Trusting our people and processes - The additional vaccine scope required resources to rapidly onboard onto the project to address the limited capacity of team members and a variable and rapidly changing scope. GHSC-TA intervened by setting the expectation of working in a changing environment, conducting an induction program, and connecting resources to other GHSC-TA team members. This led to onboarding capacitated resources to the project to support the additional vaccine work. The lessons learned were that the GHSC-TA induction program has matured and is an asset that we must use wisely and be proud of. GHSC-TA team members worked collaboratively with new resources in a changing environment, with outside perspectives being invaluable and allowing for reflection and smarter ways of work.

The importance of building relations with NDOH counterparts to enhance working together – Since the beginning of the program, GHSC-TA has invested time in understanding the needs of counterparts helped to build trust and buy-in. This strengthened relationships, leading to collaborative thinking and problem-solving to develop sustained solutions. The lesson learned was that GHSC-TA needed to work very closely with NDoH by engaging with them through attending meetings to understand the problems experienced and propose solutions. A garden was used as a metaphor to explain that one needs to prepare the soil before planting seeds, while ongoing maintenance and watering ensures that a good yield is produced.

FINANCIAL MANAGEMENT

ANNEX I. PROGRESS SUMMARY

Table 6: Key Performance Indicator Progress Summary

Indicator	Reporting Year	Baseline Value	Year 5 Proposed Target	Year 5, Achievement	% Year 5 Achievement
PROJECT PURPOSE – STRENGTHEN THE CAPACITY OF THE AFFORDABLE MEDICINE DIRECTORATE AND PROVINCIAL PHARMACEUTICAL SERVICES ACROSS THE MEDICINES SUPPLY VALUE CHAIN TO RESULT IN IMPROVED MEDICINE AVAILABILITY.					
Key Performance Indicator 1: Percentage availability of medicines at health establishments	FY20	78%	90%	86%	96%
OBJECTIVE 1 – IMPROVE SELECTION AND USE OF MEDICINE.					
Key Performance Indicator 2: Number of medicine selection decisions made utilizing health technology assessments	FY20	0	2	0	0
Key Performance Indicator 3: Percentage of assisted Pharmaceutical and Therapeutics Committees with improved operational capacity.	FY20	N/A	25%	Data not yet collected	N/A
OBJECTIVE 2- SUPPORT OPTIMIZATION OF THE SUPPLY CHAIN					
Key Performance Indicator 4: Percentage of antiretroviral units delivered by suppliers within contractual lead-time (supplier performance reliability – on time).	FY20	79%	90%	66%	73%

Indicator	Reporting Year	Baseline Value	Year 5 Proposed Target	Year 5, Achievement	% Year 5 Achievement
Key Performance Indicator 5: Percentage of Master Health Produce List items on transversal contracts excluding antiretroviral units delivered by suppliers within contractual lead-time (supplier performance reliability – on time).	FY20	75%	85%	67%	78%
Key Performance Indicator 6: Supplier performance reliability – Perfect order fulfilment for orders placed on suppliers (in-full).	FY20	73%	80%	63%	78%
Key Performance Indicator 7: Percentage of master health product list items on transversal contracts delivered via direct delivery to the hospitals designed by the provinces to receive direct delivery.	FY20	N/A	70%	Data not collected as activity is no longer implemented	N/A
Key Performance Indicator 8: Min/Max level reporting – Number of health establishments and warehouses with configured minimum and maximum (min/max) stock levels for stocked medicines being reported to the National Surveillance Centre.	FY20	0	1,500	1894	126%
Key Performance Indicator 9: Demand forecast accuracy for provinces using the demand forecasting process.	FY20	N/A	55%	32%	58%
Key Performance Indicator 10: Forecast bias for pharmaceutical forecasts in provinces using the demand forecasting process.	FY20	TBD	<15%	34 %	226%

Indicator	Reporting Year	Baseline Value	Year 5 Proposed Target	Year 5, Achievement	% Year 5 Achievement
Key Performance Indicator 11: Percentage of eligible patients transitioned from Tenofovir/Emtricitabine/Efavirenz to Tenofovir/Lamivudine/Dolutegravir.	FY20	0%	100%	66%	66%
OBJECTIVE 3 – STRENGTHEN GOVERNANCE					
No KPIs scheduled to be reported quarterly.					
OBJECTIVE 4 – IMPROVE WORKFORCE MANAGEMENT					
No KPIs scheduled to be reported quarterly.					
OBJECTIVE 5 – STRENGTHEN INFORMATION SYSTEMS AND INFORMATION MANAGEMENT					
Key Performance Indicator 12: Percentage of users utilizing the National Surveillance Centre to review medicine availability trends and reports.	FY20	N/A	80%	66%	83%
Key Performance Indicator 13: Number of health establishments and warehouses utilizing the Medicine Master Data Systems as a source of master data.	FY20	0	3,000	Not currently able to track	N/A

Indicator	Reporting Year	Baseline Value	Year 5 Proposed Target	Year 5, Achievement	% Year 5 Achievement
Key Performance Indicator 14: Number of health establishments using core supply chain information systems to order and/or receive stock.	FY20	0	2,600	732	28%
Key Performance Indicator 15: Reporting compliance – Percentage of health establishments reporting stock availability to the National Surveillance Centre	FY20	N/A	100%	102%	102%
Objective 6 – Improve Financial Management					
Key Performance Indicator 16: Number of provinces who review their budget vs. actual as defined in the new budgeting process to support the ring-fenced budget.	FY20	0	4	9	225%
Key Performance Indicator 17: Percentage of expenditures on non-Essential Medicine List items.	FY20	1.60%	<10%	7.8 %	100%

ANNEX 2. SUCCESS STORIES

1. Improving communication between the Affordable Medicines Directorate and its stakeholders
2. WORKING TOGETHER - To improve access to medicines in the Free State
3. Responding to COVID-19 – Managing the supply of PPE
4. The COVID-19 Vaccination Program in KwaZulu-Natal: A Journey of Connection, Commitment and Coordination
5. Rolling out COVID-19 Vaccines in South Africa



Improving communication between the Affordable Medicines Directorate and its stakeholders

Communication is a critical function of the Affordable Medicines Directorate (AMD) in the National Department of Health (NDoH) as it cuts across each of its core activities. Good communication with different stakeholders is crucial not only to the success of the supply chain, but also to the selection and rational use of medicine. It encompasses both internal and external communication, and impacts the ability of the AMD to influence end-to-end processes and practice.

The United States Agency for International Development (USAID)-funded Global Health Supply Chain Program – Technical Assistance (GHSC-TA) works in collaboration with the NDoH, Provincial Departments of Health, and regulatory bodies to strengthen public health systems in South Africa and improve health outcomes. The GHSC-TA program has worked closely with the AMD team on an on-going basis to enhance communication. Each function of the AMD has its own communication needs requiring their own solutions, medium, and messaging. A successful communication framework ensures that issues related to medicine management are communicated in a timely and effective manner to internal and external stakeholders.

Articulating the vision. One of the first activities undertaken by the GHSC-TA team was to develop a video for use by the AMD to share its vision for the future and showcase

accomplishments. The video was used by the NDoH at various fora to communicate plans and demonstrate progress made.

Understanding the stakeholders. During the first year of the program, GHSC-TA worked specifically with the Essential Drugs Program (EDP) to better coordinate communication efforts of the team. This included re-organization and updating of the stakeholder database, with a focus on building an understanding of the stakeholders, and how this impacts the type of information and medium of communication appropriate for each group. The groups required information regarding:

- The Essential Medicines List (EML) and Standard Treatment Guidelines (STGs)
- Anti-microbial Resistance
- Rational medicine use
- Decisions of various decision making bodies e.g. the National Essential Medicines List Committee (NEMLC)

Developing communication materials.

GHSC-TA supported the improvement of standard communication materials that the EDP team uses to engage different audiences on the role of EDP within the wider health system. The use of visually appealing materials with accessible and concise messaging not only enhances the ability of the audience to absorb the information, but also the credibility of those presenting.

Improving Provincial communications.

Improving communications between the NDoH and Provincial Departments of Health was high on the agenda of the AMD and GHSC-TA supported interaction and engagement with the provinces on a number of different levels. At a strategic level, GHSC-TA assisted with establishment of the Wave Governance Forum, bringing together representatives from donors and provinces to discuss strategic issues and plans for the coming quarters and creating an inclusive management environment. The GHSC-TA also assisted in setting up the Improved Medicine Availability Team (IMAT) Expanded, which is a standing group with provincial representatives (facilitated by AMD) that identifies interventions aimed at addressing medicine supply challenges. The regular meetings have improved communication and flow of information between the NDoH and provinces.

Lessons from the COVID-19 pandemic.

The COVID-19 pandemic brought into stark view the importance of constant and consistent communications targeted at the correct audience and through an accessible medium. Daily and weekly fora were quickly established and supported by GHSC-TA, where provinces and AMD could work together on demand planning and supply of medicines and vaccines quickly and effectively. The National Surveillance Center (NSC) was expanded rapidly to include reporting on the availability of personal protective equipment, as well as medicines needed to manage COVID-19. The NSC dashboards allow the information received to be easily communicated to decision makers.



Figure 1. National Surveillance Center – Usage of the COVID-19 PPE Dashboard

As part of the COVID-19 response, NEMLC established a subcommittee in March 2020 to review and appraise emerging evidence related to the management of COVID-19 rapidly and systematically. This group was subsequently appointed as the NEMLC Ministerial Advisory Committee (MAC) on COVID-19 Therapeutics in August 2021. The team completed more than forty-eight reviews which have been uploaded to the website: <http://www.health.gov.za/covid-19-rapid-reviews/>.

It was found, however, that many healthcare professionals managing COVID-19 patients did not know about the rapid reviews, or where to find them. Once this communication gap was identified, an approach to increase awareness of the COVID-19 rapid reviews was formalized to encourage discussions between decision makers and health care professionals on the frontline as well as to improve implementation of evidence-based recommendations.

GHSC-TA has supported the development of various materials to increase accessibility to information (including bulletins of committee meetings of NEMLC, notices to advise on updates to the Primary Healthcare EML/STGs, and articles such as for the “Supatsela” DOH electronic newsletter explaining the processes of the NEMLC MAC on COVID-19 Therapeutics and the rapid reviews.



Impact. Strong communication has increased not only the visibility of the policies, procedures, and processes of the AMD, but of AMD itself. This has increased the understanding in the wider health sector of the important and complex work that is undertaken by AMD and improved relationships with key individuals and groups involved in the selection and use of medicines.



The United States Agency for International Development (USAID)-funded Global Health Supply Chain – Technical Assistance (GHSC-TA) program seeks to apply leading industry practices to strengthen the public health supply chain and fundamentally improve medicine availability. While the program's focus is predominantly supply chain, its scope extends to other health system strengthening interventions. It is by bringing all the components together that a real impact can be made on community access to medicines.

The Free State is a land-locked province in the center of South Africa with a largely rural population. The Free State Provincial Department of Health (DoH) strives to create a value-driven organization that encourages operational efficiency and accountability in delivering desired outcomes effectively. The province uses a team approach based on strong inter-cluster and intersectoral collaboration.

Using this same collaborative approach, the GHSC-TA team brought together different expertise across the scope of the program to work together to implement a range of interventions at different points of the supply chain.

Provincial engagement. The success of the different workstreams relied on the pivotal role of the Provincial Support Team (PST) of the GHSC-TA program in linking different specialists with their key

counterparts in the DoH. In the Free State, the PST built up excellent relationships with all stakeholders through understanding their pain points, their strengths, and their requirements and, as a result, was able to engage the right people at the right time, ensuring that the team did not overwhelm provincial staff.

Governance. GHSC-TA worked with Provincial Pharmaceutical Services and health establishments (demanders) to develop and finalize a Service Level Agreement (SLA) between the provincial depot and demanders. The purpose of the SLA is to articulate the governing principles and lay down the roles and responsibilities of the various players to facilitate effective and efficient planning, procurement, delivery, reverse logistics, and financial management relating to medicines, medical devices and medical stationery in the province.

A series of workshops was held with Pharmaceutical Services, the Depot, Finance, the Provincial Pharmaceutical Therapeutic Committee (PPTC) and the district pharmacists from all the districts in the province. The SLA was finalized and signed in June 2021.

Promoting rational medicine use. The GHSC-TA team worked together to strengthen the use of formularies in the Free State through the joint implementation of the Formulary Tool, the National Guideline for Development and Use of Formularies,

and the National PTC Guidelines, developed together with the Affordable Medicines Directorate (AMD) at a national level.

GHSC-TA rational medicine use and IT specialists also worked together with the PPTC to test the Formulary Tool (which digitalizes formularies, using data from the Master Medicine Data System) and to analyze, prepare, and upload formularies at 130 health establishments onto the tool. Medicines were linked with locations, and approval obtained for each formulary. With the implementation of the Formulary Tool and the PTC guidelines, stakeholders can now access real-time, updated formulary information.

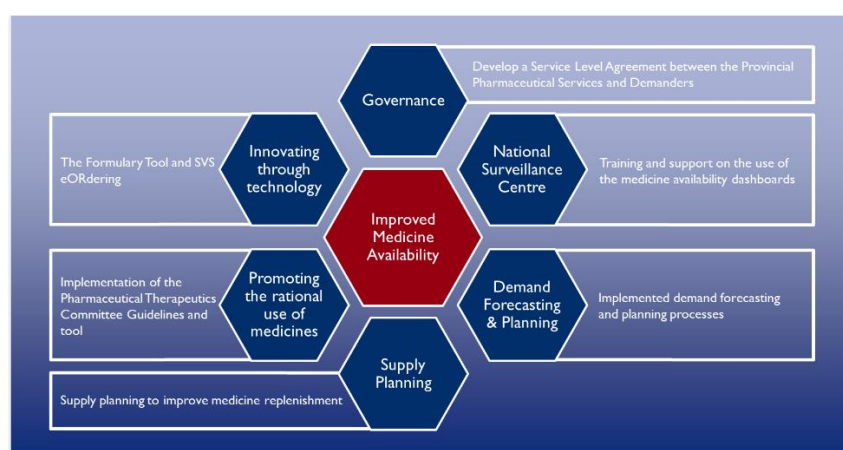
Strengthening supply chain planning. Building on the formularies and governance structures put in place, GHSC-TA supply chain specialists worked with the province to implement replenishment planning and stock reporting using the Stock Visibility System (SVS) at the health establishment level, and demand forecasting and planning at the provincial level.

The team worked with different stakeholders to institute a formal demand planning process. The process started with receipt of historical consumption data that are cleaned and then analyzed. These data are then used to create a baseline forecast presented at a demand plan review meeting. This monthly review meeting involves different stakeholders and representatives from other parts of the DOH who provide insights to enrich the demand forecast.

For example, representatives from the HIV program are invited to attend the monthly review meeting when contracts for antiretrovirals are discussed. This process of demand planning was implemented with the full support of the depot manager and excellent buy in from provincial management who assisted in getting the ball rolling for the monthly review meetings. A full package of the work, including all applicable standard operating procedures, was made available to meeting participants.

While the demand planning was implemented in a top-down fashion, the GHSC-TA team also developed a bottom-up replenishment planning methodology – the advised pull – using the new eOrdering module of the SVS system. This system allows the application of standardized min-max calculations (aligned to RxSolution methodology) as well as shifting the burden and complexity of determining reorder parameters from individuals to an electronically enabled ordering approach that uses data analytics and enabling technology.

Lessons learned. The GHSC-TA team put all the individual workstreams into context for the Free State, allowing synergies between the different activities to be identified and implemented. However, this process of engaging stakeholders needs to be cemented through a primary point of contact who can prepare, engage with, and bring together the right stakeholders to facilitate progress across the province.





Responding to COVID-19 – Managing the supply of PPE

When the COVID-19 pandemic hit, every country in the world was suddenly faced with an extraordinary requirement to procure and distribute appropriate personal protective equipment (PPE) for healthcare workers on the frontline of responding to the pandemic. In South Africa, this meant managing the supply of PPE to over 3800 clinics and 400 hospitals across the country.

The United States Agency for International Development (USAID)-funded Global Health Supply Chain Program – Technical Assistance (GHSC-TA) was working closely with the Affordable Medicines Directorate (AMD) in the South African National Department of Health (NDoH), when the directive came to manage the procurement and distribution of PPE for healthcare workers as part of the response to the rising wave of COVID-19 infections in early March 2020.

AMD requested support from GHSC-TA supply chain specialists to assist in putting processes in place to manage a suddenly critical requirement for vast quantities of PPE, at every public sector health establishment in the country.

Calculating the demand. The first step was to understand what the estimated demand would be for PPE. This was done by translating the new Infection Prevention and Control (IPC) Guidelines issued by the NDoH into a

product list. The IPC guidelines provided direction for the use of PPE in health establishments, stipulating what type of PPE should be used by which categories of staff, under which circumstances.

GHSC-TA worked with AMD and a subject matter expert from the University of Stellenbosch to draft a PPE product list from these guidelines, which was then shared with National Treasury and other stakeholders in a consultation process.

Using this product list, an initial demand forecast was calculated, using the number of different types of health establishments, correlated with the number of staff and health services offered and cross checked with the requirements of the IPC Guideline. This demand forecast process was shared with the provinces, and GHSC-TA worked with them to plan their PPE requirements and the budgets needed.

Procuring the PPE. Once the product list was agreed, GHSC-TA in collaboration with stakeholders developed detailed specifications for each item on the product list to enable the NDoH to put out tenders for the supply of PPE. Although there were existing National Treasury contracts in place with suppliers of PPE, these were completely inadequate to provide for the urgency and amount of PPE required. The situation was exacerbated by the

global shortage of PPE items, which resulted in supply problems internationally.

To provide PPE whilst new contracts were being put in place, GHSC-TA worked closely with the Solidarity Fund, a not-for-profit organisation set up as a rapid response mechanism to support government in responding to COVID-19. The Solidarity Fund assisted in obtaining donations of PPE both locally and internationally. GHSC-TA also worked with the NDoH to manage direct international donations of PPE, setting up a temporary warehousing solution to receive and distribute PPE donations.

GHSC-TA provided support to the Department of Trade and Industry to identify local manufacturers that could be assisted by government to go into production of PPE products. GHSC-TA also provided demand forecasts and data to inform the financial models underlying possible loans to potential suppliers.

Distributing the PPE. When the supply of PPE began to flow from international suppliers, much of the supply was imported via sea cargo. The COVID-19 lockdown restrictions in place at the time, had led to a backlog in South African ports. GHSC-TA coordinated with Port Health to prioritize those shipping vessels bringing in PPE supplies, and the provinces to distribute the PPE to where it was needed as quickly as possible.

Providing visibility of PPE stock. Once the product list was available, GHSC-TA worked overnight to set up a PPE dashboard on the National Surveillance Center (NSC), which provides visibility of stock-on-hand (SOH) of medicines at health establishment, district, provincial and national level.

Updating the dashboard was initially a manual process of collecting data from different data sources, until the PPE product list was included in the Stock Visibility System (SVS), a mobile application which health establishments use to report SOH. Using the SVS data, GHSC-TA

automated updating of the dashboards to provide real time visualization of PPE SOH across the country.

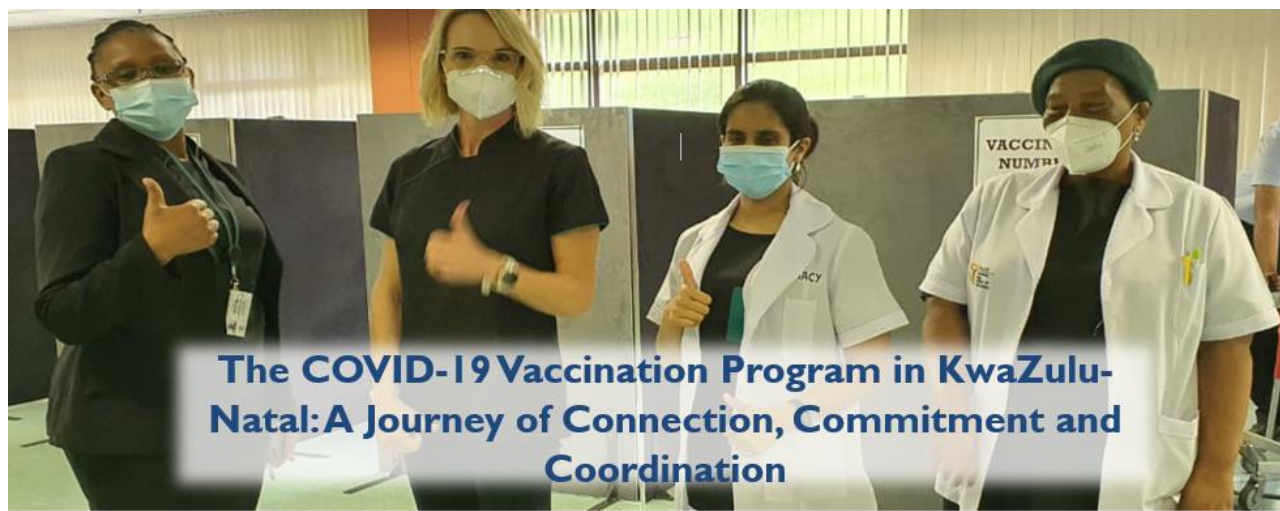
Figure 1. NSC - Usage of the COVID-19 PPE Dashboard



The dashboards provide information to decision makers and healthcare workers, on PPE availability at a national, provincial, district and health establishment level through a matrix snapshot in robot colors and a stock-out report, highlighting where SOH is at critically low levels. They also show the reporting compliance of health establishments. GHSC-TA monitors this compliance and follows up with provincial department of health PPE leads for health establishments that have not submitted reports.

Impact. The provinces were quick to adopt the use of the dashboards in managing the supply of PPE to their health establishments. The need for visibility of SOH data also drove the need to create a 'a single version of the truth' of data about the PPE needed, which could be used by all provincial procurement departments.

Lessons Learned. The supply chain management and NSC teams built the new processes on a foundation of existing technologies, platforms, and processes and then combined them to create a coordinated response to the urgent need for the supply of PPE. This approach meant there was very quick adoption and uptake by provinces, expediting planning, distribution and availability of PPE at health establishments across the country.



The COVID-19 Vaccination Program in KwaZulu-Natal: A Journey of Connection, Commitment and Coordination

*Nkosi Albert Luthuli Hospital in eThekweni—
From left to right are Ms. Samke Matibela (Pharmacy Manager); Ms. Madeleine Myburgh (Pharmacist); Ms. Preenesh Bechan (Pharmacist) and Mrs. Khetha Mkhongo (Pharmacist's Assistant) (Photo Credit: Nkosi Albert Luthuli Hospital)*

The COVID-19 pandemic has created unprecedented challenges to public health, including management of the outbreak in the country and the rollout of a comprehensive vaccination program. The United States Agency for International Development (USAID)-funded Global Health Supply Chain Program – Technical Assistance (GHSC-TA) is working in close collaboration with the KwaZulu-Natal Provincial Department of Health (PDoH) in the overall provincial response to the pandemic. 9.3 million citizens ranging 12 years and older are eligible for COVID-19 vaccinations. The province commenced planning for the COVID-19 vaccination program at the beginning of February 2021, with the first phase of the vaccine rollout targeting healthcare workers.

To facilitate the rollout, planning relating to vaccination sites, the equipment necessary to manage vaccines and ancillary items, human resource requirements, and robust processes and procedures to support the supply, distribution and administration of vaccines were needed. Effective co-ordination, management and oversight was of paramount importance to get this complex program up and running in the shortest possible time. The member of the GHSC-TA program's Provincial Support Team for the province (the PST), is working closely with the provincial team in numerous areas to support a successful

COVID-19 vaccination program in the province.

One of the first steps taken by the province, was to set up cold chain, logistics and infrastructure committees (CLIC) comprising of provincial personnel, district pharmacy managers (DPMs) and other relevant stakeholders. Collaborative CLIC meetings were held several times a week. The PST was appointed as the secretariat for this committee and provided support with documenting minutes, preparing, and communicating decision matrices and monitoring and evaluating progress on planned activities.

Infrastructure readiness was assessed by the DPMs, who conducted cold chain audits to identify gaps and/or shortcomings in the cold chain within health establishments and districts. Plans were developed and implemented for the procurement of ultra-freezers, freezers, refrigerators, vaccine carriers, temperature monitors and anaphylactic boxes. Consolidation of the cold chain data for 11 districts was undertaken by the PST, with preparations for presentation of the information by the Head of Pharmaceutical Services (HOPs) to senior management.

Pharmacy support for the COVID-19 vaccination program was also extensively discussed during provincial meetings, as pharmacy personnel (at provincial, district, and facility level) are a driving force of the COVID-19 vaccination program. The

KZN PST (in collaboration with CLIC) developed and distributed templates for the collection and collation of data relating to pharmacists and pharmacist's assistants per district, enabling management to identify and address shortages of pharmacist's assistants.

Primary vaccination sites are required to hold a permit issued in terms of the section 22A (15) of the Medicines and Related Substances Act 101 of 1965. Assistance was provided in monitoring and following up on the permit status of vaccination sites and updating of provincial records.

Vaccination sites successfully obtained permits for 89 vaccination sites by 30 September 2021. All department of health vaccination sites received their permits, while one military services site is still awaiting the issuing of a permit.

While facilities and personnel were familiar with management of the Expanded Program for Immunization and the associated vaccines, COVID-19 vaccination services require specific focused standard operating procedures (SOPs). The PST supported the National Department of Health in the development, review, and finalization of 12 cold chain SOPs. These SOPs have been rolled out and are in use in the province.

Private and public sector vaccination sites where vaccines are stored overnight were required to enroll and activate the COVID-19 Stock Visibility System (SVS) application for daily reporting on vaccines. This data is shown on the National Surveillance Center (NSC), a web-based performance monitoring and evaluation tool that provides visibility of information about COVID-19 vaccines and related items for effective program management and informed decision making at a national, provincial, district and sub-district level. Support for enrolment and troubleshooting on the COVID-19 SVS instance was provided by the PST for the commencement of vaccination rollout from 17 May 2021. By the beginning of June 2021, all 89 (100%) facilities where vaccines are stored were enrolled and submitting data on the SVS COVID-19 app.

Active monitoring and evaluation of the COVID-19 vaccination program form a key part of the support provided. Weekly vaccine, ancillary and diluent reporting compliance, stock lost, stock wasted, and expired stock reports are communicated to provincial and district stakeholders. These reports help to identify facilities that are not reporting, stock which is short dated and facilities with data quality issues. During the early stages of the COVID-19 vaccination program, several confounding factors resulted in sub-optimal reporting compliance by vaccination sites. The PST and CLIC developed and implemented structured processes for engaging with pharmacy managers, communicating, and submitting reports, and investigating reasons for low reporting compliance. Root cause analyses are conducted, and quality improvement plans implemented where needed. NSC training sessions were held allowing NSC users to navigate the COVID-19 vaccine dashboard and reports with greater understanding for decision making.

Following active surveillance and implementation of the quality improvement plans, the public sector reporting compliance rate increased significantly from 71% on 4 July 2021 to 92% on 30 September 2021 (Figure 1). Diluent reporting compliance improved from 68% on 7 July 2021 to 84% on 30 September 2021. Connectivity challenges, lost devices, servers crashing, and synchronization issues impacted on reporting rates.



Nkasi Albert Luthuli Hospital in eThekweni – Vaccination Booths (Photo Credit: Nkasi Albert Luthuli Hospital)

The work undertaken to support the province with the evolving COVID-19 vaccination program has shown that there is a constant need to implement and monitor pharmaceutical system strengthening strategies for improving the availability and accessibility of vaccines and enhancing the quality of the vaccination program. Connection, commitment and coordination are bearing fruit – from 17 May to 30 September 2021, 2.31 million (25% of target population) vaccinations had been administered in the province across 313 vaccination sites.

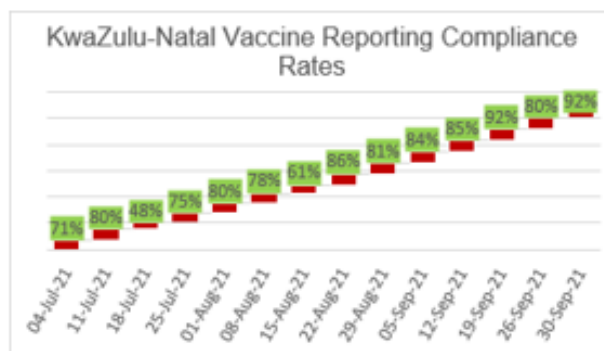


Figure 1. KZN Vaccine Reporting Compliance Rates



Rolling out COVID-19 Vaccines in South Africa

As of September 30, 2021, approximately 6.5 billion COVID-19 vaccine doses were administered worldwide¹, of which 22,394,554 were administered in South Africa. Yet, there are still many more doses that need to be procured and distributed. The USAID Global Health Supply Chain-Technical Assistance (GHSC-TA) program has delivered comprehensive support to the National Department of Health (NDoH) to roll out the COVID-19 vaccination program.

Phase One. The first vaccinations in South Africa were distributed through the Johnson and Johnson Sisonke 3B Study, a clinical trial where over 496,000 healthcare workers were vaccinated.

GHSC-TA assisted the NDoH in the planning and introduction of COVID-19 vaccines for healthcare workers in both the public and private sectors. This included mapping all vaccination sites, obtaining staffing levels to calculate demand, recording the number of trained vaccinators, and calculating the number of doses required. In consultation with the provinces and the private sector, GHSC-TA provided dose allocations for the trial to participating vaccination sites in both sectors.

Establishing the vaccination sites. GHSC-TA supplied technical assistance to the NDoH in the design of the service delivery platform and the different types of sites - primary vaccination sites and outreach services at fixed, temporary or mobile sites.

The team worked with the NDoH and the South African Pharmacy Council on the use of section 22A (15) of the Medicines and Related Substances Act 101 of 1965 to enable various organizations to acquire, possess, use, and supply COVID-19 vaccines and the medicines needed to manage any adverse reactions experienced. All vaccination sites are required to comply with the conditions of the permit to make sure that vaccines are managed correctly, and good quality vaccination services are provided.

Vaccine delivery sites increased from 69 sites in the first week to a total of 606 sites – an increase of 778.26 percent over six months. GHSC-TA assisted with the onboarding of all delivery sites.

¹ <https://covidvax.live> (accessed 02 Nov 2021)

Figure 1 Cumulative Number of Delivery Sites



Vaccine Distribution. COVID-19 vaccines have been delivered in large quantities over the past several months from the COVID-19 Vaccine Control Tower, managed by GHSC-TA. The team worked with provinces and the private sector to design a primary and secondary delivery network to ensure the most effective means of reaching all vaccination sites. Extensive work was done to collate and map the cold chain capacity and location of sites to determine what type of vaccine would be best suited by each vaccination site.

Figure 2 Cumulative Number of Doses Delivered



GHSC-TA coordinated weekly engagements between vaccine distributors and the National Joint Operational and Intelligence Structure (NATJOINTS) to ensure the safety and security of vaccines throughout the supply chain. GHSC-TA works with the distributors to determine the correct volume of vaccines to be supplied to each distributor to serve the customer base. GHSC-TA provides the contract management function of the vaccine distributors on behalf of the NDoH.

COVID-19 Vaccine Toolkit.

To support the roll-out and implementation of the COVID-19 vaccine, GHSC-TA supported NDoH in the development of the vaccine implementation guide and supporting toolkit, which includes standard operating procedures and job aids to support good practice in the handling, management and administration of COVID-19 vaccines at sites.

Stock Visibility System COVID-19

Vaccines Instance. GHSC-TA provided extensive support to the NDoH with the roll-out of the SVS COVID-19 instance to monitor vaccines and ancillary items at provincial level. GHSC-TA ensured that public and private sector sites that store vaccines overnight are set up to report on SVS COVID-19 and are assisted with any technical challenges. Walkthroughs of the vaccine dashboard and SVS web portal and/or trainings with groups and individuals were provided, strengthening capacity to effectively monitor COVID-19 vaccines reporting and availability data, to support availability of vaccines where they are needed to enable coordinated and equitable distribution of the vaccine in the roll-out. The training in the long run has improved overall adoption to 76 percent, with public facilities at 78 percent adoption and private facilities at 75 percent adoption.

Lessons Learned. One of the lessons learned is that master data is required to create an orderly vaccine distribution system. The COVID-19 Vaccine Control Tower implemented several measures to create order in the vaccine distribution system. The vaccine roll-out has also provided an excellent opportunity to improve the NDoH Master Facility List data quality. The vaccine roll-out enabled provided excellent collaboration and coordination between the public and the private sectors and offered an outstanding opportunity to test systems, processes, and practices across the various systems in preparation for National Health Insurance.