Memorandum on the Republic of Zambia Programme Audit report

The attached Audit and Investigations report sets out the conclusions of the programme audit of Gavi's support to the Republic of Zambia's Ministry of Health, executed by the Expanded Programme for Immunisation (EPI) along with other implementing partners.

The audit team reviewed the EPI and implementing partners' management of Gavi support to the routine immunisation programme provided during the period between 1 January 2018 to 31 December 2022. The audit scope including the following grants: "health systems strengthening, vaccine introductions for human papillomavirus and inactivated poliovirus vaccine, the measles rubella campaign, as well as other vaccines and cold chain equipment. The audit also covered the vaccine and cash provided by Gavi's COVAX facility in support of Zambia's COVID-19 emergency operations in 2021 and 2022.

The report's executive summary (pages 3 to 6) summarises the key conclusions, the details of which are set out in the body of the report:

1. There is an overall audit rating of **"ineffective"**, which means, "Internal controls, governance and risk management practices are not adequately designed and/or are not generally effective. The nature of these issues is such that, the achievement of objectives is seriously compromised."
2. In total, fourteen issues were identified in the following areas: (i) governance and oversight; (ii) programme management; (iii) vaccine supply chain management; (iv) immunisation data management; and (v) fixed assets management.
3. To address the risks associated with the issues, the audit team raised 21 recommendations of which 18 were rated as high priority.
4. Key findings were that:
    a. The inter-agency coordinating committee's governance and oversight mechanisms needs to be strengthened, as it did not cover all of its mandated functions, and meetings were not held regularly.
    b. Grant management requirements and recommendations from various reviews are still outstanding. The Ministry of Health did not regularly monitor and review the implementation status of these requirements or of other past audit recommendations, resulting in issues not being addressed or only partially implemented.
    c. The full impact of decentralisation of the health system on the immunisation programme is yet to be determined. Details on the devolution implementation guidelines for both national and sub-national level were not available at the EPI.
    d. Systems developed with Gavi support including the "Zambia immunisation electronic

register", the "mobile vaccination system" and the "electronic logistics management information system" were not being used by the Ministry of Health or the EPI, raising concerns about the value for money and sustainability of these systems.

e. There was no functional "electronic logistics management information system" as the prior system was discontinued in July 2022 and no backup of the system's data was done. Manual stock records were not implemented to compensate for the absence of a working system, and vaccines were not fully accounted for due to missing records.

f. Low vaccine stocks were held at the national and sub-national stores, resulting in significant stock outs at the service delivery level. There was also limited storage capacity at the national level. Moreover, vaccines were not distributed efficiently, due to insufficient vehicles to distribute the necessary doses from the national vaccine store to the sub-national stores.

g. There were inconsistencies in the immunisation coverage data reported in the district health information system as compared to the doses available in the country, during the period under review. In addition, the data quality improvement plan that was developed in 2019 was only partially implemented.

The findings of the programme audit were discussed with the Ministry of Health and implementing partners. They accepted the audit findings, acknowledged the weaknesses identified, and committed to implement a detailed management action plan.

The Gavi Secretariat continues to work with the Ministry of Health to ensure that their commitments are implemented, and to agree on how to make the programme whole.

Geneva, April 2024

PROGRAMME AUDIT REPORT

Republic of Zambia
April 2024

Table of Contents

1. Executive Summary

1.1 Overall audit opinion

Audit opinion:

The audit team assessed the Ministry of Health's management of Gavi support during the period 1 January 2018 to 31 December 2022 as **"Ineffective"** which means, "Internal controls, governance and risk management practices are not adequately designed and/or are not generally effective. The nature of these issues is such that, the achievement of objectives is seriously compromised."

As noted in Section 2.2, this opinion does not include review of cash support provided by Gavi and a subsequent review of programme expenditures is planned in 2024.

Through our audit procedures, we have identified high risk issues relating to: governance and oversight, programme management; vaccine supply chain management and immunisation data management processes. To address the risks associated with the issues, the audit team raised 21 recommendations, of which 18 (86%) were rated as high risk. The recommendations need to be addressed by implementing remedial measures according to the agreed management actions.

1.2 Summary of key audit issues

** The audit ratings attributed to each section of this report, the level of risk assigned to each audit finding and the level of priority for each recommendation, are defined in Annex 3 of this report.*

1.3 Summary of issues

Through our audit procedures, we have identified 11 high risk and 3 medium risk issues relating to the programme governance, management and oversight, vaccine supply chain management and immunisation data management processes. The high-risk issues are summarised below, followed by the detailed findings in Section 4 of this report.

Governance and oversight

The Inter-agency Coordinating Committee (ICC) is responsible for overseeing and taking strategic decisions on matters relating to the immunisation programme. However, the ICC did not meet regularly and did not cover all of its mandated functions.

The links between the ICC standing agenda and EPI Committee's (EPIC) discussions were weak. Although key challenges affecting the programmes were discussed at the EPIC meetings, there was no evidence that these items were escalated to the ICC for strategic direction or decision. There was also no defined process for monitoring the implementation of ICC recommendations.

The MOH did not regularly monitor and review the implementation status of its grant management requirements (GMRs), Effective Vaccine Management assessment recommendations and audit recommendations from Gavi and from the Auditor General. Consequently, less than half of the recommendations from the various reports and assessments were fully implemented.

Weaknesses in governance and oversight impact on the ability of the programme to achieve its objectives. Failure to comply with GMRs may have consequences on the future of Gavi's funding, and failure to follow up on issues raised in audits and EVMs perpetuates control weaknesses and undermines programme implementation and grant performance.

Programme Management

While the Ministry of Health and the immunisation programme is the intended beneficiary of technical assistance, activities were delayed or carried over to subsequent periods, in-country coordination was weak as noted above, and senior leadership at MoH were not involved in oversight over such activities. The delayed technical assistance included critical areas like supply chain and procurement, health financing and sustainability, health information systems, all of which had significant weakness as observed during the audit.

The Health Sector in Zambia is undergoing devolution. In November 2022, the Health Sector Devolution Plan was approved, which is instrumental in the devolution of the District Health Services' functions down to the local government. This plan is a sector wide document that provides the roadmap of activities to be undertaken over a 5-year period of implementation. The EPI is one of the services that is earmarked for devolution. However, details on the devolution implementation guidelines for both national and sub-national level were not available at the EPI.

Over the past couple of years, national economic difficulties have constrained the Government's ability to finance routine immunisation services. The average budget that the government allocated to the EPI was only 1% of the total ministry of health budget during the period 2018 to 2022. While the country developed a resource mobilisation framework to complement these efforts and raise additional financing to close the funding gap, the low investment in the EPI may be impacted further by devolution.

Significant Gavi funds from the EPI Optimisation grant were spent on three immunisation-related systems, however, as at the time of the audit, none of these systems were being used by MoH or EPI, raising concerns about the systems' sustainability and value for money.

Implementation of future Gavi-funded activities may be disrupted due to the absence of guidelines and detailed transition planning for devolution at the EPI, compounded by low EPI funding, and value for money and sustainability concerns in roll-out of Gavi-supported systems.

Vaccine supply chain management

Although significant investments were directed towards optimising the vaccine supply chain and ensuring the availability of vaccines in optimal conditions, there is still urgent need for the country to revamp its vaccine supply chain management system to ensure equitable access to safe and potent vaccines—a crucial step toward achieving Gavi's goal of reducing the number of zero-dose children.

Stock management records were incomplete or unreliable. The electronic vaccine logistics management information system was discontinued in July 2022, without securing a backup of the system's data. From that date to the time of the audit, no compensatory manual stock records system was in place. Vaccines were not fully accounted for due to missing records, stock differences were not reconciled, and various stock adjustments were not justified.

Cofinancing payments in the period were often delayed, forecasting calculations included estimates of vaccines consumed at subnational levels rather than actual numbers resulting in unreliable forecasts and country estimates were frequently revised downward prior to procurements being finalised. Consequently, the country's stock levels were low, with some stock-outs occurring. As of September 2023, the National Vaccine Store's (NVS) buffer stocks of pentavalent and PCV were nearly exhausted, with only 0.2 months stock of PCV available on hand. In addition, further vaccine deliveries which were expected to arrive in August 2023, but had not yet arrived as at 8 September 2023. There were also stock outs of varying magnitude between 2018 and 2022 at national and subnational level.

Vaccines were not distributed efficiently, due to insufficient distribution vehicles to deliver from the national vaccine store to the sub national vaccine stores. There were also no distribution schedules, plans, and the distribution records were unreliable.

Storage capacity for vaccines at the NVS was insufficient, Cold Chain Equipment (CCE) maintenance records were incomplete, and preventive maintenance activities were ineffective. The remote temperature alert systems were non-functional in many cases and temperature storage conditions for vaccines were not consistently checked.

The gaps noted in the vaccine supply chain processes must be addressed to ensure effective vaccine supply chain management, reduce stock-outs and missed immunisation opportunities, reduce medical waste, and improve the security and integrity of data outputs and forecasts.

Immunisation Data Management

Target population data projected by the Zambia Statistics Agency differed from the targets in the District Health Information System (DHIS2) and immunisation targets were not met. Furthermore, there were inconsistencies in the immunisation administrative coverage data reported in DHIS2 as compared to the doses available in the country during the review period. Based on the audit team's triangulation of data, it was determined that the number of children reported as vaccinated for pentavalent, PCV and rotavirus over the period 2018 to 2022 was consistently higher than the quantities of vaccines received and managed by the country over a similar timeframe.

Weaknesses were identified in the health facilities' use of immunisation tools and the documentation, validation, verification, and collation of data. This included variances between the DHIS2 data and the underlying records at the service delivery points, and variances between the underlying records at different levels.

Although the Data Quality Improvement Plan developed in 2019 was incorporated into a monitoring framework, its milestones and performance were not tracked or monitored by the MOH/EPI. Consequently, only 7 out of 22 recommendations were implemented.

In addition, expenditure totalling approximately USD 250,000 for Data Quality Assessments carried out between 2019 and 2022, may not have achieved value for money. The focus of these assessments was largely upon the availability and completeness of tools, without considering data triangulation and analysis in the assessments.

Overall, the gaps in immunisation data management compromised the quality of data used in decision making, targets set could not be supported by underlying reviews and achievements may have been overreported. The audit team noted that while the immunisation data challenges are known, they undermine the credibility of the reported immunisation administrative coverage and addressing them remains a challenge. Zambia continued to rely upon desk reviews of national official estimates without conducting field based surveys. Reliance on inaccurate or over-reported immunisation coverage data can result in incorrect programmatic interventions and misallocation of resources, which could negatively impact the effectiveness of the immunisation programme and the health of the targeted population.

2. Objectives and scope

2.1 Audit objectives

In line with the respective country agreements and with Gavi's Transparency and Accountability Policy, countries that receive Gavi's support are periodically subject to a programme audit, for which the primary objective is to provide reasonable assurance that Gavi's resources and support are managed in a transparent and accountable manner through systems that include appropriate oversight mechanisms and that the support is used according to the programme objectives as outlined in individual country agreements.

As a result, the audit team assessed the various processes and programme management arrangements governing Gavi's support (vaccines, cash, equipment and technical assistance) for which the respective entities were responsible, so as to assess if: the coordination and implementation arrangements are effective, the existing grant oversight mechanisms provide continuous and reliable assurance on Gavi's investments and the vaccine supply chain management and immunisation data systems are effective.

The team also reviewed the relevance and reliability of the internal control systems relative to the accuracy and integrity of the books and records, management, and operational information; the effectiveness of operations; the physical security of assets and resources; and compliance with national procedures and regulations.

2.2 Audit scope

We adopted a risk-based audit approach informed by our assessment of the risks in all the areas of the immunisation programme supported by Gavi. This included vaccine and supply chain management, programme and data management, governance and oversight and the use of COVAX support. The audit period in scope was from 1 January 2018 to 31 December 2022. With respect to reviewing the COVID-19 vaccination roll-out, this period was extended by another 6 months, up to 30 June 2023.

The review of cash support provided by Gavi is not included in this report; it will be subject to a separate audit in 2024.

The total Gavi support provided to the Republic of Zambia during the audit period up to 31 December 2022 is summarised in Table 1 below.

Table 1: Cash, equipment, and vaccine support as of 31 December 2022

Amounts in USD	2018	2019	2020	2021	2022	Total
Cash grants						
HPV VIG	588,609	-	-	-	-	588,609
HSS	4,444,496	4,183,114	3,138,242	2,427,376	(169)	14,193,059
IPV VIG	-	-	793,850	-	-	793,850
MR	-	-81,410	1,355,784	-	-	1,274,374
COVAX CDS	-	-	-	1,920,838	6,621,177	8,542,015
Total cash grants	**5,033,105**	**4,101,704**	**5,287,876**	**4,348,214**	**6,621,008**	**25,391,907**
Technical assistance						
Total PEF TCA	-	**944,746**	**1,345,955**	**1,391,350**	**619,642**	**4,301,693**
Equipment support						
Total (Equipment)	-	-	**1,625,426**	**360,787**	**(51,473)**	**1,934,740**
Vaccines support						
HPV	961,725	2,409,909	2,078,967	2,104,232	296,132	7,850,965
IPV	736,130	6,880,746	1,100,213	2,943,033	2,139,059	13,799,181
ISD	164,767	332,237	(22,896)	-	-	474,108
Measles	246,161	85,638	-	-	-	331,799
MR	-	-	2,315,037	-	-	2,315,037
OCV	997,953	266,444	4,832,400	12,729,399	-	18,826,196
PCV	5,652,606	4,353,770	2,137,352	4,869,858	3,253,292	20,266,878
Pentavalent	1,976,781	1,924,925	2,398,534	1,494,627	2,139,015	9,933,882
Rota virus	2,674,608	1,969,889	1,833,173	1,797,064	107,246	8,381,980
Co-financing	-	-	-	1,015,389	-	1,015,389
COVID-19 vaccines	-	-	-	29,200,299	94,094,748	123,295,047
Total vaccines	**13,410,731**	**18,223,558**	**16,672,780**	**56,153,901**	**102,029,492**	**206,490,462**
Grand Total (Vaccines + Equipment + Technical assistance + cash)	**18,443,836**	**23,270,008**	**24,932,037**	**62,254,252**	**109,218,669**	**238,118,802**

Table 2: Total Gavi cash disbursements to Zambia by recipient (2018 to 2022) in USD

Partners	HSS	COVAX	CCEOP	MR campaign	IPV campaign	HPV VIG	Total
UNICEF	3,176,989	1,239,564	1,934,740	-	-	-	**6,351,293**
WHO	-	1,461,762	-	-	-	-	**1,461,762**
CIDRZ	1,326,751	3,934,874	-	-	-	-	**5,261,625**
CHAZ	3,298,474	1,905,815	-	-	-	-	**5,204,289**
MOH	5,796,498	-	-	1,274,374	793,850	588,609	**8,453,331**
PATH	594,347	-	-	-	-	-	**594,347**
Grand Total	**14,193,059**	**8,542,015**	**1,934,740**	**1,274,374**	**793,850**	**588,609**	**27,326,647**

Table 3: Details of TCA Funding to partners (Amount in USD)

Partner	2019	2020	2021	2022	Total
ASPEN	-	409,834	72,536	-	**482,370**
CDC	22,500	-	-	-	**22,500**
CIDRZ	264,397	118,364	614,604	(26,572)	**970,794**
JSI	19,193	-	-	-	**19,193**
JHU	185,516	184,609	138,117	-	**508,242**
UNDP	-	-	163,330	-	**163,330**
UNICEF	232,740	341,874	154,440	317,281	**1,046,335**
Oslo University	-	2,374	9,111	2,222	**13,707**
WHO	220,400	288,900	239,211	326,710	**1,075,222**
Grand Total	**944,746**	**1,345,955**	**1,391,350**	**619,642**	**4,301,693**

2.4 Conduct of the audit engagement

The audit was conducted in two phases, an in-country scoping visit between 26 and 30 June 2023, and fieldwork between 28 August 2023 and 15 September 2023. As part of its audit, the team visited: the National Vaccine Store, four provincial offices and their vaccines stores, 14 district offices including their stores, and 36 health facilities. See Annex 4 for the list of sites visited by the audit team.

During the course of this engagement, the team interacted with key stakeholders encompassing: the EPI team, the Office of the Auditor General, the MOH's Internal Audit function, and the following partners: WHO, UNICEF, the World Bank, USAID, CHAZ, CIDRZ, Jhpiego and PATH.

2.5 Progress on previously identified audit issues

Gavi conducted its first programme audit in Zambia in 2017. This second programme audit, conducted in 2023, noted some improvements in areas such as programme management and oversight, vaccine and supply chain management, procurement management, financial management and monitoring and evaluation.
However, several prior audit issues were not yet fully addressed including: (i) sub optimal management of advances (ii) gaps in financial reporting (iii) use of Gavi funds to pay for taxes, (iv) vaccine and supply chain management challenges.

While some controls and mitigating actions had been considered and/or designed in response to these prior audit issues, not all the actions were fully implemented, or the design of the controls did not adequately address the nature of the risks presented at the national and/or subnational levels. Details of the issues are included in this report in Section 4.

2.6 Exchange rate

Most cash and in-country expenditures were incurred using the Zambian Kwacha (ZMW). For information purposes and as part of the summary of this report, overall total amounts were reflected in United States Dollars (USD). For the expenditures reviewed, the rate applied was based on the average bank rate across the audit period. The overall exchange rate equated to ZMW 16.13 against USD 1.00.

3. Background

3.1 Introduction

Zambia is a land-locked country in the Southern Africa region. The country shares boundaries with eight countries namely, Malawi, Mozambique, Zimbabwe, Botswana, Namibia, Angola, Democratic Republic of the Congo, and Tanzania and covers a land area of 753,000 square kilometres. The country is divided into ten provinces and a total of 116 districts. Two provinces (Lusaka and Copperbelt) are predominantly urban and eight are rural. As per the 2022 national census, the population of Zambia was 19.6 million with an annual population growth rate of 3.4%, while the estimated total fertility rate was 5.9 births per woman in 2010, a decline from 7.2 births per woman in 1980.[1] The administrative and economic capital city is Lusaka, with a population of 3.1 million, with densely populated areas in Lusaka and Copperbelt provinces and along the main transport routes. Twelve of 116 districts account for 35% of the total population.[2]

3.2 Health sector in Zambia

The existing national health system comprises promotive, preventive, curative, palliative and rehabilitative services. The health service delivery structures are established at different levels. These health services are organised along a pyramid structure, with Primary Health Care (PHC) services at community level (Health Posts, Health Centres and Mini-Hospitals) at the base, followed by the first and second level hospitals at district and provincial levels respectively, third level (tertiary) and fourth level (specialised) hospital services at national level. These levels of care are linked by a referral system intended to provide citizens with access to the health services they need.

Currently the health services in Zambia are provided by the public, private, faith-based, and civil society-owned not-for-profit health facilities. Alternative health services are also provided by traditional health practitioners and herbal health services providers at community levels. The system is also supported by disease specific programmes, service statutory institutions, regulatory statutory institutions, and training institutions, each with specific roles and responsibilities.

Health services are provided under the Ministry of Health (MOH), coordinated by the headquarters at national level, Provincial Health Offices (PHOs), District Health Offices (DHOs) and statutory institutions. As of December 2021, the country had seven fourth-level hospitals, seven third-level hospitals, 36 second level hospitals, 100 first-level hospitals, 62 mini hospitals, 1,720 health centres and 1,388 health posts. Out of the 3,320 health facilities, 2,834 are Government owned, 385 privately owned, while 101 are Faith-based Health facilities.

The Health Sector developed the 2022-2026 National Health Strategic Plan (NHSP). The NHSP is guided by the Vision 2030, which is executed through the 2022-2026 National Development Strategic Plan (NDSP). Service delivery and health systems strengthening are the vehicles used to enhance health promotion, prevention, curation, and rehabilitation.

3.3 Devolution of the Health Sector

The Ministry of Health (MOH), together with other government ministries and institutions, is required to devolve some of its functions to the Local Authorities, in line with the provisions of the Constitution (Amendment) Act, No. 2 of 2016. To guide the devolution process, the Government developed sector devolution guidelines for government institutions. The guidelines outline the procedure for developing sector devolution plans as well as how the devolution of power and authority, functions and resources should proceed. The guidelines emphasise that some degree of authority be devolved from the centre to provinces and districts, and further to sub-district levels. Government has identified devolution as the mode of decentralisation to be implemented. The Ministry of Health developed a Health Sector Devolution Plan which was published in November 2022. The overall objective of the plan is to guide the ministry in devolving the district health services function to Local Authorities.

[1] ZAMSTATS, 2022

[2] Zambia National Immunisation Strategy (2022-2026)

3.4 Immunisation in Zambia

The Expanded Programme on Immunisation (EPI) falls under the Child Health Unit of Public Health and Research in the MOH. EPI is supported by the Expanded Programme on Immunisation Committee (EPIC) and its subcommittees, whose members are comprised of Government and partners. EPI receives guidance on policy and related issues from the Interagency Coordinating Committee (ICC) on reproductive, maternal, new-born, child and adolescent health and nutrition (RMNCAH&N) chaired by the Permanent Secretary of the MOH and comprised of major stakeholders. Additionally, the Zambia Immunisation Technical Advisory Group (ZITAG) provides an independent advisory role for vaccine and immunisation related issues. There has also been long term technical assistance from the UN and expanded partners who complement immunisation work.

Immunisation service delivery in Zambia is conducted through fixed, outreach and mobile strategies, with outreach and mobile strategies accounting for 38% of immunisation service delivery and 62% for static. Over the past decade the country attained high coverage for its DTP3, BCG, MCV1 antigens, although there has been notable and progressive decline in coverage during the past 4 years. National coverage for DTP has declined since 2016, from a reported 106% DTP3 in 2016 down to a reported 94% DTP3 in 2021. Over the same 6-year period (2016-2021), decreases in immunisation coverage were also observed for most other antigens including: PCV3 dropping from 94% to 89%; second dose rotavirus RV2 dropping from 94% to 87%; and first dose measles rubella MR1 dropping from 97% to 90%.

The latest UNICEF/WHO Estimates of National Immunisation Coverage (WUENIC)[3] for Zambia show a decline for DTP1 from 94% in 2021 to 86% in 2022; and for DTP 3 from 91% in 2021 to 82% on 2022. The data also shows a sharp decline in RV2 from 87% in 2021 to 32% in 2022, with RV1 remaining at 90%.

As of December 2022, the Zambia EPI provided vaccinations against seven vaccine preventable diseases free of charge to its citizens. See Annex 14 for immunisation schedule.

3.5 Vaccine storage and supply chain

Forecasting and quantification of vaccines and related supplies is conducted annually, usually in September in collaboration with UNICEF. The forecast is concluded with the generation of a shipment plan that shows the months when the respective antigens will be delivered in the country. The procurement of traditional and COVID-19 vaccines funded by Gavi or by the Government are both transacted and handled by UNICEF Supply Division. For COVID-19 vaccines, procurement was done through the COVAX mechanism and Mastercard Foundation/AVAT.

Zambia operates a four-tier vaccine storage and distribution system. At national level is the National Vaccine Store (NVS) located in Lusaka. The cold storage capacity at the NVS is 52,747 litres (+2 to +8°C); 7,692 litres (-20°C); 2.4 m^3 (-70°C (ultra-cold chain)) net capacity. The dry storage space is at national level is 5,184m^3. This is in addition to 5,876m^3 that exists at government stores and can be used if more space is required for temporary storage in case of emergency. Vaccines and related supplies are received and kept at the NVS before being distributed to subsidiary vaccine storage and distribution points.

There are 11 Provincial Vaccine Stores (PVSs) (southern province has two vaccine storage hubs at provincial level i.e., Livingstone and Choma). Each province has a walk-in cold room with capacity ranging from 8,360 – 9,524 litres. Vaccines for routine immunisation are distributed to the PVS quarterly using a pull system.

Districts are required to order and collect vaccines from the PVS. This usually occurs on an ad hoc basis and is dependent on the availability of transport for the districts. Each district has a minimum of a freezer (264 litres) and a fridge (between 108 – 150 litres). Solar and electric refrigerators make up most of the cold chain capacity, but they are still a few facilities using kerosene fridges which need replacement (about 10%)[4].

[3] WUENIC data 2022

[4] Zambia National Immunisation Strategy (2022-2026)

Health facilities (the service delivery points) form the last tier of the vaccine supply chain and collect vaccines from their District Vaccine Stores (DVSs) each month. The 3,320 health facilities collect their vaccines from their DVS within their respective areas. Health facilities report vaccine stocks using a manual vaccine return form, submitted by every health facility to the respective district health office together with the Health Information Aggregation (HIA) 2 form by the 7th day of the following month.

Based on the 2022 second quarter Cold Chain inventory exercise, out of 3,320 health facilities countrywide, at least 561 facilities have no cold chain equipment and about 300 CCE units are non-functional.

Following the vaccine stock management challenges observed during the Effective Vaccine Management Assessment (EVMA) conducted in 2015, Ministry of Health introduced a web-based supply chain management tool (Logistimo) at the NVS, PVS, DVS and selected facilities in 2016. The system monitored stock movement and provided real time visibility of stock status at different levels of the supply chain. In 2019, an assessment of the eLMIS effectiveness and return on investment was carried out. The assessment considered evidence on the quantitative, qualitative and economic aspects of the system.

The system was used for inventory management and order placement until July 2022 when its use was stopped due to licensing and other issues. At the time of the audit, the use of manual records had not been resumed to compensate for the absence of a suitable, working logistics management system. The Ministry of Health with support from various partners, is exploring the optimal solution to implement a sustainable eLMIS in future, including the transfer of retroactive data from previous periods from the Logistimo service providers.

3.6 Immunisation data

The national system for recording and reporting health information is the MOH's DHIS2. This includes aggregate EPI data collected through routine service delivery points. The programme relies heavily on paper-based systems which results in no real time data. Data entry into DHIS2 is done at the district level monthly with a few HFs reporting directly into DHIS2.

3.7 Covid-19 context, country response and impact on routine immunisation

COVID-19 is a disease caused by a coronavirus as reported on 31 December 2019, later named as the severe acute respiratory syndrome-Coronavirus 2 (SARS-CoV-2). On 30 January 2020, the World Health Organization (WHO) declared Coronavirus Disease 2019 (COVID-19) as a Public Health Emergency of International Concern (PHEIC).

The virus was confirmed to have reached Zambia on 18 March 2020. The country experienced four waves of COVID-19: an initial wave beginning in July 2020, a much larger second wave during January and February 2021, an even larger third wave during June and July 2021, and a fourth wave during December 2021 and January 2022. Zambia enforced a partial lockdown that led to the closure of schools, colleges, and universities on 20th March 2020. Although implemented quickly and early in the pandemic, Zambia began easing COVID-19 restrictions on places of worship, businesses, restaurants, and bars in late April and early May 2020; schools, colleges, and universities in June 2020; and international arrivals in June 2020.Throughout the subsequent waves of infection, such restrictions were reenacted and rescinded accordingly.[5]

The impact of COVID-19 on the routine immunisation programme was that the percentage of fully immunised children nationally significantly decreased compared to the pre-COVID-19 era, from 89.1% in 2019 to 78.6% in 2022 and the proportion of children receiving their first dose of measles declined from 90.6% in 2019 to 83.1%in 2022.[6]

[5] Lessons from a Year of COVID-19 in Zambia: Reported Attendance and Mask Wearing at Large Gatherings in Rural Communities https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9896318/#b25

[6] UNICEF highlights a decline in vaccination coverage that leaves children unprotected against childhood diseases

Zambia introduced COVID-19 vaccines as part of its national COVID-19 response from 14 April 2021. Since then and up to 31 August 2023, Zambia has received a total of 22.3 million COVID-19 doses (including Astra Zeneca, Sinopharm, Pfizer, Moderna and J&J) of which 19 million were provided by the COVAX facility, and had administered 14 million of these.

WHO developed guidelines for considerations for integrating COVID-19 vaccination into immunisation programmes and primary health care for 2022 and beyond. Additionally, in May 2023, WHO declared that COVID-19 was no longer a Public Health Emergency of International Concern (PHEIC). In accordance with WHO integration guidelines, Zambia drafted guidelines for the routinisation of COVID-19. The country has not yet concluded planning, including consultations at provincial levels to finalise these guidelines to integrate COVID-19 into its routine immunisation, by delivering services throughout its national immunisation programme (NIP), primary health care (PHC), and other relevant health services.

3.8 Gavi's relationship with Zambia and entities involved in implementation of Gavi grants

Gavi signed a Partnership Framework Agreement with the Republic of Zambia on 22 October 2014 which provides a framework for the management of Gavi support to the country. Under this framework, Zambia has received a total of approximately USD 388 million in support from Gavi since 2001. See table 1 for details of the current audit period.

Gavi launched the COVID-19 Vaccines Advance Market Commitment (COVAX AMC) as the main building block of the COVAX Facility on 4 June 2020. The Gavi COVAX AMC is the innovative financing instrument that supports the participation of low- and middle-income economies in the COVAX facility – enabling access to donor-funded doses of safe and effective COVID-19 vaccines.[7] Zambia signed the COVAX standard terms and conditions for COVAX AMC for participants on 7 December 2020. Since then, the country has received amounts totalling USD 132 million consisting of COVID-19 vaccines and COVID- 19 Vaccine Delivery Support (CDS). See table 1 for details.

The EPI has overall responsibility for the immunisation programme including routine immunisation, supplementary immunisation activities (SIAs) (preventive & reactive), outbreak and pandemic response. EPI also serves as secretariat to the Zambia Immunisation Technical Working Group; and co-Secretariat to the National AEFI Committee. Currently Gavi monies are disbursed through a range of funding channels including: MOH, Alliance Partners (WHO and UNICEF), and other implementing partners like CHAZ, CIDRZ, PATH and extended technical assistance partners. Gavi has signed agreements in place with each of these to guide programme implementation.

3.9 Key achievements and Good Practices

Zambia has made good progress in improving its national EPI over the years. The following are some good practices noted by the audit team:

- *Vaccine management and supply chain -* The country has Standard Operating Procedures (SOPs) for effective vaccine management to guide the receipt, storage, distribution, management and recording of its vaccines at the different levels. The first edition of the SOPs was published in December 2015, and this was followed by a second edition in June 2021. In addition, the country developed a cold chain training manual which it published in 2018, as a reference document to support preventive maintenance, repair and maintain cold chain equipment. This manual is useful in supporting technicians and health workers to ensure the optimal functioning of the cold chain equipment and according to its useful economic life[8]. At subnational level, each of the PVS has got a WICR with a power backup system installed to provide adequate vaccine storage capacity and in good condition.

[7] About Gavi COVAX AMC

[8] EPI Cold Chain Technician Training Manual

- *Immunisation coverage and data recording practices* - Routine immunisation data is reported through DHIS 2. In addition, the country carried out a Demographic and Health Survey in 2018, which the MOH used to adjust its DHIS2 denominator. Prior to this survey, the denominator was based on an old population census which was carried out in 2010.
- *Governance and oversight* - The Inter-Agency Coordinating Committee for Reproductive, Maternal, Neonatal, Child, Adolescent Health and Nutrition (ICC for RMNCAH-N) was established in 2009 to coordinate activities of government and the partners with the objective of addressing the challenges of inefficiencies in the utilisation of resources, duplication of activities and high transaction costs, and ensuring improved management and delivery of quality health services across donor funded programmes. This coordination mechanism in the health sector is designed to deliver the National Health Strategic Plan, which in turn is aligned to the National Development Strategic Plan (NDSP). The activities of ICC go beyond immunisation. The ICC, Zambia Immunisation Technical Advisory Group (ZITAG) and Expanded Programme on Immunisation Committee (EPIC) each have terms of references (ToRs) to guide their activities. These governance bodies regular engage with relevant stakeholders, including civil society and church-based organisations. There is also appropriate government engagement, at EPIC and ICC, with the ICC including 9 government representatives among its 22 members.
- *Co-financing* - The country has also made significant progress in meeting its co-financing obligations on Gavi supported vaccines during the audit period.
- *Assurance arrangements* - External assurance arrangements were in place, with the Office of the Auditor General (OAG) auditing Gavi's grants annually and there is an MOH audit committee which is fully constituted under the Zambia Public Financial Management Act 2018.
- *Design of one TA plan* - The audit team further noted that implementing partners (both core and expanded) were involved in the development of the OneTA Plan and that joint discussions were held on the selection of the thematic areas and activities across the implementing partners and EPI/MOH (i.e., starting from pre-joint appraisal meeting up to final approval of the OneTA plan by Gavi Secretariat). The joint process of developing this plan helped to synchronise activities between implementing partners and cross-check any potential duplications and/or overlaps.

4. Findings

4.1 Governance and Oversight

4.1.1 The Inter-Agency Coordinating Committee (ICC) governance and oversight mechanism needs to be strengthened

Context and Criteria

In 2009, the Inter-Agency Coordinating Committee for Reproductive, Maternal, Neonatal, Child, Adolescent Health, and Nutrition (ICC for RMNCAH-N) was established, to coordinate activities of government and the partners to address challenges and inefficiencies in using resources, potential duplication of activities and high transaction costs, while ensuring improved management and delivery of quality health services across donor-funded programmes. This health sector coordination mechanism is designed to deliver the National Health Strategic Plan, which is also aligned with the National Development Strategic Plan (NDSP).

The Interagency Coordination Committee (ICC) is instrumental for the coordination and collaboration amongst diverse stakeholders involved in the immunisation efforts within a country. Gavi relies upon an operational and effective ICC, as it enables the coordination, strategic planning, optimal allocation of resources, accountability measures, advocacy, and functional partnerships for the programme(s). The ICC for RMNCAH-N is required to hold four meetings a year. The core membership for this ICC was 22 members from 16 constituencies.

The Expanded Program on Immunisation Committee (EPIC) is the technical committee that provides technical assistance to child health and stakeholders, identifies strategic interventions, acts as a link between the various partners supporting immunisation activities, identifies issues that need further follow up and provides a forum for stakeholders. The EPI committee operates through subcommittees such as the logistics and supply and cold chain, monitoring and evaluation, service delivery and communication and advocacy. Discussions at the EPIC are expected to influence the agenda for the ICC to ensure appropriate oversight through escalation of operational issues to senior officials at MoH and partner levels.

The management of the COVID-19 pandemic was coordinated by the Zambia COVID-19 Incident Management Committee/National Coordinating Committee. According to the country's National Deployment Vaccine Plan (NDVP), the ICC was required to continue operating throughout the period of the pandemic, with the role of coordinating partner for financing and activities.

Condition

We noted the following weaknesses in the ICC's performance and oversight roles:

ICC meetings were infrequent, participation was insufficient and core ICC functions were not adequately covered during meetings - The audit team reviewed the frequency of ICC meetings, participation of membership, deliberations, and action points from its meeting minutes, to assess the adequacy and effectiveness of the oversight role. The team noted the following opportunities for improvement in the ICC's oversight:

- For the audit period 2018-2022, the ICC held 11 out of the possible 20 meetings (i.e., 3 in 2018, 3 in 2019, 1 in 2020, 1 in 2021 and 3 in 2022), mainly due to interruptions from the COVID-19 pandemic. The ICC was not involved in the COVID-19 pandemic response which was managed by the National taskforce.
- Core members' attendance of ICC meetings was inadequate, achieving on average only 9 members per meeting against a quorum of 15 core members.
- Critical constituencies such as the Ministry of Finance, Ministry of Local Government, and the private sector were not attending ICC meetings.
- Some key programmatic challenges were not covered in the ICC's deliberations such as: MoH devolution, coordination and oversight over partner-led activities, programme sustainability concerns, and low grant absorptions.

In addition, from its review of the minutes the team also noted that the ICC did not cover several core objectives and functions included in its ToRs, such as:

- Addressing emergency issues affecting the programme – there was no evidence of discussion on critical issues affecting implementation such as gaps in the design of the grants.

Recommendation 1

To strengthen governance and oversight over programme management, MOH/EPI management should:

- ensure that all members of ICC and EPIC are briefed and oriented on their ToRs and mandate.
- ensure that EPIC issues are escalated to ICC for decision making where required.
- develop a coordination dashboard to track the implementation and follow up of the action points from the EPIC and ICC meetings. This dashboard should indicate an owner and timeframe for the purposes of accountability during subsequent meetings.

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- Providing strategic guidance and policy advice on the design, implementation, monitoring and evaluation of programmes and ensuring that these were aligned with the National Health Strategic Plan.
- Overseeing progress in delivery of programmes at subnational level, taking decisions to prioritise strategies, efficiency, gains, improvements in implementation standards, and equitable allocation of resource across donor funded RMNCAH-N programs in line with agreed parameters.

The role of partner organisations and other participants within the ICC was not defined **-** ICC membership comprises institutional representation from government, development and health partners, donors and Gavi alliance partners. Attendees and their alternates were not defined by the ICC ToRs. The audit team also noted that some other organisations and individuals were included in ICC meetings without a clear indication of why their inclusion was necessary. Consequently, ICC attendance ranged between 20 to 59 with an average attendance of 39 participants per meeting which hindered the execution of the ICC mandate.

EPIC discussions were not escalated to ICC for decision and accountability **-** The audit team reviewed 11 ICC meeting minutes and 10 EPIC meeting minutes for the period 2018 to 2022 and noted that key operational challenges for example low grant absorption and challenges on the use of e-LMIS were discussed at the EPIC but not escalated to the ICC for strategic direction and decision. In addition, the audit team did not find any evidence to confirm that the EPIC reviewed and tracked the EPI's annual work plans, expenditure and financial performance, and partners' implementation of activities.

No defined process for monitoring the implementation of ICC recommendations – There was no defined process for tracking and following up on the implementation of ICC recommendations and monitoring their status. Although action points from previous meeting minutes were reviewed at the next meeting, there was no mechanism or dashboard to track the actions taken on the points of pending from prior ICC meetings.

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Root Cause

- The large number of participants may have hindered the effectiveness of the ICC.
- The pandemic interrupted the operations of the ICC.
- ICC and EPIC members did not understand their mandate as stated in the Terms of Reference.
- Attendance and formation of ICC is based on invitation to institutions rather than by appointment of individuals and their alternates, there is no clear mechanism of ICC co-opting other members that may be considered relevant to implementation and the decision-making processes.
- The agenda for ICC was not influenced by discussions at EPIC.
- Weak archiving policy -While the ICC ToRs required the establishment and maintenance of a repository, the repository was never updated.

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Management comments

See detailed management responses - Annex 17

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Risk / Impact / Implications

- Inadequate oversight may impact on the ability of the programme to achieve its objectives.
- Some of the critical issues affecting program implementation are never escalated and discussed at the ICC meeting and the EPI team was unable to course correct in a timely manner.

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Responsibility

Director Policy and Planning

EPI Manager

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Deadline / Timetable

See Annex 17

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4.1.2 Grant Management Requirements (GMRs) and recommendations from various reviews are still outstanding

Context and Criteria

Over the years, various programme assessments and audits have been conducted, each providing recommendations for follow up:

- in 2016, Gavi carried out a Programme Capacity Assessment (PCA) of the MOH, covering the following programme management areas: financial management including evaluation of the funding mechanism; and vaccine and cold chain management. The PCA process concluded in November 2017 with agreed Grant Management Requirements (GMRs).
- In 2017, Gavi carried out a Programme Audit of its support to Zambia.
- Each year, the Office of the Auditor General carries out external audits on Gavi-funded programmes and issues management letters with recommendations for implementation.
- in 2021, Zambia conducted an Effective Vaccine Management (EVM) Assessment, providing information needed to monitor and assess vaccine supply chains and to help countries to improve their supply chain performance. Prior assessments were also conducted in 2011 and 2015.

Condition

Delays in implementation of GMRs: 19 out of the 30 GMRs were not fully implemented. Examples of key pending GMRs include (refer to Annex 15):

- Recruit a dedicated Senior Accountant who shall oversee accounting and financial reporting for Gavi programmes. The Senior Accountant shall be responsible for overseeing financial management at both central and district level including, but not limited to: supporting the development of annual budgets with relevant program staff at central and district level, tracking project expenditure against the agreed budget at both central and district level, reviewing monthly reconciliations of project bank accounts from both central and district level, ensuring all cash advances accounted for and reviewed within stipulated time.
- The Gavi Senior Accountant shall prepare and submit to Gavi quarterly Financial Statements and Expenditure Reports on Gavi funds managed by MOH. The financial reports will be prepared in accordance with Gavi's Financial Reporting and Audit Requirements.
- Physical verification of assets purchased with Gavi funds will be carried out on an annual basis with evidence of review thoroughly documented and available upon request.
- An internal audit plan shall be submitted and approved by the MOH at the beginning of each financial year, shared with the Office of the Auditor General and the ICC. The internal audit plan shall include financial and operational audits of Gavi programmes at central and district levels. Internal audit reports shall be made available to Gavi.

Some 2017 Gavi programme audit recommendations were not implemented – While some progress was made in addressing recommendations from the previous programme audit, we noted that ten out of 11 recommendations were not fully implemented. Examples of key recommendations repeated in this report include (refer to Annex 16 for details):

- In future, as recommended by the WHO Field guide, the MOH should: Develop and clearly document criteria for selecting supervisors at each level, give guidance on the selection of supervisors at sub-national levels and provide appropriate training, prepare, and store, for future reference, all completed supervisory checklists and reports.
- To ensure proper transparency and accountability, and in line with existing government accounting guidelines the MOH should: Manage Gavi grants, which are disbursed to the provinces and districts in compliance with defined provincial guidelines as appropriate, and in line with the Partnership Framework Agreement with Gavi, ensure that complete and accurate accounting records, including cash books are maintained, and clearly referenced to relevant supporting documents and justifications, ensure that expenditures related to allowances (e.g. DSA) are supported by signed lists of recipients showing the amount of funds received. Payments to respective recipients must be supported by details including their identity card reference, designation, duty station and contact details and ensure that the expenditures related to Gavi grants are subject to periodic and timely review by the MOH's Internal Audit function.

Recommendation 2

To enhance the oversight over implementation of recommendations from various assessments and audits, the MOH/EPI management should:

- develop a tracking system at the EPI operational level and ensure all recommendations are captured, by priority ranking (high, medium, low). Where recommendations are repeated across several reviews, these should all be included in the tracker with one action and action owner to close off the action. For example, where recommendations are repeated in the EVM improvement plan and programme audit report, the recommendations should be aggregated and agreed action should address the issues noted in both reports.
- ensure that all the EVM improvement plan's high priority activities are costed and prioritised for implementation.
- develop a dashboard at the ICC oversight level, taking into consideration contractual recommendations like GMRs vs. assurance recommendations and that these are allocated to an action owner with timelines for implementation.
- include semi-annual status reporting on implementation at the ICC meetings.
- share status updates on implementation of recommendations with Gavi after endorsement from ICC.

- The MOH should follow up the management of advances to conform to the Finance Act provisions. Specifically: advances should be retired promptly after the activity is completed; any unspent balance should be surrendered to the accounting officer.
- Managers within the Finance Department, such as the Principal and Chief Accountants, should check and review financial reports for accuracy before they are provided to donors. Reports should be completed and submitted according to the required reporting schedule.
- The MOH should ensure that the SOPs on effective vaccine management are enforced by: Ensuring that all staff responsible for vaccines update and maintain the stock records timely including necessary information on expiry dates, VVM status, batch numbers, product description, product quantities, and manufacturer, making sure stock counts are undertaken periodically and that the storekeepers validate and approve the physical count worksheets and all documents related to the periodic stock counts should be placed on file.

As such significant issues like sub optimal management of advances, unreliable logistic management information system and weaknesses in effective vaccine management remain unaddressed. Our audit also noted these as recurring issues as per findings 4.3.1, 4.5.1 and 4.5.2.

Recurring internal control weaknesses noted in the Auditor General reports were not addressed **-** The annual audit reports are accompanied by management letters which express an opinion on the control environment. In our review of the 2018, 2019, 2020 & 2021 management letters issued we noted that the following internal control weaknesses were not addressed:

- Slow utilisation of funds reported in all four management letters.
- Unretired imprests, missing payment vouchers and irregular payment of lunch allowances reported in three out of four management letters.
- Unaccounted for store items reported in two out of four management letters.

Delayed implementation of EVM assessment recommendations**:** The 2021 EVM improvement plan identified 86 activities for implementation. 77 (90%) were planned for implementation by December 2022. Of the activities due by December, 57 (74%) had not started, 14 (18%) were in progress and 6 (8%) had been completed. Some of the critical activities that have not been implemented and where gaps were still observed by the audit team include:

- Implementation of a stock management system to capture inventory movement and provide data for decision making.
- Effectiveness of support supervision including documentation of feedback and follow up.
- Cold Chain storage limitations at NVS.
- Challenges in temperature monitoring at NVS and PVS due to insufficient continuous temperature monitoring devices and historical temperature records (up to 1 year).
- Inadequate preventive maintenance of CCE and lack of documentation when it's done.
- Insufficient human resource capacity for CCE maintenance.
- Temperature mapping of the WICR and WIFRs was not conducted.
- Inadequate training in vaccine handling at subnational level.

Consequently, these issues remain outstanding and were observed by the audit team in the period following the EVM assessment and are documented under section 4.3.

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Root Cause

The following root causes were identified:

- There is no mechanism in place to track the implementation of the GMRs and audit recommendations.
- Inadequate oversight over the implementation of recommendations by the ICC.
- Recommendations are not assigned to action owners for follow up to ensure timely implementation.
- Limited oversight, follow up and tracking of EVMA improvement plan by the cold chain and logistic subcommittee.
- The EVM improvement plan was not costed, and the implementation of activities was not prioritised.
- The COVID-19 pandemic impacted the implementation of EVM recommendations between 2021 and 2022.

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Management comments

See detailed management responses – Annex 17

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Risk / Impact / Implications

- Failure to comply with the GMRs may result in the delaying, suspending or termination of Gavi's funding and consequently lost opportunities for the country (as stated in the signed grant agreement).
- Outstanding issues from audit and other reviews lead to unresolved internal control weaknesses which undermine programme implementation and grant performance.
- Inadequate oversight may impact on the ability of the programme to achieve its objectives.

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Responsibility

EPI Manager

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Deadline / Timetable

See Annex 17

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4.2 Programme Management

4.2.1 Inadequate coordination and monitoring of PEF Targeted Country Assistance (TCA) and other partner led programme activities

Context and Criteria

Targeted country assistance (TCA) complements Gavi's support for vaccines and health system strengthening. TCA aims to bridge capacity gaps by leveraging the core competencies of Gavi's partners. The nature of such support is usually determined based on a country's needs, identified during discussions such as the joint appraisal or full portfolio planning. The support is often provided through: (i) the provision of technical expertise and information sharing; or (ii) delivering training or consulting services. The proposed TCA activities are consolidated into an annual joint plan for TCA activities (the One TA plan), aligned with the relevant programmatic areas. Subsequently, the impact of the TCA support is assessed as part of each country's overall grant performance indicators.

PEF TCA guidance (2019-2020) outlines the roles and responsibilities of key stakeholders in the PEF-TCA planning, monitoring, and reporting processes. These are critical for ensuring the success and impact of TCA. Some of the key responsibilities of MOH/EPI include leading the OneTA plan development process, overseeing the identification of TCA needs and assignment to the core and expanded partners, and convening quarterly meetings to review progress on TCA implementation.

Country ownership is intended to be ensured through the consistent involvement and engagement of the EPI and MOH throughout the TCA process, including planning and monitoring performance. The guidance foresees mutual accountability to be embedded in the PEF model through established programmatic and financial reporting requirements for the partners as well as regular in-country reviews of the progress and performance of TCA jointly by EPI, implementing partners and other country stakeholders. Part of this is the Interagency Coordinating Committee (ICC) quarterly review of the TCA implementation progress.

For the period under review, 2018 - 2022, Zambia received USD 4.3 million of targeted country assistance. See table 3 for details. The TCA activities were implemented by the following partners: WHO, UNICEF, CDC and six other expanded partners.

The reports provided by partners should also be checked for accuracy and validity – with the formal confirmation of MOH/EPI for consistency of data from various sources (e.g., milestones on portal, Joint Appraisal reports, and supervision reports). Further review and confirmation of the capacities built through TCA support should also be demonstrated by evidence-based assessments, including overall programme performance improved through TCA support (e.g., coverage, equity, supply chain, data quality (DHIS2), financial management, etc.,).

Gavi entered into tripartite agreements with the partners and the Government - represented by the MOH, to implement CDS grants and components of HSS grants wherein the responsibility of the government and partners has been clearly laid out. One of the responsibilities of the MOH is to ensure regular monitoring of the activities associated with these grants, to assess the partners' performance and to report to Gavi on the implementation of programmes, according to the Partnership Framework Agreement (PFA) terms and conditions.

Condition

The audit noted the following gaps in the implementation of the TCA activities:

Inadequate coordination between TCA implementing partners and EPI/MOH – While the government and MoH are the intended TCA beneficiaries, there was no evidence that the progress on implementation and performance was reviewed by the ICC quarterly, as per the Gavi PEF TCA guidelines and there was no evidence indicating that these TCA reviews were conducted in the EPIC meetings. Consequently, involvement of senior leadership at MoH in the oversight and monitoring over Gavi-supported TCA was inadequate.

No formalised process to validate the achievement of TCA milestones - The monitoring and validation of TCA activity milestones and deliverables was not performed, i.e., the EPI/MOH did not receive any form of reports from PEF/TCA partners on the achievement of TCA milestones and deliverables and did not validate their legitimacy before reporting in the Gavi portal.

The audit further noted that 42 TCA activities were completed with major delays. Of these, 24 were completed in the following year (i.e. the activities were carried over). The delayed activities which were affected cross most of the critical thematic areas of the Zambia Country programmes (i.e., Programme management (LMC), health information systems (data), vaccine-specific support, Service Delivery, Supply

Recommendation 3

To strengthen the coordination and monitoring of the PEF/TCA partners, the MOH/EPI management - in coordination with the TCA partners should:

- establish a coordination forum that brings together the EPI and all the TCA implementing partners to coordinate, review performance, and assess implementation progress against the OneTA plan, as per the approved workplan.
- ensure that the TCA implementation progress and performance is reviewed by the ICC every three months, as per the Gavi PEF TCA guidelines.
- ensure that implementation of all Gavi-funded priorities allocated to the technical partners as part of the targeted country

Chain & Procurement, Health Financing/Sustainability and Demand promotion). Such delays also consistently occurred throughout the entire period 2018 – 2022 under review. The reasons for the delays documented in the reporting portal included COVID-19 pandemic, Polio outbreaks, Cholera outbreaks and funding constraints.

In the absence of a functioning coordinated mechanism to bring together the EPI/MOH and the various TCA implementors to jointly discuss the reasons for these delays, and with no formal milestone validation process, the audit team was unable to substantiate that the justifications provided for the delays were valid.

Conflict of interest in the PEF/TCA oversight process at the EPI – The audit noted that oversight over TCA activities at EPI office was assigned to staff seconded from CIDRZ, an organisation which also was a PEF TCA recipient. While this was a temporary measure to address staffing shortages at the EPI, there is a conflict of interest and risk of self-review, impacting the objectivity of managing TCA activities and validating performance of implementing partners.

Limited oversight by MoH/EPI over grant activities undertaken by partners - In addition to TCA activities, different partners also executed Gavi-funded immunisation activities. The activities were mostly undertaken at the provincial and district level, where CSOs implemented the activities directly. Although the EPI discusses with implementing partners at the planning stage on which activities were to be undertaken as per the instructions and approval of MOH, however the review and oversight mechanisms over these activities were not properly institutionalised. The review and validation of implementation was not undertaken at a detailed activity-level for each activity but was only undertaken at a consolidated level. Consequently, the reports submitted by the partners were relied upon by EPI to consolidate and subsequently submit an aggregated position to Gavi without properly validating the underlying implementation status.

assistance are reviewed and validated against the status report of PEF TCA milestones.
- ensure that there is no conflict of interest while assigning roles for seconded staff from implementing partners.

Recommendation 4

To ensure that MOH and EPI are regularly involved in the implementation of grants, the MOH/EPI management should:

- review and validate the completion of each grant activities undertaken by the implementing partners, based on the annual work plan approved by the MOH.
- provide guidelines to the provinces, and districts to help them perform regular monitoring of grant activities undertaken by implementing partners. Thereafter, the provinces and districts should periodically report progress of grant implementation back to the MOH/EPI central office for further cross-checking with partners report.

Root Cause

- There was no coordination platform bringing together all TCA implementing partners and the EPI, to review performance and assess progress in implementing the OneTA plan, as per the approved workplan.
- Absence of oversight and governance mechanism to map out critical activities and accountability. The TCA implementation progress and performance is not reviewed by the ICC quarterly as per the Gavi PEF TCA guideline.
- Staffing shortages at EPI.
- Gaps on the application and use of Gavi PEF TCA guidelines.

Management comments

See detailed management responses – Annex 17

Risk / Impact / Implications

- Without proper accountability it is possible that the One TA plan may not achieve its desired outcomes,
- TCA investments may not be followed through, and
- In the absence of effective engagement by MOH/EPI, partner facilitated TCA activities may not be delivered with a view of ensuring sustainability.

Responsibility

EPI Manager

Director Policy and Planning

Deadline / Timetable

See Annex 17

4.2.2 Impact of decentralisation on the immunisation programmes is yet to be determined

Context and Criteria

The national Health Sector Devolution Plan (HSDP), approved in November 2022 was initiated in the year 2006. The National Health Sector Devolution Plan was prepared based on the guidance available in National Decentralisation policy, Constitution Amendment Act, 2016 and Circular no. 10 of 2014 and a circular issued on 12 October 2015. As per the plan, the District Health Services function are to be devolved to the local government including transferring services currently being provided by District Health Office, District Health Hospitals, Mini Hospitals, Zonal Health Centres, Rural / Urban Health Centres and Health Posts. The HSDP provides the road map of the activities to be undertaken over a 5-year period to implement the Devolution Plan. It categorises the recommendations under human resources, budgeting and financing, assets transfer, organisation structure, policy and legal. The HSDP is at a high level and sector wide with EPI as one of the services being devolved. According to discussions with the Devolution task force (housed at the Cabinet Ministry), the devolution to all the districts is expected to take place simultaneously starting from Q4 of 2023. The audit team was informed of various meetings had been undertaken, however, discussions focused on other sectors, with the EPI specifically not being covered in any of the discussions held to date.

Due to the transfer of responsibilities to the local government, the district health offices would need to undertake an additional reporting to the local government and obtain necessary approvals from local government regarding any matter on which they do not have any power to decide. Previously, they used to obtain the necessary approvals from the province. The setting of policies as well the bulk procurements would remain with the Ministry of Health. The sector budget for 2024 as well as the medium-term budget for 2024-2026 is being prepared in which the devolution is being factored in and for which the EPI has also been considered. The sector budget would provide a detailed outlook on how the process would look like for the local government including activities which will be implemented by the local government. The future structure at the local government is currently not very clear. At present, the local government has a public health department which deals with sanitation, WASH, cleanliness, disposal of garbage, human waste management, however, does not have any structure for public health services.

In addition, the National Health Strategy has components for EPI, both for vaccine procurement and service delivery. Every year the budget is revised and the budget line for vaccine procurement and service delivery is adjusted upward.

Condition

There were no operational guidelines for devolution at national and sub national level - There were no detailed operational guidelines on coordination mechanisms, accountability, roles and responsibilities, institutional structure, working modalities and capacity building road map to supplement the HSDP. In addition, to date there has been no specific discussion on the devolvement of EPI services and the impact of devolvement on these services.

The EPI is currently reviewing the ICC's ToRs, to prospectively include a local government representative in the ICC's composition, an important step for the initial stages of devolution. This will help enhance the role of the ICC through visibility on roles and responsibilities and help the local authority engagement in ICC decisions.

The low investment in the EPI may be impacted further by devolution – Challenges still exist in the government's financing of the immunisation programme. Over the past two years, national economic difficulties have led to limited national contribution of funds towards routine immunisation services. The country developed a resource mobilisation framework to complement these efforts in order to raise additional funding to help close the gap. The Government's average funding allocation to the EPI over the audit period was only 1% of the MoH budget as summarised in the table below. The devolution process should consider the EPI programme's investment needs to sustain the progress and achievements to date.

Recommendation 5

To ensure that the devolution results in the transition of responsibility to sub-national levels, while maintaining continuity in the implementation of EPI activities, MOH/EPI management should:

- develop detailed implementation guidelines on devolution with clearly defined processes and coordination mechanisms.
- establish accountabilities for local governments by defining their roles and responsibilities, institutional structures, including working modalities.
- prepare and implement capacity building plans at the national and sub-national levels; and
- ensure that the transition process is costed.
- Mobilise sufficient resources to sustain the EPI operations.

Table 5: Average Government funding allocated to EPI

	2018 (ZMW)	2019 (ZMW)	2020 (ZMW)	2021 (ZMW)	2022 (ZMW)
National Budget	71,662,385,976	86,807,984,727	106,007,612,236	119,616,011,615	172,987,077,535
MOH Budget	6,824,169,820	7,519,930,916	8,656,381,044	9,230,638,979	12,416,098,313
EPI Investments	49,367,973	72,638,024	60,122,194	91,989,221	168,041,000
EPI as % of MOH Budget	**0.72%**	**0.97%**	**0.69%**	**1.00%**	**1.35%**

The devolution process is not detailed in the MOH strategic documents – The National Immunisation Strategy (2022-2026) does not contain any information on the devolution process. The National Health Strategy Plan (2022-2026) only contains a single paragraph, that the devolution plan has been developed and needs to be implemented and includes a key performance indicator for the same. There is no new structure currently being created at the local government level for EPI or for health services, hence, the existing structure at the province would continue to perform their role and responsibilities till the structure at the local government is developed. However, major changes would occur once the structure is developed at the local government level. There might be an impact on how EPI at national level operates with the local government as well as on the partner involvement.

Root Cause

- There are no detailed guidelines at the EPI level.
- Limited budget allocation towards Ministry of Health due to competing priorities.
- Insufficient clarity on the development of governance structures at the local authority level and on the role of the local government in the entire governance structure of the EPI under the devolved mechanism.

Management comments

See detailed management responses – Annex 17

Risk / Impact / Implications

- Limited ownership of the immunisation programme at subnational level may impact the overall immunisation program.
- Absence of detailed transition plan at the EPI level may impact future immunisation.
- Implementation of future Gavi funded activities may be disrupted due to inadequate guidance on the operationalisation of the devolution process.

Responsibility

Director Policy and Planning

Permanent Secretary

Deadline / Timetable

See Annex 17

4.2.3 Value for money and sustainability concerns in roll out of Gavi supported systems

Context and Criteria

The Ministry of Health submitted a proposal for the Expanded Programme on Immunisation's Optimisation (EPI-OPT) strategy to Gavi. The proposal noted that such support will help the country to address challenges of reaching every child, supply chain inefficiencies, inaccurate and untimely data, poor vaccine management practices, and inequities in vaccine administration. This proposal was approved by the IRC in August 2019 and the EPI optimisation programme began in November 2019 in the Southern Province, then expanded to the Western Province in October 2020. To date the MOH has received Gavi funding totalling USD 1.4m and USD 2.6 million under phases 1 and 2 of the HSS grant. The grant was implemented by the MOH, along with a consortium of partners: the Churches Health Association of Zambia (CHAZ), the Centre for Infectious Disease Research in Zambia (CIDRZ), PATH and UNICEF.

Condition

***Value for money may not have been realised on Gavi's investment*:** Part of the EPI optimisation grant fund was allocated to scaling up of the Zambia Immunisation Electronic Register (ZIER) amounting to USD 886,262; scaling up of the Mobile Vaccination (MVAC) amounting to USD 382,827 and its eLMIS amounting to USD 419,518.

As at September 2023, the above three systems financed by this grant were not being used by MoH or EPI. None of them was integrated into DHIS2 - the approved country data management system - and there was no evidence of use of data in any of the systems (ZIER, MVAC and eLMIS) by MOH or the EPI for decision making and planning for the immunisation program. Tablets procured in Q2 of 2021 to support the implementation of ZIER were also not included in the fixed asset register and most of these tables were not being used for immunisation activities.

No formal system implementation evaluation was done before rolling out ZIER in the western province.

Recommendation 6

To ensure sustainability and value for money of future Gavi's investments, the MOH/EPI management should carry out an independent total cost of ownership (TCO) analysis for any systems it wants to implement (including user licensing and system maintenance and support) to determine (i) the overall cost of implementing the system(s) and whether benefits outweigh investment costs; and (ii) whether the country is able to sustain and finance the costs of operating and maintaining the system once it is fully rolled out.

Root Cause

- Limited oversight over these systems by the MOH/EPI and relevant governance structures i.e., TCC and ICC and the Technical working groups.
- The total cost of ownership (TCO) or independent appraisal of the costs involved in roll out and implementation and maintenance of the systems after the pilot project was not completed.
- Inadequate sustainability planning for Gavi funded systems.

Management comments

See detailed management responses – Annex 17

Risk / Impact / Implications

- It is likely that value for money was not obtained on these system investments.
- Missed opportunity to capitalise upon using scarce funding, which could have been spent on other activities that would yield better value.

Responsibility

EPI Manager

Deadline / Timetable

See Annex 17

4.3 Vaccine supply chain management

4.3.1 Stock management records were incomplete and unreliable

Context and Criteria

One of the investment priorities of the Gavi iSC strategy is improving data visibility and use through the application of digital systems throughout the supply chain. High quality data helps to support planning and decision making. It is important for countries to design, develop and implement tailor-made systems that enable them to visualise key logistics data elements, including stock on hand and consumption at different levels of the supply chain, to enable them to make informed decisions in managing stock.

In 2015, following the vaccine stock management challenges observed during the 2015 EVMA, the MOH introduced an eLMIS called Logistimo. The system was intended to monitor stock movement and provide real time visibility on the status of stocks across different levels of the supply chain. It was envisioned that this eLMIS would be rolled-out to all health facilities, to improve efficiencies in the supply chain management by ensuring the availability of vaccines and immunisation supplies.[9]

Section 5.5 of the Standard Procedures for Effective Vaccine Management recommends that routine physical counts are conducted on quarterly basis for national and provincial vaccine stores whereas monthly for district and health facility levels.

Condition

The eLMIS system is no longer in use, resulting in incomplete vaccine records - In September 2023, the eLMIS was no longer functional, as the system was discontinued in July 2022. In addition, no backup of the system's data was available[10]. Moreover, no manual stock records were maintained at NVS since 2018, nor were these reintroduced fully since stopping using eLMIS.

Significant variances in eLMIS stock data provided - The country was granted temporary access to its past eLMIS system by the developer for a brief period during the audit fieldwork. The team downloaded the key data sets to review the accuracy of information and noted variances between the closing balance in the system and the expected/calculated closing balance as shown in the below table.

Table 6: Unreconciled stock data in Logistimo (doses)

Vaccine	Opening Balance as of 1 Jan 2021 [A]	Doses received (1 Jan '21 to 6 July '22) [B]	Quantity Issued (1 Jan '21 to 6 July '22) [C]	Expected balance in system [D = A + B - C]	Closing balance in system on 6 July '22 [E]	Unexplained variance [E – D]
DTP-HepB-Hib	583,865	2,876,766	2,341,984	1,118,647	367,850	**(750,797)**
IPV	5,090	740,700	715,570	30,220	190,390	**160,170**
PCV 4	780,620	1,318,400	1,908,680	190,340	229,200	**38,860**
Rotarix	342,950	1,087,500	982,827	447,623	-	**(447,623)**
MR	528,110	1,018,950	1,218,550	328,510	560,550	**232,040**
BCG	744,000	2,335,000	1,882,040	1,196,960	804,800	**(392,160)**
AstraZeneca – Covid-19	-	971,400	845,350	126,050	-	**(126,050)**
J&J – Covid-19	-	2,350,360	1,345,515	1,004,845	-	**(1,004,845)**
Pfizer – Covid-19	-	919,620	419,868	499,752	1,043,214	**543,462**

Recommendation 7

To identify and roll out a suitable and sustainable eLMIS, in future the MOH/EPI management should:

- within its Logistics Technical Working Group (TWG), establish an eLMIS project steering team or appoint a project manager possessing the necessary expertise in IT infrastructure. A project plan should be developed articulating the technical development specifications taking into consideration all of the key users' requirements.
- identify suitable eLMIS options which suit the Country needs for both national and sub-national levels.
- identify a suitable vendor taking into consideration the existing eLMIS systems in use which manage health commodities, so that where possible the introduction of multiple systems can be avoided.

Recommendation 8

To address gaps identified in policies, that resulted in incomplete manual and system records, and to learn lessons from the previous period, MoH and EPI should:

[9] Detailed Report for Logistimo and RTM Roll Out Assessment

[10] Except that EPI was granted access to eLMIS (Logistimo) by the developer for 1 week only with effect from 8 Sept 2023.

Incomplete manual inventory management record **-** The NVS had started regenerating current and historical stock records to compensate for the records lost in eLMIS. However, we noted there were no records for the period 1 January 2018, to 30 June 2023. While the eLMIS shut-down may account for missing records to 6 July 2022, there were no manual records for the period 7 July 2022 to 30 June 2023, indicating a significantly delayed response to a critical stock management process. Additionally, there were no records for IPV and COVID-19 vaccines (Pfizer and J&J).

Table 7: Incomplete stock records for sampled vaccines

#	Vaccine	Available vaccine stock control card start date
1	Pentavalent	30th June 2023
2	Measles rubella	16th June 2023
3	Pneumococcal conjugate vaccine	30th June 2023
4	Rotavirus	7th July 2023

Unexplained stock variances between physical stock counts and recorded stock balances **-** When the audit team conducted a physical count at the NVS and compared the quantities of antigens counted with those in the vaccine control cards, there were variances for all the antigens as shown below.

Table 8: Variances between physical count and stock records at NVS

Name of Vaccine	Physical Count on 30/08/23	Quantity as per Vaccine Control Card	Variance (in doses)
Pentavalent vaccine	442,844	442,007	837
Inactivated polio vaccine (IPV)	318,955	**	318,955
Pneumococcal conjugate vaccine (PCV)	38,800	40,000	(1,200)
Rotavirus	737,100	480,175	256,925
J&J – Covid-19	1,118,230	**	1,118,230
Pfizer – Covid-19	571,680	**	571,680
*** Stock Cards not provided*			

In addition, unexplained variances were noted between vaccine control card balances and physical counts performed by the audit team for at least one of the sampled antigens at all 5 PVS; 8 of 14 DVS; and 29 of 36 HFs (See Annex 9a, Annex 9b & Annex 9c).

Stock reconciliation variances during the review period **-** The audit team reconciled stock of sampled antigens at the NVS during the period 1st January 2022 to 30 August 2023 when the physical count was conducted and noted variances for four sampled antigens whose data was available.

Table 9: Unreconcilable stock at NVS

Vaccines	Expected Balance	Physical Count as of 30/08/23	Variance (in doses)
Pentavalent vaccine	1,730,767	442,844	(1,287,923)
Inactivated polio vaccine (IPV)	788,940	318,955	(469,985)
Pneumococcal conjugate vaccine (PCV)	1,179,420	38,800	(1,140,620)
Rotavirus	790,200	737,100	(53,100)

- develop a policy to manage data governance, master data management, and how to manage system integration and the changes associated. This will be critical when transitioning to another eLMIS system in the future.
- develop a data back-up policy. It is suggested that this include details such as: a schedule for the restoration testing of backups, the frequency of such tests, and who will be responsible for test management, reporting and quality assurance.

Recommendation 9

To address gaps in stock record information from the past periods, MoH/EPI management should:

- determine its minimum data/information requirements from the past period sufficient to support the continuity of the programme. Thereafter with the help of system developer, the relevant data should be retrieved from Logistimo.
- determine its minimum requirements for maintaining manual stock records in parallel at each level, in order to support the completeness and accuracy of vaccine management going forwards.

Recommendation 10

To address the deficiencies in inventory management SOPs, the MoH/EPI management should revise relevant sections of its SOPs, including guidance on the investigation and approval of stock adjustments.

Recommendation 11

To address gaps in governance and oversight over vaccine supply chain processes and vaccine management practices, MOH/EPI management should:

- train all officers involved in the vaccine management processes on the use of available manual records and on the eLMIS when it is rolled out.

At sub-national level, there were variances between the expected stock balance and the actual stock balance during the period 1st January 2022 to the day when the physical count was conducted for at least one antigen at 5 of 5 PVS, 12/14 DVS and 36/36 Health Facilities (Refer to Annex 10a, Annex 10b & Annex 10c). ***Unexplained stock adjustments at sub national stores*** **-** Unexplained adjustments were noted from the review of the vaccine control cards at 2 of 5 PVS, 8 of 14 DVS and 15/36 Health Facilities. Stock adjustments of varying magnitude were passed with no supporting reasons (Refer to Annex 11a, Annex 11b & Annex 11c). At sub-national level, there was no evidence of tracking and recording of temperature upon receipt of a vaccine consignment at all the 5 PVS, 14 DVS and 30 of 36 health facilities. Similarly, 3 of 5 PVS, 6 of 14 DVS and 7 of 36 health facilities were not checking the VVM status upon the receipt of vaccines provided to them.	• strengthen the monitoring and supervision mechanisms to enforce best practices like conducting and documenting physical counts, record keeping, among others by developing ToRs for support supervision, defining key deliverables for quality control, having annual supervision workplans, and by providing helping tools or forms to cover all aspects. In addition, feedback from supervision should be formally documented and communicated to the respective offices for appropriate action and the closure of action points should be followed up at all levels. • work with UNICEF to ensure supervision of NVS is conducted by MOH/EPI on a regular basis, and documented feedback is provided and followed up.
Root Cause • eLMIS was no longer in use after 6th July 2022 due to licensing and other operational constraints. • Delayed intervention to introduce manual records after the failure of eLMIS. • Gavi's 2017 programme audit recommendations were not implemented. This includes the assessment of the eLMIS implementation status; eLMIS utilisation; and the mandate for provinces and districts to uphold primary stock records manually until eLMIS integration is complete. Additionally, MoH/EPI failure to engage with Logistimo India Private Limited to establish a formal contract or license for the eLMIS, addressing crucial aspects like data access rights and ownership, key data location, and backup arrangements. • Unexplained stock adjustments, attributed to insufficient guidance on investigating and approving stock adjustments. Section 5.3 of the vaccine management SOP lacks clarity regarding the specific steps to be taken when addressing discrepancies between physical count and inventory records during the investigation and approval of adjustments. • Inventory management records were incomplete, with some records missing information for some periods. • At sub-national level, 4 of 36 Health Facilities visited did not conduct physical counts and the other 32 facilities where physical counts were done, did not conduct the counts according to a monthly schedule. • Training in vaccine management processes was inadequate given the staff attrition across all levels. The audit team noted that at 3 of 5 PVS, 10 of 14 DVS and 25 of 36 HFs, staff indicated that they had not received any training in stock management during the audit period. • Inadequate oversight over the vaccine supply chain and logistics management processes. • Support supervision was insufficient, with limited feedback as noted at 4 of 5 PVS, 11 of 14 DVS and 27 of 36 HFs.	Management comments See detailed management responses – Annex 17
Risk / Impact / Implications • There was no reliable process to provide accountability for Gavi provided vaccines at national and subnational levels. • Inaccurate data to inform forecasting of vaccines, procurement, and supply planning.	Responsibility EPI Manager Deadline / Timetable See Annex 17

4.3.2 Low stock at national and subnational stores resulted in significant stock outs at service delivery level

Context and Criteria

Forecasting volumes of vaccines that are required helps determine the quantity and type of each vaccine/antigen that needs to be procured and delivered during a predefined period. Forecasts take into consideration the target population, estimated coverage, wastage rates for different vaccines/antigens, stock on hand, buffer stock and shipments in the pipeline. When validated, the forecast is translated into a supply plan which indicates when the shipments of the respective vaccines/antigens are to be received by the country. It is important for the necessary quantities to be received in a timely manner to assure continuity in the availability of vaccines for the target population.

The Republic of Zambia conducts annual forecasts for vaccines/antigens and related supplies like needles and syringes safety boxes, for routine and supplementary immunisation activities. Every year, the forecasting exercise is usually conducted during the month of August/September using the UNICEF immunisation forecast template. This template includes guidelines and steps to guide the country through the forecasting process, using country-specific data and assumptions. The forecasting exercise is done in collaboration with UNICEF Country Office.

Data to input in the forecasting tool is obtained from the department of Monitoring and Evaluation which in turn gets its authenticated data from the Central Statistics Office. The stock on hand at the National level is considered at the time when the forecast is generated. The buffer stock included in the calculation is calculated at 25% of forecasted quantities and the recorded distributions at the NVS are used as an estimate of the number of doses consumed. Wastage rates for the respective antigen-types are based on WHO guidance as the country did not have its own country-specific wastage rates.

Condition

The audit team performed various tests at national level to review the adequacy of the vaccine forecasting process, the sufficiency of vaccine stock-levels at the NVS, PVS, DVS and the service delivery points, with a view to modelling the MoH's ability to meet the goal of leaving no one behind with immunisation. Significant challenges were identified as follows:

Variances between forecasted doses and doses received – A review of the number of vaccine doses approved for procurement and the number of doses of vaccines received at the NVS over the period 2018 to 2022 indicated that there were significant variances as shown in the table below.

Table 10: Variances between forecasted quantities and received quantities.

Year	Pentavalent			Rotavirus			PCV		
	Doses Forecasted	Doses Received	Variance	Doses Forecasted	Doses Received	Variance	Doses Forecasted	Doses Received	Variance
2018	2,052,700	2,052,700	**0%**	1,738,500	1,386,000	**-25%**	2,516,800	2,516,800	**0%**
2019	2,578,800	1,580,700	**-63%**	1,906,000	1,059,000	**-80%**	2,800,000	2,003,600	**-40%**
2020	1,358,933	1,401,500	**3%**	1,255,229	1,228,500	**-2%**	1,646,353	1,716,800	**4%**
2021	1,431,400	1,418,183	**-1%**	639,000	759,000	**16%**	1,273,493	1,067,600	**-19%**
2022	2,190,532	1,942,462	**-13%**	1,985,875	896,000	**-122%**	2,534,812	1,867,200	**-36%**

At the time of the audit, the stock levels of pentavalent vaccine and PCV at the NVS were below three months of stock as shown in the table below. In addition, the pipeline stock which was expected to arrive at the country in August 2023 had not been delivered by 8th September 2023.

Recommendation 12

To ensure availability of adequate supplies of vaccines in-country, MOH/EPI management should:

- work with the Ministry of Finance to review the timing of payments of co-financing for vaccines.
- conduct periodic reviews of stock levels in the country to provide learning for the annual vaccine planning projections.
- adjust forecasting and planning calculations, where necessary, to ensure that adequate buffer stocks are included which are sufficient to mitigate the risk of stock shortages, including taking into account the procurement and replenishment lead times.

Table 11: Months of Stock at NVS (in doses)

Vaccine Type	Balance at the time of Physical Count as of 30/08/23	Estimated Monthly Average Needs*	Months of stock as of 30/08/2023
Pentavalent	442,844	192,379	2.3
IPV	318,955	87,920	3.6
PCV	38,800	161,924	0.2
Rotavirus	737,100	153,422	4.8

**Source: Vaccine Stock Status Reports*

In August/September of every year, the country generates and shares its forecast with UNICEF for the following year. During the six years reviewed, the audit team noted incidences when the NVS' stock levels were below the required buffer stock levels, indicating a recurring challenge in ensuring adequate stock levels. For example, in the course of each year for the six-year period, the stock on hand fell below the minimum buffer stock level for IPV (4 out of 6 years), Pentavalent, PCV and Rotavirus (3 out of 6 years). Refer to Annex 5a & Annex 5b for details.

Stock-outs at national and sub-national level – During Q4, NVS experienced stock outs of pentavalent vaccine for 75 days from 1st October 2022. In the broader review period spanning from January 2018 to June 2023, the cumulative stock-out days were as follows; 147 for IPV (with the longest stock-out period lasting 73 days), 100 for PCV (with the longest stock-out lasting 48 days), and 574 days for Rota virus vaccine (with the longest stock-out period lasting 376 days). The analysis was conducted based on available records at NVS, which were incomplete and may not fully capture the entire stock-out situation.

The audit also compared stock-outs of Gavi supported vaccines to BCG, which is not a Gavi-supported vaccine. The cumulative number of stock-out days for BCG was 288 (with the longest stock -outs lasting 152 days), indicating a persistent challenge in ensuring adequate levels of childhood vaccines in the country. All sampled vaccines were stocked out at subnational levels as indicated in the table below.

Table 12:Stock outs at sub national level

	Province			District			Health Facilities		
Vaccine	No. of Provincial Vaccine Stores with Stock-outs	Average duration of Stock-out (days)	Longest single stock-out period (days)	No. of District Vaccine Stores with stock-outs	Average Duration of Stock-out (days)	Longest single stock-out period (days)	No. of HFs visited with stock-outs	Average Duration of Stock-out (days)	Longest single stock-out period (days)
Pentavalent vaccine	3/5	50	138	5/14	28	83	19/36	45	484
IPV	3/5	41	71	4/14	39	75	19/36	75	336
Rota	5/5	109	474	14/14	139	474	31/36	191	666
PCV	5/5	61	376	8/14	42	140	18/36	53	322
BCG	1/5	16	25	3/14	23	37	13/36	37	246

<table>
<tr><td>Root Cause
• There were delays in government’s disbursement of co-financing funds resulting in delayed delivery of cofinanced vaccines.
• While there is a process for generating forecasts, there is no guidance on assessing the accuracy of forecasts from previous years to guide and enhance assumptions for subsequent year projections. Additionally, there is no process to filter information at sub national level and communicate it to UNICEF and Gavi to inform adjustment of orders.
• Vaccine Management SOP did not define the minimum and maximum stock levels at NVS.</td><td colspan="2">Management comments
See detailed management responses – Annex 17</td></tr>
<tr><td>Risk / Impact / Implications
• The Country is unable to meet EPI and Gavi mission target of leaving no one behind on immunisation due to stock outs at service delivery points.
• Recurring stock outs of vaccines impact the efficiency, effectiveness, and sustainability of the immunisation programme in the country.</td><td>Responsibility
Director Finance

EPI Manager</td><td>Deadline / Timetable
See Annex 17</td></tr>
</table>

4.3.3 Vaccine distribution challenges experienced at national and sub national levels

Context and Criteria

Distribution of vaccines is an integral part of the vaccine supply chain which ensures the flow of vaccines via the various storage points until stocks reach the point of service delivery. The immunisation programme's success lies in its ability to deliver safe and potent vaccines to the last mile and beneficiary. Vaccine distributions should be supported with appropriate documentation to record the issuance and acknowledgement of receipt, in order to track and account for the vaccines at each stage of delivery.

Vaccines are distributed on a quarterly basis from the NVS to the PVS; and on a monthly basis from the PVS to the DVS, and from the DVS to the health facilities. The NVS is responsible for the initial vaccine distribution stage, using its own trucks which are funded by the central government.

Condition

No distribution schedules and plans **-** NVS did not have a documented distribution schedule. While the NVS logistics team used a pull system to supply vaccines to the PVS (i.e. based on their expressed demand), there was no plan to direct when the recipient stores should submit their orders/requisitions for vaccines, and when to plan to receive their vaccines.

No assessment of vaccine distribution transport needs **-** The country has not done a formal assessment of its transport needs for vaccine distribution. The audit team noted that though NVS has 4 trucks for the distribution of vaccines to PVS and selected DVS located along the distribution routes, only 3 trucks were in working condition as at September 2023. As a result, vaccine distributions to PVS were ad hoc, depending on the availability of transport. On several occasions the PVS were required to collect their own vaccines from the NVS.

Unreliable vaccine distribution records **-** The NVS uses issue vouchers to document and account for distribution of vaccines to PVS. NVS did not use issue and requisition books/registers and occasionally use photocopied forms to support their vaccine distribution process. Five of eleven randomly sampled goods issuance vouchers at NVS lacked vital information including the date of dispatch from NVS and the date of receipt by the corresponding recipient stores. The audit team also observed that there were three versions of issuance vouchers, with no standardised approved version. For COVID-19 vaccinations which were mostly undertaken under campaign mode using the push model of distribution, there were no proper logistics records at NVS, PVS and DVS and reconciliation on the movement of vaccines could not be undertaken. Based on the records available at the NVS, there was no evidence that 6 of the 10 provinces received all of their quarterly supplies in 2022.

Untraceable vaccine records between distribution points**:** At the sub-national level, goods delivery notes for vaccines issued by the NVS could not be traced at 2 of 5 PVS visited (see Annex 8a for the details) hence the audit team was unable to independently verify whether the vaccines dispatched by the NVS were received at the 2 PVS. Similarly, there were variances between quantities of vaccines dispatched from the PVS and recorded as received by the DVS at 9 of 14 DVS visited (see Annex 8b for the details).

Recommendation 13

To improve effectiveness of vaccine distribution, MOH/EPI management with representation from the NVS logistics team should:

- develop and disseminate annual vaccine distribution schedules and plans to all PVS and ensure that orders and deliveries by PVS and NVS respectively are made in accordance with the schedule.
- conduct a comprehensive needs assessment to establish the current distribution gaps and request or mobilise resources in future grants applications based on the needs assessment result.
- closely follow-up on the timely transfer and payment of government funds in support of the operational costs of distributing vaccines.

improve oversight over the distribution of vaccines at national and sub-national level (for example reviewing and signing off returned proof of delivery documents from the PVS, and orders and deliveries by PVS and NVS are consistent with the schedule)

Root Cause

- Insufficient knowledge and skills regarding the significance and necessity of crafting distribution schedules and plans.
- Distribution budget constraints at NVS.
- Inadequate management oversight over the distribution function which would have triggered activities like assessment of distribution needs and generating of work instructions on completing and signing off a vaccine distribution exercise.

Management comments

See detailed management responses – Annex 17

Risk / Impact / Implications	Responsibility	Deadline / Timetable
• No assurance that the provinces receive vaccines every quarter due to incomplete documentation. • Without assessment of distribution needs, the country is unable to determine distribution infrastructure gaps and source for necessary funding. • Without appropriate accountability, vaccines could be potentially lost.	EPI Manager	See Annex 17

4.3.4 Inadequate cold chain storage capacity at NVS and gaps in management of cold chain equipment

Context and Criteria

Gavi's iSC Strategy 2021-2025 articulates one priority investment area as, "*continued support to maintain adequate cold chain equipment capacity and supply chain infrastructure"*. Ensuring that the CCE is maintained to their optimal temperature range requires regular preventive maintenance, defined procedures that reduce the likelihood of equipment failure and extend the life of equipment, which include calibration, routine part replacement, lubrication, or cleaning[11]. Similarly, due to the temperature sensitivity of vaccines, any malfunctioning of cold chain equipment should be considered as an emergency that could be mitigated by development of a contingency plan. The staff handling/managing the CCE should be aware of the contingency plan and its implementation.

The country developed an EPI cold chain training manual in 2018 to guide cold chain technicians and officers on CCE maintenance and repair. Chapter 7 of this manual requires every District EPI cold chain technician to draw up a preventive maintenance program for servicing cold chain equipment to keep them in good working condition and prolong the life span of the equipment.

The NVS has a cold chain equipment workshop within its compound. The workshop is used for routine servicing and repair of equipment and offers practical training for cold chain officers in the management of cold chain equipment.

NVS currently has eight small WICR with total storage capacity of 105 m^3, one WIFR with storage capacity of 15 m^3, five ice-lined refrigerators and five ultra-cold chain (UCC) refrigerators that were all functional during September 2023. The cold chain equipment assessment report (April 2023) showed that nationally there is insufficient cold chain storage for vaccines – a needs gap of 34% (33,474 Litres) at +2°C to +8°C and a gap of 61% (7,603 Litres) for -20°C.

Condition

Insufficient NVS cold chain storage capacity - The cold chain storage capacity at the NVS was inadequate for routine immunisation and COVID-19 vaccines. The cold rooms' shelves were full, with additional vaccines being kept in aisles, making it difficult to access the vaccines during physical counts. See Annex 6 for illustration of the inside of a WICR at the NVS. The situation was exacerbated by little or no movement of over 1 million doses of COVID-19 vaccines from the NVS during the last 6 months (i.e., from March to August 2023). As a stop-gap measure, NVS occasionally uses the cold chain facilities at Zambia Medicine and Medical Supplies Agency to store its vaccines, (i.e., during campaigns and supplementary immunisation activities).

Late arrival and installation of COVAX CCE - The COVAX CCE was received in the months of January and February 2022 but installed in the months of July and August 2022 which was after the first campaign was undertaken in the month of May 2022. The installation and commissioning of the COVAX equipment continued with the original plan. Since then, there was no additional assessment to determine the CCE gaps addressed by COVAX CCE and how this CCE will be incorporated into the routine immunisation programme.

Ineffective maintenance of CCE – There was insufficient evidence to support the completion of preventive maintenance activities for all CCE. The quarterly preventive maintenance report, which consolidates information for all CCE, did not specify the individual preventive maintenance activities undertaken for each CCE. Furthermore, the reviewed reports were incomplete and lacked dates on when the preventive maintenance was conducted. Additionally, there were no equipment maintenance logs to capture and document the preventive and curative maintenance activities for all the nineteen CCE including two CCE (the only WIFR and 1 of the 8 WICR) that have been in use for over 20 years, making them more susceptible to break downs.

At sub national level, 4 out of the 5 provincial vaccine stores did not have preventive maintenance plans and none of the provincial vaccine stores had equipment maintenance logs. At the DVS, 6 out of the 14 did not have a preventive maintenance plan and only 1 of the 14 had an equipment maintenance log. At the health facilities, 26 out of the 36 lacked preventive maintenance plans and 2 out of the 36 had an equipment maintenance log. There were also notable delays in repair of broken-down equipment which took over 21 days to repair the CCE at 3 out of the 5 PVS (refer to Annex 12a & Annex 12b for details).

Recommendation 14

To address the cold chain storage gaps, MOH/EPI management should engage development partners and other stakeholders to help support the provision of additional cold chain storage support. In the meantime, to help clear slow-moving COVID-19 doses, efforts should be made to increase the demand for these vaccines, including the routinisation of COVID-19 vaccination, among other interventions.

Recommendation 15

To improve cold chain management and the service life of cold chain equipment, MOH/EPI management should:

- design and use proper preventive maintenance checklists and logs, for all cold chain equipment items at national and sub-national stores.
- design and print temperature monitoring forms in the recommended SOP format for vaccine management.

[11] WHO Vaccine Management Handbook Module VMH-E5-01.1

<table>
<tr><td colspan="2">The CCE contingency plan was insufficient – The EPI cold chain technician training manual includes a contingency plan; however, this plan only indicates key personnel to contact during an emergency and was not clear on activities to undertake to address the emergencies. For example, there were no instructions on what would be done at NVS in the event of a breakdown of the WIFR and the WICRs, to avert vaccine wastage.

Gaps in temperature monitoring – During the last 5 years at the NVS, no temperature mapping had been conducted for 6 out of the 8 WICRs and the 1 WIFR. Only the 2 newest WICR which were delivered as part of COVAX grant, had been subjected to a temperature mapping exercise upon installation. The remote temperature alert systems were non-functional for 6 out of the 8 WICRs and the 1 WIFR and none of the other 19 CCE units at the NVS was configured with a continuous temperature monitoring device to capture and record temperatures at regular intervals. The cold chain officers relied on the WICR monitors only to capture and record temperature. There was no remote temperature alert system at the NVS and 4 out of the 5 PVS.

Incomplete temperature monitoring records – The NVS's temperature monitoring forms are designed to capture and document temperature twice a day for 7 days. By inference, this means that cold chain officers should print out a new form each week to continue recording temperature. A review of the forms indicated that temperatures were not recorded daily and consistently not recorded over weekends. Some forms were missing vital information like the name of the CCE and the date/week the data in the form related to.</td><td>• develop and distribute job aids on cold chain management to all cold chain handling points; and
• develop and disseminate contingency plans in the event of a breakdown for all vaccine handling points.</td></tr>
<tr><td>Root Cause
• Significant remaining COVID-19 vaccines (i.e. including more than 1 million doses of Johnson & Johnson vaccine) with minimal movement.
• Inadequate oversight over the cold chain management function.
• Non-adherence to cold chain management SOPs.
• Absence of job aids on cold chain management.
• The existing design of the temperature monitoring form is not consistent with the SOPs and best practice. The tool currently being used can only record temperature twice a day for a one-week period.</td><td colspan="2">Management comments
See detailed management responses – Annex 17</td></tr>
<tr><td>Risk / Impact / Implications
• Storage constraints lead to ineffective physical counts characterised by difficulty of checking expiry dates, potential damages, batch verification and reconciliation etc., which will result in potential vaccine wastages due to challenges in ensuring and operationalising first/early expiry - first use/out mechanism.
• Risk of equipment breakdown leading to vaccine loss especially for vaccines stored in the WIFR without a comprehensive contingency plan.
• Risk of temperature departures from the acceptable range without intervention.
• In addition, data for a given CCE cannot be promptly reviewed highlighting temperature trends and the opportunity to put into effect remedial actions, if required.</td><td>Responsibility
EPI Manager</td><td>Deadline / Timetable
See Annex 17</td></tr>
</table>

4.3.5 Gaps in management of expired vaccines

Context and Criteria

Sub section 5.6.1 of the SOP on effective vaccine management (2021), states that all expired vaccines should be kept completely outside the cold chain pending their safe disposal according to the recommended guidelines.

Condition

Delayed disposal of expired vaccines taking up valuable space **-** NVS has one dry store for keeping dry supplies. The bulk of the store is used for storage of expired/obsolete antigens and related supplies. The audit team noted that expired vaccines has been kept in the national vaccine store for long durations, ranging from 274 to 3,987 days as shown herein below.

Table 13: Delayed disposal of expired vaccines

Name of vaccine	Date	Batch No.	Quantity (in doses/ units)	Date of the audit review	Duration of storage of expired stocks (in days)
Pfizer Covid-19	30-Nov-22	GA2988	598,740	31-Aug-23	274
MR-5	30-Apr-22	228202320A	90,000	31-Aug-23	488
BCG	30-Sep-12	1359	12,000	31-Aug-23	3,987
Needles & Syringes 2ml	31-Dec-21		2,160,000	31-Aug-23	608

Expired vaccines were stored with viable stock **-** During the field visits the audit team noted an instance at Luto health facility where 140 expired doses of J&J vaccine were kept in the same refrigerator with viable vaccines. On another one health facility, vaccines were also found with illegible, damaged labels and therefore the particulars regarding their shelf life could not be determined (see Annex 7b).

COVID-19 doses are at a risk of expiry **-** The audit team noted that the COVID-19 vaccines at NVS and sub-national vaccine stores were at risk of expiring (i.e., Pfizer vaccines – 571,680 doses at NVS and 33,967 doses at sub-national stores scheduled to expire in October 2023; and J&J vaccines – 1,118,230 doses at NVS and 672,667 doses at sub-national stores were scheduled to expire between October 2023 and January 2024).

Recommendation 16

To improve management of expired vaccines, the MOH/EPI management should:

- develop a management of expirations policy for medical waste including vaccines.
- collaborate with the Zambia Environmental Management Agency to expedite the disposal process for expired vaccines.
- segregate expired vaccines from viable stock at sub-national levels.
- as part of supervisory visits, the review of expired vaccine management should be included, to ensure compliance at sub-national levels.

Root Cause

- Absence of a waste management policy.
- Long and bureaucratic waste disposal process that requires the presence of both Zambia Medicines Regulatory Authority and Zambia Environmental Management Agency to supervise the destruction process. Getting both agencies at the same time has proved to be an uphill task for the vaccine management team.
- Non-segregation of expired stock from viable inventory at the service delivery points.
- Significant reduction in the demand for COVID-19 doses, due to reduction in perceived threat from COVID-19 has resulted in lower than anticipated consumption.

Management comments

See detailed management responses – Annex 17

Risk / Impact / Implications

- Large quantities of obsolete stock taking up valuable storage space for dry supplies.
- Potential risk of administering expired vaccines at service delivery points due to non-segregation of expired vaccines and viable stock.

Responsibility

EPI Manager

Deadline / Timetable

See Annex 17

4.4 Immunisation data management

4.4.1 Target population data may not be accurate and set immunisation targets have not been met since 2020

Context and Criteria

The National Health Strategic Plan (NHSP) 2017 to 2021 sets the immunisation programme's target as the percentage of fully immunised children under one year. This NHSP target is communicated and adopted at all levels across the country.

The Gavi HSS and NVS General guidelines (2015-2018), recommend that Gavi-supported countries ensure that the country's population projection of live births is consistent with external projections. Furthermore, the guidelines recommend that Gavi-supported countries conduct high quality and national representative household survey every five years.

Prior to the recently concluded 2022 population census, the last population census was carried out in 2010. The Zambia Statistics Agency (ZAMSTATS) in partnership with the Ministry of Health; the University Teaching Hospital Virology Laboratory (UTH-VL); and the Department of Population Studies at the University of Zambia (UNZA) carried out a Demographic and Healthy Survey (DHS) in 2018. According to the DHS report issued in January 2020, data collection was carried out from July 2018 to January 2019. Following the 2018 Zambia DHS, the Ministry of Health adjusted the denominator in DHIS 2 starting from 2018. The country used the reported province level BCG coverage in the DHS report as a basis to adjust the number of under year ones (<1).

EPI noted that the adjusted denominator was input into DHIS2 starting from 2018, followed by annual adjustments using the projected population growth rate from (ZAMSTATS), included in the medium variant population projections for 2011 to 2035.

Condition

The audit team performed various tests at national level to understand the methodology used for setting targets, how they are measured and the country's progress in reaching many infants under the age of two years with immunisation services. We also assessed the accuracy of the source of data used in decision making. Additional reviews were performed to establish the progress EPI had made in addressing known denominator issues. The following gaps were noted:

The immunisation targets in the National Health Strategic Plan (NHSP) were not met and a catch-up plan was not developed **-** As noted in other countries, Zambia was not able to meet its set immunisation targets since 2020 mainly due to the COVID-19 pandemic. However, while the pandemic played a big factor, the EPI did not develop a catch-up plan to close the gap created by the pandemic due to COVID-19 restrictions/lock downs. Consequently, MoH is unable to measure progress against set targets that have taken into consideration the impact of COVID-19 pandemic. The audit team compared the coverage in DHIS2 against the set immunisation indicator in the NHSP and noted that MOH/EPI did not achieve the set targets for 2020, 2021 and 2022 as showed below:

Table 14: percentage of fully immunised children against set NHSP targets

	2018	2019	2020	2021	2022
% of fully immunised children under one year					
NHSP Targets	87%	88%	90%	96%	95%
Achievement (DHIS2 data)	88%	89%	89%	88%	83%
Variance	**(1%)**	**(1%)**	**1%**	**8%**	**12%**

Variance between the number of under-one infants projected by Zambia Statistics Agency and DHIS2 – Following the information provided by the EPI team, the audit team compared the adjusted denominator put in the DHIS2 by MoH against the number of infants under one year old, provided by the ZAMSTATS medium variant population projections for 2011 to 2035 to ascertain the accuracy of the denominator input in DHIS2. The audit team noted deviations between the projected number of infants by ZAMSTATS and DHIS2 (data used for the denominator) per year during the period of the audit.

Recommendation 17

To determine targets for the next period, EPI/MoH management should:

- determine the impact of the pandemic and number of children that missed vaccinations during the period to set appropriate short-term catch-up targets and ensure that missed opportunities are integrated into ongoing campaigns.
- document lessons learned from the previous National Health Strategic Plan (NHSP) and incorporate learnings into the new NHSP.

Recommendation 18

To address the challenges in the denominator and ensure that the appropriate adjustments are made, the EPI/MoH management should:

- review the denominator in DHIS2 together with the ZAMSTATS projections and ensure that the adjustments in DHIS2 are normalised.
- consider undertaking independent surveys, such as a coverage evaluation survey, to supplement and review the accuracy of reported data.
- work with the WUENIC team to review data using sample studies, instead of desk-based reviews, to

(See table below). Consequently, we could not ascertain the accuracy of the adjustments in denominator in DHIS2 to ensure that MoH reaches all children with all immunisation services before they attain 2 years of age.

Table 15:Variance between the number of under-one infants projected by Zambia Statistics Agency and DHIS 2

	Total number of infants under one year			
Years	Population Projection	DHIS2	Variance	Percentage Variance
2018	653,238	704,214	(50,976)	(8%)
2019	665,873	722,804	(56,931)	(9%)
2020	678,359	741,996	(63,637)	(9%)
2021	690,781	764,225	(73,444)	(11%)
2022	703,249	785,154	(81,905)	(12%)
	3,391,500	**3,718,393**	**(326,893)**	**(10%)**

establish a more accurate picture of the country's progress.

Root Cause

- The final 2022 national census report has not been released. In addition, the preliminary report does not provide data disaggregated for under 1.
- The Monitoring and Evaluation subcommittee is non-functional and there is no evidence that the adjustments on the denominator were reviewed.

Management comments

See detailed management responses – Annex 17

Risk / Impact / Implications

- Although the denominator was adjusted in 2018 following the Zambia Demographic and Health Survey, there are still districts reporting immunisation coverage greater than 100%. During the audit period, there was an average of 30 districts reporting DPT-1 coverage above 100% (i.e., negative zero doses) and 21 districts reporting DPT=3 coverage above 100%.
- Use of erroneous data may result in inaccurate administrative coverage data, which is non-compliant with what is agreed with Gavi and may undermine the confidence in the reported administrative coverage data.
- The programme may be unable to design interventions to identify zero dose children due to use of incomplete target data.

Responsibility

EPI Manager

Assistant Director - M&E

Director Planning

Deadline / Timetable

See Annex 17

4.4.2 Inconsistencies in administrative immunisation coverage

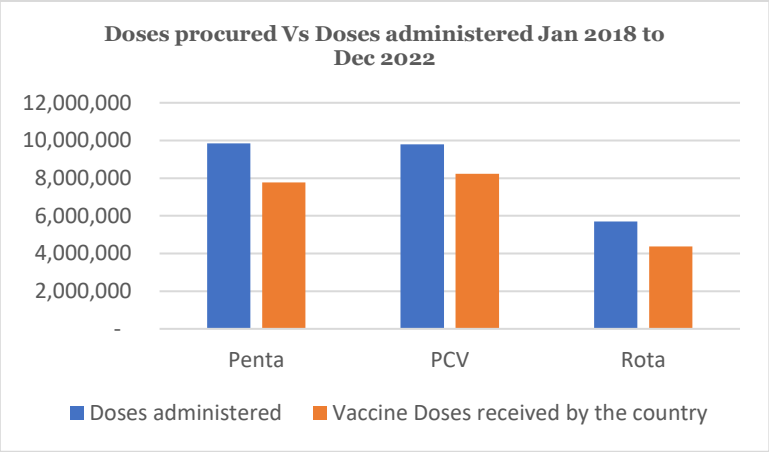
Context and Criteria

Per Clause No. 8 (d) of the 2014 Partnership Framework Agreement – it is necessary that all information provided to Gavi including its applications, progress reports, any supporting documentation, and other related operational and financial information or reports, is accurate and correct as of the date of the provision of such information. In addition, Article 16 of Annex 1, sets out additional provisions on the monitoring and reporting, specifying that "the Government's use of Gavi's vaccine and cash support is subject to strict performance monitoring," such that: "Gavi seeks to use the Government's reports and existing country-level mechanisms to monitor performance."

The grant application guidelines require Gavi-supported countries to improve data availability, data quality and use of data for their planning, programme management, understanding and documentation of results. These guidelines encourage the use of immunisation coverage data as an ongoing institutionalised process for better planning, improved programme performance and resource management.

Condition

Anomalies in reported administrative coverage – Inconsistencies were noted in the administrative coverage data reported in DHIS2 as compared to the doses available in the country during the review period. The stock ledgers at national level were not up to date and therefore could not be relied upon to track the movements of stock. Consequently, the audit team considered the total vaccine shipments received at National Vaccine Store (NVS) for the same period to be approximately equivalent to the total doses available in the country. The total vaccine shipments were adjusted downwards using WHO recommended wastage rates and closing balances for 2022 at NVS. The results indicated that the number of children reported as vaccinated for pentavalent, PCV and rotavirus during the period 2018 to 2022 was consistently higher than the quantities of vaccines received in the country. These variances are suggestive of over-reporting of the administrative coverage.



Variances between DHIS2 reported data and underlying data records at the service delivery points – The audit team visited 36 health facilities and carried out a comparison of reported vaccinations in DHIS2 against underlying records like immunisation register, monthly reports, and consumption data for

Recommendation 19

To ensure the availability of accurate and reliable immunisation data for decision making, MOH/EPI management should:

- routinely triangulate available data, including an assessment of the administrative coverage data and vaccine availability/utilisation, to check for accuracy of data reported. Such analyses should be completed at the national and sub-national levels, and any data inconsistencies noted should be validated and explained.
- ensure that all primary data collection tools are completed correctly and correlate or support each other.
- consistently complete data verification and validation exercises at the health facility and district levels.
- ensure adequate supervision at sub-national level over data collection and management including follow-ups of recommendations, to address data management gaps arising from routine supervision visits.

pentavalent and IPV. The audit team noted variances between immunisation register and monthly reports in 94% of the HFs, between monthly reports and DHIS2 in 58% of HFs and between reported vaccinations in DHIS 2 and consumption data in 97% of HFs. See Annex 13 for details.

Variances between coverages of vaccinations administered at the same time – According to the immunisation schedule for Zambia, children are supposed to receive Pentavalent 1 and PCV 1 at six weeks, Pentavalent2 and PCV 2 at ten weeks and Pentavalent 3 and PCV 3 at 14 weeks.
The audit team compared coverage data for Pentavalent 1, 2 and 3 against coverage data for PCV 1, 2 and 3 for the period 2018 to 2022 and noted variances as illustrated below:

Table 17:Variance between Penta and PCV

Year	Penta 1	PCV 1	Var	Penta 2	PCV 2	Var	Penta 3	PCV 3	Var
2018	641,212	642,725	(1,513)	627,334	626,336	998	609,396	612,408	(3,012)
2019	652,822	656,958	(4,136)	634,103	640,349	(6,246)	611,288	618,928	(7,640)
2020	649,999	655,777	(5,778)	640,062	644,314	(4,252)	622,726	627,152	(4,426)
2021	715,723	717,645	(1,922)	693,537	696,972	(3,435)	669,325	678,075	(8,750)
2022	713,514	676,735	36,779	696,817	664,693	32,124	674,436	638,911	35,525
Total	**3,373,270**	**3,349,840**	**23,430**	**3,291,853**	**3,272,664**	**19,189**	**3,187,171**	**3,175,474**	**11,697**

Root Cause

- Data reviews carried out at national level only focus on data timeliness and completeness of reporting without emphasis on data quality aspects like triangulation of coverage data to logistics/distribution data, reconciliations between tally sheets and monthly reports, which could have helped to identify data anomalies and offer the possibility for data correction.
- Limited and ineffective Data Quality Assessments. There was no evidence of DQAs done in 9 out of the 14 districts visited and no DQIPs developed at all levels.
- Inadequate data quality reviews with no evidence for data quality reviews at 70% of HFs visited. In addition, there was no evidence for data quality feedback from districts to facilities. This is mainly due to no structured mechanism/form/report to use to provide written feedback.
- Inadequate standard data management tools and data management job aids.
- Failure to update the immunisation registers and other data records immediately during the immunisation sessions.
- Stock out and use of outdated data tools missing key EPI data elements leading to a failure to capture the data points.

Management comments

See detailed management responses – Annex 17

Risk / Impact / Implications

- Inconsistent immunisation and consumption data deters effective strategic decision making thus affecting grant performance and subsequent funding decisions.
- Unreliable vaccination coverage compromises the immunisation programme's ability to identify under immunised and un-immunised children.
- Without an effective data verification and validation process, data anomalies will not be identified and promptly corrected– resulting in inaccurate or erroneous immunisation data entries and reporting. Unexplained data anomalies undermine the credibility of the reported immunisation administrative coverage.
- Reporting inaccurate coverage via Gavi's performance framework is not compliant with the Partnership Framework Agreement.
- Better alignment of pentavalent and PCV vaccines could bring opportunities to reach more children.

Responsibility

Assistant Director - M&E

Deadline / Timetable

See Annex 17

4.4.3 Slow implementation of the Data Quality Improvement plan

Context and Criteria

The general guidelines for country applications for Gavi-eligible countries recommend that Gavi-supported countries improve data availability, quality and use as it is essential for planning, programme management and understanding and documenting results. The guidelines encourage the use of immunisation coverage data as an ongoing institutionalised process for better planning, improved programme performance and resource management. Gavi supported countries are encouraged to develop a strategic data improvement plan based on latest assessment and to identify key priority areas to be addressed, clarifying responsibilities, identifying needed and available resources, timelines, and key milestones.

Data Quality Assessments (DQA) conducted by immunisation programmes provide a self-assessment opportunity for countries to identify their data challenges and develop improvement plans. Since 2015, Gavi required countries to perform the DQA using WHO-endorsed methodologies. Although DQA is not an annual requirement, it is recommended to be done at least every three to five years. Zambia developed a Data Quality Improvement Plan (DQIP) in 2019 following the 2018 Data Quality Assessment (DQA).

Condition

***Slow implementation of recommended actions in the Data Quality Improvement* Plan –**. Although the DQIP incorporated a monitoring framework, its milestones/indicators and performance were not tracked and monitored by the EPI. Consequently, only 7 out of 22 interventions have been fully implemented, 7 were partially implemented and 8 have not yet been implemented. The following activities have not been implemented:

- Revision of EPI manual to include roles and responsibilities for the District MCH coordinator. Cold chain Officers and Pharmacy personnel on how they are to work together and manage data.
- Design and implementation of policy and job aid to strengthen feedback available to all the health facilities.
- Strengthening of EPI information systems interoperability.
- Circulation of reference materials on data management to health facilities by 2021.
- Implementation of data review meetings at HF level.
- Adoption and implementation of electronic data management systems at all service delivery levels.
- Assessment of impact of 2020 census data on EPI.
- Refining head count methodology and developing a head count guide.

***Value for money may not be realised from DQAs* -** Expenditures totalling USD 253,000 were incurred in conducting DQAs between 2019 and 2022. However, the audit team only received reports for DQAs carried out in 7 provinces *(Central, Copperbelt, Eastern, Luapula, Lusaka, Muchinga and Northern)* in October 2022. The audit team reviewed all the seven reports and noted the following gaps:

- The assessments focused only on availability and completeness of tools. There was no focus on data triangulation, review of data quality assurance mechanisms at HF level and accuracy of reported data.
- The DQA reports from the different provinces were not reviewed and synthesised to develop a consolidated national level report and develop a nationwide DQIP.
- There were no data quality improvement plans with clear actions to be undertaken to address the gaps noted from each province.

There was no evidence of dissemination of findings from the assessments to sub national level.

Recommendation 20

To improve data availability, quality and use, the MOH/EPI management should:

- ensure that all DQAs are carried out according to the WHO-endorsed methodology. This should include developing costed DQIPs, after each DQA.
- work with other health development partners to develop terms of reference, for the M&E technical working group and to reactivate and restore this group.
- ensure that the M&E technical working group properly monitors all the activities identified in the DQIP and implement in a time bound manner.
- budget for the outstanding DQIP action items and ensure that funding is allocated to all critical areas of the plan.

<table>
<tr><td>Root Cause
• Insufficient oversight arrangements on the M&E function at EPI level. The M&E technical working group was inactive/ non-operational and without documented terms of reference.
• The DQIP was not costed, and activities have not been prioritised.</td><td colspan="2">Management comments
See detailed management responses – Annex 17</td></tr>
<tr><td>Risk / Impact / Implications
• Key priority areas for data quality may not be addressed on time which could lead to inaccurate, incomplete, inconsistent, and unreliable immunisation data.
• Failing to implement critical data quality activities affects the quality of immunisation results and the overall direction and guidance that Management can provide to the programme.
• Without good quality DQAs, EPI is unable to demonstrate improvements in the quality of its coverage data.</td><td>Responsibility
Assistant Director - M&E

EPI Manager</td><td>Deadline / Timetable
See Annex 17</td></tr>
</table>

4.5 Fixed asset management

4.5.1 Gaps in fixed asset management

Context and Criteria

The November 2017 GMRs state that the Accounts Unit in MOH will develop and maintain a Fixed Assets Register (FAR) for assets procured with Gavi funds. Physical verification of assets purchased with Gavi funds will be carried out on an annual basis with evidence of review thoroughly documented and available upon request.

EPI maintains a fixed asset register (FAR) for all assets procured using Gavi funds. This register included assets situated at both the national and sub-national level.

Condition

The FAR was incomplete **-** The audit team noted that several items were not reflected in the FAR. This included 135 tablets and 1 vehicle procured by CIDRZ. In addition, one vehicle procured by CHAZ and 528 vaccine refrigerators procured under the CCEOP Grant were not included in the FAR. Finally, 140 laptops procured by UNICEF with a total value of USD 112,288 were recorded as a lumpsum in the FAR without any additional entries, serial numbers or the locations of these laptops.

Gaps in handover of assets procured by partners to MOH **-** There were no handover reports or documents for the following items:

CHAZ procurement – 2,620 bicycles, 4 motorcycles and 1 vehicle.

UNICEF procurement – 24 vehicles, 1 Truck, 2 Boats, 140 Laptops; and

CIDRZ procurement – 135 Tablets, and 2 Vehicles.

In addition, there were no distribution lists for the CHAZ procurement of bicycles and motorcycles, nor the UNICEF procured vehicles and boats.

Annual asset verifications have not been carried out since 2018 **-** The finance (control and management) act, Sec 37 states "All stocks of public stores shall be completely verified at least once in a year by a duly appointed stock verifier or Board of Survey." This was not requirement complied with.

Recommendation 21

To comply with the GMRs, the MOH/EPI management should ensure that the FAR captures all Gavi funded assets and that annual physical asset verifications are consistently done, as required.

Root Cause

Inadequate oversight over fixed assets management.

Management comments

See detailed management responses – Annex 17

Risk / Impact / Implications

Inadequate controls over the use and custody of the assets may lead to the misuse and loss of programme assets.

Responsibility

EPI Manager

Deadline / Timetable

See Annex 17

5. Annexes

Annex 1 : Acronyms

AEFI	Adverse Events Following Immunisation
AZ	Astra Zeneca
BCG	Bacillus Calmette Guerin vaccine
COVID-19	COVID-19
CCE	Cold Chain Equipment
CCEOP	Cold chain equipment Optimisation platform
CDC	Centre for Disease Control
CDS	COVID-19 Delivery Support
COSO	Committee of Sponsoring Organisations of the Treadway Committee
COVAX	COVID-19 Vaccine Global Access
CVS	County Vaccine Store
DFID	Department for International Development
DG	Director General
DHIS	District Health Information System
DQA	Data Quality assessment
DQIP	Data Quality improvement plan
DTP	Diphtheria, Tetanus, Pertussis
EAW	Early Access Window
EPI	Expanded Programme for Immunisation
EVMA	Effective Vaccine Management Assessment
FAR	Fixed Asset Register
FCDO	Foreign, Commonwealth and Development Office
FPP	Full Portfolio Proposal
FY	Financial Year
GAVI	Global Alliance for Vaccine and Immunisation
GBP	Great Britain Pound
GDP	Gross Domestic Product
GF	Global fund
GMR	Grant Management Requirement
HCW	Health Care Worker
HF	Health Facility
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HPV	Human Papillomavirus
HR	Human resources
HSS	Health Sector Strengthening
HSSP	Health Sector Strengthening Plan
HSWG	Health Sector Working Group
ICC	Interagency Coordination Committee
IP	Implementing Partner
IPV	Inactivated poliovirus Vaccine
iSC	Immunisation Supply Chain
ISS	Integrated support Supervision
JAR	Joint Annual Review
eLMIS	Electronic Logistic Management Information System
MCV	Meningococcal Vaccine

MOFP	Ministry of Finance and Planning
MOH	Ministry of Health
MR	Measles Rubella
MYP	Multi Year Plan
NDVP	National Deployment Vaccine Plan
NGO	Non-Governmental Organisation
NVS	National Vaccine Store
ODK	Open Data Kit
OPV	Oral Polio Vaccine
PCA	Programme Capacity Assessment
PEF	Partnership Engagement Framework
PFA	Partnership Framework Agreement
PIRI	Periodic Intensification of Routine Immunisation
RI	Routine Immunisation
SARA	Service Availability and Readiness Assessment
SARS	Severe Acute Respiratory Syndrome
SDG	Sustainable Development Goals
SDP	Service Delivery Points
SIA	Supplementary Immunisation Activities
SMT	Stock Management Tool
SOP	Standard operating procedures
SVS	State Vaccine Store
TA	Technical Assistance
TB	Tuberculosis
TCA	Targeted Country Assistance
TWG	Technical Working Group
UHC	Universal Health Coverage
UN	United Nations
UNICEF	United Nations Children Fund
USAID,	United States Agency for International Development
USD	United States Dollar
VAR	Vaccine Arrival Report
VCB	Vaccine Control Book
VIG	Vaccine Introduction Grants
VPD	Vaccine Preventable Diseases
VVM	Vaccine Vial Monitor
WHO	World Health Organisation
WICR	Walk in Cold Room
WUENIC	WHO / UNICEF estimates of national immunisation coverage
YF	Yellow Fever

Annex 2 : Methodology

Gavi's Audit and Investigations (A&I) audits are conducted in accordance with the Institute of Internal Auditors' ("the Institute") mandatory guidance which includes the Core Principles for the Professional Practice of Internal Auditing, the definition of Internal Auditing, the Code of Ethics, and the International Standards for the Professional Practice of Internal Auditing (Standards). This mandatory guidance constitutes principles of the fundamental requirements for the professional practice of internal auditing and for evaluating the effectiveness of the audit activity's performance. The Institute of Internal Auditors' Practice Advisories, Practice Guides, and Position Papers are also be adhered to as applicable to guide operations. In addition, A&I staff will adhere to A&I's standard operating procedures manual.

The principles and details of the A&I's audit approach are described in its Board-approved Terms of Reference and Audit Manual and specific terms of reference for each engagement. These documents help our auditors to provide high quality professional work, and to operate efficiently and effectively. They help safeguard the independence of the A&I's auditors and the integrity of their work. The A&I's Audit Manual contains detailed instructions for carrying out its audits, in line with the appropriate standards and expected quality.

In general, the scope of A&I's work extends not only to the Gavi Secretariat but also to the programmes and activities carried out by Gavi's grant recipients and partners. More specifically, its scope encompasses the examination and evaluation of the adequacy and effectiveness of Gavi's governance, risk management processes, system of internal control, and the quality of performance in carrying out assigned responsibilities to achieve stated goals and objectives.

Annex 3 : Definitions – audit opinion, audit rating and prioritisation

A. Overall Audit Opinion

The audit team ascribes an audit rating for each area/section reviewed, and the summation of these audit ratings underpins the overall audit opinion. The audit ratings and overall opinion are ranked according to the following scale:

Effective	**No issues or few minor issues noted**. Internal controls, governance and risk management processes are adequately designed, consistently well implemented, and effective to provide reasonable assurance that the objectives will be met.
Partially Effective	**Moderate issues noted.** Internal controls, governance and risk management practices are adequately designed, generally well implemented, but one or a limited number of issues were identified that may present a moderate risk to the achievement of the objectives.
Needs significant improvement	**One or few significant issues noted.** Internal controls, governance and risk management practices have some weaknesses in design or operating effectiveness such that, until they are addressed, there is not yet reasonable assurance that the objectives are likely to be met.
Ineffective	**Multiple significant and/or (a) material issue(s) noted.** Internal controls, governance and risk management processes are not adequately designed and/or are not generally effective. The nature of these issues is such that the achievement of objectives is seriously compromised**.**

B. Issue Rating

For ease of follow up and to enable management to focus effectively in addressing the issues in our report, we have classified the issues arising from our review in order of significance: High, Medium and Low. In ranking the issues between 'High,' 'Medium' and 'Low,' we have considered the relative importance of each matter, taken in the context of both quantitative and qualitative factors, such as the relative magnitude and the nature and effect on the subject matter. This is in accordance with the Committee of Sponsoring Organisations of the Treadway Committee (COSO) guidance and the Institute of Internal Auditors standards.

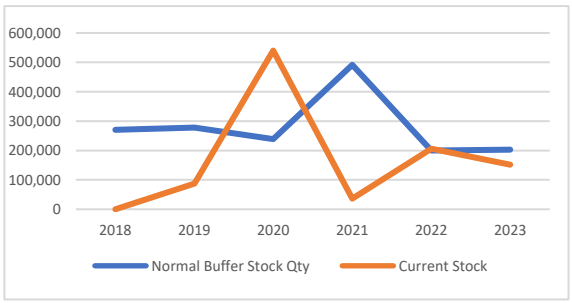
Rating	Implication
High	At least one instance of the criteria described below is applicable to the finding raised: • Controls mitigating high inherent risks or strategic business risks are either inadequate or ineffective. • The issues identified may result in a risk materialising that could either have: a major impact on delivery of organisational objectives; major reputation damage; or major financial consequences. • The risk has either materialised or the probability of it occurring is very likely and the mitigations put in place do not mitigate the risk. • Fraud and unethical behaviour including management override of key controls. Management attention is required as a matter of priority.
Medium	At least one instance of the criteria described below is applicable to the finding raised: • Controls mitigating medium inherent risks are either inadequate or ineffective. • The issues identified may result in a risk materialising that could either have: a moderate impact on delivery of organisational objectives; moderate reputation damage; or moderate financial consequences. • The probability of the risk occurring is possible and the mitigations put in place moderately reduce the risk. Management action is required within a reasonable time period.
Low	At least one instance of the criteria described below is applicable to the finding raised: • Controls mitigating low inherent risks are either inadequate or ineffective. • The Issues identified could have a minor negative impact on the risk and control environment. • The probability of the risk occurring is unlikely to happen. Corrective action is required as appropriate.

Annex 4 : Sites visited by the audit team

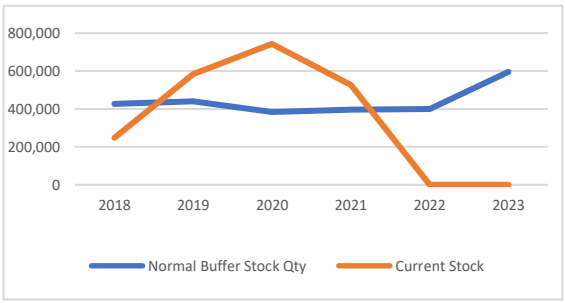
Provinces (4)	Districts (14)	Health Facilities (36)
Lusaka	Lusaka, Chongwe, Chilanga, Luangwa.	Kanyama, Chilenje, Luangwa Boma, Madombe, Chitope, Chainda, Ngwerere, Kanakantapa, Munyeu, Mwembeshi, Nakachenje.
Copperbelt	Kitwe, Ndola, Mpongwe.	Kaniki HF, 21 Miles HF, Twapia HF, Mapalo HF, Luto Health Post, Chilobwe HF, Ndeke Urban HF, Mushiwe HF, Kalweo HF.
Southern	Livingstone, Choma, Kalomo, Zimba.	Mochipapa, Mapanza, Railway Surgery, Kasiya, Mahuluhulu, Mapatizya, Luyaba, Habulile, Munkolo.
Luapula	Samfya, Milenge, Mansa.	Stage II, Mushili, Kapata, East 7, Kafwanka, Musaila, Central Urban.

Annex 5a : Stock on hand below buffer stock

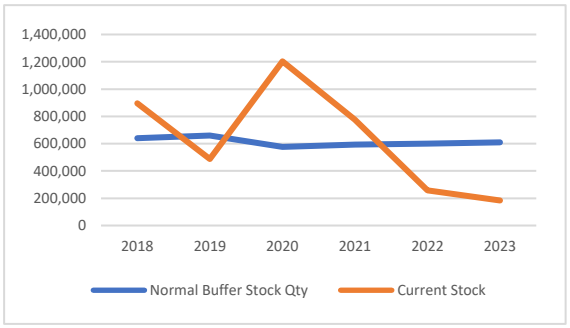
SoH Vs Buffer Stock - IPV



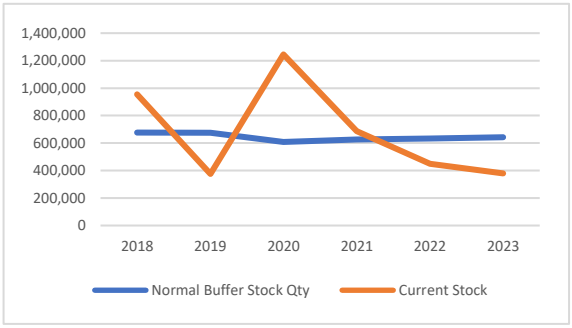
SoH Vs Buffer Stock – Rota Virus Vaccine



SoH Vs Buffer Stock – Pentavalent Vaccine



SoH Vs Buffer Stock - PCV



Annex 6b : Stock on hand below buffer stock

	Province			District			Health Facilities		
Vaccine	No. of PVS with stockouts	Average Duration of Stockout	Max Days Out of Stock	No. of DVS with stockouts	Average Duration of Stockout	Max Days Out of Stock	No. of HFs with stockouts	Average Duration of Stockout	Max Days Out of Stock
Pentavalent vaccine	3/5	50	138	5/14	28	83	19/36	45	484
Inactivated Polio vaccine	3/5	41	71	4/14	39	75	19/36	75	336
Rota Virus vaccine	5/5	109	474	14/14	139	474	31/36	191	666
PCV	5/5	61	376	8/14	42	140	18/36	53	322
BCG	1/5	16	25	3/14	23	37	13/36	37	246

Annex 6 : Inside a WICR at NVS

Annex 7a : An open cabin truck at NVS

Annex 7b : Vaccines with illegible labels

Annex 8a : Untraceable Stock from NVS to PVS

Province	Vaccine	Quantity of Untraceable stock
Copperbelt	Penta	35,000
	Pneumococcal Conjugate Vaccine	30,400
	J&J	(80,000)
Lusaka	IPV	110

Annex 8b : Untraceable Stock from PVS to DVS

PVS	DVS	Vaccine	Quantity of Untraceable stock
Southern - Choma Hub	Choma	Penta	9,000
		Pneumococcal Conjugate Vaccine	11,200
		Rota Virus Vaccine	7,700
		J&J	2,050
Southern - Livingstone Hub	Kalomo	Penta	5,100
		IPV	1,000
		Pneumococcal Conjugate Vaccine	4,600
		Rota Virus Vaccine	1,800
	Zimba	IPV	4,000
		Pneumococcal Conjugate Vaccine	(7,000)
		Rota Virus Vaccine	(1,000)
Copperbelt	Mpongwe	Penta	4,750
		IPV	870
		Pneumococcal Conjugate Vaccine	6,000
		Rota Virus Vaccine	5,000
	Kitwe	Penta	7,000
		IPV	9,600
		Pneumococcal Conjugate Vaccine	9,548
		Rota Virus Vaccine	6,000
	Ndola	Penta	550
		IPV	3,500
		Pneumococcal Conjugate Vaccine	800
		Rota Virus Vaccine	4,500
		J&J	1,000
	Samfya	Pneumococcal Conjugate Vaccine	2,904
		Rota Virus Vaccine	1,000
	Milenga	Penta	1,300
		IPV	260
		Pneumococcal Conjugate Vaccine	1,400
		Rota Virus Vaccine	850
	Chilanga	Penta	114,800
		IPV	18,700
		Pneumococcal Conjugate Vaccine	65,600
		Rota Virus Vaccine	38,200
		J&J	3,000

Annex 9a : Variance between Stock Record and Physical Count at Provincial Vaccine Store

Vaccine	Province Name	Physical Count	Stock Record Balance	Variance
Penta	Southern - Choma Hub	13,758	9,335	4,423
	Copperbelt	7,900	7,900	-
	Luapula	37,500	24,850	12,650
	Lusaka	121,000	121,000	-
IPV	Southern - Choma Hub	-	2,240	(2,240)
	Southern - Livingstone Hub	900	900	-
	Copperbelt	34,250	34,250	-
	Luapula	51,750	51,830	(80)
	Lusaka	27,310	24,000	3,310
Pneumococcal Conjugate Vaccine (PCV)	Southern - Choma Hub	9,200	2,591	6,609
	Southern - Livingstone Hub	5,200	5,200	-
	Copperbelt	15,600	15,600	-
	Luapula	45,200	60,000	(14,800)
	Lusaka	34,000	34,000	-
Rota Virus Vaccine	Southern - Choma Hub	-	6,225	(6,225)
	Southern - Livingstone Hub	4,200	4,195	5
	Copperbelt	40,375	63,375	(23,000)
	Luapula	74,250	67,425	6,825
	Lusaka	50,625	50,625	-
J&J Vaccine	Southern - Choma Hub	1,850	-	1,850
	Copperbelt	93,500	74,350	19,150
	Luapula	2,300	3,350	(1,050)
	Lusaka	3,050	3,050	-

Annex 9b : Variance between Stock Record and Physical Count at District Vaccine Store

Vaccine	Province Name	Physical Count	Stock Record Balance	Variance
Penta	Choma	5,290	15,205	(9,915)
	Kalomo	3,900	4,119	(219)
	Samfya	1,200	2,300	(1,100)
	Milenga	800	1,170	(370)
	Mansa	1,280	1,230	50
	Chongwe	2,216	2,413	(197)
	Chilanga	2,949	2,900	49
	Lwangwa	800	800	-
IPV	Choma	3,360	6,195	(2,835)
	Kalomo	3,900	3,975	(75)
	Livingstone	900	900	-
	Zimba	430	430	-
	Mpongwe	900	900	-
	Kitwe	1,625	1,625	-
	Ndola	2,650	2,650	-
	Samfya	465	1,255	(790)
	Milenga	245	-	245
	Mansa	2,065	2,015	50
	Lusaka	-	-	-
	Chongwe	3,300	2,880	420
	Chilanga	450	450	-
	Lwangwa	640	640	-
Pneumococcal Conjugate Vaccine (PCV)	Choma	13,100	13,012	88
	Kalomo	20,300	20,300	-
	Livingstone	5,200	5,200	-
	Zimba	5,500	5,500	-
	Kitwe	3,020	3,000	20
	Ndola	1,984	1,984	-
	Samfya	1,672	2,684	(1,012)
	Milenga	256	520	(264)
	Chongwe	4,835	4,940	(105)

Vaccine	Province Name	Physical Count	Stock Record Balance	Variance
	Chilanga	508	500	8
	Lwangwa	1,176	1,176	-
Rota Virus Vaccine	Choma	5,754	5,900	(146)
	Kalomo	11,960	9,965	1,995
	Livingstone	4,200	4,195	5
	Zimba	4,000	4,000	-
	Mpongwe	900	-	900
	Kitwe	4,950	4,950	-
	Ndola	50	50	-
	Samfya	300	1,500	(1,200)
	Milenga	1,000	1,250	(250)
	Mansa	1,375	1,375	-
	Chongwe	3,285	3,265	20
	Chilanga	2,565	2,565	-
	Lwangwa	1,475	1,475	-
J&J	Choma	14,330	16,220	(1,890)
	Kalomo	13,650	-	13,650
	Zimba	745	745	-
	Mpongwe	720	720	-
	Kitwe	1,800	1,810	(10)
	Ndola	650	650	-
	Samfya	-	1,450	(1,450)
	Milenga	150	870	(720)
	Mansa	620	-	620
	Chongwe	5,365	5,695	(330)
	Chilanga	170	170	-

Annex 9c : Variance between Stock Record and Physical Count at Health Facilities (N-36)

Vaccine	Total Physical Count	Total Stock Record Balance	Net Variance
Pentavalent	3769	3983	(214.00)
Inactivated Polio Vaccine	3824	6336	(2,512.00)
PCV	3746	4229	(483.00)
Rota Virus Vaccine	7843	7264	579.00
J&J	22430	11691	10,739.00

Annex 10a : Variances in Stock Reconciliation at Provincial Vaccine Store

Vaccine	Province Name	Expected Balance	Physical Count	Variance
Pentavalent	Southern - Choma Hub	10,235	13,758	(3,523)
	Southern - Livingstone Hub	-	-	-
	Copperbelt	18,600	7,900	10,700
	Luapula	23,564	37,500	(13,936)
	Lusaka	121,000	121,000	-
IPV	Southern - Choma Hub	240	-	240
	Southern - Livingstone Hub	900	900	-
	Copperbelt	47,735	34,250	13,485
	Luapula	113,480	51,750	61,730
	Lusaka	24,000	27,310	(3,310)
Pneumococcal Conjugate Vaccine (PCV)	Southern - Choma Hub	3,191	9,200	(6,009)
	Southern - Livingstone Hub	(5,600)	5,200	(10,800)
	Copperbelt	53,940	15,600	38,340
	Luapula	(6,900)	45,200	(52,100)
	Lusaka	34,000	34,000	-
Rota Virus Vaccine	Southern - Choma Hub	6,225	-	6,225
	Southern - Livingstone Hub	4,195	4,200	(5)
	Copperbelt	63,375	40,375	23,000
	Luapula	51,325	74,250	(22,925)
	Lusaka	50,625	50,625	-
J&J Vaccine	Southern - Choma Hub	300	1,850	(1,550)
	Southern - Livingstone Hub	-	-	-
	Copperbelt	75,590	93,500	(17,910)
	Luapula	16,350	2,300	14,050
	Lusaka	-	3,050	(3,050)

Annex 10b : Variances in Stock reconciliation at DVS

Vaccine	Province Name	Expected Balance	Stock Record Balance	Variance
Penta	Choma	15,340	5,290	10,050
	Kalomo	(75)	20,300	(20,375)
	Livingstone	-	5,200	(5,200)
	Zimba	-	5,500	(5,500)
	Kitwe	(187)	1,850	(2,037)
	Samfya	9,812	1,200	8,612
	Milenga	1,070	800	270
	Mansa	1,300	1,280	20
	Lusaka	7,650	7,650	-
	Chongwe	2,413	2,216	197
	Lwangwa	800	800	-
IPV	Choma	6,535	3,360	3,175
	Kalomo	4,700	3,975	725
	Zimba	9,965	11,960	(1,995)
	Mpongwe	900	900	-
	Ndola	3,970	2,650	1,320
	Samfya	3,940	465	3,475
	Milenga	(130)	245	(375)
	Mansa	1,805	2,065	(260)
	Lusaka	3,310	-	3,310
	Chongwe	2,880	3,300	(420)
	Lwangwa	640	640	-
Pneumococcal Conjugate Vaccine (PCV)	Choma	14,878	13,100	1,778
	Kalomo	30,200	20,300	9,900
	Livingstone	5,600	5,200	400
	Zimba	5,510	5,500	10
	Kitwe	638	3,020	(2,382)
	Ndola	1,998	1,984	14
	Samfya	3,984	1,672	2,312
	Milenga	439	256	183
	Chongwe	4,940	4,835	105

Vaccine	Province Name	Expected Balance	Stock Record Balance	Variance
	Lwangwa	1,176	1,176	-
Rota Virus Vaccine	Choma	6,835	5,754	1,081
	Kalomo	9,965	11,960	(1,995)
	Livingstone	4,195	4,200	(5)
	Zimba	4,170	4,000	170
	Mpongwe	(95)	900	(995)
	Kitwe	1,315	4,950	(3,635)
	Ndola	(20)	50	(70)
	Samfya	1,700	300	1,400
	Milenga	1,355	1,355	-
	Mansa	1,370	1,375	(5)
	Chongwe	3,285	3,285	-
	Lwangwa	1,475	1,475	-
	Zimba	750	745	5
	Mpongwe	780	720	60
	Ndola	1,125	650	475
	Milenga	(101)	150	(251)
	Mansa	-	620	(620)
	Chongwe	5,695	5,365	330

Annex 10c : Variances in Stock reconciliation at Health Facilities (N=36)

Vaccine	Expected Balance	Stock Record Balance	Variance
Pentavalent Vaccine	4061	3621	440
IPV	7273	3824	3,449
PCV	2805	3584	(779)
Rota Virus Vaccine	7850	7942	(92)
J&J	12782	20333	(7,551)

Annex 11a : Unexplained Stock Adjustments at PVS

Vaccine	Province Name	Net Adjustment
Pentavalent	Copperbelt	(21,750)
IPV	Copperbelt	(7,415)
PCV	Copperbelt	140
PCV	Luapula	3,700

Annex 11b : Unexplained Stock Adjustments at DVS

Vaccine	DVS	Net Adjustment
Pentavalent	Kitwe	(71.00)
Pentavalent	Ndola	(300.00)
Pentavalent	Milenga	(1.00)
IPV	Zimba	(85)
IPV	Mpongwe	(750)
IPV	Ndola	(1,080)
IPV	Samfya	(220)
IPV	Mansa	210
PCV	Choma	114
PCV	Zimba	(52)
PCV	Mpongwe	(546)
PCV	Kitwe	(128)
PCV	Ndola	58
PCV	Mansa	225
Rota Virus Vaccine	Choma	(175)
Rota Virus Vaccine	Mpongwe	(1,000)
Rota Virus Vaccine	Kitwe	(1)
Rota Virus Vaccine	Ndola	(110)

Annex 11c : Unexplained Stock Adjustments at Health Facilities

Vaccine	# of Health Facilities	Net Adjustment
Pentavalent	8	1,529
IPV	12	506
PCV	11	(309)
Rota Virus Vaccine	8	359

Annex 12a : CCE Management at PVS

Provincial Vaccine Store	Equipment installed in a safe and secure place?	Equipment functional on the day of the visit	Equipment has ever broken down since the day of installation	Duration of Equipment Repair	Availability of a preventive maintenance plan	Availability of equipment maintenance logs	Availability of a contingency plan
Southern Province - Choma Hub	YES	NO	YES	> 21 DAYS	NO	NO	YES
Southern Province - Livingstone Hub	YES	YES	YES	2-7 DAYS	YES	NO	YES
Copperbeelt	YES	YES	YES	> 21 DAYS	NO	NO	YES
Luapula Province	YES	NO	YES	2-7 DAYS	NO	NO	YES
Lusaka	YES	YES	YES	> 21 DAYS	NO	NO	YES
COUNT "YES"	***5***	***3***	***5***		***1***	***0***	***5***
COUNT "NO"	***0***	***2***	***0***		***4***	***5***	***0***

Annex 12b : CCE management at DVS

District Vaccine Store	Equipment installed in a safe and secure place?	Equipment functional on the day of the visit	Equipment has ever broken down since the day of installation	Duration of Equipment Repair	Availability of a preventive maintenance plan	Availability of equipment maintenance logs	Availability of a contingency plan in case of equipment breakdown
Choma	NO	NO	YES	> 21 DAYS	NO	NO	YES
Livingstone	YES	YES	YES	1 DAY	YES	NO	YES
Zimba	YES	YES	YES	> 21 DAYS	YES	NO	YES
Kalomo	YES	YES	YES	1 DAY	NO	NO	YES
Ndola	YES	YES	NO		YES	NO	YES
Kitwe	YES	NO	NO		NO	NO	YES
Mpomgwe	YES	YES	YES	> 21 DAYS	YES	NO	YES
Mansa	YES	YES	YES	2-7 DAYS	YES	NO	NO
Samfya	YES	YES	YES	2-7 DAYS	YES	NO	YES
Milenge	YES	YES	YES	2-7 DAYS	YES	NO	YES
Lusaka	YES	YES	YES	> 21 DAYS	NO	NO	YES
Chongwe	YES	YES	NO		YES	YES	NO
Chilanga	YES	YES	NO		NO	NO	YES
Lwangwa	YES	YES	YES	1 DAY	NO	NO	NO
COUNT "YES"	***13***	***12***	***10***		***8***	***1***	***11***
COUNT "NO"	***1***	***2***	***4***		***6***	***13***	***3***

Annex 13 : Variance between Immunisation Register, Monthly Report, DHIS2 Records, Consumption of Doses

Province	HF Name	Immunisation register (a)	Monthly report (b)	DHIS2 Record (C)	Consumption (d)	Var 1 (a-b)	Var 2 (c-b)	Var 3 (c-d)
Lusaka	Chainda	76	96	95	-	(20)	(1)	95
	Chilenje	0	3,593	3,593	-	(3,593)	-	3,593
	Chitope	77	93	81	-	(16)	(12)	81
	Kanakantapa	19	141	141	-	(122)	-	141
	Kanyama	723	4,688	5,966	3,963	(3,965)	1,278	2,003
	Luangwa	69	55	65	-	12	10	65
	Madombe	25	44	39	44	(19)	(5)	(5)
	Munyeu	40	54	61	-	(14)	7	61
	Nakachenje	170	175	167	98	(5)	(8)	69
	Ngwerere	173	687	856	970	(514)	169	(114)
Southern	Mapanza	214	225	225	244	(11)	-	(19)
	Mochipapa	110	128	128	114	(18)	-	14
	Railway Surgery	16	637	637	534	(621)	-	103
	Kasiya	6	13	11	20	(7)	(2)	(9)
	Mahululu	23	52	17	67	(29)	(35)	(50)
	Mapatizya	116	131	122	145	(15)	(9)	(23)
	Luyaba	79	376	376	266	(297)	-	110
	Munkolo	58	42	-	55	16	(42)	(55)
	Habulile	60	219	219	30	(159)	-	189
Copperbelt	21 Miles	34	37	39	14	(3)	2	25
	Kaniki	189	174	166	193	15	(8)	(27)
	Chipulukusu	1509	1657	1657	528	(148)	-	1,129
	Twapia	413	734	704	-	(321)	(30)	704
	Luto (health post)	7	10	8	5	(3)	(2)	3
	Chilobwe	74	94	97	67	(20)	3	30
	Ndeke	612	612	622	491	-	10	131
	Mushiwe	43	45	44	47	(2)	(1)	(3)
	Kalweo	298	339	329	344	(41)	(10)	(15)
Luapula	Musaila	46	138	138	39	(92)	-	99
	Central	297	538	538	31	(241)	-	507
	Stage II	218	860	860	191	(642)	-	669
	Mushili	189	247	247	125	(58)	-	122
	Kapata	16	30	30	470	(14)	-	(440)
	East 7	67	85	85	129	(18)	-	(44)
	Kafwanka	83	97	79	42	(14)	(18)	37
						94%	58%	97%

Annex 14 : Immunisation schedule.

BCG OPV0	At birth
OPV1 PCV1 DTP HepB-Hib 1 Rota1	At 6 weeks or soon after
OPV 2 PCV 2 DTP HepB-Hib 2 Rota 2	4 weeks after the 1st dose of the above vaccines
OPV 3 PCV 3 IPV 1 DTP HepB-Hib 3 Rota 3	4 weeks after the 2nd dose of the above vaccines
MR1 IPV 2 OPV4- (if OPV0 was not given)	At 9 months or soon after, unless symptomatic HIV
MR2	At 18 months or soon after, unless symptomatic HIV

Annex 15 : Detailed status of the outstanding GMRs.

	GMR	Remarks
1	Quarterly Financial Statements shall be prepared and submitted by CHAZ to Gavi. The CHAZ Financial Statements should be shared with Gavi Senior Accountant and EPI manager before submission. This specification is detailed in the Tripartite Agreement between Gavi, MOH and CHAZ. • Quarterly financial reports are required 45 days after the period end; • Annual financial report is due 3 months after the financial year end; and • Annual external audit report is due 6 months after the financial year end.	Reports were submitted to Gavi by EPI. However, they do not comply with the reporting timelines.
2	The following positions will be recruited by MOH: Dedicated Senior Accountant • Recruit a dedicated Senior Accountant who shall oversee accounting and financial reporting for Gavi programmes. Gavi shall review the job description before the position is posted and the CV for the selected candidate before appointment. The Senior Accountant shall be responsible for overseeing financial management at both Central and District level including, but not limited to, the following:	A dedicated senior accountant was recruited. However, the audit team noted significant gaps in the execution of roles and responsibilities.
3	Supporting the development of annual budgets with relevant program staff at Central and District level;	The accountant is not involved in the preparation of budgets to Gavi. He Joined after the HSS budget was finalised but has not participated in any subsequent budgets submitted to Gavi.
4	Tracking project expenditure against the agreed budget at both Central and District level;	Its only done for HSS main grant and not for all other grants. The accountant does not prepare quarterly reports for other Gavi grants
5	Reviewing monthly reconciliations of project bank accounts from both Central and District level;	No evidence of review of bank reconciliations from districts. However, the accountant hasn't shared bank reconciliations for National level bank accounts
6	Ensuring all cash advances accounted for and reviewed within stipulated time;	Transfer to districts are not treated as advances. Does not maintain and advance ledger to track advances to individuals.
7	Communicating expenditure guidelines to the provinces and the districts;	The audit team was not provided with evidence to confirm that guidelines are shared with districts.
8	Maintaining adequate financial documentation;	The audit team noted transactions which were not supported with adequate documentation
9	Preparing and submitting endorsed quarterly financial reporting to Gavi	Quarterly reports for HSS are indeed submitted to Gavi. However, these are not reviewed by the anyone else in MOH. The principle accountant is only copied as well as the EPI Manager. There is no evidence that reports for other Grants like VIGS and Campaigns except MR were prepared and submitted to Gavi
10	The Senior Accountant or designated representative shall train accounting staff in participating districts on accounting and financial reporting for Gavi programme activities. They will also conduct supervisory visits to districts at least two times per year.	Trainings conducted with support from UNDP. There is no evidence of Support supervisions conducted by the Finance team to the provinces and districts
11	The Senior Accountant and EPI Manager shall have fixed monthly meetings to track financial progress and expenditure of Gavi support. Meetings need to be documented and the minutes submitted as supporting documentation through the Country Portal.	There is no evidence of meetings between EPI Manager and the accountant to discuss financial progress and expenditure of Gavi support
12	The Gavi Senior Accountant shall prepare and submit to Gavi quarterly Financial Statements and Expenditure Reports on Gavi funds managed by MOH. The financial reports will be prepared in accordance with Gavi's Financial Reporting and Audit Requirements. Financial reports are part of the reporting package in the country portal. The Senior Accountant will also facilitate to ensure the external audit requirements are adhered to. Financial reporting is due as follows: • Quarterly financial reports are required 45 days after the period end; • Annual financial report is due 3 months after the financial year end; and • Annual external audit report is due 6 months are financial year end.	Reports are submitted to Gavi. However, they do not comply with the reporting timelines. In addition, only reports relating to the HSS grant were prepared by the accountant.
13	The Accounts Unit in MOH will develop and maintain a Fixed Assets Register (FAR) for assets procured with Gavi funds.	The FAR was developed but it is not updated
14	Physical verification of assets purchased with Gavi funds will be carried out on an annual basis with evidence of review thoroughly documented and available upon request	Asset verification is not carried out due to lack of funds
15	The Gavi funds provided under this Agreement shall not be used to pay any taxes, customs, duties, toll or other charges imposed on the importation of vaccines and related supplies. The Government shall use its reasonable efforts to set up appropriate mechanism to exempt from duties and taxes all purchases made locally and internationally with Gavi funds.	Tax exemptions for tender-by-tender application and not the entire grant. This may result into delays in the implementation of the activities
16	An internal audit plan shall be submitted and approved by the MOH at the beginning of each financial year, shared with the Office of the Auditor General and the ICC.	There was no evidence that the internal audit plans were developed and shared with the office of the auditor general and the ICC.
17	The internal audit plan shall include financial and operational audits of Gavi programmes at central and district levels. Internal audit reports shall be made available to Gavi	Gavi grants were not covered by Internal Audit during the audit period.
18	The MOH shall develop an Action Plan to track progress of implementation of internal and external audit recommendations.	Internal audit reports were not provided, and no tracker was maintained.

	GMR	Remarks
19	The EPI Manager and Senior Accountant shall be responsible for maintaining the following documentation, which may be requested by Gavi at any point during programme implementation: • Signed and completed attendance registers for all training conducted with support of Gavi resources; • Supportive Supervision checklists from Central to Provincial, Provincial to District and District Facility level; • Signed receipts for all per diems and allowances paid with support of Gavi resources; • All procurement related documentation for assets procured with support of Gavi resources; • Log-books verifying vehicle movement for all visits undertaken through Gavi support	The audit team still noted missing support documents which has resulted in questioned expenditure.

Annex 16 : Detailed status of the 10 outstanding recommendations from the previous Gavi program audit.

	Recommendation	Remarks
1	In future, the MOH should: · Develop micro plans through the nationwide stakeholder consultative process and harmonise them into a nationwide budget. This budget should form the basis of disbursements to districts and provinces. In addition, there should be a formal process for review and approval of any material changes to the approved micro-plans and budgets. · Cascade the approved micro-plans and detailed budgets to provinces and districts and guidelines within a reasonable timeframe before the campaign as they form the basis for programme implementation. · Ensure that the criteria for identifying training participants, as well as qualified, competent trainers is documented and followed. Also, the identification and designation of the individuals who are to be trained should be determined using defined, documented criteria and suitable pre-prepared lists of these participants should be completed at the time of each activity and filed.	Micro plans were established at cascaded to the subnational level and trainings were held at the subnational level. However, a) their application is not consistent across all districts. b) the micro plans were prepared by districts health officials, but they were not consolidated into a national macro-plan and budget. The cash transfers from the centre to districts were not in line with the micro-plans. EPI determines and initiates what is sent to the district and provinces instead of the provinces and districts to initiate the process based on their needs. No SOPs for identifying training participants, as well as qualified, competent trainers were developed and cascaded to the sub national level. However, for every training, a needs assessment is conducted for the participant's, qualified trainers are selected to deliver on the subject matter. The catchment area analysis is done in consultation with the Provincial and District Health Officers
2	In future, as recommended by the WHO Field guide, the MOH should: · Develop and clearly document criteria for selecting supervisors at each level. · Give guidance on the selection of supervisors at sub-national levels and provide appropriate training. · Prepare and store, for future reference, all completed supervisory checklists and reports.	No SOPs/criteria for selecting supervisors were developed
3	To ensure proper transparency and accountability, and in line with existing government accounting guidelines the MOH should: • Manage Gavi grants, which are disbursed to the provinces and districts in compliance with defined provincial guidelines as appropriate, and in line with the Partnership Framework Agreement with Gavi. • Ensure that complete and accurate accounting records, including cash books are maintained, and clearly referenced to relevant supporting documents and justifications. • Ensure that expenditures related to allowances (e.g. DSA) are supported by signed lists of recipients showing the amount of funds received. Payments to respective recipients must be supported by details including their identity card reference, designation, duty station and contact details, e.g. mobile number. • Ensure that the expenditures related to Gavi grants are subject to periodic and timely review by the MOH's Internal Audit function.	Questioned expenditure continues to exist at national and subnational level
4	The MOH should follow up the management of advances (imprests) by staff to conform to the Finance Act provisions. Specifically: · Imprests should be retired promptly after the activity is completed; · Any unspent balance should be surrendered to the accounting officer two working days of the officer's return to the station and a receipt issued to that effect; and · Accounting officers should submit to their controlling officers a schedule of all outstanding imprests monthly, and the controlling officer should take action against officers with outstanding advances (imprests).	There is no system for tracking advances.
5	Managers within the Finance Department, such as the Principal and Chief Accountants, should check and review financial reports for accuracy before they provided to donors. Reports should be completed and submitted according to the required reporting schedule.	There is no evidence of review of financial reports by a senior officer within MOH
6	The MOH should submit a request to the Ministry of Finance so that programmes funded by Gavi grants receive exemption from taxes.	Tax exemptions for tender-by-tender application and not the entire grant. This may result into delays in the implementation of the activities
7	The Audit Team has reviewed a letter from Zambia Revenue Authority (Ref no: ZRA/CG/TA/1901/17) dated 28 September 2017, by which the head of Zambia's tax authority approved the refund of taxes paid with Gavi grants. The MOH is supposed to provide documentation to Zambia Revenue Authority to process a refund of ZMW 259,829 to the programme bank account.	There was no evidence that documentation was provided to ZRA. Consequently, the refund had not been made by the time of the audit.
8	The MOH should: · Carry out an evaluation of the current status of implementation of the VLMIS, Logistimo, including successes, challenges and requirements for using	Logistimo posed challenges in licencing, proprietary backup and support and was not sustainable in terms of cost.

	Recommendation	Remarks
	this system nation-wide. The report should be presented to the MOH eHealth TWG to consider before the formal approval. · Require provinces and districts to maintain its primary stock records in a duplicate manual format until the VLMIS is fully anchored/embedded. · Ensure consistent use of the approved VLMIS both at lower levels and also at national level for decision making.	Around June 2022, there were changes in the policy at national level where the Govt information and data systems are supposed to be Smart Zambia, an entity enacted by law to be responsible for data management & regulation. UNICEF indicated to support the country and engage Logistimo to continue using the system. MOH wrote to Smart Zambia to waive the law and continue using a system that is not among the approved. Smart Zambia approved for 1 year and six months but took a longer time to respond. By that time, UNICEF didn't have the resource due to length of time to support Logistimo. At the moment, a study is being done whether to temporary switch on Logistimo or develop a sustainable system for the future.
9	The MOH should contact Logistimo India Private Limited and negotiate a formal contract and/or license for the software and clarify such aspects as: (i) data access ownership and rights; (ii) the location of key data; and (iii) back-up arrangements.	
10	The MOH should ensure that the SOPs on effective vaccine management are enforced by: · Ensuring that all staff responsible for vaccines update and maintain the stock records timely including necessary information on expiry dates, VVM status, batch numbers, product description, product quantities, and manufacturer. · Making sure stock counts are undertaken periodically and that the storekeepers validate and approve the physical count worksheets. All documents related to the periodic stock counts should be placed on file. The supervision Terms of Reference should include the requirement to investigate any differences between stock count figures and vaccine records and staff should be trained accordingly. · Ensuring that reports are submitted from all levels on a monthly basis and that these are used to support decision-making. · Ensuring that temperature monitoring is carried out systematically at all vaccine stores on a routine basis, twice daily as a minimum.	SOPs on effective vaccine management were developed at the national level ***(Second edition updated in June 2021)*** but not communicated to the subnational. There is no evidence that SOPs and job aides for vaccine management and distribution at all levels were distributed rendering their enforcement difficult The team also noted limited training and capacity gaps in vaccine stock management at all levels

Annex 17: Detailed management responses

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
The Inter-Agency Coordinating Committee (ICC) governance and oversight mechanism needs to be strengthened	**Recommendation 2** To strengthen governance and oversight over programme management, MOH/EPI management should: • ensure that all members of ICC and EPIC are briefed and oriented on their Terms of Reference and mandate. • ensure that EPIC issues are escalated to ICC for decision making where required. • develop a coordination dashboard to track the implementation and follow up of the action points from the EPIC and ICC meetings. This dashboard should indicate an owner and timeframe for the purposes of accountability during subsequent meetings.	**Action 1** Management has taken note of the audit recommendations. The next EPIC and ICC meetings will be used to update the Terms of reference and orient the members. **Action 2** Management has taken note of the audit recommendation. EPIC will be strengthened, and the EPIC issues will be escalated to the ICC for the required decision making. To this effect the secretariate will start tracking the submissions from EPIC to ICC. **Action 3** Management has taken note of the comments from the auditors. A coordination dashboard to track the implementation and follow up of the action points from the EPIC and ICC will be developed. The dashboard will be a live document and will have the action taken reports from the meetings indication the person responsible, and the time frame for accountability purposes. The country has already held the first EPIC meeting since the audit concluded and implementation progress will be tracked on tracker and will be presented in the first ICC meeting for the year scheduled for first week of March 2024.	**Action 1** Director Policy and Planning **Action 2** EPI Manager **Action 3** EPI Manager	**Action 1** 31 March 2024 **Action 2** 31 March 2024 **Action 3** 31 March 2024
Grant Management Requirements (GMRs) and recommendations from various reviews are still outstanding	**Recommendation 2** To enhance the oversight over implementation of recommendations from various assessments and audits, the MOH/EPI management should: • develop a tracking system at the EPI operational level and ensure all recommendations are captured, by priority ranking (high, medium, low). Where recommendations are repeated across several reviews, these should all be	**Action 1** Management has taken note of the comments from the auditors. The country has developed a tracking system at the EPI operational level that ensures all recommendations are captured, by priority ranking (high, medium, low) **Action 2**	**Action 1** EPI Manager	**Action 1** 31 January 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	included in the tracker with one action and action owner to close off the action. For example, where recommendations are repeated in the EVM improvement plan and programme audit report, the recommendations should be aggregated and agreed action should address the issues noted in both reports. • ensure that all the EVM improvement plan's high priority activities are costed and prioritised for implementation. • develop a dashboard at the ICC oversight level, taking into consideration contractual recommendations like GMRs vs. assurance recommendations and that these are allocated to an action owner with timelines for implementation. • include semi-annual status reporting on implementation at the ICC meetings. • share status updates on implementation of recommendations with Gavi after endorsement from ICC.	Management acknowledges the recommendations. Prioritisation as well as budgeting is done. Resource mobilisation is underway. **Action 3** EPI developed a draft dashboard that will take into consideration the GMRs and assurance recommendations. With this, actions will be allocated to a specific owner with timelines of implementation. **Action 4** The auditor's recommendation is noted. We agree and will ensure that a semi-annual status report on implementation will be submitted at the ICC meeting. **Action 5** Management has taken note of the comments from the auditors. The status update on the implementation of recommendations will be shared with Gavi after endorsement from ICC which is expected to be convened by end of Quarter 1 of 2024	**Action 2** EPI Manager **Action 3** EPI Manager **Action 4** EPI Manager **Action 5** EPI Manager	**Action 2** 31 December 2024 **Action 3** 31 March 2024 **Action 4** 31 July 2024 **Action 5** 30 June 2024
Inadequate coordination and monitoring of PEF Targeted Country Assistance (TCA) and other partner led programme activities	**Recommendation 3** To strengthen the coordination and monitoring of the PEF/TCA partners, the MOH/EPI management - in coordination with the TCA partners should: • establish a coordination forum that brings together the EPI and all the TCA implementing partners to coordinate, review performance, and assess implementation progress against the OneTA plan, as per the approved workplan. • ensure that the TCA implementation progress and performance is reviewed by the ICC every three months, as per the Gavi PEF TCA guidelines. • ensure that implementation of all Gavi-funded priorities allocated to the technical partners as part of the targeted country assistance are reviewed and validated against the status report of PEF TCA milestones.	**Action 1** The Ministry of Health has set up a Coordination and Management subcommittee that is chaired by the EPI Manager. The membership is composed of MOH EPI Secretariat and the PEF/TCA partners. The subcommittee will review performance and assess implementation progress against the OneTA plan, as per the approved workplan. **Action 2** The country notes the comments and will update the ICC on the TCA implementation progress and performance as with other Gavi grants.	**Action 1** EPI Manager **Action 2** EPI Manager	**Action 1** By 1st quarter 2024(31st March 2024) **Action 2** 30 June 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	• ensure that there is no conflict of interest while assigning roles for seconded staff from implementing partners.	**Action 3** The recommendation is well noted by the country. All Gavi-funded priorities allocated to partners as part of the PEF TCA will be reviewed and validated against the status report of milestones as per reporting timeline. **Action 4** The auditor's recommendation is noted. However, no evidenced conflict of interest in the PEF/TCA oversight as yet. All agencies have equal opportunity to support programme through staff secondment and PEF/TCA decisions are made jointly in partner coordination meetings. The programme will continue to assign roles of seconded staff that do not include agency self-oversight decisions which are reserved for MOH management staff.	**Action 3** EPI Manager **Action 4** EPI Manager	**Action 3** Biannually starting 30 June 2024 and 30 November 2024 **Action 4** 31 March 2024
	Recommendation 4 To ensure that MOH and EPI are regularly involved in the implementation of grants, the MOH/EPI management should: • review and validate the completion of each grant activities undertaken by the implementing partners, based on the annual work plan approved by the MOH. • provide guidelines to the provinces, and districts to help them perform regular monitoring of grant activities undertaken by implementing partners. Thereafter, the provinces and districts should periodically report progress of grant implementation back to the MOH/EPI central office for further cross-checking with partners report.	**Action 1** The auditor's recommendation is well noted. A planning and coordination sub-committee has been established that includes MOH and implementing partners with a mandate to track and review implementation of grants. Update and review of grant completion will also be presented to MOH senior management during internal management and ICC meetings based on approved annual workplan. Joint Annual Reviews will be held to validate activities undertaken. **Action 2** The recommendation is noted. The country plans to hold inception meeting prior to any disbursement of the grant that will be used to provide guidelines on the implementation of the grant. For example, the country plans to conduct the inception meeting for the HSS/EAF and ITU funding as well as the CCEOP in February 2024. Monthly/quarterly report progress of grant will be implemented for the provinces and districts implementing the respective grants. The planning and coordination subcommittee will review these reports in the meeting.	**Action 1** EPI Manager **Action 2** Director Policy and Planning	**Action 1** 31st March 2024 **Action 2** Annually during the fourth quarter.

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
Impact of decentralisation on the immunisation programmes yet to be determined	**Recommendation 5** To ensure that the devolution results in the transition of responsibility to sub-national levels, while maintaining continuity in the implementation of EPI activities, MOH/EPI management should: • develop detailed implementation guidelines on devolution with clearly defined processes and coordination mechanisms. • establish accountabilities for local governments by defining their roles and responsibilities, institutional structures, including working modalities. • prepare and implement capacity building plans at the national and sub-national levels; and • ensure that the transition process is costed. • Mobilise sufficient resources to sustain the EPI operations.	**Action 1** The devolution of Government functions to local authority is being guided by an oversight National Decentralisation Committee that defines the processes and coordination mechanism between MOH and Local Government. MOH following this guidance will develop implementation guidelines for supported programmes including EPI to ensure continuity of activities. **Action 2** The accountabilities for local government for devolved function will be established following guidance by National Decentralisation Committee **Action 3** Capacity building plans at national and sub-national levels will be prepared following establishment of accountabilities for local government staff. **Action 4** A costed transition plan will be developed guided by capacity assessments and functions to be devolved. **Action 5** The recommendation of the auditors has been noted. Government will continue to mobilise sufficient resources to sustain EPI operations by drawing from allocations from Central and local Government and lobbying for partner investments.	**Action 1** Director Policy and Planning **Action 2** Director Policy and Planning **Action 3** Director Policy and Planning **Action 4** Director Policy and Planning **Action 5** Permanent Secretary	**Action 1** 30 June 2024 **Action 2** 30 June 2024 **Action 3** 30 June 2024 **Action 4** 30 June 2024 **Action 5** 31 August 2024
Sustainability and value for money concerns in roll out of systems	**Recommendation 6** To ensure sustainability and value for money of future Gavi's investments, the MOH/EPI management should carry out an independent total cost of ownership (TCO) analysis for any systems it wants to implement (including user licensing and system maintenance and support) to determine (i) the overall cost of implementing the system(s) and whether benefits	**Action** Management has taken note of the audit recommendations. Management will carry out an independent total cost of ownership (TCO) analysis for any systems it wants to implement in future.	EPI Manager	30 June 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	outweigh investment costs; and (ii) whether the country is able to sustain and finance the costs of operating and maintaining the system once it is fully rolled out.			
Stock management records were incomplete and unreliable	**Recommendation 7** To identify and roll out a suitable and sustainable eLMIS, in future the MOH/EPI management should: • within its Logistics Technical Working Group (TWG), establish an eLMIS project steering team or appoint a project manager possessing the necessary expertise in IT infrastructure. A project plan should be developed articulating the technical development specifications taking into consideration all of the key users' requirements. • identify suitable eLMIS options which suit the Country needs for both national and sub-national levels. • identify a suitable vendor taking into consideration the existing eLMIS systems in use which manage health commodities, so that where possible the introduction of multiple systems can be avoided.	**Action 1** The Auditors recommendation is noted and agreed to. In this regard, the Gavi TSS compliant system was identified, and work has already started. So far requirement gathering and system configuration has been done. A road map is place, and the system is expected to be running by June 2024 **Action 2** Management notes and agrees to the recommendation by the auditors. The Gavi TSS compliant system was identified, and work has already started. **Action 3** Management has taken note of the comments from the auditors. A vendor to work on the eLMIS yet to be identified but processes are underway from the respective agencies that are supporting this activity.	**Action 1** EPI Manager **Action 2** EPI Manager **Action 3** EPI Manager	**Action 1** 30 June 2024 **Action 2** 30 June 2024 **Action 3** 30 June 2024
	Recommendation 8 To address gaps identified in policies, that resulted in incomplete manual and system records, and to learn lessons from the previous period, MoH and EPI should: • develop a policy to manage data governance, master data management, and how to manage system integration and the changes associated. This will be critical when transitioning to another eLMIS system in the future. • develop a data back-up policy. It is suggested that this include details such as: a schedule for the restoration testing of backups, the frequency of such tests, and who will be responsible for test management, reporting and quality assurance.	**Action 1** Management has taken note of the recommendation from the auditors. The guidelines have been developed on steps to take in the absence of the electronic system and will be disseminated to sub-National level. **Action 2** Management has taken note of the recommendations made by the auditors. A repository for data backup will be developed once the system is in operation. This will involve 7 days automatic system back-up by the Logisticians and ICT officers at different levels.	**Action 1** EPI Manager **Action 2** EPI Manager	**Action 1** 31 March 2024 **Action 2** 30 June 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	Recommendation 9 To address gaps in stock record information from the past periods, MoH/EPI management should: • determine its minimum data/information requirements from the past period sufficient to support the continuity of the programme. Thereafter with the help of system developer, the relevant data should be retrieved from Logistimo. • determine its minimum requirements for maintaining manual stock records in parallel at each level, in order to support the completeness and accuracy of vaccine management going forwards.	**Action 1** Management has taken note of the comments from the auditors; The temporal access to the system was granted and data was retrieved. **Action 2** Management has taken note of the comments from the auditors; Vaccine Arrival reports, supply vouchers, vaccine receipts and issued, requisitions are being documented and filed for completeness.	**Action 1** EPI Manager **Action 2** EPI Manager	**Action 1** 31 March 2024 **Action 2** 31 March 2024
	Recommendation 10 To address the deficiencies in inventory management SOPs, the MoH/EPI management should revise relevant sections of its SOPs, including guidance on the investigation and approval of stock adjustments.	**Action** The recommendations by the Auditors are noted and to this effect, SOP for effective vaccine and cold chain management have been revised.	EPI Manager	30 June 2024
	Recommendation 11 To address gaps in governance and oversight over vaccine supply chain processes and vaccine management practices, MOH/EPI management should: • train all officers involved in the vaccine management processes on the use of available manual records and on the eLMIS when it is rolled out. • strengthen the monitoring and supervision mechanisms to enforce best practices like conducting and documenting physical counts, record keeping, among others by developing ToRs for support supervision, defining key deliverables for quality control, having annual supervision workplans, and by providing helping tools or forms to cover all aspects. In addition, feedback from supervision should be formally documented and communicated to the respective offices for appropriate action and the closure of action points should be followed up at all levels.	**Action 1** Management has taken note of the comments from the auditors; orientation, mentorship, TSS is planned for the paper based system with the guidelines developed. And as soon as the eLMIS introduction commences, trainings and mentorships will also be conducted for all users. Additionally, every transaction type e.g. receipt, issue, stock count will be printed and filled in by the relevant entities as way of enhancing the back up. **Action 2** Recommendation by Auditors is noted by Management. Vaccine management aspects are already imbedded into the main EPI checklist. The Programme will ensure feedback is sent formally to the visited institutions and action points followed.	**Action 1** EPI Manager **Action 2** EPI Manager	**Action 1** 30 June 2024 **Action 2** 30 June 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	• work with UNICEF to ensure supervision of NVS is conducted by MOH/EPI on a regular basis, and documented feedback is provided and followed up.	**Action 3** National vaccine store will regularly be supervised by the senior management officers by way of spot checks to ensure adherence to the standards.	**Action 3** EPI Manager/UNICEF	**Action 3** 31 March 2024
Low stock at national and subnational stores resulted in significant stock outs at service delivery level	**Recommendation 12** To ensure availability of adequate supplies of vaccines in-country, MOH/EPI management should: • work with the Ministry of Finance to review the timing of payments of co-financing for vaccines. • conduct periodic reviews of stock levels in the country to provide learning for the annual vaccine planning projections. • adjust forecasting and planning calculations, where necessary, to ensure that adequate buffer stocks are included which are sufficient to mitigate the risk of stock shortages, including taking into account the procurement and replenishment lead times.	**Action 1** The recommendation by the auditors has been noted. Profiling of funds for procurement of vaccines through co-financing mechanism was reviewed to ensure payments are made by June annually. **Action 2** Recommendation by auditors have been noted and this has been strengthened and is being conducted monthly. **Action 3** Recommendation by auditors have been noted. 2024 forecasting has taken note of these adjustments and will always be done for the subsequent years.	**Action 1** Director Finance **Action 2** EPI Manager **Action 3** EPI Manager	**Action 1** 30 June 2024, then annually **Action 2** 31 March 2024 **Action 3** 31 December 2024
Vaccine distribution challenges experienced at national and sub national levels	**Recommendation 13** To improve effectiveness of vaccine distribution, MOH/EPI management with representation from the NVS logistics team should: • develop and disseminate annual vaccine distribution schedules and plans to all PVS and ensure that orders and deliveries by PVS and NVS respectively are made in accordance with the schedule. • conduct a comprehensive needs assessment to establish the current distribution gaps and request or mobilise resources in future grants applications based on the needs assessment result. • closely follow-up on the timely transfer and payment of government funds in support of the operational costs of distributing vaccines. improve oversight over the distribution of vaccines at national and sub-national level (for example reviewing and	**Action 1** Recommendation is well noted and distribution schedules and plans have been developed for 2024 and this will always be done for the subsequent years **Action 2** Recommendation is well noted and needs assessment conducted and costing is underway to determine the cost for resource mobilisation. **Action 3** The recommendation by the auditors is well noted. Submission will be made timely for profiling of release of resources for distribution of vaccines. **Action 4**	**Action 1** EPI Manager **Action 2** EPI Manager **Action 3** EPI Manager	**Action 1** 31 March 2024 **Action 2** 30 June 2024 **Action 3** Every first month of a quarter **Action 4**

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	signing off returned proof of delivery documents from the PVS, and orders and deliveries by PVS and NVS are consistent with the schedule)	The recommendation is well noted and signing off proof of delivery has been enhanced at all levels in line with the standards.	**Action 4** EPI Manager	31 March 2024
Inadequate cold chain storage capacity at NVS and gaps in management of cold chain equipment	**Recommendation 14** To address the cold chain storage gaps, MOH/EPI management should engage development partners and other stakeholders to help support the provision of additional cold chain storage support. In the meantime, to help clear slow-moving COVID-19 doses, efforts should be made to increase the demand for these vaccines, including the routinisation of COVID-19 vaccination, among other interventions.	**Action** - Management acknowledges the auditors findings on the cold chain storage gaps and engagements with cooperating partners is ongoing. The team noted a negative storage gap at the National Vaccine Stores and the Ministry of Health has received support from Africa CDC of about 150 CCE for national and subnational levels. Currently in pipeline is the support from World bank procurement of the walk-in freezer, SDD refrigerators, refrigerated trucks and a number of assorted spares parts. Also in Pipeline is about 210 vaccine refrigerators under CCEOP 2.0 support to be implemented this year. Additionally, the Government is also procuring about 59 Solar Direct Refrigerators (SDD) to address the existing gaps at health facility level. Management acknowledges the finding of the auditors on the slow moving of Covid -19 vaccine doses and wish to state that in the quest to increase demand and improve vaccine uptake, a covid-19 integration into routine and primary health care guideline is being developed by EPI and cooperating partners which has highlighted target populations categorised into high risk, low risk and medium risk. This will be finalised by the end of 1st quarter 2024. In addition, the Advocacy, Communication and Social Mobilisation team has also been engaged to help identify and sensitise the target groups identified in the integration guidelines.	EPI Manager	30 June 2024
	Recommendation 15 To improve cold chain management and the service life of cold chain equipment, MOH/EPI management should: • design and use proper preventive maintenance checklists and logs, for all cold chain equipment items at national and sub-national stores.	**Action 1** Management acknowledges the auditors recommendation. The program has been using the existing Maintenance checklist embedded in the cold chain manual which has now been reviewed to meet the standard requirement for preventive Maintenance Check list.	**Action 1** EPI Manager	**Action 1** 31 March 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	• design and print temperature monitoring forms in the recommended SOP format for vaccine management. • develop and distribute job aids on cold chain management to all cold chain handling points; and • develop and disseminate contingency plans in the event of a breakdown for all vaccine handling points.	**Action 2** Management acknowledges the auditors recommendation on the temperature chart. The chart already exists and is now standardised. Printing will be done centrally and distributed to all cold chain storage points as per 2024 joint workplan with UNICEF. **Action 3** Management acknowledges the auditors recommendation on job aids for cold chain management. These have now been developed for printing and distribution to all cold chain handling points as per 2024 joint workplan with UNICEF. **Action 4** Management acknowledges the auditors recommendation on the Contingency Plan in the event of the Cold Chain breakdown. The Generic Contingency plan already exist and embedded in the Cold Chain Manual and will be disseminated to all vaccine handling points for adaptation by every level of the supply chain system.	**Action 2** EPI Manager **Action 3** EPI Manager **Action 4** EPI Manager	**Action 2** 30 June 2024 **Action 3** 30 June 2024 **Action 4** 31 March 2024
Gaps in management of expired vaccines	**Recommendation 16** To improve management of expired vaccines, the MOH/EPI management should: • develop a management of expirations policy for medical waste including vaccines. • collaborate with the Zambia Environmental Management Agency (ZEMA) to expedite the disposal process for expired vaccines. • segregate expired vaccines from viable stock at sub-national levels. • as part of supervisory visits, the review of expired vaccine management should be included, to ensure compliance at sub-national levels.	**Action 1** Management acknowledges the comments from Auditors. The disposal of waste policy will be followed to ensure improved management of expired vaccines by ensuring timely and regular spot checks, identification and disposal of expired products following the National Waste Disposal guidelines. **Action 2** Management acknowledges the comments from Auditors. Management has since engaged ZEMA in addition to other necessary measures to ensure expedited disposal process. **Action 3** Management takes note of the recommendations by the auditors and to this effect, constant engagement with sub-national levels	**Action 1** EPI Manager **Action 2** EPI Manager **Action 3** EPI Manager	**Action 1** 31 March 2024 **Action 2** 31 March 2024 **Action 3** 31 March 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		has been initiated to ensure effective management of expired vaccines. **Action 4** Management notes and agrees with the comments by the Auditors. A plan has since been developed to ensure quarterly review of expired vaccine management through supervisory visits	**Action 4** EPI Manager	**Action 4** 31 March 2024
Target population data may not be accurate and set immunisation targets have not been met since 2020	**Recommendation 17** To determine targets for the next period, EPI/MoH management should: • determine the impact of the pandemic and number of children that missed vaccinations during the period to set appropriate short-term catch-up targets and ensure that missed opportunities are integrated into ongoing campaigns. • document lessons learned from the previous National Health Strategic Plan (NHSP) and incorporate learnings into the new NHSP.	**Action 1** Management acknowledges the findings by the auditors. The catch-up plan has been developed and includes the impact of the pandemic and children that missed vaccinations have been identified. The plan also includes integrating missed opportunities into ongoing campaigns and strengthening the immunisation pilar at all levels of care. **Action 2** Management is agreeable to the findings of the auditors and wish to state that the lessons from the previous National health strategic plan were documented and were used to inform the new NHSP on immunisation pilar.	**Action 1** EPI Manager **Action 2** EPI Manager	**Action 1** 31 March 2024 **Action 2** 30 June 2024
	Recommendation 18 To address the challenges in the denominator and ensure that the appropriate adjustments are made, the EPI/MoH management should: • review the denominator in DHIS2 together with the ZAMSTATS projections and ensure that the adjustments in DHIS2 are normalised. • consider undertaking independent surveys, such as a coverage evaluation survey, to supplement and review the accuracy of reported data. • work with the WUENIC team to review data using sample studies, instead of desk based reviews, to establish a more accurate picture of the country's progress.	**Action 1** Denominators in DHIS2 were reviewed using the ZAMSTAT 2022 population. As for previous denominator estimates, there were three methods available to estimate the population under one as follows. -Via BCG -Via ANC -Via Deliveries	**Action 1** Assistant Director - M&E	**Action 1** 28 February 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		The team choose ANC because the other two methods could not give us normal coverages. The ANC method was used with the following criteria. The middle point between 2014 and 2018 was used for total ANC numbers in DHIS2 Thereafter a proportion of ANC from ZDHS 2018 to estimate total pregnancies was arrived at. After taking into account the deliveries, live-births and Foetal Losses the under one was then extrapolated and interpolated for the years before 2016 and after. **Action 2** A demographic health survey that includes evaluation of RI coverage has been planned for implementation in 2024. **Action 3** The country takes note of the recommendation. The country will engage the WUENIC team to review the data using sample studies to establish more accurate picture of the county's progress.	**Action 2** Director Planning **Action 3** EPI Manager	**Action 2** June 2024 **Action 3** May 2024
Inconsistencies in administrative immunisation coverage	**Recommendation 19** To ensure the availability of accurate and reliable immunisation data for decision making, MOH/EPI management should: • routinely triangulate available data, including an assessment of the administrative coverage data and vaccine availability/utilisation, to check for accuracy of data reported. Such analyses should be completed at the national and sub-national levels, and any data inconsistencies noted should be validated and explained. • ensure that all primary data collection tools are completed correctly and correlate or support each other. • consistently complete data verification and validation exercises at the health facility and district levels. • ensure adequate supervision at sub-national level over data collection and management including follow-ups of recommendations, to address data management gaps arising from routine supervision visits.	**Action 1** Commodities database being developed and to serve as a triangulation point for service and commodity data. Further services of the Zambia analytic platform ZHAP are being sourced to help in data triangulation. ZHAP is a data visualisation platform that integrates data from different databases. **Action 2** Lot Quality Assurance Sampling (LQA) will be incorporated in DQA guidelines. This will require each facility to complete the LQAs and if not passed, the entire report will have to be re-done. **Action 3**	**Action 1** Assistant Director - M&E **Action 2** Assistant Director - M&E **Action 3**	**Action 1** April 2024 **Action 2** June 2024 **Action 3** June 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		All DQA will be completed at health facility and district level following the plan in the DQIP. **Action 4** Quarterly supervision visits planned for and follow-up mentorship to be conducted in March, June, September and December of 2024.	Assistant Director - M&E **Action 4** Assistant Director - M&E.	**Action 4** March, June, Sep, Dec 2024.
Slow implementation of the Data Quality Improvement plan	**Recommendation 20** To improve data availability, quality and use, the MOH/EPI management should: • ensure that all DQAs are carried out according to the WHO-endorsed methodology. This should include developing costed DQIPs, after each DQA. • work with other health development partners to develop terms of reference, for the M&E technical working group and to reactivate and restore this group. • ensure that the M&E technical working group properly monitors all the activities identified in the DQIP and implement in a time bound manner. • budget for the outstanding DQIP action items and ensure that funding is allocated to all critical areas of the plan.	**Action 1** Data audit guidelines in line with WHO guidelines being developed to standardise how all DQAs are conducted including RI. **Action 2** ToRs for M&E TWG have been developed, chair and secretariate appointed, and schedule of meetings drawn. **Action 3** DQIP drafted and at stage of seeking buy-in from technical working partners. Final plan to be conducted 1st Week of February **Action 4** The DQIP action were prioritised and costed for possible financing.	**Action 1** Assistant Director - M&E **Action 2** EPI Manager **Action 4** EPI Manager **Action 4** EPI Manager	**Action 1** March, June, Sept, Dec 2024 **Action 2** 31 January 2024 **Action 3** 28 February 2024 **Action 4** 28 February 2024
Gaps in fixed asset management	**Recommendation 21** To comply with the GMRs, the MOH/EPI management should ensure that the FAR captures all Gavi funded assets and that annual physical asset verifications are consistently done, as required.	**Action 1** Management has taken note of the recommendation from the auditors and the assets register has been put in place for all the assets procured by the partners (CHAZI, CIDRZ and UNICEF).	EPI Manager	31 March 2024