Memorandum on the Peoples's Republic of Bangladesh Programme Audit report

The attached Audit and Investigations report sets out the conclusions of the programme audit of Gavi's support to the Peoples's Republic of Bangladesh's Ministry of Health and Family Welfare (MOHFW), executed by the Expanded Programme on 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 1 January 2016 to 31 December 2022. The audit scope included the following grants: Health Systems Strengthening, MR follow-up campaign, COVID-19 Vaccine Delivery Support (CDS) funds, as well as other vaccines and cold chain equipment.

Funds directly executed by WHO and UNICEF were not subject to our programme audit and were considered out of scope, in accordance with the United Nations single audit principle. Gavi funds disbursed to the World Bank through the multi-donor trust fund were also excluded from the scope of our audit, due to restrictions in the bilateral agreements between Gavi and the World Bank, which prevent individual contributors from auditing their specific contributions separately.

Conclusions on the review of Gavi-funded expenditures is not included in this report, as it will be subject to a separate, forthcoming audit engagement to be conducted later on during 2025.

The report's executive summary (pages 4 to 5) summarises the key conclusions, 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 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".
2. In total, twenty issues were identified in the following areas: (i) governance and oversight; (ii) programme management (iii) vaccine and supply chain management; and (iv) immunisation data management.
3. To address the risks associated with the issues, the audit team raised 24 recommendations, of which 12 were rated as high priority.
4. Key findings were that:
    a. There was a lack of coordination between the various oversight structures, and the terms of reference for the Inter-agency Coordination Committee (ICC) were not formally endorsed. Oversight of EPI funds managed by the MOHFW was inadequate due to lack

of internal audit and external audit.

b. The development, implementation, and monitoring of EPI annual work plans were hindered by process gaps and fragmented working arrangements due to separate work plans maintained by the various implementing agencies. A critical challenge was the high turnover of human resources resulting in vacancies impacting the ability to implement the immunisation program effectively at both national and sub-national levels. Additionally, the lack of effective coordination between the two ministries overseeing urban and rural healthcare services significantly limited the program's capacity to influence immunisation outcomes. There was lack of effective supervision mechanisms due to shortage of human resources and budget constraints and the programme relied heavily on the technical assistance provided by the implementing partners.
c. The national EPI team relied heavily on manual vaccine logistics systems instead of an electronic vaccine logistics management information system until 2022, when a DHIS2 module was introduced but was found inadequate due to data inconsistencies and lack of system integration. Reliability of vaccine data remained a concern and design issues in the module restricted identification of discrepancies and follow-ups. The integrity of data was compromised due to inadequate supervision and monitoring as well as lack of validation processes.
d. There were shortcomings in Immunisation data management, including in target-setting, reporting of children vaccinated, overreporting of administrative coverage as compared to vaccines consumed, inadequate configuration of DHIS2, lack of evaluation surveys and significant delays in implementing data quality improvement plans.
e. The EPI's transition from Gavi support to fully self-financing state faces significant challenges such as governance gaps, financial uncertainty, workforce constraints, and weak systems in planning, supply chain, data management, and oversight of outsourced services.

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

The Gavi Secretariat continues to work with the Ministry of Health and Family Welfare to ensure that the above commitments are met.

Geneva, August 2025

PROGRAMME AUDIT REPORT

People's Republic of Bangladesh
May 2024

Gavi
The Vaccine Alliance

Table of Contents

1. Executive Summary

1.1 Overall audit opinion

Audit opinion:

The audit team assessed the Ministry of Health and Family Welfare's (MOHFW) management of Gavi support during the seven-year period 1 January 2016 to 31 December 2022 as **"Ineffective"** which means, "Multiple significant and/or material issues were 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."

Through our audit procedures, we have identified 11 high risk and 9 medium risk issues relating to the programme management and oversight, vaccine and supply chain management and immunisation data management processes. To address the risks associated with the findings, the audit team raised **24 recommendations**, of which 12 (50%) were rated as high risk. The recommendations need to be addressed by implementing remedial measures according to the agreed action plan on Annex 16.

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 issue and each recommendation, are defined in Annex 2 of this report.*

1.3 Summary of issues

Through our audit procedures, we identified high risk issues relating to governance and oversight, programme management, vaccine and supply chain management and immunisation data management. The significant and high-risk issues are summarised below, and detailed findings following in Section 4 of this report.

Governance and oversight

The various bodies responsible for oversight over the expanded programme on immunisation (EPI) were not well-coordinated while fulfilling their mandate. The inter-agency coordinating committee (ICC) faced issues related to its terms of reference and functionality, in part due to a lack of formal endorsement by MOHFW. The ICC also held insufficient strategic discussions and struggled due to ambiguities in the membership of its representatives. There were deficiencies in the oversight of the EPI funds managed by the MOHFW, as the expected internal and external audits were not conducted, resulting in insufficient oversight and scrutiny.

Programme management

Deficiencies were noted in the management of the national immunisation programme, with process gaps in the development, implementation, and monitoring of EPI annual work plans. Separate work plans were maintained by the (i) Maternal, Newborn, Child & Adolescent Health (MNC&AH) – which includes the EPI; (ii) UNICEF and (iii) WHO, resulting in the fragmentation of working arrangements. Since plans were not consolidated, this detracted from the EPI being able to readily obtain an overview of the entire programme's performance and budget consumption.

The programme faced significant human resources challenges at both the national and sub-national levels, there was a high level of turnover across EPI functions, resulting in many vacancies. Staff induction and training were not well structured, and at the sub-national level, temporary personnel were sometimes assigned critical roles, posing risks to the quality of service delivery.

Different government departments are in charge of healthcare in rural and urban areas, including vaccinations. The Ministry of Health and Family Welfare primarily looks after rural health, while the Ministry of Local Government, Rural Development and Cooperatives handling urban health, which the city corporations and municipalities oversee. Current arrangements of two separate ministries handling different rural and urban healthcare components, each with their own reporting systems, dislocating the programme's ability to coordinate and influence immunisation efforts and diluted accountability.

The programme's lacked effective supervision mechanisms. Shortcomings persisted due to a shortage of human resources and budget constraints at both the national and sub-national levels and the programme needed to increasingly leverage from the technical assistance provided by the alliance partners. As a result, the EPI's ability to drive continuous improvement and disseminate key skills and capabilities to its workforce was hampered.

Vaccine and supply chain management

The national EPI team primarily managed its vaccine logistics using manual records instead of an electronic vaccine logistics management information system (eLMIS). Historically, manual record-keeping was prevalent until 2022, when a module to track stocks was introduced into DHIS2. However, the team determined that this module fell short of the programme's requirements, with recurring inconsistencies and anomalies in the data it contained. At the central level, the overall Covid-19 records of total doses managed was also imprecise, due to the information on the country's various receipts being fragmented and unreconciled across multiple sites, including mismatches in the details of what was received. Some incidents of non-compliance with the earliest expiry first out (EEFO) principle were noted for routine vaccines.

Sub-nationally, the reliability of vaccine data in the DHIS2 module remains a concern. Notably, there were unexplained differences in the numbers of vaccines issued and subsequently received by subsidiary stores. The DHIS2 module data at different levels was not integrated, and the system was not designed to flag any discrepancies, with no follow-up or resolution of issues with the data.

The audit team's analysis of monthly stock balances across districts and sub-districts during the 2019-2022 period in DHIS2 highlighted inconsistencies. Although the aggregated data for vaccines appeared to be consistent, on reviewing the underlying detail at district level, the audit team highlighted mismatches between the carried forward and brought forward balances across subsequent periods. The audit team's analysis also suggested that at the sub-national level, there were intermittent stockouts, including some districts having to operate for extended periods without sufficient doses.

Incorrect data entries were associated with insufficient personnel supervision and monitoring and the absence of suitable validation processes, thus undermining the integrity of the data.

Immunisation data management

There were shortcomings in the country's immunisation data when setting targets and reporting the number of children vaccinated. The audit identified deficiencies in past targets illustrated by: unexplained fluctuations in the monthly targets; static targets; counterintuitive target decreases; or targets being set significantly lower than past levels. Inconsistencies were explained by erroneous entries, missing information, and a lack of data quality validation processes.

Similar issues affected the data flow when reporting immunisation coverage, raising concerns about the underlying data capture processes. Inconsistencies emerged during each stage of the process including: at the time of compiling tally sheets; when transcribing the data across to monthly summaries; and when manually inputting data into DHIS2. This detracted from the reliability of the overall national-level aggregated data.

Other concerns involved discrepancies between the amounts of 'vaccines used' and 'administrative coverage' data reported in DHIS2. The audit team's analysis of pentavalent data highlighted that the administrative coverage data consistently exceeded the actual vaccine utilisation (available) from 2019 to 2022, indicating that administrative coverage was overstated. Similar inconsistencies were also observed in the PCV data.

The configuration of DHIS2 was inadequate and there was no proper segregation of duties in the system. For example: several system based controls were inactive; the system did not generate warnings when negative balances were derived; and cut-off timelines were not enforced making it possible for data to be retroactively entered much later.

In the past the country would routinely conduct an annual coverage evaluation survey, to validate and improve the accuracy of its data. However since 2019, no such evaluation surveys have been undertaken, despite their contribution in identifying gaps in data quality. Similarly, there have been substantial delays in implementing the data quality improvement plans (DQIPs), with such plans only being partially executed.

Transition from Gavi support up until January 2030

The EPI transition from Gavi support to a fully self-financing state faces significant challenges, including:

- **Transition management**: To date, no dedicated transition steering committee has been established, though it is considered necessary to help navigate the transition process, including aligning the various ministries and stakeholders and support the coordination and transition process from donors' support.
- **Financial sustainability**: The absence of a comprehensive transition roadmap risks delaying the necessary budgetary planning, resource mobilisation and allocation/ prioritisation. By the end of 2029, the government will need to cover 100% of its vaccine procurement costs, which are estimated will increase up to as much USD 77 million per year.
- **Human resources and leadership issues**: The transition process is expected to stress human resources and present new challenges for the MOHFW, requiring stabilisation of the programme's personnel, as well as bolstering its capabilities and leadership in preparation.
- **Supply chain and inventory management**: the current set-up does not include a suitable inventory management system, including logistical issues of stockouts and stock management inefficiencies.
- **Autonomy and technical/programmatic capacity**: currently the EPI team's ability is somewhat limited in independently formulating comprehensive annual work plans and budgets.
- **Data management and reporting**: There are gaps in data accuracy, completeness, and reliability – compromising data quality and integrity. Suitable data analytical capabilities and evidence-based planning processes will need to be developed.
- **Outsourcing of urban immunisation activities**: The implementation of the urban immunisation strategy currently relies upon outsourcing the work NGOs, who conduct vaccination activities across urban areas. Governance over the provision of such health services falls under the oversight of the Local Government Division (LGD), no proper accountability framework for the NGOs is in place and the execution of outsourced activities was poorly monitored, creating an element of doubt with regards to the effectiveness of services rendered.

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

The audit team undertook its audit based on a risk-based approach, informed by a risk assessment which examined all of the main areas of the immunisation programme. This assessment identified and defined the following key components for further review: vaccine and supply chain management; programme management and oversight; immunisation data management; cold chain equipment management; COVAX delivery support; and the effectiveness of targeted country assistance.

The audit scope covered the seven-year period from 1 January 2016 to 31 December 2022. The total cash and vaccines (including ancillary support) provided by Gavi during this period is presented in **Figure 1a, Figure 1b** and **Figure 2**

Figure 1a: Cash and vaccines support to MOHFW during the period 2016 – 2022.

	Amounts in scope							
Cash grants	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total (in USD)**
HSS	*9,520,926*	*13,368,800*	*10,849,005*	*15,366,257*	*39,759,762*	*10,423,285*	*12,060,922*	*111,348,957*
MR follow-up campaign	-	-	-	*8,611,018*	-	-	-	*8,611,018*
CCEOP	-	-	-	*605,547*	*35,949*	-	*473,036*	*1,114,532*
CCEOP - COVAX	-	-	-	-	-	*602,149*		*602,149*
Op. costs - Fragility support	-	-	*451,257*	-	-	-	-	*451,257*
PCV product Switch	-	-	*279,715*	-	-	-	-	*279,715*
COVAX CDS EA	-	-	-	-	-	*10,151,220*	-	*10,151,220*
CCEOP Covid-19	-	-	-	-	-	*1,880,018*	-	*1,880,018*
Covid-19 - CDS – third window	-	-	-	-	-	-	*956,620*	***956,620***
Total cash	***9,520,926***	***13,368,800***	***11,579,977***	***24,582,822***	***39,795,711***	***23,056,672***	***13,490,578***	***135,395,486***
Total vaccines	***66,857,784***	***64,984,854***	***52,236,762***	***75,610,507***	***46,597,553***	***427,984,691***	***743,162,781***	***1,477,434,932***
Total (vaccines & cash support)	***76,378,710***	***78,353,654***	***63,816,739***	***100,193,329***	***86,393,264***	***451,041,363***	***756,653,359***	***1,612,830,418***

Figure 1b – Cash disbursements by grant and implementer as on 31 December 2022 in USD

Implementers	HSS	MR	CDS	CCEOP	CCEOP - Covid 19	PCV	Op.Cost	Total (In USD)
UNICEF	*30,580,709*	*4,227,743*	*5,274,762*		*602,149*	*279,715*	*226,003*	***41,191,081***
WHO	*29,610,135*	*4,383,275*	*5,768,334*				*225,254*	***39,986,998***
IBRD	*50,000,000*							***50,000,000***
UNICEF-SD	*1,233,048*			*1,114,532*	*1,880,017*			***4,227,599***
Crown Agents			*64,743*					***64,743***
MOH	*(74,935)*							***(74,935)***
Total	***111,348,957***	***8,611,018***	***11,107,839***	***1,114,532***	***2,482,166***	***279,715***	***451,257***	***135,395,486***

Scope Limitation

The HSS grant amount includes disbursement to the World Bank (WB) multi-donor trust fund (MDTF), WHO and UNICEF. The bilateral agreement between Gavi and the WB, which is the MDTF's fund manager, prevents contributing members (including Gavi) from conducting tailored audits covering just their contributions. As a consequence, the programme audit had to assume a limitation of scope in relation to Gavi's cash transfers to the MDTF.

For funds passed through Alliance Partners, the grant contracts stipulates the UN's single audit principle. This principle accords the United Nations Board of Auditors the sole authority to audit the financial accounts and statements of the UN entities, including WHO and UNICEF. Consequently, any funds directly managed by these partners were not included in the Programme Audit's scope.

Figure 2: Covid-19 vaccines support provided through Gavi's COVAX Facility as of 31 December 2022

Covid-19 vaccine manufacturer/ brand	2021 (in doses)	2022 (in doses)	Total (in doses)
Pfizer Overseas LLC	15,762,240	63,381,150	79,143,390
Sinovac Life Sciences Co., Ltd.	37,452,000	20,013,040	57,465,040
Pfizer Overseas LLC - Paediatric	-	33,050,000	33,050,000
Beijing Institute of Biological Products Co Ltd	34,878,000	-	34,878,000
Serum Life Sciences Ltd - Covishield	4,292,000	5,490,000	9,782,000
AstraZeneca AB	17,394,350	2,126,100	19,520,450
Moderna Switzerland GMBH	13,727,360	2,054,200	15,781,560
Janssen Pharmaceutica NV		679,750	679,750
Total number of Covid-19 doses shipped			**250,300,190**

The approximate procurement cost for these Covid-19 doses was USD 1,032 million.

2.3 Audit approach

The audit was conducted in two phases. An initial one week in-country scoping visit in October 2022, followed by three weeks fieldwork conducted between 8 to 30 March 2023. The audit scope included various locations including the Central vaccine store, 8 district vaccine stores and 20 Upazila health complexes. The team examined various fiduciary assurance elements, including the internal and external audit mechanisms. See Annex 4 for the list of facilities visited by the audit team.

While undertaking its fieldwork, the team interacted with key stakeholders including the: MOHFW Secretary, National EPI Manager, Central EPI team, and the Gavi Alliance Partners including WHO, UNICEF, and PATH.

2.4 Exchange rate

Most cash and in-country expenditures were incurred in Bangladeshi Taka (BDT). For information purposes and as part of the summary, overall support and totals are also reflected in United States Dollars (USD). The derived exchange rate is an average of the daily bank rate provided by the Central Bank of Bangladesh rate, over the seven-year audit period. This equates to an overall exchange rate of BDT 84.27 to USD 1.

3. Background

3.1 Introduction

Partnership with the MOHFW: The partnership between the Ministry of Health and Family Welfare (MOHFW) and Gavi has played a role in advancing the country's Expanded Programme on Immunisation (EPI). Since its inception in 1979, the EPI has focused on providing essential vaccines to its population, including Gavi's support since 2001. This collaboration has contributed towards the delivery of vaccine, ensuring that children have access to life-saving immunisation. By December 2022, the EPI offered a seven vaccines to children aged 0 to 15 months, including Gavi's financing for three of these vaccines (as well as MR for campaigns), as illustrated in **Figure 3** below. Gavi's support included: inactivated poliomyelitis (IPV), pentavalent, and the pneumococcal conjugate (PCV) vaccine, with the latter two vaccines being subject to Gavi's co-financing policy.

According to this policy, the People's Republic of Bangladesh is currently in its initial 'self-financing' phase, resulting in the Government contributing USD 0.20 per dose towards Gavi-supported vaccines. Gavi has also extended Health System Strengthening (HSS) grants to address critical bottlenecks within the health system, thereby enhancing access to immunisation and other essential child and maternal health services.

Figure 3: Routine Immunisation Schedule in Bangladesh for children aged 0 to 15 months [https://dghs.gov.bd/]

Disease	Name of vaccine	Number of doses	Minimum interval between doses	Starting time
Tuberculosis	BCG	1	N/A	At birth
Diphtheria, Pertussis, Tetanus, Hepatitis-B, Hemophilus Influenza type b(Hib)*	Pentavalent*	3	4 weeks	6 weeks
Poliomyelitis	OPV IPV*	3 2	4 weeks 8 weeks	6 weeks 6 weeks
Pneumococcal pneumonia*	PCV*	3	4 weeks	6 weeks
Measles and rubella*	MR*	1	N/A	9 months
Measles	Measles	1	N/A	15 months

* vaccine supported by Gavi

In addition to the role Gavi has played in supporting routine vaccines within the Bangladesh Expanded Programme on Immunisation (EPI), Gavi also supported supplementary immunisation activities (SIAs), targeting diseases like measles and rubella. SIAs (or campaigns) aimed to reach children who might otherwise be missed by routine vaccination services.

Gavi's support has been instrumental in providing emergency assistance for both: oral cholera vaccines since 2017; and Covid-19 vaccines and financial resources since 2021. Gavi also played a role in bolstering the country's cold chain infrastructure through its cold chain optimisation platform, to procure and install additional equipment. A well-functioning cold chain helps to ensure the integrity of vaccines and ensuring their efficacy.

in future with Gavi's support, the MOHFW aspires to introduce additional vaccines into its EPI programme, including: rotavirus, human papillomavirus, Japanese encephalitis, and typhoid conjugate. This reflects the Government's commitment to further improve public health outcomes through strengthening routine immunisation.

Gavi's 2015 programme audit: The previous programme audit conducted in 2015 assessed Gavi's support to Bangladesh over the 3.5-year period from 1 July 2011 to 31 December 2014. A supplementary phase was carried out in July 2016 to review the self-procurement of immunisation supplies, for the period 2009 to mid-2016. An overall rating of 'partially satisfactory,' was issued in December 2018 indicating that while internal controls and risk management processes were generally in place, improvements were needed.

No direct comparison can be made between the current and prior audits due to their different audit scopes, as the grant management arrangements have significantly changed since the previous audit. Thus, where in the past Gavi used to disburse its funds directly to the Government of Bangladesh (GOB), since 2016 funds have begun to be channelled to the EPI via the Alliance partners. Hence several of the previous audit recommendations are no longer applicable, as the MOHFW no longer directly receives or manages the majority of Gavi funding.

Economic status and future Gavi Support*:* Bangladesh has demonstrated robust economic growth in recent years, establishing itself as one of Asia's prominent economies. With an average annual GDP growth rate of approximately 6.3% from 2004 to 2022, the expansion in partly attributed to the garment export sector and to regular inflows of expatriate remittances. Several sectors have experienced significant growth over the past two decades.

According to data from the World Bank, Bangladesh's Gross National Income (GNI) per capita in 2022 is estimated to be USD 2,820. Bangladesh achieved middle-income country (MIC) in 2018, after surpassing the per capita GNI threshold of USD 1,630. This also has funding implications consistent with Gavi's funding eligibility policy. Thus in 2022, the country entered its accelerated transition phase, triggering a gradual increase in the GOB's vaccine co-financing commitment. This financial responsibility will continue to incrementally increase up to 2030, beyond which Bangladesh will transition away from Gavi, and will no longer be eligible for new financial support. This transition signifies the evolving nature of the partnership between Bangladesh and Gavi, as the country's immunisation programme progresses toward self-reliance.

Demographics and administrative structure: Situated in the northeastern region of South Asia, Bangladesh is the world's eighth most populated nation. Per the Bangladesh Bureau of Statistics' 2022 census, the country's population totals approximately 165.16 million, comparable with World Bank estimates of about 171.19 million for the same year.

Bangladesh is divided into seven administrative divisions: Dhaka, Chittagong, Rajshahi, Rangpur, Khulna, Sylhet, and Barisal. Overall, these divisions are made of 64 districts and 11 city corporations. The districts are further subdivided into 488 upazilas or sub-districts and 223 municipalities. Each upazila contains an average of 10 unions, though with some variation as the number of unions can range from between 5 to as high as 27 unions. Every union encompasses 3 wards. In contrast, the country's urban areas are governed by 11 city corporations and municipalities.

Health Metrics: The World Bank reports that currently, over 89% of children in Bangladesh are fully immunised. Remarkably, a child's life expectancy if born today has increased by around 25 years since 1972. As of 2021 data from the World Bank, life expectancy at birth in Bangladesh is currently about 72.4 years. The United Nations Development Programme's Human Development Index (HDI) for 2021 placed Bangladesh 129th out of 191 countries.

While in general Bangladesh is categorised under 'medium human development,' the present level life expectancy at birth is on par with nations in the 'very high human development' bracket. The improvement in life expectancy is partly credited to increased access to immunisation since Gavi's involvement began in 2001.

Gavi funding mechanisms: Gavi's cash support to Bangladesh during the audit period totalled USD 135 million. This included different funding streams, with the biggest being the Health Systems Strengthening (HSS) grant, around 111 million US dollars. This grant was split into two parts: one part went to a multi-donor trust fund managed by the World Bank, and the other part went to WHO and UNICEF. Most of Gavi's other grants, like for Product Switch, COVAX Country Delivery Support, and immunisation campaigns, were also channelled through WHO and UNICEF.

Gavi's main two conduits to disburse HSS funding to the GOB were as follows:

- Multi donor trust fund (MDTF) – This fund, managed by the World Bank (WB) under the Health Sector Support Project (HSSP), is categorised as reimbursable project aid. The HSSP serves a range of health programmes beyond just national immunisation activities. The WB also ensures that MDTF funding is not spent on procurement vaccines or related supplies, in order to ensure that the trust's funding does not substitute for the GOB's co-financing commitments towards Gavi-supported vaccines. Under the current setup, the WB disburses funds semi-annually to the Ministry of Finance, following a validation process of the "eligible expenditures" which are aligned with disbursement linked indicators. Between 2019 and 2022, Gavi transferred approximately US$ 50 million HSS funding to the MDTF.

  For the MDTF-HSSP, the WB provides an annual single audit report to all its contributing donors. The audit is performed by the WB's external audit covering all trust funds, including HSSP, managed by the bank. Although there's provision for a dedicated MDTF-HSSP financial audit in the agreement with Gavi, such an audit require prior agreement between the donor and the WB and has to be undertaken by the WB's external auditor. Thus far, Gavi hasn't commissioned such audits.

- Alliance partners - This modality primarily involves the alliance partners, WHO and UNICEF. All of this funding is categorised as direct project aid and is earmarked to immunisation activities. Between 2019 and 2022, Gavi transferred approximately US$ 61 million HSS funds split between WHO and UNICEF. Thereafter, approximately 26% of these funds were rechannelled to the MOHFW's EPI, spread between the national and sub-national levels. The remaining HSS funds were spent by the partners to undertake agreed immunisation activities on behalf of the EPI.

3.2 National entities involved in implementation of grant activities

Ministry of Health and Family Welfare

The MOHFW is the designated ministry for all matters related to health and for ensuring overall health services coverage across the country. It is responsible for defining health policies, setting strategies, establishing technical standards, controlling quality, enforcing regulations, and for procuring and distributing: (i) vaccines, (ii) family planning

contraceptives, and (iii) other essential commodities. The Directorate General of Health Services (DGHS) and the Directorate General of Family Planning (DGFP) are two of the primary implementing units of the MOHFW. The national Expanded Programme on Immunisation falls under DGHS.

Ministry of Local Government, Rural Development, and Cooperatives (MOLGRD&C)

The MOLGRD&C's mandate includes the provision of primary health care in urban area settings. It consists of two divisions: the local government division (LGD) and the rural development and cooperative division (RDC). The LGD is responsible for all city corporations and municipalities, collectively referred to as urban local bodies (ULB).

Although the LGD does not have any direct responsibility for urban health care, it has jurisdiction over the ULBs who have a legal and administrative mandate for carrying out public services, including primary health. Thus, the MOLGRD&C is expected to assume overall responsibility for supporting the ULBs in carrying out their duties related to public health and primary health care service delivery. Also, the LGD is mandated to provide the ULBs with the necessary budget and management support, sourced from the central government resources.

In discharging their duties, frequently the ULBs will collaborate with non-governmental organisations and the private sector, in order to deliver EPI services across various urban areas. In certain instances, larger city corporations and municipalities are organised into multiple zones, each of which is further sub-divided into wards. This allows city corporations and municipalities to structure their urban areas into individual wards in which vaccinations can be administered according to a predetermined schedule.

National immunisation programme

In Bangladesh, the national immunisation programme is primarily managed by the central Expanded Programme on Immunisation (EPI) team. The EPI is one of the seven programmes under the Maternal, Newborn, Child and Adolescent Health (MNC&AH) of the MOHFW.

At the grassroots level, healthcare for immunisation is provided by health complexes and clinics, which are located across the various upazilas, city corporations, and municipalities.

The immunisation programme has three main supply chain tiers. The national EPI team is responsible for the programme's core operations and operates the central vaccine store, which supplies the 64 district stores. The district stores provide interim storage points which periodically distribute vaccines to the service delivery level. This third level comprises of 692 decentralised stores located across the various upazilas, city corporations, and municipalities. Overall, there are 757 cold chain points operating across this supply chain network. Ultimately, the health complexes and clinics across the service delivery level, provide essential healthcare services, including vaccination.

3.3 National immunisation programme achievements

Over the years, Bangladesh's national expanded programme on immunisation has demonstrated commendable advancement. Key achievements, observed or presented to the audit team include:

Vaccination outreach: Each year, the national immunisation programme is successful in reaching over 3 million mothers and their newborns. The outreach initiative has resulted in a substantial decrease of vaccine-preventable diseases throughout the nation.[1]

Covid-19 vaccination: As of 18 February 2023, Bangladesh's Covid-19 dashboard indicates that over 80% of the target population had been vaccinated against Covid-19, equivalent to more than 350 million doses having administered to approximately 150 million individuals.[2]

Efficient vaccine distribution: The EPI's vaccine distribution network ensures access to vaccines within 12-15 hours from the central store to districts, and approximately 2 hours at most from districts to subdistricts. It uses cold boxes whose specifications, guarantee that vaccines stay within the 2-8°C range for over 72 hours, in line with robust PQS standards.

Stock count reconciliation: The audit team made field visits to 8 districts and 20 Upazila health offices, including 3 city corporations. Across all locations, the random physical counts carried out by the audit team, largely reconciled with the current stock running balances, as maintained in manual registers.

Improvement recognised in effective vaccine management (EVM) assessment: The 2021 assessment effective vaccine management (EVM) assessment rated the country's logistics and vaccine supply system as "very good overall performance." This was reflected by the country's overall score of 84%, exceeding the WHO's target benchmark of equal to or higher than 80%, in line with established EVM requirements.

1 https://immunisationdata.who.int/pages/profiles/bgd.html
2 http://103.247.238.92/webportal/pages/covid19-vaccination-update.php, accessed 18 February 2023.

3.4 Operational Challenges

Covid-19 Pandemic: The Covid-19 pandemic impacted on Bangladesh's routine immunisation programme. In its initial stages during April and May 2020, significant disruption occurred due to from strict lockdowns, the reassignment of frontline health workers, and citizen's apprehensions about transmission of the disease. According to Gavi's internal documents, a significant number of children missed their routine scheduled doses. For instance between January and November in 2020 there were shortfalls in the target number of children reached including 272,174 for MR 2nd dose; and 227,501 for pentavalent 3rd dose

At the start, the pandemic presented challenges for health workers, due to a lack of guidance regarding preventing infection, compounded by inadequate supplies of personal protective equipment. Health workers also faced logistics challenges, such as movement restrictions and limited public transport. Other issues persisted, including difficulties of identifying suitable vaccination locations compliant with safety protocols, and occasionally landlords refusing to allow vaccinations to take place on their property.

The pandemic also resulted in postponing the measles rubella vaccination campaign planned for March 2020. It is estimated that necessary adaptations to mitigate Covid-19 risks, increased overall costs by almost USD 4 million. This was due to revised vaccination strategies, extending of the campaign duration, and the need for alternate training and communication methods.

The delivery and installation of cold chain equipment was also delayed, including several walk-in cold rooms for the EPI central store and a few districts. Important activities scheduled in the EPI work plan, such as online annual micro plans and implementation of the urban immunisation strategy, were also delayed. Frontline health workers, including several from the WHO surveillance and immunisation officer network, necessary to keep national and sub-national authorities informed, contracted Covid-19 or were forced to quarantine.

Influx of forcibly displaced Myanmar nationals: As of 12 June 2023, UNFPA estimated that Bangladesh was hosting approximately 1 million forcibly displaced Myanmar nationals (FDMN), placing an additional strain on the immunisation programme, due to the significant increase in the local population, in particular Cox's Bazar district. Gavi embraces the concept of equity for the FDMN population as a recipient of immunisation services on par with that of Bangladeshi nationals. In response to the humanitarian crisis, Gavi provided both additional vaccines and financial assistance under its fragility, emergencies, and refugees policy, with extra support from the Gavi alliance partners. As a result, the EPI team is now providing additional routine immunisations services, including Covid-19 vaccination to the FDMN community.

The FDMN are receiving basic services, but still face many challenges. Given their situation and housing in camps, they remain at risk of disease outbreaks (e.g., Dengue in December 2021 and again in May 2022)[3] and malnutrition. Many children face limited educational prospects, or are at risk of neglect, exploitation, or gender-based violence.[4] Ensuring the health and well-being of this vulnerable group requires a comprehensive, sustained humanitarian effort

[3] Dengue in Rohingya refugee/Forcibly Displaced Myanmar Nationals (FDMN) camps in Cox's Bazar - Bangladesh (who.int), accessed 23 Sept 2023.
[4] Bangladesh Humanitarian SitRep 1 Jan - 30 Sept 2022 (unicef.org), accessed 23 September 2023.

4. Findings

4.1 Governance and Oversight

4.1.1 Lack of an effectively functioning oversight mechanism

Context and Criteria

The country's inter-agency coordination committee (ICC) is expected to play an important role in directing the strategic agenda for immunisation stakeholders. It is responsible for ensuring that the planning, implementation, and oversight of immunisation activities is undertaken effectively. Health ministries in Gavi-supported countries are required to establish and lead the ICC, with regards to the grant application and submission process, and ensure alignment with the national immunisation strategy. Similarly, the active participation of key stakeholders in this process helps to enable the programme's: strategic planning, allocation of resources, accountability, advocacy, and coordination efforts, ultimately leading to improved national health outcomes.

The country's 2015 health systems strengthening grant application indicated that the ICC would conduct regular quarterly reviews over the monitoring and evaluation data to: (i) address any programme constraints (ii) validate proposed problem-solving actions, and (iii) identify those responsible for resolution.

Condition

In August 2018, Gavi issued a GMR outlining various gaps in the ICC's oversight mechanism which required the MOHFW to revisit and address: (i) revising the ICC's TORs; and (ii) establishing subcommittees (or thematic groups), with a specific focus on logistics' supply management, as well as vaccine forecasting and quantification.

The audit team identified significant shortcomings in the inter-agency coordinating committee's terms of reference (TORs), and in its ability to discharge its mandate including facilitating strategic discussions, monitoring the programme, meeting regularly and following-up on agreed actions.

The audit team noted the following ICC shortcomings in the ICC's TORs:

- **No formal MOH endorsement**: The audit team observed that the role of the ICC had transitioned from its initial ad hoc status in 2001 when it was established under the name "Bangladesh working group on Gavi." Nevertheless, the alteration in their role resulting from changes in the program was not officially acknowledged by the MOHFW. Similarly, the ICC's TORs from January 2001 were neither officially endorsed nor acknowledged by the MOHFW.
- **Unclear roles and responsibilities:** The TORs did not provide clarity in relation to the ICC's specific duties and responsibilities, instead it just mentioned broad areas of accountability. Furthermore, the TORs failed to explicitly mention the ICC's responsibility on important tasks such as supporting the development and sign-off of Gavi grant applications.
- **Undefined technical working groups arrangements:** The TORs failed to clarify reporting lines and expectations with the recently established "vaccine and logistics management technical working group", that was in the process of being operationalised (with UNICEF's support) as of March 2023.
- **Inadequate member composition:** The TORs did not sufficiently articulate what the ICC's member composition should be. While it mentioned various constituencies, it did not specify the expected proportional representation. The TORs also did not recognise the need or possibility for district/ division-level and city corporation representation, nor did it explain the vice-chair selection process.

Recommendation 1

The MOHFW should revise and formally endorse the inter-agency coordination committee's terms of reference. As a minimum, the revised TORs should include the following element:

- Clear, comprehensive details of the ICC's roles and responsibilities. Clarify what are the respective reporting mechanisms for technical working groups (such as the vaccine and logistics management technical working group).
- Specify proportional representation and member composition for different ICC constituencies, including representatives from the sub-national level and urban areas. Define a process to select the vice-chair position.
- Articulate what the minimum quorum for a meeting consists of. Put in place a suitable mechanism in case the ICC needs to escalate any key functional gaps or weaknesses to Gavi, for additional support.

- **Procedural gaps:** The TORs lacked clarity on procedural aspects, including what is the minimum quorum for a meeting. Although some meeting minutes mentioned a four-member quorum, this was not reflected in the TORs. In addition, the TORs did not define a suitable mechanism in case the ICC needed to escalate any key functional gaps or weaknesses to Gavi for additional support.

The audit team's review of ICC meeting minutes from 2018 to 2022 revealed several areas of concern, indicating gaps in the ICC's effectiveness in fulfilling its role:

- **Poor programme monitoring:** The ICC was only intermittently involved in monitoring programme activities. ICC meeting minutes provided no evidence that the implementation status of key initiatives and agreed actions was of regularly reviewed, including: the EPI's operational plans, PEF TCA activities, EVM improvement plan, GMR and past audit recommendations follow-ups, and transition planning. Furthermore, the ICC did not set clear targets or metrics against which it was expected to measure programme performance. It also failed to establish a liaison mechanism with District Health Offices and local authorities, limiting its effectiveness in overseeing the EPI's monitoring and evaluation.
- **Irregular meetings and attendance:** The ICC meetings were held irregularly and often were poorly attended, achieving less than the suggested four-member quorum. Despite the TORs prescribing quarterly meetings, the ICC was convened once in 2018, three times in both 2019 and 2020, not at all in 2021, and twice in 2022. Attendee lists were not maintained, so it was not evidenced whether quorum was met or if the chair of the ICC chair or a suitable nominee participated at these meetings. Such infrequent meetings suggest that the ICC's ability to direct programme decision-making and to fulfil its oversight role was curtailed.
- **Issues of strategic importance not regularly included:** The ICC meeting minutes lacked discussions on critical strategic issues that should have been escalated to the MOH for action. Matters such as the turnover of the central EPI team, over-reliance on temporary health workers at the upazila level, preparation for transitioning out of Gavi support, and the slow progress in implementing the urban immunisation strategy were not featured in the ICC discussions. This suggests a potential gap in the committee's strategic planning and its influence over MOH's policy decisions.
- **Lack of follow-up procedures:** The audit revealed a lack of proper follow-up procedures in the ICC's operations. Most meeting minutes did not include action points, indicating a potential absence of clear directives for future activities. Out of the nine meetings held between 2018 and 2022, seven meeting minutes did not document any action points. Additionally, there was no evidence of systematic follow-up on previous meetings or decisions, potentially leading to gaps in accountability and continuity of efforts.

Recommendation 2

The MOHFW should enhance the effectiveness of its inter-agency coordination committee through:

- **Improving programme monitoring** – by developing a programme monitoring framework that includes regular reviews of key initiatives such as the: EPI operational plans, partnership engagement framework (including technical assistance), effective vaccine management improvement plan, and follow-up of grant management requirements and audit recommendations, and transition planning. Establish pre-agreed targets for programme performance oversight to ensure regular and effective monitoring processes.
- **Consistently holding meetings** – the ICC should respect the frequency of its quarterly meetings, as per its TORs. Meeting attendance records should be maintained to evidence minimum quorum, and identify which stakeholders attended.
- **Discussing strategic issues** – by ensuring that matters with strategic importance are prioritised on the agenda, so that key issues are promptly discussed and escalated to the MOHFW for attention. This could include for example: turnover in the national EPI team, sustainability of using temporary health workers in upazilas, transition planning, and progress on the "urban immunisation strategy."
- **Enhancing follow-up** – by establishing a systematic follow-up process to track and ensure decisions and resultant action points are implemented, so that accountabilities are maintained. This includes minuting: the agreed actions , who is the responsible for implementation and the corresponding timeline to complete.

Root Cause

- **Need for robust ICC leadership**: Without a sufficiently engaged and directive MOHFW leadership, it is not possible to establish effective oversight and coordination over the national immunisation programme. Similarly, the partners' contributions in supporting and prioritising the programme , can only be leveraged once roles and responsibilities have been clarified, in order to strengthen the ICC's ability to deliver on its mandate.
- **Incomplete documentation and formal processes**: The absence of formal endorsement of the ICC's terms of reference, detracts from the MOHFW's commitment to ratifying and establishing the committee's functions. Without accurate and complete meeting minutes summarising the ICC's

Management comments

See detailed management responses - Annex 16

<table>
<tr><td colspan="2">deliberations and decisions, it is problematic to understand its ability to effectively monitor the programme, hold parties accountable, and follow-up on agreed actions and improvements.
• Unimplemented grant management requirement: Gavi's grant management requirement on governance from August 2018, was not followed up and implemented.</td><td></td></tr>
<tr><td>Risk / Impact / Implications
• Poor or infrequent inter-agency coordination committee follow-up will have a limited impact in monitoring programme performance, identifying gaps and ensuring course correction. Difficulty in addressing emerging immunisation needs and evaluating interventions.</td><td>Responsibility
EPI, DGHS and MOH&FW</td><td>Deadline / Timetable
See Annex 16</td></tr>
</table>

4.1.2 Coordination roles and mandates need to be clarified across governance bodies

Context and Criteria

The country's inter-agency coordination committee (ICC) plays an important role in the coordination and collaboration of immunisation stakeholders. Based on the review of Bangladesh's grant applications and consultations with a range of stakeholders, the audit team documented that in addition to the ICC, several other national-level coordination and advisory bodies were also associated with the national immunisation programme:

- Inter-agency coordination committee (ICC);
- National Committee for Immunisation Practices (NCIP); and
- National Immunisation Technical Advisory Group (NITAG).

In addition to these above-mentioned bodies, five other entities with specific oversight or coordination mandates were also in place:

- National Expert Review Committee (ERC) for Acute Flaccid Paralysis cases;
- National Task Force (NTF) for laboratory containment of wild poliovirus;
- National Certification Committee for Polio Eradication (NCCPE);
- National Vaccine Committee for Measles and Rubella (NVC-MR); and
- National Expert Review Committee (ERC) for assessing serious adverse events following immunisation (AEFI).

To ensure effective coordination across the national immunisation programme, the audit team focused on assessing the roles and coordination among oversight bodies, specifically the ICC, NCIP, and NITAG. An assessment was considered pertinent given possible risks associated with multiple committees including: duplication, inefficiencies, dilution of accountability, conflicting decisions, poor communication, fragmentation, inefficient allocation of resources, and reduced stakeholder confidence.

Condition

- **Undefined coordination mechanisms:** The ICC, NCIP, and NITAG terms of reference did not adequately describe their collaborative and coordination responsibilities with each other, as key governance bodies working within the immunisation landscape. The absence of articulation for how to coordinate governance also related to the other bodies operating within this same landscape.
- **Mandates and responsibilities:**
  - Responsibilities for developing policy and how to manage policy-related issues in common between the ICC and the NCIP were unclear. For example, the 2014 IPV introduction plan proposed that the national immunisation policy should be updated to include IPV, but without explicitly specifying which governance body was responsible. Instead, the plan diluted attribution, by referring both to the ICC and the NCIP as committees related to the EPI programme, as well as the other five committees that focus on specific areas of the programme.
  - Historically NCIP and NITAG were referred to interchangeably, causing confusion with regards to their establishment, mandate and coordination roles. The grant application for Rota round 3 submitted in September 2016 mentioned the existence of a functional NITAG. However, the 2020 WHO commissioned Evaluation of NITAG in SEAR partially contradicted this, by stating that the NITAG was only constituted thereafter in June 2019. Also, according to some stakeholders, the NCIP was in effect superseded by the NITAG in 2019. However, the NITAG's TORs revised in February 2022 stated that the "NITAG will submit reports to the NCIP every six months …." This obfuscation raises doubt about the respective NCIP and NITAG's respective roles in coordinating and reporting between both of them. Similarly, it remained unclear whether the NCIP has formally evolved into the NITAG, or if both entities continued to coexist with distinct roles.
  - The audit team also noted that the TORs of the ICC and NITAG were silent on their responsibilities in relation to engaging NGOs on the EPI programme, even though NGOs are considered important partners on immunisation delivery, which are currently managed within the city

Recommendation 3

The MOHFW should:

- **Undertake a comprehensive review across the various oversight bodies' terms of reference** to clarify their respective coordination and reporting responsibilities and ensure that effective collaboration is aligned with other bodies' roles. Specifically, each governance body's TORs should define their coordination role vis-a-vis other governance elements also operating within the national immunisation landscape.
- **Develop a process for regular review and dissolution of committees that become inactive** or redundant, in order formally rescind them. In particular, it is recommended that the current status of National Committee for Immunisation Practices (NCIP) should be clarified in relation to National Immunisation Technical Advisory Groups (NITAG).

<table>
<tr><td colspan="2">corporations' and municipalities' remit. Similarly, to date the ICC had no Local Government Division (LGD) representation on the ICC, even though this is the formal entity to which the city corporations and municipalities are accountable.

• Inactive committees: According to the EPI and alliance partners, some committees were inactive and had not been formally dissolved, despite their absence of activity. This creates a situation where these dormant committees existed in name only, without any apparent coordination or engagement with other committees. The audit team observed from its discussions that in the existing national framework, there is no formal procedure for disbanding committees that have become inactive or irrelevant.</td><td></td></tr>
<tr><td colspan="2">Root Cause
• Fragmented efforts among the immunisation programme stakeholders could lead to inefficiencies, duplication of activities, poorly organised implementation and sub-optimal resource utilisation.
• Absence of a comprehensive, overarching framework of governance for the national immunisation programme has resulted in: confusion , inefficient decision-making, and a lack coordination amongst the governance bodies.
• Standard procedures for the creating or dissolution of committees is poorly documented, with a general lack of or compliance with due process.</td><td>Management comments
See detailed management responses - Annex 16</td></tr>
<tr><td>Risk / Impact / Implications
Sub-optimal governance mechanisms can cause coordination challenges, inefficient decision-making, or inadequate accountability, reducing the likelihood that the immunisation programme in Bangladesh will succeed in its objectives.</td><td>Responsibility
EPI, DGHS and MOH&FW</td><td>Deadline / Timetable
See Annex 16</td></tr>
</table>

4.1.3 Funds managed by the MOHFW were not subject to national assurance mechanisms

Context and Criteria

Gavi's funds were disbursed to the MOHFW indirectly via the alliance partners (e.g., UNICEF and WHO) and the multi donor trust fund (MDTF) for health, managed by the World Bank. Regardless of the channel used, Gavi's funds are expected to be subject to the MOHFW's internal and external audit processes.

Condition

The audit team observed that the Gavi funds received by the MOHFW, irrespective of the funding channel, were missing the following assurance mechanisms:

Internal audit arrangements – the Gavi funds channelled through UNICEF and WHO were not subject to internal audit

Between 2016 and 2022, the MOHFW received considerable Gavi funding: BDT 1.82 billion (USD 17.3 million) through WHO and BDT 1.37 billion (USD 13.05 million) through UNICEF. Despite this, the MOHFW's Financial Management and Audit Unit (FMAU), tasked with internal audits of the Health Service Division's programmes, did not conduct any internal audits of the EPI programme.

By discussion with UNICEF, WHO and the World Bank, the audit team noted that the partners perceived that the current FMAU's capacity was insufficient, and that further improvements were necessary for it to be able to oversee fund use effectively. The World Bank indicated that there are ongoing efforts to enhance the MOHFW's public financial management, including strengthening its internal audit function.

External audit arrangements - Gavi funds channelled through UNICEF and WHO were excluded from the supreme audit institution's audit scope

Gavi funds for channelled to the EPI, classified as Direct Project Aid, fall under the mandate of Foreign Aided Project Audit Directorate (FAPAD), one of the 17 audit directorates in Bangladesh's Office of the Comptroller and Auditor General (OCAG). However, FAPAD didn't audit these funds. The audit team learned from discussions with the Auditor General that for FAPAD to audit such funds, both the ministry and the donor must formally request for such arrangement. However such a process was not followed for these Gavi funds. Additionally, there was a misconception within one of the alliance partners that OCAG audited the funds that they subcontracted to the EPI under the Health, Population and Nutrition Sector Programme (HPNSP) framework. This was later clarified by the audit team to not be correct.

The audit team noted that UNICEF established an understanding with the Foreign Aided Project Audit Directorate (FAPAD) of the OCAG, that it would audit the funds that UNICEF subcontracted to the MOHFW's EPI programme, consistent with good practice. However, FAPAD's audit appeared to only cover part of the scope. Thus, despite UNICEF providing BDT 758 million[5] (USD 7.21 million) to the EPI during 2021, the FAPAD audit report for 2021 only covered expenditures totalling BDT 65 million (USD 0.62 million), based on its testing of a sample of BDT 6 million (USD 0.06 million) transactions. This difference suggests that the majority of Gavi's funds were not subject to an independent audit.

Gaps in country level assurance processes of the Gavi Alliance partners

The internal audit report of UNICEF in 2022[6] highlighted the need to strengthen the monitoring of programme activities, specifically ensuring effective end-use monitoring of programme outputs. The report emphasised the importance of conducting spot checks, programme visits, and HACT (Harmonised

Recommendation 4

Strengthen the Financial Management and Audit Unit (FMAU) function by:

- Allocate adequate resources (including experienced personnel and necessary IT tools), to enhance the capacity of the FMAU's internal audit function. Also provide training and professional development opportunities to internal auditors to build their capacity further in financial management and auditing.
- Ensure that a comprehensive risk-based internal audit work plan is developed and implemented by FMAU, specifically targeting Gavi-funded programmes, including those where monies are sub-contracted by UNICEF and WHO partners, to ensure regular and systematic internal audits are done.

Recommendation 5

Ensure that Gavi's funds are included in OCAG's external audits scope/ mandate:

Actively engage with the Office of the Comptroller and Auditor General (OCAG) and its relevant audit directorates to ensure the inclusion of Gavi funds allocated to the EPI within OCAG's annual audit scope.

[5] The mount includes both Gavi and non-Gavi funds.

[6] https://www.unicef.org/auditandinvestigation/documents/2022-oiai-audit-report-bangladesh-country-office

<table>
<tr><td>Approach to Cash Transfers) audits. Insufficient checks and audits were observed, and follow-up actions were not implemented appropriately, indicating a gap in monitoring activities and ensuring the proper utilisation of donor funds.
Similarly, the internal audit report of WHO in 2020[7] concluded that the effectiveness of internal controls in administration and finance at the Bangladesh Country Office was partially satisfactory, requiring improvement in certain areas. Specifically, the report highlighted the need for improved documentation for spot checks and verification of supporting receipts and other documentation with FACE forms.

These gaps, although not directly related to Gavi support, were suggestive of deficiencies in the partners' assurance mechanisms in Bangladesh. Gavi should take this under advice, as it considers whether to intensify its expectations regarding assurance in future. The existing processes and practices may not be sufficient to date.</td><td colspan="2"></td></tr>
<tr><td>Root Cause
• Insufficient capacity and resources within the FMAU to conduct internal audits across the breadth of the Health Service Division, including the EPI. Insufficient investment by the MOHFW on its internal audit function, leading to the omission of internal audits for Gavi-funded programmes.
• Lack of agreed institutional arrangements between the MOHFW and the OCAG led to the omission of Gavi's direct project aid funding from the OCAG annual audit plan, specifically for the funds sub-contracted by UNICEF and WHO to the EPI.</td><td colspan="2">Management comments

See detailed management responses - Annex 16</td></tr>
<tr><td>Risk / Impact / Implications
Suboptimal assurance mechanisms pose risks to the proper financial management and accountability of Gavi funds, potentially leading to misallocation or misappropriation of resources and the possibility of internal control weaknesses not being remediated or remaining undetected.</td><td>Responsibility
EPI, DGHS and MOH&FW

EPI, DGHS, MOH&FW and DP</td><td>Deadline / Timetable

See Annex 16</td></tr>
</table>

[7] https://apps.who.int/gb/ebwha/pdf_files/WHA74/A74_35-en.pdf

4.2 Programme Management

4.2.1 Gaps in the development, implementation, and monitoring of annual work plans

Context and Criteria

Gavi's health systems strengthening 3 (HSS3) grant awarded to Bangladesh was administered by various organisations including the WHO, UNICEF, and the World Bank (WB) on behalf of the government. While the WHO and UNICEF components of the grant were specifically earmarked for national immunisation programme activities, the HSS3 component disbursed to the World Bank as part of a Multi Donor Trust Fund pool fund, with the objective of contributing towards strengthening national health systems.

The HSS3 funds channelled through WHO and UNICEF was intended to support the MOHFW's five-year plan for Maternal, New-born, Child & Adolescent Health (MNC&AH). As a part of MNC&AH, the EPI was responsible for the development of an annual "operational plan" (OP) to implement its part of this five-year plan. Additionally, the EPI is expected to take a lead in bringing together both government and donor funds and develop a comprehensive annual work plan and oversee its implementation.

Based on these expectations and the unique structure of the HSS3 grant, the audit team sought to assess the control and oversight processes in place within the EPI for controlling and monitoring its annual work plan. The primary criteria for evaluation included the alignment of the work plan with the national OP, the clarity of roles and responsibilities in developing and implementing the work plan, and the effectiveness of monitoring processes to ensure proper utilisation of the HSS3 grant and achievement of programme objectives.

Condition

Lack of consolidated EPI annual work plan

The audit team identified deficiencies in the management of the annual EPI activities, which were guided and directed by at least three separate work plans. Thus WHO, UNICEF, and EPI (via the OP) each maintained a separate work plan consisting of their own EPI related activities. In addition, the EPI team lacked visibility over Gavi's targeted country assistance funding (PEF TCA). All of these components should have been consolidated into a comprehensive annual work plan; however no such plan was in place.

The absence of such a comprehensive plan resulted in the fragmentation of certain working arrangements, for example:

- Both WHO and UNICEF's monitored their work plans according to their own internal processes. However, the results and findings from this monitoring were not shared with or available to the EPI.
- The existence of parallel annual plans meant that it was not feasible to undertake a holistic review over the breadth of progress of the entire EPI programme. For e.g., the national EPI team had very little understanding and information about the EPI activities related to Forcibly Displaced Myanmar Nationals (FDMN) which was directly managed between the alliance partners and the affected districts.
- As a consequence of the EPI having to justify and account the incremental funding flows and advances it received from UNICEF and WHO, progress monitoring was often done using the statement of expenditures that the EPI submitted, indirectly promoting a culture of monitoring which was more on a transactional footing.
- For certain activities, WHO and UNICEF opted to directly engage with the division or district health offices concerned, in effect an approach which bypassed the national EPI team's involvement or oversight.

The audit team recognised that the MOHFW and alliance partners attempted to establish a consolidated EPI work plan in 2021, with the aim to bring together all EPI activities, irrespective of the funding source. However, this draft was not formally approved, and it did not result in the EPI team using the output for programme implementation and grant monitoring purposes.

Recommendation 6

The MOHFW should consider strengthening the EPI's authority and influence in managing the overall programme by instituting the following systematic and recurrent processes, by:

- Developing a comprehensive annual EPI work plan consolidating both Government and direct project aid[8] budget sources. This plan should summarise all EPI activities, including those financed by Gavi's targeted country assistance funding (PEF-TCA).
- Establishing a joint process with the Gavi alliance partners to regularly review and monitor the comprehensive annual work plan, to enable the national EPI team obtain an overview of the implementation status of grants' sum total activities.

Recommendation 7

The MOHFW should adopt a standardised method to estimate population figures for immunisation purposes, in order to apply a consistent figure across the range of activities including the: MNC&AH OP, EPI microplans, and vaccine forecasting. This so as to avoid any major discrepancies when determining appropriate resource requirements such as for budgeting, procurement, and service delivery.

[8] Direct Project Aid (DPA) refers to funds provided by donors, including Gavi, directly to specific projects in Bangladesh, bypassing the country's national budget, treasury and assurance mechanisms. The DPA is typically used for development projects that aim to improve various aspects of society, such as healthcare, education, or infrastructure.

Discrepancies in the methodology and basis for estimating resource requirements across various EPI plans

The audit team observed discrepancies when determining resource requirements across various activities plans including: (i) the MNC&AH operational plan; (ii) service delivery activities (from underlying microplans); and (iii) vaccine procurement (based on national forecasts). This was primarily due to inconsistencies across the range of different target population estimates which were used.

For example, when reviewing the basis for two of sets of activities and the corresponding budget requirements the team noted:

- The budget for the five-year MNC&AH operational plan was computed using national census 2011 population projections;
- EPI microplans were based on the greater of: (a) the preceding year's BCG vaccination; and (ii) latest birth registrations adjusted for the number of surviving infants and growth rate.

Since the microplans lacked budget details, an annual budget had to be determined centrally first. The budget was thereafter allocated across the districts. As a result, the funds distributed to each district by the national EPI team did not always align with the specific needs outlined in each district's microplan. To put it in other words, there was no certainty that the funds allocated was reasonably responsive to the needs expressed by the districts in their microplans.

Historically, the MNC&AH plan has prioritised allocating GOB funds towards co-financing Gavi-supported vaccines and the procurement of non-Gavi supported vaccines. Consequently, this approach led to the exclusion of key EPI activities like supportive supervision from the MNC&AH 2017-2022 plan.

The audit team determined that in its present form, the five-year MNC&AH plan is not a suitable tool with which the EPI can maintain a proper overview of its budget consumption, while also managing and directing the implementation of its activities during each year. This highlighted the need to establish a comprehensive annual work plan within the EPI's purview.

Root Cause

- The absence of a consolidated annual work plan resulted in EPI activities not being properly coordinated.
- Significant turnover in the EPI national team reduces national ownership of the programme, and disrupted the continuity and consistency for decisions on how resources are allocated.
- The suggestion of implementing a comprehensive annual work plan was not a high priority for the alliance partners, detracting from the transparency and coordination of programme activities.
- It was not possible to obtain a broad-brush overview of the implementation status of the grants' sum total activities. Instead the government and the partners' exchanges were mostly centred around a transactional approach, focused on the exchange of information and expenditure reports for decisions on releasing subsequent funding tranches.

Management comments

See detailed management responses - Annex 16

Risk / Impact / Implications

- The absence of a comprehensive annual work plan prevented the EPI management from obtaining an overview of the implementation status of the grants' sum total activities and hampered its ability in prioritising or managing EPI activities and resources. As a consequence, the national EPI team's central position and ownership of the programme and its ability to direct the overall programme was undermined.
- The existing dispersal of EPI expenditure data across multiple platforms, including GOB, WHO, and UNICEF, complicates the determination of the actual cost of operating the programme. Potentially, this also hinders the MOHFW's transition process from Gavi support, by not transparently identifying all the operational costs of running the EPI programme.

Responsibility

EPI, DGHS, MOH&FW and DP

EPI, DGHS, MOH&FW, BBS, Ministry of Planning and DP

Deadline / Timetable

See Annex 16

• Without suitable budget monitoring procedures: (i) any significant underspend of resources may not be promptly identified in order to reprogramme the funds, representing a missed opportunity to reallocate resources efficiently; (ii) programme objectives might be delayed or potentially not achieved, as some planned activities might not be executed; and (iii) ultimately the budget consumption needs to be tracked, so that the overall cost verses impact of the programme can be evaluated. • Linkages between the overall MNC&AH plan and actual execution, as well as between the level of oversight and actual implementation of partner-led or decentralised-level EPI activities were somewhat tenuous. Weak programme management structures undermines: monitoring progress accrued, the prioritisation of activities and future planning.		

4.2.2 Gaps in health workers management strategy, planning and manpower shortages

Context and Criteria

Critical gaps in the EPI's human resources have been highlighted across several assessments and reviews, including the 2021 "Bangladesh EPI Vaccine Procurement and Supply Chain Management Review" conducted by the World Bank with Gavi support. Issues cited as significant concerns: significant numbers of vacant EPI positions at all levels; the absence of a reporting framework for NGO staff; accountability issues; and competency gaps. Other issues include limited outreach capacity; sub-par service; staff attitudes towards clients; political interference in staff transfers and postings.

Condition

The audit team observed that unless the EPI's human resources issues are resolved, they could jeopardise service delivery quality, programme performance, and the overall sustainability of the programme. The national EPI team is currently confronted by elevated staff turnover, while at the sub-national level the EPI was impaired due to chronic staff shortages, forcing the programme to rely on temporary hires. The Gavi alliance partners tried to help bridge this HR capacity gap by providing technical assistance. However, the partners' stopgap measures risked creating increased dependency by the national programme.

National EPI team – significant staff turnover undermining programme continuity

The audit team noted that rapid change occurred across in the national EPI staff. Based on discussions with the EPI, it was noted that over the past five years the function experienced a high level of turnover across key functions including: five Line Directors, six EPI Managers, and more than 20 Deputy Programme Managers. On average, staff in many of these positions remained in post for just one year. However, there was a lack of regular, structured induction or training for the EPI management. Skills development largely relied upon the necessary funding being first available, and much of the personal growth stemmed from on "on-the-job" learning. Some of this ad-hoc training was ineffective in building their capacity to lead programme operations as well as to progressively reduce their reliance upon the alliance partners. Also, worth recognising that there was also a cost for the alliance partners investing in briefing new EPI management programme team members.

In addition, it was observed that high turnover in national EPI staff, occasionally interrupted the programme's continuity of inputs and contributions to drawn-out processes such as: submission of Gavi grant applications, managing new vaccine introductions, procurement planning, participation in the full portfolio planning process, following up on plans including EVM implementation and data quality improvement. Often these processes can span more than a year, which if when it coincided with a change in several EPI key staff, could result in Gavi and/or the MOHFW needing to leverage the alliance partners' institutional memory.

Sub-national level staff shortages and reliance on temporary personnel

At the district level, staff shortages, sometimes long-lasting were observed. The shortfall in staff was in part addressed by the recruitment of temporary staff. According to a conservative estimate of the situation as of May 2023, the data source being maintained by the alliance partners, with validation by the MOHFW, approximately 30% of positions, involved in EPI activities, at the sub-national level remained vacant, with a many of these posts being filled by a temporary recruit.

For instance, in 2022, the micro planning process for the yearly targets and resources needed for regular immunisation activities was compromised because there weren't enough staff to properly carry out and oversee the process. Likewise, the staff

At the service delivery level, when operational roles such as the Health Assistant were vacant, responsibility for vaccination passed on to the Family Welfare Assistants, who were required to take on this additional task. However, there was no database or certification process to

Recommendation 8

The audit team recognises the nationwide moratorium on health worker recruitment due to a pending legal case. However, the MOHFW should immediately address the human resource challenges to ensure a sustainable immunisation program, namely:

- **Ensure national EPI team stability:** Devise strategies to retain key personnel and minimise turnover with a minimum service tenure of three years. This might may be achievable introducing incentives for longer tenures, structured skill development programs, and creating an environment that fosters professional growth.
- **Develop workforce strategy and fill vacant positions**: Considering the risk to programme quality and sustainability due to current reliance on temporary health workers, the MOHFW should reevaluate the actual staffing need vis-à-vis the current needs and devise a strategy to recruit either permanently or temporarily with a minimum tenure. Such recruitment should have clear accountability and reporting lines. This would provide a level of stability necessary to ensure continuity in service delivery and programme management.

verify the level of training or ability of these Family Welfare Assistants, creating the possibility that some individuals would provide sub-optimal immunisation services.

City corporations[9] – outsourcing of urban immunisation activities to NGOs, civil society or private sector

According to 2016 and 2019 coverage evaluation survey (CES), unvaccinated children in Bangladesh are predominantly concentrated within city corporation locations. For e.g., in 2019 city corporation achieved only 75% full vaccination coverage of children aged 12 months compared to the rural average of 89%.

This poor coverage is attributable to the city corporations' lack of investment in their healthcare infrastructure and their reliance on outsourcing immunisation services to NGOs and civil society organisations. This dependency on external organisations for key health services, including vaccinations was driven by the fact that most city corporations have only a few health staff and limited service delivery points. The 2019 CES showed that in city corporations, vaccinations often didn't follow the recommended schedule, and more children missed follow-up doses compared to other areas. NGOs providing vaccination services didn't have clear reporting framework making them accountable to the LGD.

The HSS3 grant included an activity to build the capacity of selected city corporations' health departments, in order to assist them to recruit and train of a new cadre of dedicated health staff in their catchment area, including vaccinators and supervisors. However, the MOHFW had not followed through on this activity, leaving the city corporations short of health workers. Other activities supported by HSS3 grants such as, advocacy training, microplanning and supervision/review meetings were either not implemented or lacked effectiveness due to the lack of coordination between the MOLGRD&C/LGD and the MOHFW.

However, a notable exception was Rajshahi City Corporation, which has demonstrated significantly better performance. This success is credited to its investment in establishing and financing additional health worker positions specifically for its immunisation program. Unlike other city corporations, Rajshahi actively collaborated with the national EPI team and invested in its health workforce, resulting in high performance levels as validated by CES from 2016 to 2019. These surveys consistently highlighted Rajshahi's superior performance compared to other city corporations and rural areas managed by the MOHFW.

Sub-national level – inadequate coordination and engagement of technical assistance resources

The audit team noted issues in relation to the additional support provided by technical assistance resources at the subnational level, in terms of how they were insufficiently involved or collaborated with the District Health Offices (DHOs). Although these additional individuals were performing their assigned tasks, their outputs were often not integrated due to the lack of suitable coordination. As a result, the interaction between the technical assistance providers and the DHOs was largely ad-hoc, rather than being conducted in a systematic, participatory manner involving all stakeholders.

Although the individuals providing additional support were accountable to their respective organisations, there was no process for them to be able to develop their action plans, while taking into consideration and involving the DOHs. It was suggested that standard tracking template which could be used in common to document activity progress needed to be implemented. This template would enable all additional support individuals to log issues, detail agreed actions, assign responsibilities, and regularly provide implementation status updates. Thus, implementing a suitable reporting system designed around the tracking template, could help increase the involvement of the DHO heads (i.e., Civil Surgeons), whilst providing them with a comprehensive overview of the operational challenges observed. In turn,

[9] For additional detail regarding the role of City Corporations, see audit finding 4.2.3

<table>
<tr><td colspan="2">they could respond by helping to identify or support suitable solutions within their mandate, which could be implemented to improve the overall immunisation programme.

The audit found that the national EPI team was sometimes unaware of the technical assistance provided by the alliance partners at local levels. Such activities were organised directly with the District Health Offices (DHOs), limiting the national EPI team's ability to contribute and learn from the implementation. Additionally, some issues identified at the district level required action from higher authorities like the MOHFW or the ICC, but these were not adequately escalated due to poor coordination. This lack of systematic involvement of the national EPI team in local issues not only prevented valuable feedback but also potentially undermined their ability to lead the programme.

The alliance partners recognised the importance for them to put additional structure around their engagement with the DHOs, as well as to increase their support on the follow-up of agreed actions. However, improving these processes remains a significant challenge.</td><td></td></tr>
<tr><td>Root Cause

Over-relying on external donors for financial and operational support could result in shifting the government's priorities away from the immunisation agenda. Also, if the donors' additional contributions are significant enough to raise the immunisation programme's achievements to a creditable level of performance, this could result in falsely promoting the impression that the programme is sufficiently mature, and consequentially inadvertently reduce the prioritisation for continuing necessary investment.</td><td colspan="2">Management comments

See detailed management responses - Annex 16</td></tr>
<tr><td>Risk / Impact / Implications

The national EPI team's considerable reliance on temporary health workers as a stopgap, without having an overview of their training and capabilities, could impact on the programme's ability to provide immunisation services of the necessary quality, and ultimately distance the EPI and result in it relinquishing some of its core responsibilities.

The current setup for any additional technical assistance support at the sub-national level, is fragmented and its effectiveness and impact is undermined, because of insufficient collaboration with the District Health Offices. This can result in missing opportunities to engage the national EPI team, in order to escalate or promptly address issues in a structured and coordinated manner.</td><td>Responsibility
EPI, DGHS, MOH&FW, MOLGRD&C</td><td>Deadline / Timetable

See Annex 16</td></tr>
</table>

4.2.3 The national EPI lacked authority to ensure minimum service standards across urban areas

Context and Criteria

In Bangladesh, rural healthcare was the responsibility of the MOHFW, whereas urban healthcare within the city corporations and municipalities, fell under the jurisdiction of the Ministry of Local Government, Rural Development, and Cooperatives (MOLGRD&C). Additionally, in many large city corporations, MOLGRD&C had engaged NGOs to deliver immunisation services. Given the rapid urbanisation and the substantial urban population, the Inter-Ministerial Coordination Committee devised the 2019 National Urban Immunisation Strategy. This strategy document was also relevant in advancing the objectives of Gavi's Zero-Dose (ZD) strategy.

It is estimated that approximately 20-25% of the nation's population resides within city corporations and municipalities. It is therefore important that urban areas' vaccination needs receive the necessary degree of focus, in accordance with the national immunisation programme. This is due to: (i) a rapid, sustained growth of the urban population has occurred during the past ten years – such growth is also forecast to continue, particularly in slum areas; (ii) the proximity of individuals one to another within densely populated areas, facilitates the transmission of vaccine-preventable diseases, in particular measles due to its high transmissibility. In general, it is understood that the immunisation coverage and health service delivery statistics for urban areas are weaker, when compared to the rest of the country.

Further, the 2021 "EPI Assessment for Financial Sustainability in Bangladesh" report, highlighted several gaps in the immunisation programs managed within city corporations. These gaps encompassed the collection of user fees from parents, duplication of immunisation activities by different providers, insufficient satellite/outreach centres to cover entire target areas within a ward, a scarcity of immunisation sessions in hard-to-reach areas, lower awareness among parents about immunisation sessions compared to rural areas, and inadequate efforts to follow up and reach missing children.

Recognising the significance of city corporations' immunisation status to public health, the audit team undertook a high-level assessment of the cross-functionality and degree of collaboration between the Ministry of Local Government, Rural Development, and Cooperatives (MOLGRD&C) which is responsible for urban immunisation activities, and the rest of the country under the national EPI team and MOHFW's purview.

Condition

The unclear division of responsibilities between MOLGRD&C and MOHFW with parallel reporting structures undermined the accountability and efficiency of immunisation efforts in urban areas. Some key gaps observed by the audit team are as follows:

- **Absence of coordination mechanism** – There was no regular meetings between the EPI team and the representatives from city corporations and municipalities regarding immunisation efforts. In addition, the MOLGRD&C was not represented in ICC. Although some of the additional personnel support provided by the alliance partners interacted directly with the NGOs operating in city corporations on capacity building and monitoring activities, this was often done without directly involving the higher-level city corporation authorities and the national EPI team.
- **Lack of oversight** – NGOs engaged by MOLGRD&C to provide immunisation services in major city corporations lacked a proper governance framework. This resulted in uncertainty about their accountability to city corporation officials or the MOHFW. This lack of clarity undermined the overall oversight and the national EPI team's efforts to maintain immunisation standards through supervision, monitoring, and feedback mechanisms.
- **Implementation of strategies and critical EPI plans** – The implementation of the 2019 Urban Immunisation Strategy, aimed to tackle low immunisation coverage in urban areas, was delayed due to the absence of an agreed-upon framework detailing coordination, implementation, reporting, and oversight requirements between MOHFW and MOLGRD&C. Additionally, there was uncertainty regarding the applicability and operationalisation of the national EPI plans and commitments, such as the annual EPI plan, Effective Vaccine Management implementation plan, and data quality improvement plan, across the urban settings.
- **HR training for service delivery** – the national EPI team has no mandate to examine city corporations' personnel records including the training status of their vaccinators. There were no compensating measures set up by city corporations to plug this gap.

Recommendation 9

The MOHFW is recommended to establish a comprehensive memorandum of understanding with the Ministry of Local Government, Rural Development and Cooperatives (MOLGRD&C) to strengthen urban-level immunisation services. As a minimum, the memorandum should consider the following areas:

- **Roles and responsibilities** between MOHFW and MOLGRD&C in planning, implementation, supervision, and monitoring of immunisation services in urban areas.
- **Coordination mechanism** such as ICC meetings or task forces, to facilitate communication and collaboration between the two ministries for effective programme management.
- **Oversight and accountability** framework applicable to the NGOs ensuring that both MOHFW and MOLGRD&C are informed about service delivery, coverage, and challenges.
- **Programme supervision** mechanisms for supervision, monitoring, and quality assurance of immunisation services within the urban areas, outlining the roles of both ministries.
- **Implementation framework for strategies and plans,** such as the 2019 Urban Immunisation Strategy and the EVM implementation plan clarifying roles and responsibilities between the ministries.

In the discussions with the audit team, the representative from MOLGRD&C explained that their limited engagement with subcontracted NGOs was primarily due to the insufficient staff available within the city corporations. They assured the audit team that they would explore the option of hiring additional manpower if necessary. Nevertheless, without a ministerial-level strategic framework agreement and a formal exchange of commitments, the effectiveness of any intervention remains uncertain.	• **Human resources training** including training plans and appointment of vaccinators and health workers. • **Data sharing and integration framework** for data sharing and reporting between the ministries and ensuring that accurate and comprehensive immunisation data is available for decision-making. • **Resource allocation and funding** covering allocation of resources for immunisation services, including any financial support from central or local government sources. • **User fee collection policy** to address the collection and management of user fees for immunisation services, ensuring transparency and equity.	
Root Cause The lack of an appropriate strategic framework that clarifies governance arrangements and institutional linkages between the MOHFW and the MOLGRD&C constrains the deployment and coordination of immunisation activities in the urban settings.	Management comments See detailed management responses - Annex 16	
Risk / Impact / Implications The lack of heterogeneous standards and approaches, governing the provision and quality of vaccination health services creates uncertainty for clients and providers. In the absence of a suitable framework for how to operationalise the 2019 urban immunisation strategy, investments in strengthening national capacity may be diluted and not have the desired effect.	Responsibility EPI, DGHS, MOH&FW, MOLGRD&C	Deadline / Timetable See Annex 16

4.2.4 Inadequate supportive supervision and absence of feedback on programme performance

Context and Criteria

In the Bangladesh's context, supportive supervision is done through first line supervisors (e.g., health inspectors, sanitary inspectors) and second line supervisors (e.g., Civil Surgeons, Upazila Health and Family Planning Officer, medical officers, EPI superintendents and officials from the national EPI team. WHO defines supportive supervision as '…a process of guiding, monitoring, and coaching workers to promote compliance with standards of practice, ensure the delivery of quality health services, and support the professional development of those supervised. Thus, supportive supervision is integral to strengthening core EPI areas such as service delivery, vaccine handling, cold chain management, data collection, reporting, microplanning, AEFI reporting, and financial management oversight, etc.

The third health systems strengthening (HSS3) grant provided by Gavi included a budget line of USD 508,614 for supportive supervision.

Condition

The audit team observed significant deficiencies in the MOHFW's supervision process in relation to the national immunisation programme. As a consequence, the programme relied on the technical assistance provided by the alliance partners to conduct necessary supervision work. Nevertheless, despite the partners efforts to fill this supervision gap, this was not entirely successful due to the lack of coordination among them. In addition, there was no process for them to share feedback on supervision outcomes with the national EPI team, limiting the latter's ability to react and respond to any needs or findings arising.

The HSS3 grant allocated funds for the EPI HQ personnel to undertake supervisions at the district and sub-district (upazila) level, However, because these supervisions did not take place this resulted in national EPI team missing out on a primary information source to able it to redesign and improve activities and interventions. While both the 2019 and 2021 EPI annual work plans include several supervision-related activities — many such these tasks were not accomplished. These included: developing/implementing a supervision app, overseeing microplanning processes, ensuring pre-campaign readiness, and supervising vaccine and cold chain management (2019), and initiating additional supervisions at the upazila municipality levels (2021), etc.

For the national EPI team, there was no dedicated budget line for the preparation and execution of annual supervision plan. The national EPI team had not undertaken any supervision since 2021. In past years, HSS funds for supervision were managed by WHO. During the audit period from 2016 to 2022, despite WHO disbursing approximately USD 104,000 (BDT11 million) to District Health Offices (DHO) to undertake supervisions at upazilas, these activities were not duly prioritised by the DHOs. The audit team observed that often, supervision was considered as a secondary activity, by joining it on to other activities such as workshops, preparation of meetings, and EVM assessment. The team also noted that there was a lack of evidence that supportive supervisions were conducted, or that suitable mechanisms were in place to track recommendations arising from the supervisions undertaken by the first and second line. EPI personnel at upazilas visited by the audit team reported receiving inadequate funding allowances to conduct their supervision and monitoring, including their transport costs. Similarly, first line supervisory roles, such as the Health Inspectors' and Assistant Health Inspectors' positions, were often vacant.

The issue of insufficient supervision is not new. It has been a recurring theme identified during past reviews and assessments. In 2021, both the "Routine EPI Surveillance Review" and the "EPI Efficiency Assessment Report" highlighted the issue. Despite acknowledging the problem, this issue still needs to be addressed and resolved.

Recommendation 10

The MOHFW should implement a comprehensive supervision mechanism that ensures that supportive supervisions are sustained, and that the role of the alliance partners in this area is progressively reduced. This requires the MOHFW undertaking the following actions:

- **Establish a structured thematic or technical working group** dedicated to designing and developing a framework directing how supervision activities are to be implemented. This framework should include clear objectives, roles, and responsibilities for those involved, both in the EPI and externally, including the partners.
- Each year to **develop a costed supervision plan** which complies with WHO guidelines. The supervision activity should be included in as a mandatory item in the MOHFW's operational plan and could be a prerequisite before the GOB allocates funding.
- **Secure the necessary resources from the GOB's domestic budget** to finance the implementation of annual supervision plans.
- Develop mechanisms to **record and document the outcomes from supervisions** and track the follow-up of any recommendations arising.
- **Conduct periodic evaluations of the effectiveness of the supervision activities** including the involvement of the alliance partners. Ideally, these evaluations should be carried out by a team of individuals who are suitably independent from the process of conducting supervisions.

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Root Cause

Root causes for the inadequate deployment of supportive supervision can be connected to:

- **Insufficient resources**: There has been an underinvestment in monitoring and supervision, with EPI primarily relying on external funding sources. GOB funds specifically allocated to supervision in the MNC&AH operational plan are deemed insufficient, and there is currently no comprehensive supervision mechanism or annual plan in place. The issue of conducting supervisions is also exacerbated due to delays until GOB funds were released to districts and sub-districts, in effect restricting the execution of supervision and monitoring activities.
- **Lack of structured approach**: There is no structured thematic or working group to advise on the importance and need to sustain regular supervisions.
- **Inadequate capacity**: The high level of turnover in EPI programme managers means that they are often inadequately inducted or briefed before taking on programmatic responsibilities, including addressing supervision shortcomings. Additionally, the programme is experiencing significant shortages in its first- and second-line field staff responsible for conducting supervisions.
- **Funding prioritisation and alignment**: To date, the immunisation programme has received much of its support from development partners, with the GOB placing less priority on funding supervision and communication activities, as the former financing these. Instead, the GOB has focused on financing logistics including: vaccine procurement, distribution, service delivery, and cold chain. Equally the need to respond to the Covid-19 pandemic, has also disrupted national budget priorities.

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Management comments

See detailed management responses - Annex 16

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Risk / Impact / Implications

The lack of an effective supportive supervision mechanism, compromises the EPI's ability to drive continuous improvement by providing its personnel with the necessary motivation, modelling, constructive feedback, and the gradual transfer of skills and attitudes, necessary to successful programme delivery.

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Responsibility

EPI, DGHS, MOH&FW, Technical committee members and DP

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Deadline / Timetable

See Annex 16

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4.2.5 Absence of key groups such as technical working group for vaccine logistics

Context and Criteria

UNICEF, WHO and other immunisation partners are expected to provide collaborative support to EPI through technical working groups (TWGs). These partners also benefit from targeted country assistance (PEF-TCA) grants provided by Gavi. Such TWGs are expected to provide support in various areas such as: supply chain, vaccine management, data management, the use of technology, and advocacy.

In 2017, Gavi's programme capacity assessment (PCA) recommended that the MOHFW create a NLWG, which reports to the ICC. Thereafter, the 2019 HSS3 grant from Gavi allocated a total of USD 84,000 specifically for the establishment of the National Logistics Working Group (NLWG), under UNICEF's guidance.

Condition

The audit team noted the absence of functional Technical Working Groups (TWG)s, including a group responsible for vaccine logistics and supply chain management issues. Despite the importance of TWGs helping coordinate technical decisions, review performance, and as a function able to escalate issues, the national EPI team was unable to expedite its establishment. .

In April 2022, PATH issued a report assessing Covid-19 vaccine delivery gaps and health disruptions, which emphasised the need to set-up an NLWG to oversee vaccine receipts, deployment, oversight, and monitoring plans. This underscores the importance of putting in place a suitable, effective TWG overseeing vaccine logistics, particular given the context of responding to pandemics, such as Covid-19.

In October 2022, the MOHFW told the audit team that UNICEF was helping establish an NLWG, comprising of a nine-member committee headed by an additional secretary of public health. However, in March 2023 when the audit team returned to conduct its fieldwork, it noted that this arrangement was still not in place. The implementation of the NLWG had been deprioritised and deferred, with the group's revised timeline and TORs not being finalised.

Without a functioning NLWG, the national EPI team increasingly depended upon the alliance partners' capabilities and guidance on vaccine logistic issues, in particular UNICEF.

In addition, the audit team noted the absence of an appropriate WHO data focal point as part of the proposed NLWG membership. Given the focal role that WHO plays in supporting DHIS2, this seems to be a material omission given the value of including a representative who can contributes to data usage and analytics in informing deliberations on vaccination supplies.

A functional NLWG would help to address many of the gaps highlighted in **Section 4.3 Vaccines and supply chain management.**

Recommendation 11

The MOHFW should expedite the **establishment of a functional National Logistics Working Group (NLWG)** overseeing its vaccine logistics and supply chain management.

The MOHFW, in collaboration with partners, should ensure that the NLWG is equipped with clear TORs outlining roles, responsibilities, and accountabilities of its members.

The inclusion of a suitable data focal point in the NLWG is recommended so as to contribute the use of data and analytics in enhancing deliberations on vaccination supplies, decision-making and logistics optimisation.

Root Cause

- The MOHFW and its management team was not instrumental in stepping up and spurring this initiative forwards.
- Disruption due to the Covid-19 pandemic diverted attention, resources, and efforts away from implementing the NLWG.
- High levels of staff turnover in the national EPI team, including senior level positions responsible for directing such initiatives, interrupted the continuity, understanding, and efforts in setting up necessary working groups.

Management comments

See detailed management responses - Annex 16

Risk / Impact / Implications	Responsibility	Deadline / Timetable
• Delays and limited accountability over logistics decision-making. • The lack of an NLWG may compromise the EPI's ability to respond to volatile situations, such as steering the efficient and effective distribution of vaccines in pandemic situations. • Where a technical working group vacuum exists, partner-led external support may fill the space. • It may be challenging to sustain and anchor short-term external support assistance, by incorporate it longer term into the nationally owned vaccine logistics and supply management processes.	EPI, DGHS, MOH&FW, and DP	See Annex 16

4.2.6 Several factors could undermine the transition process from Gavi support

Context and Criteria

Gavi support is intended to be time-limited and catalytic. Countries co-finance a growing share of the cost of their programmes as guided by their Gross National Income (GNI) per capita. This culminates in an eligibility threshold when they are expected to be fully self-financing. Having entered its accelerated transition phase in January 2022, Bangladesh's EPI is scheduled to transition out of Gavi support after an eight-year period, i.e., by January 2030. During this transition phase, Bangladesh is required to gradually increase its co-financing share of vaccine procurement spread across the period. This transformative process signals a shift away from a Gavi-supported vaccine financing model towards a wholly comprehensive national procurement mechanism.

This transition phase does not only affect vaccine procurement but also relates to all other immunisation operational costs, some of which were donor-supported, and which will become the GOB's responsibility. Important to recall that per Gavi's policy, Bangladesh's will no longer be eligible for further HSS grants once its DTP-3 coverage exceeds 90%. The timing of transition can be compounded by adjustments on other donor-funded projects such as WHO's Global Polio Eradication Initiative, amplifying funding risks associated with the sustainability of public health initiatives, including immunisation.

Countries' transition out of Gavi support and subsequently not being able to sustain their immunisation gains or past accrued investments, is acknowledged as an important Gavi Alliance risk.

Condition

The audit team noted a range of preparations that are underway in support of the country's transition, including studies, assessments, and recommendations financed through Gavi's targeted country assistance. Since 2022, Gavi has also allocated resources to support advocacy-related activities.

With deference to these expert-endorsed, evidence-based initiatives, the audit team undertook its own risk-based assessment of the EPI's transition preparedness, by leveraging the audit findings in areas such as: governance and oversight, programme management, vaccine and supply chain management, data management, and budgeting and finance management. As a result, the audit team identified the following six areas which it deems as contributing towards a successful transition process, namely:

Transition coordination and management

The absence of a steering committee with a mandate to ensure effective cross-ministerial coordination and transition management has created an institutional gap in overseeing and directing the transition process. This gap poses a risk to establishing alignment among key ministries and stakeholders on critical topics, such as increasing resource allocation to achieve self-financing status. Transition places additional pressure on public funds and underscores the need for strong public health leadership and programmatic management. Establishing a formal committee is a valuable step to address these challenges effectively.

The existing governance bodies which direct and provide oversight over the immunisation programme are not yet equipped to take on all of their additional responsibilities, in order to successfully direct the programme towards transition. This is primarily due to structural weaknesses that are hindering their ability to operate effectively and steer through the transition process, see audit finding 4.1.1. for more details

Financial sustainability and dependency

The EPI currently lacks a clear and complete roadmap for transition, that is suitable to systematically navigate through its transition process, and which articulates how to operationalise the country's strategy for progressively transitioning away from Gavi support. In addition, a comprehensive plan in support, would help communicate additional requirements for mobilising resources, and how these will be allocated.

Recommendation 12

To address the gaps and audit-related areas of concern potentially affecting the transition process financing, the MOHFW should **formulate a comprehensive National Immunisation Strategy (NIS)** which spans the rest of the period until transition (approximately 8 years). As a minimum, this NIS should include:

- Establishment of a dedicated transition committee with suitable representation, to provide cross-ministerial coordination and effective management over the transition of donor funded health programmes.
- Development of a detailed roadmap setting out key transition milestones from Gavi support, including comprehensive financial planning covering vaccine procurement and related operational costs.
- Integration of the urban immunisation strategy as part of the NIS.
- Consideration for any knock-on effect between the polio and the routine immunisation programme, such as the financing of surveillance and immunisation officer (SIMO) positions should be anticipated and planned for, plus any risks mitigated.
- A suitable action plan (see Annex 16) to address areas of concern identified by the audit team in relation to the programme. If not addressed, these gaps have the potential of possibly disrupting the transition process.

Gavi estimates that by the end of 2029, overall vaccine procurement costs that the country will be fully financing will amount to about USD 77 million per year for its new introduced routine vaccines (e.g., Penta, PCV, IPV, HPV, TCV, JE and Rota). This represents a steep increase from the current co-financing levels for 2023 which was USD 11.5 million. This remains a concern, since although the GOB's public funding to the overall health budget has increased, with respect to the EPI programme it is still remains significantly dependent upon external funding sources, including Gavi.

In addition, currently the immunisation programme lacks the experience of directly managing most of its budget, as the majority of its funding is not yet channelled through national systems. Therefore, the need for change in the budgeting and financial management area represents another challenge with respect to adjusting its execution and financing mechanisms for immunisation. Currently, there is still a degree of reliance upon partner-driven budgets and their setting the implementation schedule, somewhat diluting national ownership over resource allocation. Moreover, the MOHFW still needs to develop an accurate assessment of the full realised cost of running the national programme.

Human resources and leadership challenges

The transition is expected to place additional strain on already existing shortage of staff due to numerous vacancies at both the national and subnational levels. At the central level, significant staff turnover puts at risk the institutional memory, continuity, and on-the-job experience of the national EPI team. Consequently, the program's reliance on temporary HR support from alliance partners is expected to grow even further. For additional details, see audit finding 4.2.2.

Supply chain and inventory management

Best practices in immunisation supply chain encompass ensuring product availability, maintaining potency, and effectively managing logistical risks, which includes reducing closed-vial wastage. However, the audit team observed that the current logistics setup lacks a suitable warehouse inventory management system, leading to recurrent stockouts and occasional shortages at certain sub-national level facilities. This deficiency was particularly evident during the Covid-19 pandemic in 2021-2022 when the national EPI store struggled to maintain accurate stock records and had to heavily depend on the partner support.

Several of the existing supply chain inefficiencies are likely to endure, at least until the country duly implements an electronic Logistics Management Information System (eLMIS) in order to provide the national EPI team with end-to-end visibility, accountability and management over its stocks. For additional details, see audit finding in section 4.3**.**

EPI's autonomy and authority

The EPI team faced challenges in independently preparing and finalising comprehensive annual work plans and budgets without requiring external support. For details see audit finding **4.2.1**.

Additionally, it is a concern that the implementation of the urban immunisation strategy currently relies upon significant inputs from NGOs by outsourcing service delivery activities to them, across many of the city corporations and municipalities. The role of third-party organisations operating in the public health space within the city corporations and municipalities introduces an additional tier of complexity, potentially blurring accountabilities and the proper coordination of vaccine supplies, data reporting, and programme implementation and performance. The operationalisation of a third-party outsourcing model and the coordination between two different ministries requires a suitable governance and programme management frameworks. For additional details see audit finding 4.2.3**.**

<table>
<tr><td colspan="2">Data management and reporting

Transition maturity also requires generating and using immunisation data to inform evidence-based decisions, in order to optimise and direct vaccination programmes. However, the audit team identified several issues with regards to the accuracy and completeness of immunisation data, indicating that there still remains significant work to improve overall data quality and analytics.

Two significant data deficiencies were observed: currently the target population of individuals to be vaccinated is not reliably calculated. In addition, the immunisation health data captured on the DHIS2 platform, is not adequately controlled and reviewed, compromising quality. Both these shortcomings hinder the development of accurate evidence-based transition plans. For additional details, see audit finding in section 4.4.</td><td></td></tr>
<tr><td>Root Cause

See root causes included in the audit findings related to each of the audit areas.</td><td colspan="2">Management comments
See detailed management responses - Annex 16</td></tr>
<tr><td>Risk / Impact / Implications

If the country fails to fulfil its annual co-financing requirements, this may interrupt the flow of Gavi’s support, and until resolved any additional vaccine introduction support will not be processed. It is anticipated that the GOB faces a significant challenge in meeting its rapidly increasing co-financing contributions over the next five-year period, 2023 - 2027.</td><td>Responsibility
EPI, DGHS, MOH&FW, and DP</td><td>Deadline / Timetable

See Annex 16</td></tr>
</table>

4.3 Vaccine and supply chain management

4.3.1 Vaccine forecasts need to be improved

Context and Criteria

Annual vaccine forecasts contribute towards the effective planning of managing the immunisation programme. By accurately predicting the expected demand for vaccines, the EPI can ensure that a suitable supply of vaccines is procured, maintained, and distributed to meet the target population's needs. Failure to predict needs correctly can result in understocking – which leads to vaccine shortages and possible disease outbreaks due to under-immunisation; or overstocking – which can result in elevating losses of unused, surplus doses and the wastage of resources. Therefore, accurate forecasts are necessary to match supply with demand, in order to optimise resource utilisation and maintain a regular flow of vaccines.

Condition

- **Ambiguous roles and responsibilities in the process**: The EPI team explained that the annual vaccine forecasting process is a collaborative task which involves both the EPI and the alliance partners. Nonetheless, the audit team observed that the process was marred by a lack of clarity regarding distinct roles, responsibilities, and accountabilities. Alliance Partners claimed that they provided a technical support role with final decision authority resting with the MOHFW. However, in practice, EPI's heavy reliance on partners resulted in limited autonomy for their decision-making and input.
- **Discrepancies between forecast and actual receipts of routine vaccines**: A misalignment emerged between routine vaccine receipts and annual supply plans against UNICEF's forecasts for the years 2019 to 2022. Notably, Penta and PCV volumes exceeded the forecasted quantities by 16% and 6% respectively. An even more unusual situation arose with IPV, where a notably high variance was observed. This discrepancy in IPV is likely attributable to an erroneous use of vials instead of doses in the forecasting process, further highlighting the need for accuracy and precision, see Figure 4 below.

These issues collectively underline the importance of establishing clear roles and responsibilities within the forecasting process, fostering effective collaboration between parties, and ensuring accurate methodology to achieve reliable forecasts and seamless vaccine management.

Figure 4: comparison of cumulative forecast and receipts in doses from 2019 to 2022.

Year	Vaccine Type	Annual forecast	Vaccines deliveries	Forecast variance
2019	PENTA	13,922,700	14,058,236	101%
	PCV-10	11,639,200	12,890,800	111%
	IPV (1 dose vial)	1,810,100	2,757,250	152%
2020	PENTA	9,681,557	10,916,315	113%
	PCV-10	11,843,276	8,349,200	70%
	IPV (5 doses vial)	9,057,850	1,638,300	18%
2021	PENTA	11,494,950	10,254,830	89%
	PCV-10	10,373,270	10,810,400	104%
	IPV (5 doses vial)	1,369,600	1,562,400	114%
2022	PENTA	7,795,300	13,740,800	176%
	PCV-10	7,808,400	11,666,400	149%
	IPV (5 doses vial)	228,200	1,194,300	523%

Recommendation 13

The MOHFW should:

Define roles, responsibilities, and accountabilities for all stakeholders participating in the vaccine forecasting process. Implement a consistent review mechanism for vaccine forecasting, incorporating regular meetings with relevant parties, including the EPI and Alliance Partners.

Recommendation 14

The MOHFW should:

Standardise and ensure consistency in the target population denominators used for vaccine forecasting, reporting immunisation coverage and calculating vaccine requirements (micro planning).

<table>
<tr><td>Root Cause
• Vaccine Forecast accuracy compromised by the use of inconsistent and inaccurate target population denominators. The target population denominator used for forecasting (UN estimates) is smaller than the EPI's target population calculation against which EPI reports the immunisation coverage.
• Lack of periodic review – vaccine forecasting was once a year event, it lacked interim reviews to inform necessary adjustments and improve accuracy for future forecasts.</td><td colspan="2">Management comments
See detailed management responses - Annex 16</td></tr>
<tr><td>Risk / Impact / Implications
Inability to maintain necessary stock buffer levels and therefore leading to the risk of vaccine stockouts and ultimately misses vaccinations opportunities.</td><td>Responsibility
EPI, DGHS, MOH&FW, and DP</td><td>Deadline / Timetable
See Annex 16</td></tr>
</table>

4.3.2 Lack of stock management system and weak inventory controls

Context and Criteria

Stock management systems help to track and manage stock levels, expiration dates, and stock consumption and usage. When effective, such systems can help minimise stockouts and wastage by ensuring timely availability of vaccines in the right quantities. Furthermore, electronic stock management systems reduce the risk of manual error and discrepancies in data, while enhancing effectiveness by tracking stock movements in near real time. Moreover, stock management systems can be leveraged using data analytics, to improve decisions on procurement, distribution, and resource allocation, and thereby improve overall logistics efficiency. Where there are high stock volumes, multiple products and significant turnover, an automated stock management system offers significant advantages in meeting logistic demands and requirements, when compared to using a manual system.

A 2021 EVM recommendation suggested to introduce a dedicated electronic logistic management information system (eLMIS) for real time tracking of vaccine and logistics.

The Covid-19 pandemic stressed and disrupted vaccine supply management. Already, the EPI team faced significant staff shortages and the use of temporary hired personnel. In addition to this, the pandemic increased the workload due to rapid ramp up and distribution of Covid-19 doses, impacting on the quality and consistency of logistical processes operating across the supply chain.

Condition

National EPI Vaccine Store

The national EPI vaccine store did not have an automated stock management system, the incoming and outgoing stock movements were entered into manual stock registers. The use of logistics module in DHIS2 was limited to the subnational level and was disintegrated from the national store records. The subnational level also maintained manual records in parallel with the DHIS2.

In 2022, the EPI with technical assistance from an alliance partner, initiated the use of DHIS2 module to track stock management at the central vaccine store. This initiative, which is yet to be fully optimise, is unlikely to achieve automation of stock records and effective logistics management. It also does not negate the need for an eLMIS comprised of a central warehouse management system because of the following issues:

- The national vaccine store's DHIS2 stock data still relies on manual input from physical Vaccine Arrival Reports (VAR) rather than a streamlined electronic VAR system directly integrated with DHIS2, emphasising that the process isn't fully automated.
- The DHIS2 stock module records vaccines by vial rather than by dose, which is a limiting factor with respect to the degree of accuracy and legibility of stock quantities. From its review of DHIS2 stock records, the audit team noted several errors where vials were incorrectly recorded as doses or vice versa.
- In absence of a truly automated system, central vaccine store failed to demonstrate how it was complying with earliest expired first out (EEFO) vaccine management principles. For e.g., the audit team noted instances of non-compliance relating to the issuance of Pentavalent vaccines in 2019, see Annex 8 for details. As such the tracking of batches and expiry dates appeared to be reliant on the storekeepers' mental map, exacerbating the likelihood that EEFO was not adhered to.
- The DHIS2 modules utilised by the national vaccine store and the subnational level operated as separate and non-integrated. Consequently, the issuance from the national store did not automatically reflect as receipts at the subnational level, necessitating manual input of receipts into DHIS2.

Subnational Level

The audit team observed discrepancy in the vaccine stock records primarily driven by the use of stand-alone DHIS2 stock modules at the national vaccine store and at the subnational level. Key observations were as follows:

- **Mismatches between central-level stock issuances and district-level receipts**: For 2022, vaccine issuances from the central store to districts did not match the data for vaccine receipts recorded in DHIS2. While some differences could be attributed to timing differences between one month and the next, the audit team also identified unexplained discrepancies. Collectively, across all 64 districts, there was a deficit of 1,234,398 pentavalent doses

Recommendation 15

The MOHFW is recommended to **implement an electronic Logistic Management Information System (eLMIS)** at the central and subnational level, able to comprehensively track and manage vaccines and immunisation supported supplies. Such a system will provide visibility over stock levels, expirations, and will improve the accountability and management of supplies.

Recommendation 16

The EPI is recommended to **standardise the unit for vaccine records** by complying with best practice and consistently recording all vaccines by dose only, to improve the legibility and accuracy of all vaccine stock entries.

Recommendation 17

The national EPI team is recommended to ensure that its storekeepers' and stores handling vaccines **comply with EEFO** by adhering to the following processes and practices:

- **Implement clear, visual markings on storage units and shelving,** as part of standard operating procedures to help comply with EEFO principles. Placards or labelling that can signal which batches should be issued first, separating these from stocks

<table>
<tr>
<td>and 615,408 PCV doses at the district level. In contrast, there was a surplus of 497,675 doses (or 19,907 vials) of IPV vaccines at district-level compared to what the central store issued. For details see Annex 6.

• Mismatches between district-level issuances and subdistrict-level receipts: The DHSI2 vaccine data suggested endemic errors in the quantities of pentavalent and PCV doses recorded as received by sub-districts (i.e., upazilas), as receipts were regularly over-biased and were higher than the district-level vaccine issuances. Overall, these biases totalled up to around 5% of pentavalent and 6% of PCV receipts, with the variances being particularly significant between the end of 2021 to during the first half of 2022. For details see Annex 6.

The audit team concluded that the mismatches it identified would not exist or would be promptly identified if an integrated vaccine management system was in place.</td>
<td>which are can only be issued afterwards. Colour-coding can be used to designate different vaccine batches. If adopted, such practices should be included in standard operating procedures for vaccine storage and distribution.

• Undertake routine supervisions on stock turnover. A routine mechanism to check for EEFO adherence should be established, to review and ensure the effectiveness of manually labelling stocks and storage locations. This will help ensure that any further poor storage practices are identified and promptly addressed. Refer to Recommendation 10 for additional details on supervision.</td>
</tr>
<tr>
<td>Root Cause
The central vaccine store does not benefit from the functionality and use of a comprehensive inventory management system to improve the accuracy and effectiveness of its stock management processes.</td>
<td colspan="2">Management comments
See detailed management responses - Annex 16</td>
</tr>
<tr>
<td>Risk / Impact / Implications
• Sub-optimal stock management systems and processes.
• Non-integrated stand-alone DHIS2 data sources can result in data mismatches. Lack of visibility over what stocks were held across various levels of the supply chain.
• Incomplete or unreliable data for annual forecasting purposes.
• In the absence of an automated stock management system at central level, additional resources were needed to consolidate overall stock records and to reconcile POs and VARs.</td>
<td>Responsibility
EPI, DGHS, MOH&FW, and DP</td>
<td>Deadline / Timetable
See Annex 16</td>
</tr>
</table>

4.3.3 Covid-19 vaccines stock records at national EPI store were unsatisfactory.

Context and Criteria

In line with Gavi's Transparency and Accountability Policy and grant terms and conditions for COVAX AMC group participants, countries should manage COVAX resources by maintaining accurate records documenting how doses of approved vaccines, equipment and supplies are managed and disbursed. In addition, such resources should be used in accordance with the agreed purpose. Within this context, the national EPI team is expected to keep accurate records for how its management and deployment of the Covid-19 vaccines.

As of 9 March 2023, Bangladesh has administered 358,513,196 Covid-19 doses. On receiving shipments at its central vaccine store, the EPI was required to complete a vaccine arrival report (VAR) a submit it report to UNICEF. Beginning June 2021, over a 21-month period the GOB has received 147 separate Covid-19 vaccine shipments secured from various sources, including COVAX. Overall, the country received Covid-19 doses manufactured by seven different manufacturers. All COVAX-supported vaccines were handled by UNICEF Supply Division. According to UNICEF's reports, the EPI programme received 250 million doses from COVAX.

Condition

Covid-19 receipts at the central vaccine store: The audit team noted the following gaps and inconsistencies in the records documenting how many Covid-19 vaccine doses were received at the central vaccine store:

- **Lack of consolidated stock data:** In the initial stages, some vaccine shipments were received at locations other than the central vaccine store, as it did not have sufficient appropriate and adequate storage capacity. As a result, select pharmaceutical companies in the private sector with cold chain infrastructure were designed by the Government's Covid Task force to receive, store and distribute several consignment Covid-19 vaccines across the country. Some of these consignments which were formally received outside of the central vaccine store's purview, were not comprehensively recorded, preventing the national EPI team from reconstituting accurate records of its covid-19 receipts by aggregating data from each location.
- **Mismatches and alternate entries:** Despite tracing 250 million Covid-19 vaccines through aggregating its VAR records, the audit team noted that there discrepancies recorded in the VARs regarding product names, funding sources, and other details. These inconsistencies are outlined in Annex 7. Moreover, the aggregated VAR records indicated that 251 million doses were received, 1 million higher than COVAX's reported 250 million doses that it shipped. The EPI team was unable to provide an explanation for this difference, which was probably due to errors recorded in some of the VARs.
- **Confusion between adult and paediatric vaccine formulations**: The audit team noted that of the COVAX stock shipments, approximately 2.5 million Pfizer vaccine doses were misclassified as paediatric when they were in fact adult formulations, highlighting data quality issues. This difference was identified by comparing the EPI's DHIS2 receipts from UNICEF Supply Division shipments from the Pfizer manufacturer, see Annex 7.
- **EPI did not maintain complete and accurate records of vaccines issued:** The national EPI store logistics team did not maintain accurate and complete records regarding the number of Covid-19 doses issued from its central store to the city corporations and districts within Dhaka city. Initially, the data provided to the audit team was incomplete, indicating that only 64 million Covid-19 doses were distributed between 2021 and 2022. However, following the audit team's identification of these data gaps, the national EPI team subsequently updated their stock records on DHIS2. As of 29 March 2023, the revised records revealed that nearly 356 million Covid-19 doses had actually been issued during the stated period.
- **Inaccurate vaccine grouping and date errors**: the EPI mistakenly grouped together two different brands of Covid-19 vaccine – namely: Covishield and AstraZeneca's Covid-19. Although it was recognised that both of these manufacturers' product had the same ChAdOx1-S active ingredient, per WHO guidance both brands should have been tracked as separate products. In addition, the overall data on issues provided by the EPI logistics to the audit team contained errors and inconsistent date formats, requiring the data to be cleaned. Most of the Covid-19 doses distributed had a shelf-life of

Recommendation

Refer to Recommendation 15.

three to six months or longer. However, overall, around 1% of doses had less than one month of shelf-life when issued, and the vaccine records failed to capture any expiration date for 6 million doses.

- **Discrepancies in stock balances at the central vaccine store:** Personnel from the alliance partners, calculated that the current Covid-19 balance held by the central vaccine store was 1.6 million doses. In contrast, the audit team's physical stock count in mid-March 2023, counted that a current balance was 2.8 million doses, meaning there was an unexplained difference of 1.2 million doses.
- **Lack of data to substantiate vaccine issuances**: There was a general lack of underlying documents such as, issue vouchers and delivery notes signed by the receiving stores to back up the issuance from the national stores. Further, the DHIS2 data report lacked traceability to batch numbers and batch expiration dates. One of the alliance partners commented that the batch details were entered but the system was unable to generate a batch wise report.

Root Cause

- Lack of a reliable vaccine management system and records.
- Manual inventory records are prone to human error.
- Lack of effective supervision, processes and quality control of VAR preparation.

Management comments

See detailed management responses - Annex 16

Risk / Impact / Implications

- Overall stock records are compromised, including some erroneous details.
- Records indicating the current stock available for issuance are not totally accurate.
- Patient safety depends upon clearly tracking separate paediatric and adult Covid-19 vaccine formulations.

Responsibility

Deadline / Timetable

See Annex 16

4.3.4 Sub-national level – opening stock balances did not reconcile with the preceding period's stock movements

Context and Criteria

Gavi's updated five-year (2021–2025) immunisation supply chain (iSC) strategy strives towards a vision of strong supply chains that enable the delivery of potent life-saving vaccines to every person when needed, no matter where they live. Inconsistent availability of high-quality vaccines and limited reach of vaccine supply chains in underserved populations threaten access as well as immunisation coverage and equity outcomes. Strong, efficient and responsive supply chains will be critical to Gavi's vision of leaving no one behind with immunisation.

One of the six priority areas for targeted investments to achieve this goal is to use digital systems to enable data visibility throughout the supply chain.

The country's vaccine records for the top three tiers of its supply chain, are maintained using a Vaccine Management System DHIS2 module. Having recognised the system's limitations, the EPI and the partners have planned to implement an eLMIS in the future.

Condition

The audit team found data inconsistencies in the DHIS2 vaccine management system. Despite an apparent average reconciliation of approximately 100% for Penta and PCV across all districts and subdistricts from 2019 to 2022. On closer scrutiny of the sub-national stock data, individual districts and sub-districts presented unreconcilable discrepancies which occur when the stock closing balances reported in DHIS2 does not reconcile to the preceding period's opening balance after adjusting for receipts (+), issues (–) and losses (–). The audit team performed this analysis for each month during the period 2019 – 2022.

Although an overall reconciliation at national level might appear balanced due to some districts and subdistricts reporting excess stock compensating for shortfalls in others, in practice a macro-level reconciliation presented a different picture. While it's possible that some of these discrepancies resulted from lateral stock movements between districts, but the national EPI team denied this practice, and the audit team found no documentation supporting such movements during their field visits.

Several discrepancies in data seemed to disappear in the subsequent reporting periods, however there were no documented evidence supporting such adjustments in DHIS2. Of concern was that the vaccine management DHIS2 module lacked the functionality to flag any inconsistencies in its data, including the negative stock balances. Additionally, the process of transferring closing balances from one period to serve as the opening balance for the next period was not automated; district EPI superintendents had to manually input these opening balances, increasing the risk of errors and unauthorised adjustments. Consequently, there was no follow-up on the differences between carried forward and brought forward balances.

Annex 9 illustrates discrepancies between the opening and closing stock data at subdistrict/upazila level**.** In addition, occasionally some subdistricts failed to enter their opening monthly stock balances into DHIS2, erroneously leaving the data field blank.

District Level

The audit team's analysis of two vaccine records held at the district and upazila sub-national levels demonstrates the progressive ebb and flow due to subsequent periods' opening stock balances being adjusted without supporting evidence justifying such changes.

Pentavalent vaccines: While there is a general balance in the overall figures, analysis by the audit team at individual districts showed substantial variations in their monthly data. On average, approximately 12% (out of 64 in total) of the districts each month had unreconciled opening balances, exhibited either as positive or negative stock variance when compared to vaccine movements of the prior period. These fluctuations sometimes cancelled out a subsequent period variance.

Recommendation

Refer to Recommendation 15.

On an annual basis, pentavalent vaccines demonstrated negative variances in 2019 and 2020 and positive variances in 2021 and 2022. The net variance over the entire four-year period (2019 – 2022) was a negative balance of 160,743 doses/vials). The net negative variance meant that there should have been more vaccines available than what the records showed, and the shortfall was unaccounted for. For details, see Annex 9.

PCV**:** The overall reconciliation showed a 101% consistency for the same period. However, consistent with the observation related to pentavalent vaccines, individual districts data regularly showed variances most months. On average, around 11% of the districts had variances between every month's opening stock balance and overall stock movements of the preceding period. On an annual basis there was negative variance in 2019 and positive variance from 2020 to 2022. The net variance over during this period was a positive variance of 534,288 doses (equivalent to 133,572 vials). The net positive variance suggests that there should have been less PCV vials available than what the records indicated. For details, see Annex 9 .

Subdistrict/ upazila Level

Pentavalent vaccine: Globally, the audit team's analysis of stock data for pentavalent vaccines from all (628) reporting subdistricts (upazilas) returned an average 98% reconciliation rate for the period 2019-2022. However, at individual subdistrict level there was an average of 206 (33%), i.e., one out of three districts during any single month period , displayed either a positive or a negative stock variance. Though some variances cancelled each other over time, the net cumulative effect of monthly variations in pentavalent opening stock valances, resulted in an overall negative variation every year. In total, the aggregate stock data for all districts for the entire four-year period (2019 – 2022) returned a net negative value of 621,073 doses, which meant that there should have been more vaccines in stock than what the records showed, and the shortfall was unaccounted for. For details on the analysis, see Annex 9. For illustrations of the analysis of subdistricts contributing to the variances see Annex 9.

PCV: Similar to the trends identified in the pentavalent data, some of the PCV variances cancel each other over time, but the net cumulative effect of monthly variations in PCV opening stock valances, resulted in an overall negative variation every year. In total, the aggregate stock data for all districts for the entire four-year period (2019 – 2022) returned a net negative value of 245,535 vials, which meant that there should have been more vaccines available than what the records showed, and the shortfall was unaccounted for. For details, see Annex 9. For illustrations of the analysis of subdistricts contributing to the variances see Annex 9.

Root Cause

- **Data entry errors**: The existence of discrepancies in the opening stock balances recorded in DHIS2 at both district and subdistrict level indicate that unvalidated adjustments to stock data are frequently entered but not reviewed, with the data entry process not being monitored, nor the variance followed up and a suitable justification documented. Over time, the aggregation of these micro-adjustments to stock balances add up across the health facilities, with the overall result yielding significant disparities in unaccounted for vaccine doses.
- **Lack of supervision**: Inadequate monitoring or supervision over the DHIS2 data entry process can contribute to errors accruing. Without regular validation of the data entered, variances in the data recorded in DHIS2 might not be promptly identified and could persist.
- **Lack of internal validation rules in DHIS2**: The DHIS2 system lacks suitable system controls to prevent input errors (such automated checks could effectively prevent some of the erroneous data entries into the system).

Management comments

See detailed management responses - Annex 16

Risk / Impact / Implications

- **Vaccine availability**: Inaccurate records will fail to ensure that there are correct vaccine stock levels to meet the demand. This is essential to prevent vaccine shortages, which can lead to missed immunisation opportunities.
- **Wasted resources**: Inaccurate stock data might prompt unnecessary vaccine procurement or reallocation, wasting resources that could be better utilised elsewhere.
- **Data-driven decision making**: The skewed data undermines data-driven decision-making processes. Health officials relying on the inaccurate data might make misguided decisions, affecting vaccine distribution, procurement, and deployment strategies.

Responsibility

Deadline / Timetable

See Annex 16

4.3.5 Vaccine stock levels at sub-national levels were occasionally insufficient to meet needs

Context and Criteria

The national policy requires that sufficient of supplies of routine vaccines be held in stores, in order to meet the demands of subsidiary levels. The policy also requires maintaining stock levels at the central vaccine store of up to 6 months, at district level stores – up to 3 months and at upazila stores – up to 1 month.

Condition

Stockouts

Districts: Based on an analysis of DHIS2 data, the audit team noted that recurrent stockouts of pentavalent and PCV (the latter less frequently) occurred, indicating that there were operational inefficiencies across the supply chain. Although most stockouts were typically resolved within a month, there were instances when it took more than a month to subsequently replenish the affected store with new supplies from the central vaccine store. For details see Annex 10.

Subdistricts: The subdistrict-level data revealed instances where several upazilas had zero or negative stock balances of pentavalent and PCV for one or more consecutive months. For details see Annex 10.

Inadequate stock levels

Districts: The average vaccine stock level that districts held for both pentavalent and PCV was sufficient to service approximately 1.5 months' needs, significantly below the ideal threshold of 3-months supplies.

The audit team analysed the monthly DHIS2 data for each of the 64 districts for the 4-year period (2019 – 2022) which is equivalent to 3,072 data points (i.e., 64 districts * 12 months * 4 years). For pentavalent, the data suggested that only 49% of the time, districts held stocks level "sufficient" to meet between 1 to 3 months of needs. At the other end of the spectrum, the data suggested that 28% of the time the districts held an "insufficient" stock level, whereby the stock levels were less than 1 month's needs. Remaining 23% of the time, the stock level held by the districts were in excess of 3 months.

Analysis for the PCV vaccine showed almost identical trend largely due to the fact that both PCV and Penta follow identical immunisation schedule against the same target population 2022.

Subdistricts: The average amount of vaccines held in stock by the subdistrict stores, for both pentavalent and PCV, was around 0.5 months, significantly below the desired threshold of 1-month supplies.

The audit team analysed the monthly data for each sub-district for during the 4-year period (2019 – 2022) which is equivalent to an average of 30,048 data points (i.e., 626 subdistricts[10] * 12 months * 4 years). For pentavalent, the overall findings indicated that fewer than 40% of the time the end of the month stock levels at subdistricts were "sufficient" to meet 0.5 to 1 month of needs. At the other end of the spectrum, the data analysis, revealed that 47% of the time the end of the month stock levels were "insufficient" i.e., stock level were less than 0.5 month needs. Also, on average of 6% of the subdistricts' data points indicated a "negative" stock balance, which in this context was indicative of there being some erroneous stock data entries in DHIS2.

Recommendation

Refer to Recommendation 13, Recommendation 14 and Recommendation 15.

[10] The number represents the total reporting subdistricts created in DHIS2 and may not represent the actual number of subdistricts.

With regards to PCV for the subdistricts, the audit findings were the same as that for pentavalent, except in the case of negative stock balances, where on average of 8% of the subdistricts were negative, also indicative of errors in the DHIS2 data creating these invalid values.

The audit team also analysed the frequency of from 2019 to 2022 stock levels falling below half of the required monthly consumption, categorising the data into instances of low stock lasting for 1 month, more than 2 months, and more than 10 months. The results revealed a significant trend of prolonged low stock levels, particularly in the "more than 2 months" category, which consistently showed a high percentage of Upazilas experiencing this issue between from 2019 to 2022. For details see Annex 10 .

Subdistrict - imbalance in the stock distribution

For pentavalent, around 15% of data points during 2022 exhibited stock levels of greater than 1 month of needs, and on a few occasions ranging as high as stock levels exceeding 3 months of needs. An even more pronounced situation was applicable to the distribution and balance of PCV vaccines held in stock across subdistricts in 2022. Namely, around 25% of data points during 2022 exhibited stock levels of greater than 1 month of needs, as well as some occurrences when holdings ranged as high as stock levels exceeding 3 months of needs.

Disbalances in distribution patterns may in some cases be justifiable based on local circumstances such as the remoteness of the location. However, such anomalies should be followed up and validated through the use of supportive supervision and data analysis, to clarify the situation. Better understanding of each context can provide the opportunity to adjust distribution timing or quantities accordingly to better meet any subdistricts' needs which require a different approach.

The above observations underscore the need for systematic improvements in vaccine distribution and stock management to ensure that vaccines are available in the right quantity, place and time, so as to minimise any operational inefficiencies in the supply system and avoid disrupting immunisation efforts.

Root Cause

Failure to accurately balance the vaccine supplies with the target population demands can result in inefficient distribution of product.

Management comments

See detailed management responses - Annex 16

Risk / Impact / Implications

Possible consequences of inadequate supply management include limiting the number of vaccination sessions, reduced outreach, and a probable decline in overall rates of immunisation coverage.

Responsibility

Deadline / Timetable

See Annex 16

4.3.6 The cold chain equipment inventory register was not up to date

Context and Criteria

The requirement for proficient management and upkeep of the cold chain equipment (CCE) inventory within the vaccine supply chain is paramount to ensure the effectiveness and potency of vaccines. UNICEF helps to source and support, the EPI's cold chain equipment requirements, for an endowment spread across 757 storage points making up the national cold chain supply. The 2021 EVM underscored the need to periodically update the country's cold chain capacity, and recommended that it be reviewed and if necessary, updated every year, if not every six months. The 2022 EVM implementation plan also recommended the implementation of a cold chain equipment inventory (CCEI) system, possibly as a DHIS2 module, to cover the entire CCE landscape.

Condition

Central – National EPI

The audit noted that the most recent CCE inventory version was done to 2021, raising concerns about the accuracy of the latest equipment register.

The national EPI team stated that various factors deterred it from regularly updating the cold chain equipment inventory. Challenges included: staffing shortages and operational disruption due to the Covid-19 pandemic. The audit team also noted that DHIS2 CCEI module, was not yet entirely tailored towards meeting the EPI programme's inventory logistics' needs.

Shortages in chain technicians remains a significant barrier, with 38 out of 74 (51%) of the positions across the country being currently vacant as at March 2023. This gap curtailed the programme's capacity to properly manage and maintain its CCE endowment across the supply chain. There have also been fewer monitoring, supervisions, and the training opportunities for newly recruited or temporary storekeepers responsible for the management and operation of CCE units.

The audit team noted that the volume of vaccines to be handled by the supply chain, including its CCE, is anticipated to continuing growing in line with the country's population and demand for vaccination. The continued requirements for additional storage capacity requires adequate cold chain capacity, including subnational levels. It was observed that the EPI is delayed in carrying out a comprehensive assessment of its existing equipment life cycles and the remaining useful life of assets, so as to plan for future procurement of additions or replacement equipment units to sustain the supply chain's functionality and capacity.

Sub-national

In addition to the challenge of maintaining a current inventory, other CCE needs, processes and concerning practices identified at the sub-national level relating to the proper management of such equipment included:

- The need for to better link the inventory asset tagging to each item of equipment's uniquely identifiable serial numbers.
- Some functional equipment were kept idle, their usage was yet to be determined .
- Inconsistent, irregular recording of cold chain equipment temperatures, raising doubts if vaccines were kept within a recommended temperature range.
- Indeterminate usage of alarm systems, including whether they were still functional, even though it was recognised their importance in flagging rapid, high or unsafe deviations in temperature. Some storekeepers were unable to explain how alarm systems worked.
- Absence of equipment installation records, including details on when the item was installed and the funding source.
- Staff lacking access to standard operating procedures on maintenance. It was also not formally confirmed whether CCE items were to be included under the centrally managed maintenance programme.
- Limited understanding or clarification for what should be the appropriate response to equipment breakdowns, including how to minimise delays until the maintenance is authorised and work begins.

Recommendation 18

The MOHFW should periodically conduct a comprehensive assessment of the national immunisation programme's endowment of cold chain equipment. This assessment result in developing a plan, including as a minimum the following:

- Review the functionality of equipment to determine the condition of and performance of existing equipment.
- Assess the existing cold chain storage capacity and determine whether it is sufficient in terms of meeting future needs and requirements.
- Conduct a CCE lifecycle analysis to determine when equipment units should be replaced.
- Develop capital and operational expenditure estimates for the financing of CCE additions, replacements, and ongoing maintenance.
- Advocate and mobilise for additional resources and likely sources of funding, such as government budgetary allocations or external donor financing.
- Document the processes and timelines for new CCE procurement and installation, as well as the proper disposal of decommissioned units.
- Develop a training plan for sub-national personnel located at district and upazila levels, to ensure that understand and are able to operate and conduct preventative and curative CCE maintenance effectively.
- Establish suitable monitoring and evaluation mechanisms, to track the lifecycle, economic life and performance of cold chain equipment units.

Recommendation

<table>
<tr><td></td><td colspan="2">Refer to Recommendation 8 related to nationwide vacant EPI positions.</td></tr>
<tr><td>Root Cause
The management and maintenance of cold chain equipment has been impacted by a combination of: (i) vacant cold chain technician positions; (ii) monitoring and training backlogs; (iii) shortages in manpower; (and) underusage inventory management tools.</td><td colspan="2">Management comments
See detailed management responses - Annex 16</td></tr>
<tr><td>Risk / Impact / Implications
• CCE units which do not operate correctly can result in temperature fluctuations, potentially compromising the integrity and potency of vaccines.
• The lack of sufficient cold chain storage capacity to store the right quantity of vaccines in the right conditions, at the right time and location, could result in missed vaccination opportunities.</td><td>Responsibility
EPI, DGHS, MOH&FW and DP</td><td>Deadline / Timetable
See Annex 16</td></tr>
</table>

4.4 Immunisation Data Management

4.4.1 The accuracy and completeness of immunisation targets was questionable

Context and Criteria

Gavi's guidelines mandate that countries receiving Gavi support need to maintain accurate and reliable data for the purposes of effective planning and programme management. PFA Clause No. 8 (d), emphasises that Governments receiving Gavi support should provide accurate information and monitor the use of Gavi's resources.

The EPI programme uses microplanning as a longstanding practice in setting its national immunisation targets. Each year when In conducting its microplanning process, the EPI is supported by the alliance partners to determine the optimal methodology, including an appropriate growth rate to be applied to prior year's registered births or BCG vaccinations. Once agreed, the methodological basis is communicated to the District Health Offices (DHOs) and city corporations by means of an instruction letter. The letter sets out the corresponding process to be followed for microplanning, so that the activity can be undertaken sometime during October or November. When completed, these microplans are then submitted by the upazilas/zones/ or municipalities up to their hierarchy to the DHOs or city corporations, who then consolidate and forward the overall microplan, for that district or city corporation, onto the national EPI. Each plan include details on next year's immunisation targets as established by each district or city corporation, with each of the upazila/zones/or municipalities within that area being considered as a "reporting unit" with its own target which they will use to report against in DHIS2. Thereafter each of these units' targets, are broken down into proportional monthly targets, and the statistician from that upazilas/zones/or municipality is responsible to input the target data into the respective DHIS2. It is important that the monthly targets are input accurately into DHIS2 so that any subsequent monthly performance data input in the system is monitored and evaluated against the correct corresponding target.

Condition

The audit team noted the followings deficiencies in the annual target setting process:

Fluctuations in monthly immunisation targets:

During the audit team's review of the aggregated annual targets entered in the DHIS2 data system for the five-year period from 2018 and 2022, significant fluctuations in the monthly targets were identified. This observation diverged from the expected EPI practice of inputting the same target for each month (i.e., on a linear basis), by evenly dividing the annual target across the year. The EPI programme explained that a straight-line approach was the usual method to follow which should have generated evenly distributed targets for each month of the year. However, as illustrated in the Figure 5 below, the net sum of all the reporting unit's monthly targets routinely fluctuated, rising or falling every month indicating that some of the districts' targets were changed several times throughout the year.

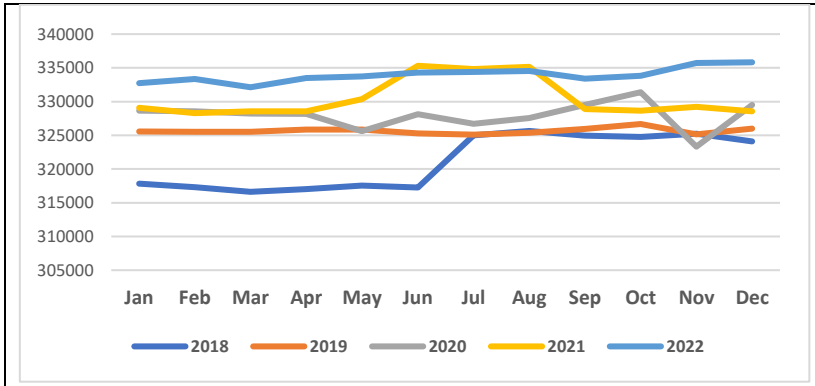
The audit team asked the EPI team and the alliance partners whether any periodic review processes of targets was sanctioned, which could have led to the target been revised, explaining some of the fluctuations observed. However, no such review process was found to exist. This because, once reporting units' targets were entered into the DHIS2 system, they were considered as locked and not to adjusted or revised any further.

Figure 5: Fluctuating immunisation target on monthly basis, nationwide.

Recommendation 19

The MOHFW and the EPI should improve the target setting process by:

- **Standardising DHIS2 monthly target setting as the default option,** when the initial monthly target is first entered at the start of the reporting year, that this target should become the default option for all other months of the year. The system should also flag to users if any monthly targets are subsequently changed, from the initial default target set.
- **Requiring reporting units to maintain records justifying what basis they used to set targets (if different from the instruction letter)**, including the growth rate used. A formal review process should be established to assess and approve these targets, including a step to cross-check that the target is consistent with prior year's performance.



Static or decreasing DHIS2 targets across the years:

Given general trends reflected in the Bangladesh' increasing birth rates, on average the target setting methodology would be expected to translate into an increasing trend in the targets set, for most reporting units.

However, the audit team's analysis identified multiple instances where the annual targets remained static or even gradually decreased over several years, which was counterfactual and not in accordance with the EPI's instruction letter to estimated annual target population by applying a growth rate. As explained in the instruction letter, the responsibility for conducting microplanning lies with the wards under the UpHCs and zones in city corporations. Where a reporting unit deems that the EPI is instruction is impractical, it is expected that the UpHCs/zones diverging from the approved target setting methodology should provide an explanation for using an alternative method. However, the audit team, observed that this was not the case, as no such justifications for a variation in the methodology applied or the use of alternative approaches were documented by any of the sub-national facilities it reviewed.

Furthermore, based on the audit team's visits to various UpHCs, the team noted that the EPI sub-national personnel asserted that their microplanning approach complied with the EPI instruction letter. The audit team concluded that there is a misalignment between the EPI's directions and actual district level practices and behaviours. The audit team therefore questioned the lack of consistency and accuracy in the microplanning target outputs, due to operational weaknesses in the underlying process.

Details of the reporting units with static (i.e. a constant target year on year) or with a progressively reducing targets over the years are provided in Annex 12.

Persistent underestimation of targets despite the past trend of exceeding achievements:

The audit team also noted issues with select reporting units, who routinely reported achieving vaccination rates exceeding their targets, and overall performance rates beyond 100%. The audit team observed that root causes were indeterminate – possibly due to the unit not complying with the instruction letter, human error or using incorrect data. Also – notwithstanding the microplanning exercise – some reporting units opted to perpetually use the same target each year rather than adjust it. This also coincided with several units whose annual performance was greater than 100% each year. See Figure 6 below for details.

For the respective UpHC to neglect restating their annual targets and establish a new baseline based on the past vaccination track record is concerning. Similarly, although the DHO were responsible to oversee and supervise the UpHC target setting process, there was no evidence of any DHO intervening.

In addition, the audit team observed that this issue was not identified by either the national EPI team or the alliance partners using appropriate analysis or monitoring. Examples of units consistently surpassing their target without adjusting their baseline are provided in Annex 12.

The audit team calculated an average target for a given preceding period and compared with the targets entered in the succeeding period, see Figure 7 below for details. The team's objective was to assess whether the reporting units used their data from past performance as a benchmark when they deemed EPI instruction infeasible. The finding showed that in general, reporting units did not sufficiently incorporate or use their past data when setting new targets, corroborating with the observation that there were gaps in the target setting approach.

Figure 6: Illustrations of reporting units achieving regularly exceeding their monthly target across the months and various years.

Facilities	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20
Bhaluka Upazila Health Complex	109.6	135.5	94.7	126.4	111.8	105.9	111.4	100.7	111.7	127.4	120.7	118.6	121.1	112.1
Dhaka CC North Zone-01	118.8	106.3	115.2	108	107.1	89.6	105.4	93.4	112.9	116.9	105	113.9	109.2	113.3
Dhaka CC South Zone-02	132.5	100.7	115.2	104.6	103.1	100.9	108.9	107.3	113.3	120.5	106	116.7	115.8	104.6
Kabirhat Upazila Health Complex	137.7	105.4	116	102.8	110.8	98.7	101.5	108.9	110.2	113.4	118.8	101.9	117.4	86.9
Manikganj Mun.	149.3	120.9	135.8	120.1	112.7	358.8	100	93.3	130.6	151.5	111.2	135.8	162.4	174.3
Netrokona Mun.	203.9	133.9	121.3	120.4	141.6	97.3	113.6	103.2	132.6	138	134.8	149.8	130.3	85.5
Pirojpur Mun.	175.9	103.8	120.3	108.9	120.3	100	130.4	113.9	143	159.5	160.8	174.7	175.9	128.9
Savar Upazila Health Complex	112.3	120.2	122.1	124.5	115.3	107.3	112.5	98.1	100.2	106.5	107.5	103.6	109.7	100.8
Sunamganj Mun.	120.3	121.8	115.8	106	103.8	66.9	70.7	109.8	110.5	138.3	134.6	132.3	109	138.8

Figure 7: Examples of audit team reconstituting target estimates based on past performance data.

Reporting unit	Historic average from 2019 (Jan to Oct)	Next year target beginning Jan 2020	Difference	Historic average from Nov 2019 – Oct 2020	Next year target beginning Jan 2021	Difference	Historic average from Nov 2020 – Oct 2021	Next year target beginning Jan 2022	Difference
Bhaluka Upazila	1,116	1,008	(108)	1,091	1,009	(82)	1,016	1,093	77
Brahmanbaria Mun.	712	666	(46)	776	666	(110)	796	666	(130)
Kaliakair Upazila	1,228	1,172	(56)	1,307	1,172	(135)	1,351	1,346	(5)
Kasba Upazila	822	772	(50)	854	779	(75)	841	787	(54)
Manikganj Mun.	162	101	(61)	153	101	(52)	149	101	(48)
Muksudpur Upazila	707	656	(51)	707	665	(42)	722	676	(46)
Nabinagar Upazila	1,330	1,306	(24)	1,603	1,314	(289)	1,308	1,304	(4)
Netrokona Mun.	280	221	(59)	273	221	(52)	263	221	(42)

Root Cause

The following factors contributed:

- **Incorrect data entry**: Discrepancies can occur when subsequent monthly targets are input incorrectly into DHIS2 by the individual responsible, as each the targets have to be manually input into each month. Also, the system does not automatically show when past monthly targets differ or generate an error messages where there are significant inconsistencies with the previous month's target. Examples of fluctuating monthly targets entered in the system are provided in Annex 11.
- **Incomplete/ missing data**: Some reporting units failed to enter their monthly targets into DHIS2 altogether, resulting in incomplete and inaccurate reporting. Examples of missing data entries are provided in Annex 11.

Management comments

See detailed management responses - Annex 16

<table>
<tr><td colspan="2">

- **Data was not reviewed as there was no validation process reviewing health facilities' inputs**: As microplans and target data, progressively passed up the hierarchy from ward level to the national EPI, at no point along the reporting chain was there any process in place to review and validate, the accuracy and consistency between the plans and the targets input into DHIS2.

</td><td></td></tr>
<tr><td>Risk / Impact / Implications
At a national level, the aggregation of inaccurate DHIS2 targets input by the reporting units, can result in a misleading picture of the overall level of vaccine demand, impacting on the country's decisions on planning, forecasts, resources, and what to procure in future. In addition, the reporting overachievement of immunisation coverage can result in over-confidence with regards to the target population's immunity, potentially resulting in the government repurposing resources or no longer prioritising immunisation to the same extent.</td><td>Responsibility
EPI, DGHS, MOH&FW and DP</td><td>Deadline / Timetable
See Annex 16</td></tr>
</table>

4.4.2 Immunisation coverage – systemic errors and data management gaps

Context and Criteria

PFA Clause No. 8 (d), requires that all information submitted to Gavi, including applications, progress reports, supporting documentation, and operational and financial data, must be accurate and correct at the time of submission. Additionally, Gavi's grant application guidelines establish criteria aimed at enhancing access to high-quality immunisation data. Criteria include: desk reviews of coverage data each year, establishing routine mechanisms to independently assess the quality of administrative data, and using Gavi's support to develop and execute data quality improvement plans. Moreover, the guidelines stress the importance of regular population-based surveys to evaluate immunisation coverage, emphasising the need for accurate and reliable data to inform programme management and decision-making.

In Bangladesh, the process of preparing micro plans, reporting administrative coverage data, and vaccination usage data follows the health system's hierarchy. Once micro plans are finalised, the nationwide session plan devised by the national EPI is promulgated via the DHOs and city corporations, to be shared with the UPHC/Zones, and ultimately reach the unions and ward-level health staff. Subsequently, based on session plans, Health Assistants (HA) are expected to conduct home visits for newborns based on information about pregnant women in their locality. The HAs are then expected to update their tally sheet in order to request vaccines from the Medical Technicians EPI for future sessions.

Each vaccination day, HA update their tally sheet with vaccine consumption data, send tally sheet copies to MTEPI and Assistant Health Inspector (AHI); while retaining one copy for themselves. At month end, HA submit compiled ward level data to AHI who further consolidate them and report to Health Inspectors (HI). The HI then compile the data from their responsible unions and submit it to MTEPI at UpHC. MTEPI then consolidate the union data and transfer to statistician who enter the vaccination coverage in DHIS2 for the respective reporting unit.

Condition

The audit team analysed micro planning process for session plan and several data from DHIS2 such as, administration coverage and wastage calculations etc., and noted the following issues:

Biases in the reported administrative coverage implied due to discrepancies in DHIS2 data: The audit team undertook a crude triangulation of DHIS2 data comparing: (i) total pentavalent vaccines used; and (ii) immunisation coverage data. 'Vaccine used' refers to the number of doses administered during vaccinations sessions, as reported by upazilas/zones/or municipalities. Thus, data on the number of doses consumed is recorded along with the resultant coverage data in DHIS2. The audit team analysis focused on pentavalent which comes in single-dose vials, to mitigate the risk of human error occurring should staff count vials instead of doses. The team's analysis indicated that the overall administrative coverage data consistently exceeded vaccines used between 2019 to 2022, a circumstance which is physically impossible based on DHIS2 data.

Figure 8: Comparison of annual administration coverage against pentavalent doses issued, as per DHIS2 for the period 2019-2022.

Year	Admin coverage	Vaccine used	Variance
2019	11,836,130	11,800,848	(35,282)
2020	11,182,701	11,088,782	(93,919)
2021	12,187,452	11,981,236	(206,216)
2022	12,410,526	12,302,334	(108,192)

Biases in the reported administrative coverage implied due to discrepancies with the supply of vaccines: The audit team undertook a supplementary data triangulation exercise comparing: (i) data on the physical number of doses made available in the supply chain; and (ii) DHIS2 immunisation coverage data. It's important to acknowledge that a certain degree of friction is to be expected in any supply chain, measured as the difference between ideal operating conditions and actual performance. By definition, the number of children that can be vaccinated is lower than the total number of doses available

Recommendation 20

The MOHFW and the EPI should:

- **Conduct routine data triangulation**: Regularly conduct data triangulation exercises, encompassing accuracy and completeness assessments, to compare administrative coverage data with vaccine availability and utilisation. This analysis should be carried out at the national EPI level, Districts/City Corporations, and reporting units (UpHC/Municipalities).
- **Enhance DHIS2 with warning mechanisms**: Integrate warning messages or red flags within the DHIS2 system to alert users about incomplete data and instances of high variances between expected and reported figures.

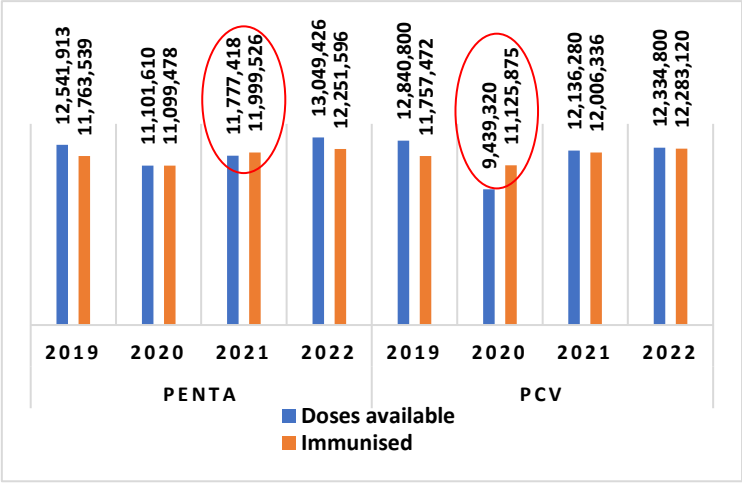
during a matching period. Where the gap between both these measures is small, this can be an indication of optimally functioning operations, even after accepting that a degree of dose wastage is to be expected.

The team undertook a comparison between (i) the volume of vaccines available – derived from the number of doses distributed from the central vaccine store (calculated as = opening balance + vaccines received - closing balance); and (ii) the number of children vaccinated reported in DHIS2 for the period 2019 - 2022. Such an analysis is crude, given that there is always a residual amount of doses available across the supply chain, and the lag in time taken to distribute doses. However, it is credible to interpret results from such a data triangulation given a sufficiently large enough period of time under review, as the impact of balances carried forward are attenuated.

The triangulation analysis highlighted significant disparities in DHIS2 results reported for pentavalent in 2021 and PCV in 2020, as in each period, the reported coverage data was technically higher than the number of does available, without factoring any wastage. Any potential wastage increases the gap between doses available and coverage that can be achieved. Based on the data, 222,108 more children were reported as vaccinated than pentavalent doses in 2021, and 1,686,555 more children were reported as vaccinated than PCV doses in 2020, see Figure 9 below**.**

In conclusion, the team's supplementary analysis indicated that: the overall administrative coverage reported for PCV exceeded the physical volume of doses available in the supply chain during 2020 (a circumstance which is physically impossible), and that the sustained 100% match between pentavalent coverage and doses available over the 24-month period 2020 to 2021 is not credible.

Figure 9: Comparison between available vaccines and Children Immunised.



Negative wastages in DHIS2: Based on DHSI2 data, a pattern of administrative coverage exceeding vaccine used was identified. At a more granular level, this translated into instances of negative wastage rates being highlighted in DHIS2, reinforcing the evidence that at a granular level how certain reporting units directly contributed to discrepancies between administrative coverage and vaccine used. Figure 10 below displays the negative wastage rate for pentavalent at the country level. For detailed month-by-month information on negative balances for Penta, PCV, and IPV, refer to Annex 12**.**

Figure 10: Annual open vial wastage rates for pentavalent, shown in DHIS2 as negative.

Period / Data	Pentavalent open vial wastage rate
2019	-0.21
2020	-0.96
2021	-1.7
2022	-0.86

Incomplete DHIS2 data fields: Based on its granular review of DHIS2 data, the audit team noted instances where reporting units recorded "coverage data" without a matching entry for "vaccines used". Similarly, there were other instances were reporting units recorded data on "vaccines used" without a matching entry for "coverage data". Examples of blank "vaccines used" data fields are detailed in Annex 12, and examples of blank "coverage data" fields are detailed in Annex 12. Notably, in the latter case (i.e., "vaccine used" data without any matching "coverage data"), DHIS 2 defaults to displaying a wastage rate of 100%.

Discrepancies in coverage between paired doses penta1 and PCV1: In line with microplanning, agreed dates are planned for child vaccinations sessions. The vaccination schedule of all three doses of both pentavalent and PCV is the same i.e., both vaccines are to be administered to each child at the same session, which typically results in equal numbers of children receiving the vaccines every month. However, the audit team observed several occasions where the number of children immunised with Penta1 significantly differed from the number immunised with PCV1. Refer to Annex 12.

Root Cause

- **Absence of data validation processes**: There was a lack of data reviews and validation processes taking place across all levels. Reports compiled at the ward, union, or upazila levels were not adequately reviewed by the supervisor function (e.g., by AHI, and HI), with discrepancies not being identified. As a result, these discrepancies frequently endured or were not corrected, as the data, sometimes in an aggregated form, passed up the chain of hierarchy via the UpHC and DHO, to the national EPI.
- **No error prompted by DHIS2**: DHIS2 does not include a field check control, in order to prompt the user with a warning/ error message in case of incomplete data fields or inconsistent entries, resulting in inaccuracies or data gaps not being promptly identified and addressed.
- **Concerns with administrative coverage and vaccine data:** Inaccuracies in the administrative coverage or vaccine consumption/ distribution data undermines the accuracy of reporting.
- **Lack of regular data quality reviews:** The absence of frequent data quality reviews at various levels of the health system, including upazilas, city corporations, District Health Offices, and the national EPI, obstructs the identification and correction of discrepancies in data.
- **Insufficient data analytics:** Unless data triangulation checks are undertaken, such as by comparing DHIS2 "vaccines used" to "coverage data", this hinders identifying the need for corrective action.

Management comments

See detailed management responses - Annex 16

Risk / Impact / Implications

Poor data reliability: Data inaccuracies will continue to accrue until adequate review processes are in place, which support the reliability of data generated by the immunisation programme. Poor quality data can compromise effective decision-making and the allocation of resources.

Responsibility

EPI, DGHS, MOH&FW and DP

Deadline / Timetable

See Annex 16

4.4.3 Immunisation coverage – errors in data flow process undermined the integrity of the data reported

Context and Criteria

The process governing the recording of vaccination data is initiated by Health Assistants (HAs) at the ward level, who are responsible for conducting vaccination sessions according to a predetermined schedule. During these sessions, HA are verify details on vaccination administered and prepare a tally sheet, to note the number of children vaccinated, vaccines used, and any associated wastage. This tally sheet, generated in triplicate, is dispatched to the Medical technicians EPI (MTEPI) at the Upazila Health Complex (UpHC), with a copy also sent to Assistant Health Inspectors (AHI) and retained by the HA. AHI operate at the Union level and are responsible for overseeing two or more wards within their jurisdiction, they do not have a dedicated physical office space. At the end of each month, the AHI compiles all tally sheets into a ward-level monthly report, forwarded to the Health Inspector (HI), who further aggregates reports from multiple wards at the Union level before submitting to MTEPI. The MTEPI then consolidates data from unions and fixed sites at the UpHC level, ultimately transmitting it to the statistician who inputs the corresponding data into DHIS2 system.

Initially, this is essentially a manual process, relying upon the completion and submission of paper-based forms up to the UpHC level, at which point the data is collated and input in a digital format into DHIS2. The process is largely replicated within the zones of city corporations and municipalities, where typically NGOs compile ward-level monthly reports, based on paper-based tally sheets submitted from vaccination sites, ofttimes managed by other NGOs. These ward-level reports are then collated by zone and transmitted to the statistician who types in the data in digital format into DHIS2.

Condition

The audit team's review of a sample of tally-based data at selected sites identified mistakes during various stages of data aggregation and flow, undermining its reliability and integrity. Such errors were attributed to slip-ups in transcribing data and to a lack of quality checks. The team observed the following errors at each stage:

Errors from tally sheets: There were inconsistencies when compiling the tally sheets, as some figures did not reconcile, suggesting errors occasionally occurred when summing up the data.

Transcription of data from tally sheets to monthly summaries: Additional computation errors sometimes occurred as data was transcribed from tally sheets over to monthly summaries generated at the ward, Union, or UpHC level.

Data inputs into DHIS2: Further errors ensued when figures from the monthly summaries were input into the DHIS2 system.

National-level aggregated data: Many of the various mistakes and errors above were due to the manually handling the data. At a national level, the aggregation of these proceedings translated into accumulated variations in the national-level data, raising concerns about the overall accuracy and reliability of the reported figures.

Spot check analyses performed by the audit team on a single month of data drawn midyear from the month of June in 2018, 2020, and 2022 across various UpHC and zones of city corporations and municipalities, underlines the pervasive nature of errors throughout the process. Specifically, 39% of tested sites exhibited some degree of manual compilation error, and 28% of data reviewed from the same sites revealed inaccuracies at the point of inputting the data into DHIS2.

Annex 13 provides insights into the intricacies of immunisation data flow and the associated errors.

Recommendation 21

The MOHFW should strengthen its process of recording immunisation data by:

- **Data validation mechanisms:** establishing a data quality validation mechanism at the UpHC and city corporations incorporating periodic reviews of data inputs before submitting the information to statisticians for input into DHIS2. The validation mechanism should also cross-check that inputs into DHIS2 are consistent with data from the monthly reports.
- **Data quality oversight:** designating dedicated personnel at the Civil Surgeon's Office (i.e., district level) who are responsible for monitoring data quality for their districts' upazilas. These individuals will be charged with ensuring that the implementation of mitigation and corrections of any data discrepancies is done, as well as to regularly follow-up on the status of agreed actions.
- **Data quality assessments**: jointly the MOHFW and EPI should develop standard operating procedures requiring that regular data quality assessments (i.e., spot checks) are done, in collaboration with the partners. These assessments should be conducted at regular intervals to ensure the

<table>
<tr><td></td><td colspan="2">ongoing accuracy and reliability of sub-national immunisation data.

Recommendation

• Refer to Recommendation 8 related to nationwide vacant EPI positions.
• Refer to Recommendation 10 which pertains to enhancing EPI's supervision process. This enhancement should encompass regular spot checks of reported immunisation data, comparing it against the source documents, such as tally sheets and monthly reports.</td></tr>
<tr><td>Root Cause

• No review before primary coverage data is compiled by supervisors/ officers (e.g., AHI, HI, MTEPI) and no data quality review by the Upazila Health &Family Welfare Officer before entering the data in DHIS2.
• Absence of regular data quality assessments – including insufficient or no supervision from either the district Civil Surgeon's Office or the national EPI team. No documentation was kept on file records evidencing that any issues with data quality were identified, or any subsequent actions proposed and followed up.
• Insufficient training or on-the-job supportive formation for key personnel including: HA, AHI, HI, MTEPI, and the statistician.</td><td colspan="2">Management comments

See detailed management responses - Annex 16</td></tr>
<tr><td>Risk / Impact / Implications
Data discrepancies risk undermining the reliability and credibility of data used for the EPI programme's decision-making.</td><td>Responsibility
EPI, DGHS, MOH&FW and DP</td><td>Deadline / Timetable

See Annex 16</td></tr>
</table>

4.4.4 Data quality – gaps in controls over the immunisation data system

Context and Criteria

In 2009, the MOHFW adopted DHIS2 as its primary management information system to track the country's health data. DHIS2 is a web-based platform for recording, managing, and reporting data relating to the delivery of health services. The system was introduced across Bangladesh using a phased rollout, supported initially by GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH), who helped facilitate its deployment into districts by 2011 and sub-districts by 2013.

Thereafter, an additional vaccine management system DHIS2 module was introduced at the sub-district level in 2014, subsequently extended to city corporations and municipalities in 2015 with the support of UNICEF and GIZ. This vaccine management module is expected to help track the availability of vaccines across the country, ranging from the central vaccine store down to sub-districts. In general, DHIS2 has a good track record for providing a user-friendly web interface to accurately capture data on a timely data, in order to support public health planning, priority setting and decision-making.

Condition

The audit team observed several shortcomings in the vaccine management system DHIS2 module. These issues have significantly eroded the reliability and integrity of the data generated through DHIS2, threatening the accuracy of progress tracking against targets.

Data cut-off was not enforced: The audit team noted that users are currently able to retroactively input data in DHIS2 for prior periods. Per the stipulated guidelines, reporting units should finalise their reports in DHIS2 by the 7th day after the end of the prior month. After this deadline, the system must automatically block any entries or changes to the data pertaining to that period, preventing unauthorised data manipulation. However, during the team's review of the DHIS2 in March 2023, they noted that it was still possible to input immunisation coverage data into the system for past periods including in 2021 and 2022, all reporting units had this level of access. The national EPI team were unable to explain the anomaly in access.

No system warnings – including for negative balances : The audit team identified a weakness in DHIS2's control set up. The system did not contain any system-based control to warn if any erroneous entries or when negative stock balances were generated, increasing the risk that data errors would be overlooked or remain unnoticed. Actual examples of negative stock reporting were identified from some reporting units, exemplifying the issue. Similarly, the system did not have any system-based control warning users when negative wastage calculations were generated, a topic which is discussed in detail under finding 4.3.2, for which the audit team also identified several such cases as presented in Annex 14.

Lack of segregation of duties and user access management: In order to access DHIS2, the MOHFW's Management Information Department issued a single user ID to each upazila and two user IDs at the district level. The audit team questioned the generic user IDs being utilised for various operational purposes by each reporting unit (upazila). This practice compromised the principles of segregation of duties and accountability. For example, it was not possible to determine the identity of the person performing data reviews and confirm that this task was actually done by the reporting unit head, who is actually responsible for checking the data inputs from UpHC's statistician.

Similarly for districts, although two user IDs had been provided, the audit team noted that the prevailing practice was for districts to utilise just one of their user IDs, for both recording logistics/stock data as well as for carrying out review functions. In effect, the sharing of a generic ID undermined accountability, creating a vulnerability that unauthorised access or alterations to data could occur.

Management of user ID accounts – dormant accounts: User access IDs can be created and managed via the DHIS2 dashboard. As at March 2023, the programme consisted of 629 reporting units (including 2 FDMN units). However, the audit team noted that the system had 669 active users for the purposes of reporting on immunisation coverage and 659 active users for vaccine management reporting, which resulted in the dashboard not being able

Recommendation 22

The MOHFW should require the EPI to rectify the identified deficiencies within the DHIS2 by:

- **Enhancing DHIS2's integrity and functionality**: Initiate system upgrades addressing the flaws identified. Any amendments to the systems should prioritise critical functionalities such as automating the transfer of closing stock balances from the previous month's into the subsequent month's opening stock and enforcing data entry cut-off dates. Such enhancements can help to improve the data quality in DHIS2.
- **Revising roles and responsibilities in the DHIS2 manual**: Update the DHIS2 manual, to clearly define responsibilities for reviewing data and to reinforce the segregation of duties between data input and review of data roles. This will ensure that data entry and quality checks are performed by different individuals, to increase the integrity of the data.
- **Reviewing and streamlining users' access**: Conduct a comprehensive review of users with access to DHIS2. Consider removing users other than those linked to reporting units responsible for inputting immunisation data, in order to: rationalise access; improve accountability; and align with dashboard indicators, such as reporting timeliness.

<table>
<tr><td colspan="2">to provide an accurate snapshot on the level of reporting timeliness, given that these non-reporting user IDs should not actually have been included when accounting for reporting timeliness.</td><td></td></tr>
<tr><td colspan="2">Root Cause
Lack of communication: There was no communication between the national EPI team and the DHIS2 developers, regarding the desire for system-based warning messages in case of irregular data inputs (i.e., associated with negative stock or wastage values).

Prioritisation of form over substance: The programme’s current focus is primarily on the timely data collection and input into DHIS2, rather than data quality. This risks prioritising the form – getting the data in the system even if inadequate or unvalidated, while deprioritising the substance – i.e., recognising the value of quality, assured data.

Inadequate user access management: The provision of access to DHIS2 to entities – such as hospitals – beyond the 629 reporting units who routinely provide immunisation data, illustrates inconsistency in the management of user access. This imprecision also introduced possible confusion regarding reporting and inaccurate data submissions and analytics.</td><td>Management comments
See detailed management responses - Annex 16</td></tr>
<tr><td>Risk / Impact / Implications
Weaknesses in the DHIS2's design and functionality have implications for the integrity and management of the programme’s data:
• Data manipulation and unauthorised access: The absence of personalised user IDs increased the risk of unauthorised access or data alterations;
• Data inaccuracies and reliability concerns: The absence of automatic carry-forward for opening stock balances and the lack of control mechanisms to check for irregular inputs, can resulting in computing negative values and introduce inaccuracies into the data; and
• Missed intervention opportunities: Gaps in the data and inaccuracies resulting from the above weaknesses can hinder identifying routine immunisation challenges or issues which need to be promptly addressed.</td><td>Responsibility
EPI, DGHS, MOH&FW & DP</td><td>Deadline / Timetable
See Annex 16</td></tr>
</table>

4.4.5 Inadequate progress in improving data quality

Context and Criteria

The EPI, with support from the alliance partners, has established several measures to improve its data quality. This commitment is stated in the comprehensive multi-year plan (cMYP) 2018-2022 for Bangladesh's National Immunisation Programme. The plan outlines a strategy involving data quality self-assessments conducted by surveillance immunisation medical officers (SIMOs), to re-evaluate data quality several times each month. The outcomes from these assessments are regularly compared for consistency, and the districts and SIMOs actively engage in discussions to address issues identified. This iterative monitoring process was expected to continue until the improvements in data were substantiated by the WHO UNICEF Estimates of National Immunisation Coverage (WUENIC) estimates and the coverage evaluation survey (CES).

The CES, done by independent agents, is a useful monitoring tool which provides an evidence-based assessment of the immunisation programme's impact and validates its achievements. Hence such surveys should be regularly conducted and published. The EPI has leveraged and accepted CES in the past, as a more faithful representation of the programme's status than its own administrative data. Moreover, the programme's data improvement plans for 2020 and separately for 2022-2025 required that a CES is conducted each year, emphasising its feedback role on the quality of data.

Furthermore, data quality assessments (DQA) are a self-assessment mechanism, requiring countries to identify their data challenges and develop data quality improvement plans (DQIP). Hence the Bangladesh EPI is expected to devote sufficient resources to rectify its data quality concerns in its routine immunisation programme and coverage. This commitment is corroborated in its published cMYP 2018-2022.

The audit team review the programme's effectiveness in regularly conducting CES and implementing DQIPs. Worth noting that both these mechanisms share a common objective of narrowing the gap between administrative coverage and the CES survey results. The team sought to establish the frequency of CES and whether DQIPs were comprehensively executed, including any necessary adjustments due to externalities such as when the Covid-19 pandemic was pervasive.

Condition

Timely, reliable data is a necessary component of effective decision-making when directing immunisation programmes. The audit findings highlighted challenges in two areas: delays in conducting the CES and in implementing the DQIPs. Both of these activities detracted from the credibility of the immunisation data during this period.

Delays in conducting CES surveys

Except for 2012, MOHFW regularly conducted annual CES from 2010 to 2019 to monitor administrative data discrepancies. However, the last CES was in 2019, and there has been a three-year gap in CES activities up to March 2023, which contradicts the 2020 data improvement plan that stressed the significance of conducting annual CES for enhancing the quality of immunisation data.

While the Covid-19 pandemic presented various challenges, in the Bangladesh context, its peak impact occurred during 2021. Thus, the lack of CES surveys covering the period before (2020) or after (2022) puts into doubt the viability of the data improvement plan given its emphasis on the need for an annual CES. A recent survey would have helped to localise gaps in data quality. Hence its absence is problematic and could impact upon the programme's ability to formulate and tailor DQIP activities targeted at specific reporting units most warranting improvement assistance.

Delays in implementing data quality improvement plans

The EPI, with support from the alliance partners, has developed data quality improvement plans (DQIP) as part of its commitment to enhance data quality. The audit team reviewed progress and determined that there were significant delays and that these plans were only partially implemented.

The 2020 DQIP comprised 14 activities, each contributing to data enhancement. As at March 2023, only 2 of these activities are complete, 2 are partially executed, 1 was not begun (linked to executing the CES survey) and the remaining 9 activities were continuously deferred to the following years. The activities that were delayed or only partially executed include elements such as: desk reviews, in- depth data quality assessments, linkages between supply and utilisation data, and improvements in documented evidence of vaccination.

Recommendation 23

The MOHFW is recommended to collaborate closely with the alliance partners to **ensure that CES survey are undertaken each year**. These results will serve as a resource to help localise gaps in data quality and thereafter to tailor DQIP activities targeted at specific reporting units most warranting improvement assistance.

Recommendation 24

The MOHFW is recommended to **prioritise implementation of its data quality improvement plan** and establish suitable mechanisms to regularly monitor and review progress on the plan's execution. This includes ensuring that activities are accomplished in accordance with the plan, and promptly carrying out the necessary corrective actions to address issues.

In addition, the DQIP 2022-2025 comprised 21 activities. Only 1 of these activities was complete as of March 2023. The gap between ambition (i.e., planning what to do) and execution (i.e., what actually has been accomplished) raises questions about the motivation to fulfil the strategy and credibly follow-through on improving data quality. See Annex 15 for status of DQIP 2020 and DQIP 2022.		
Root Cause The protracted delays of implementing both DQIPs and of conducting annual CES can be attributed to several factors. • Planning delays and the overall disruption caused by the Covid-19 pandemic, resulted in deferring the necessary data collection and survey activities. • The lack of persuasive EPI leadership which failed to successfully argue for the CES to be promptly reinstated once the initial pandemic disruption phase subsided. High turnover within the national EPI team resulted in a lack of urgency to resume CES activities. There was also a lack of process for periodic monitoring of the DQIP activities. • Staff turnover and attrition which detracted from the continuity of the EPI workforce, including several positions that were responsible for addressing data quality issues.	Management comments See detailed management responses - Annex 16	
Risk / Impact / Implications The delays in carrying out the CES and implementing the DQIP raise concerning issues for the EPI program. These delays hinder the program's ability to show significant improvement in data quality, cast doubt on the reliability of data for evidence-based strategic decisions, and undermine confidence in immunisation results.	Responsibility EPI, DGHS, MOH&FW & DP	Deadline / Timetable See Annex 16

5. Annexes

Annex 1 : Acronyms

A&I	:	Audit and Investigations
AHI	:	Assistant Health Inspector
BCG	:	Bacille Calmette-Guérin
BDT	:	Bangladeshi Taka
CCE	:	Cold Chain Equipment
CCEI	:	Cold Chain Equipment Inventory
CCEOP	:	Cold Chain Equipment Optimisation Platform
CES	:	Coverage Evaluation Survey
COSO	:	Committee of Sponsoring Organisations of the Treadway Committee
CSO	:	Civil Surgeon's Office
DC	:	Divisional Coordinator
DGHS	:	Director General of Health Services
DHIS	:	District Health Information System
DHO	:	Districts Health Office
DIP	:	Data Improvement Plan
DPA	:	Direct Project Aid
DQA	:	Data Quality Assessments
EPI	:	Expanded Programme on Immunisation
EVM	:	Effective Vaccine Management
FACE	:	Funding Authorisation and Certificate of Expenditure
FAPAD	:	Foreign Aided Project Audit Directorate
EEFO	:	Earliest expiry first out
FMAU	:	Financial Management and Audit Unit
GIZ	:	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOB	:	Government of Bangladesh
HA	:	Health Assistants
HACT	:	Harmonised Approach to Cash Transfer
HI	:	Health Inspector
HMIS	:	Health Management Information Systems
HPNSP	:	Health Nutrition and Population Sector Program
IFRC	:	International Federation of Red Cross
IPV	:	Inactivated Polio Vaccine
LMIS	:	Logistics Management Information System
MDTF	:	Multi- Donor Trust Fund
MIS	:	Management Information System
MNC&AH	:	Maternal, New-born, Child & Adolescent Health
MOHFW	:	Ministry of Health and Family Welfare
MTEPI	:	Medical Technician Expanded Programme on Immunisation
NGO	:	Non-Government Organisation
OCAG	:	Office of Comptroller & Auditor General
PCA	:	Programme Capacity Assessment
PCV	:	Pneumococcal Conjugate vaccine
PFA	:	Partnership Framework Agreement
PO	:	Purchase Order
RPA	:	Reimbursable Project Aid
SIMO	:	Surveillance Immunisation Medical Officers
SOE	:	Statement of Expenditure
SOP	:	Standard Operating Procedure
TA	:	Travel Allowance
UHFWO	:	Upazila Health and Family Welfare officer
UNICEF	:	United Nations Children's Fund
UPHC	:	Upazila Health Complex
USAID	:	United States Agency for International Development
USD	:	United States Dollars
VAR	:	Vaccine Arrival Reports
VAT	:	Value Added Tax
WHO	:	World Health Organisation
WUENIC	:	WHO/ UNICEF Estimates of National Immunisation Coverage

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 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 : List of Facilities Visited by the audit team

National EPI - Dhaka	
District	**Upazila**
1. Bandarban	1. Bandarban Sadar
	2. Lama
2. Cox's Bazar	3. Ramu
	4. Moheshkhali
3. Dhaka	5. Dhamraj
	6. Keraniganj
	7. Savar
	8. DNCC
	9. DSCC
4. Tangail	10. Basail
5. Sylhet	11. Sylhet Sadar
	12. Fenchuganj
	13. SCC
6. Moulvibazar	14. Moulvibazar
	15. Gournodi
	16. Bakerganj
7. Jhalkathi	17. Razapur
	18. Kathalia

Annex 5 : Bangladesh's current supply chain structure – based on a three – tier model

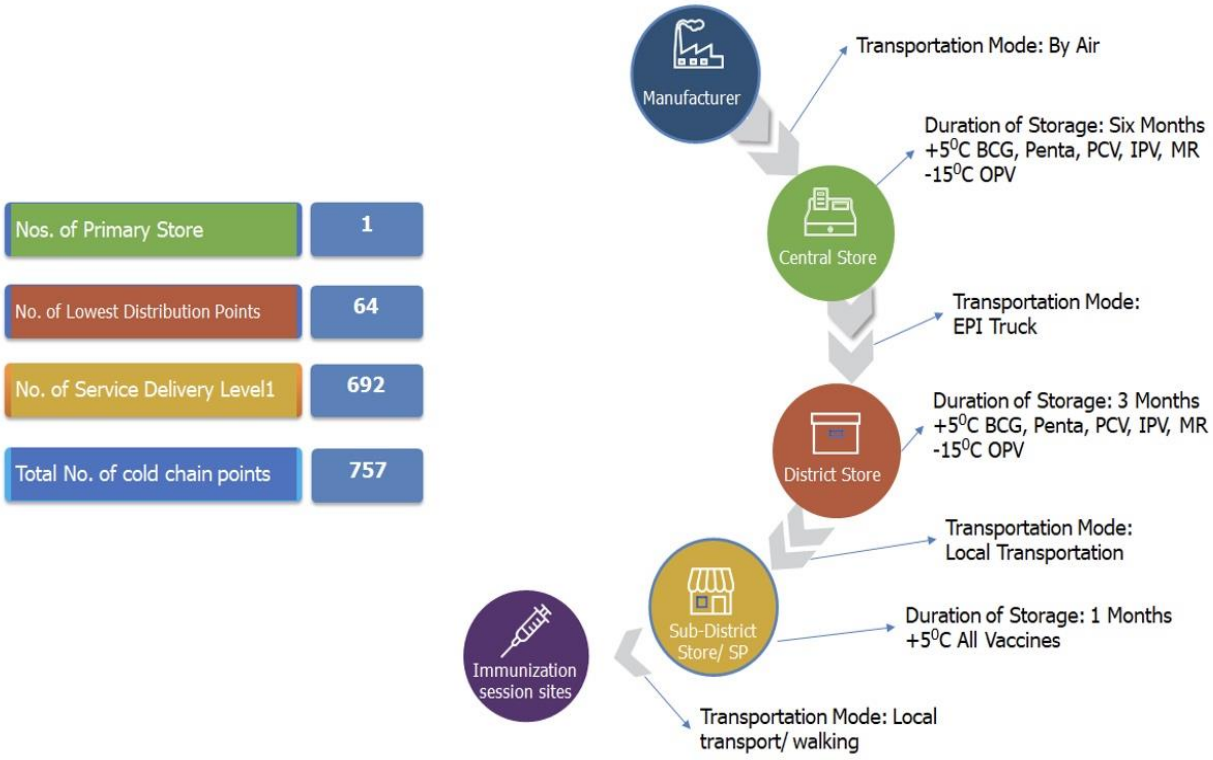


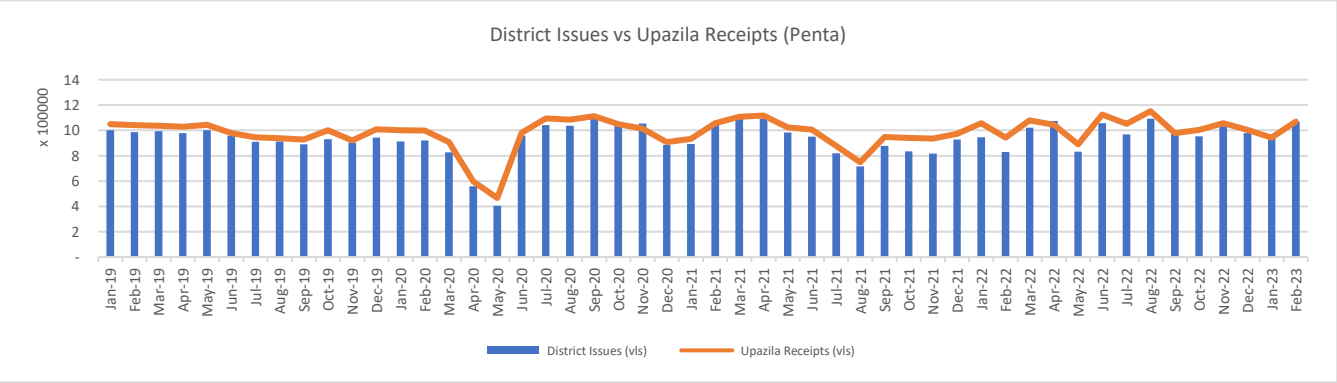
Figure Immunization supply chain levels

Annex 6: Variance in supply and receipt of Penta, PCV and IPV between national and sub-national level

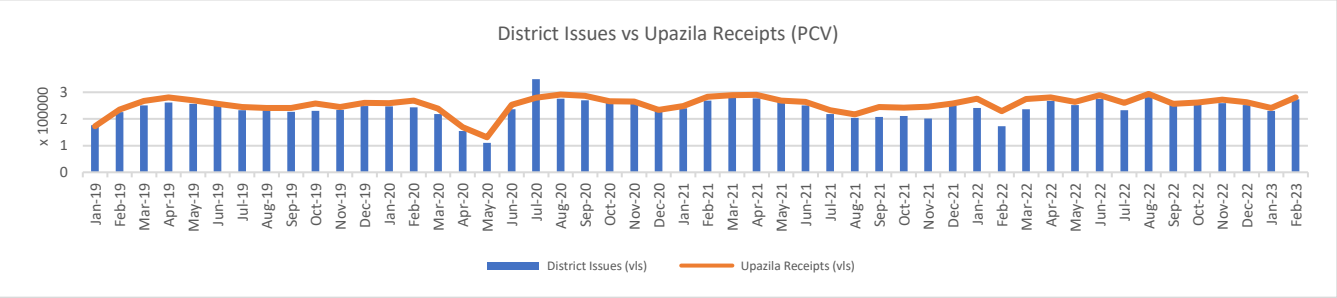
6.1: Variance (in vials) of supply by EPI-HQ and receipts by EPI-Districts for January – December 2022.

P Month	Pentavalent vials issued from EPI-HQ	Pentavalent vials received all districts	difference in ratio %	PCV vials issued from EPI-HQ	PCV vials received all districts	difference in ratio %	IPV vials issued from EPI-HQ	IPV vials received all districts	difference in ratio %
Jan-22	789,700	792,900	101%	152,400	120,198	79%	34,560	25,950	76%
Feb-22	753,700	629,176	84%	21,400	41,700	195%	17,850	18,690	105%
Mar-22	1,102,800	927,200	85%	499,500	426,700	86%	47,820	70,204	147%
Apr-22	1,159,200	1,181,000	102%	240,000	253,100	106%	22,230	24,390	110%
May-22	788,000	1,082,384	138%	267,250	327,400	123%	18,720	23,400	125%
Jun-22	1,361,326	941,200	70%	314,750	234,400	75%	1,180	390	34%
Jul-22	1,516,800	1,392,300	92%	338,400	306,400	91%	44,397	42,030	95%
Aug-22	784,000	791,880	101%	201,800	215,400	107%	24,180	23,760	99%
Sep-22	965,496	834,972	87%	239,000	210,050	88%	31,520	34,530	110%
Oct-22	796,300	663,000	84%	246,700	239,200	97%	23,160	23,520	102%
Nov-22	1,283,404	1,298,300	102%	223,100	251,300	113%	25,050	25,740	103%
Dec-22	1,748,700	1,280,716	74%	335,400	300,000	90%	33,000	30,160	92%
Total	**13,049,426**	**11,815,028**	**91%**	**3,079,700**	**2,925,848**	**95%**	**323,667**	**342,764**	**106%**
	Overall net difference in pentavalent 1,234,398 less vials were received; Overall unexplained 9% gap.			Overall net difference in PCV 153,852 less vials were received ; Overall unexplained 5% gap.			Overall net difference in IPV 19,097 more vials were received; Overall unexplained 6% surplus.		

6.2 : Discrepancy between District issuance and sub-district (Upazila) receipts per records entered in LMIS/DHIS2 for Penta.



6.3: Discrepancy between District issuance and sub-district (Upazila) receipts per records entered in LMIS/DHIS2 for PCV.



Annex 7: Comparison of Covid-19 supply and receipt data

7.1: Comparison between EPI VAR and COVAX data for Covid-19 Vaccines shipped to Bangladesh (in doses)

	EPI vaccine arrival reports (VARs)			UNICEF SD shipment data			Total EPI (a) /
Vaccine brands (number of doses)	2021	2022	Total EPI (a)	2021	2022	Total COVAX (b)	total UNICEF SD (b)
Pfizer Overseas LLC	26,203,320	71,368,140	97,571,460	15,762,240	63,381,150	79,143,390	123%
Sinovac Life Sciences Co., Ltd.	38,187,368	19,991,040	58,178,408	37,452,000	20,013,040	57,465,040	101%
Pfizer Overseas LLC - Paediatric	-	32,533,000	32,533,000		33,050,000	33,050,000	98%
Beijing Institute of Biological Products Co Ltd	28,636,103	-	28,636,103	34,878,000		34,878,000	82%
Serum Life Sciences Ltd - Covishield	6,200,000	8,240,000	14,440,000	4,292,000	5,490,000	9,782,000	148%
AstraZeneca AB	10,779,330	-	10,779,330	17,394,350	2,126,100	19,520,450	55%
Moderna Switzerland GMBH	6,909,800	2,054,200	8,964,000	13,727,360	2,054,200	15,781,560	57%
Janssen Pharma	-	679,750	679,750		679,750	679,750	100%
Total doses	116,915,921	134,866,130	**251,782,051**	123,505,950	126,794,240	**250,300,190**	**101%**

7.2: Mismatch between the doses received per DHIS2 and UNICEF SD doses shipped illustrating discrepancies in the amounts of each type of Pfizer doses

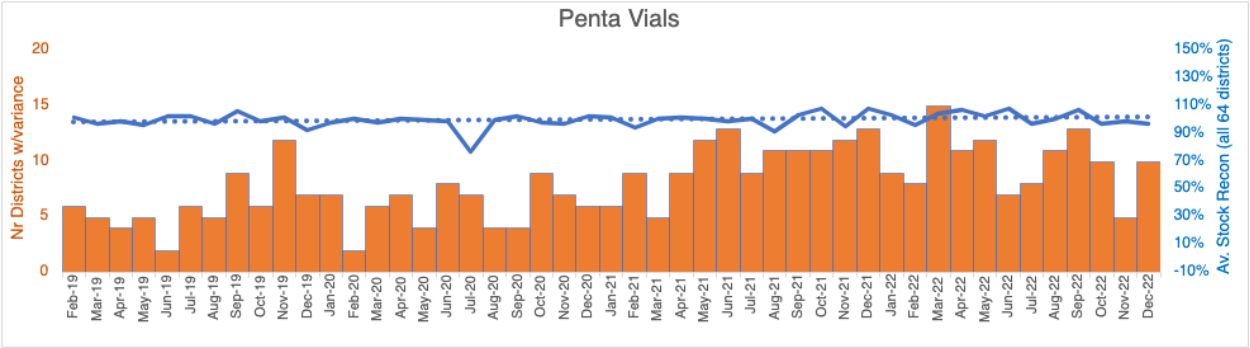
Doses received – Per EPI/ DHIS2 records (c)		**Doses shipped –** per UNICEF SD shipment records (d)		**Variance** (c) – (d)
Pfizer	79,143,390	Pfizer	55,142,100	-2,500,000
		Pfizer (RTU)	26,501,290	
Pfizer (Paediatric)	35,997,200	Pfizer (Paediatric)	33,497,200	2,500,000
Total mixture of doses ***received*** *from Pfizer*	*115,140,590*	*Total mixture of doses* ***supplied*** *by UNICEF SD*	*115,140,590*	0

Annex 8: EEFO non-compliance illustration for pentavalent vaccine – where batch dates shown in red were issued out of sequence.

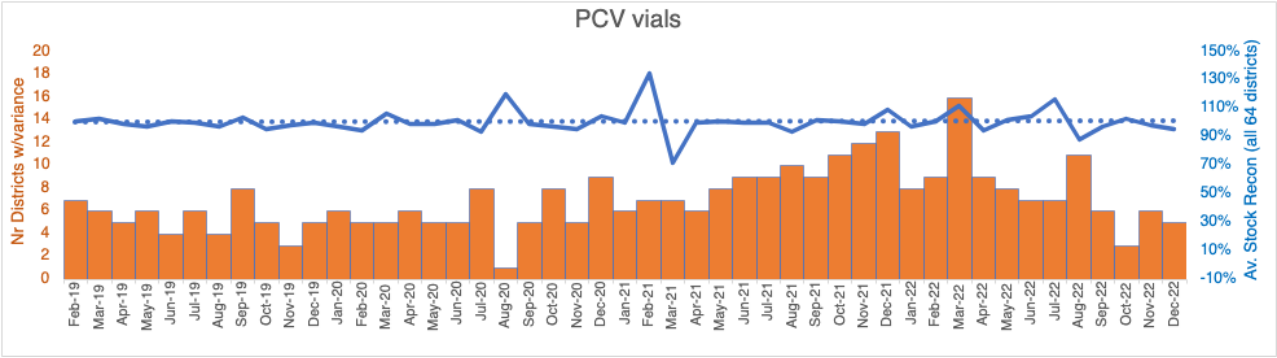
Date of supply from Central Store	Batch no	Batch Exp. Date
09 Jan 19	FWL18526	Sep-21
21 Jan 19	220110018B	Mar-21
27 Jan 19	220110418A	Mar-21
20 Feb 19	220110918B	Mar-21
26 Feb 19	220110218C	Mar-21
4 Mar 19	2plk004B820	Aug-20
28 Mar 19	2PLK003D18	Aug-20
26 Mar 19	220113218A	Jun-21
28 Mar 19	2plk*	Aug-20
24 Jun 19	220102419C	Aug-21
2 Jul 19	220100719B	Jun-21
2 Jul 19	PLK038D18	Nov-20
1 Aug 19	220102419C	Aug-21
7 Aug 19	2285X001B	Jun-21
19 Aug 19	2859X001C	Jun-21
8 Sep 19	220104219B	Oct-21
14 Nov 19	2859Y020A	Nov-21
17 Nov 19	2859Y020A	Nov-21
2 Dec 19	2859Y020A	Nov-21
11 Dec 19	PLK004E19	Apr-21
11 Dec 19	PLK002E19	Apr-21
15 Dec 19	FWL19516	Jul-22

Annex 9: Reconciliation for Penta and PCV

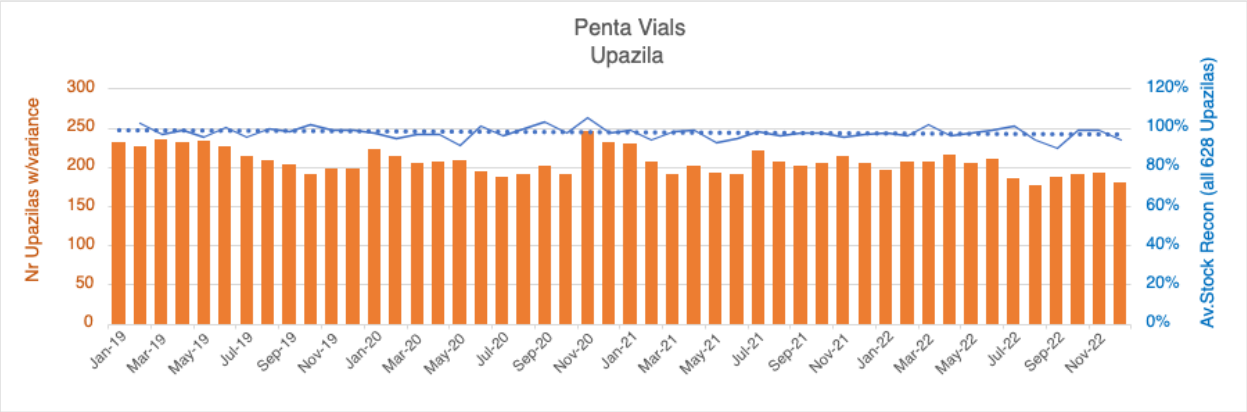
9.1: Penta vaccines reconciliation for 2019 – 2022 across all 64 districts.



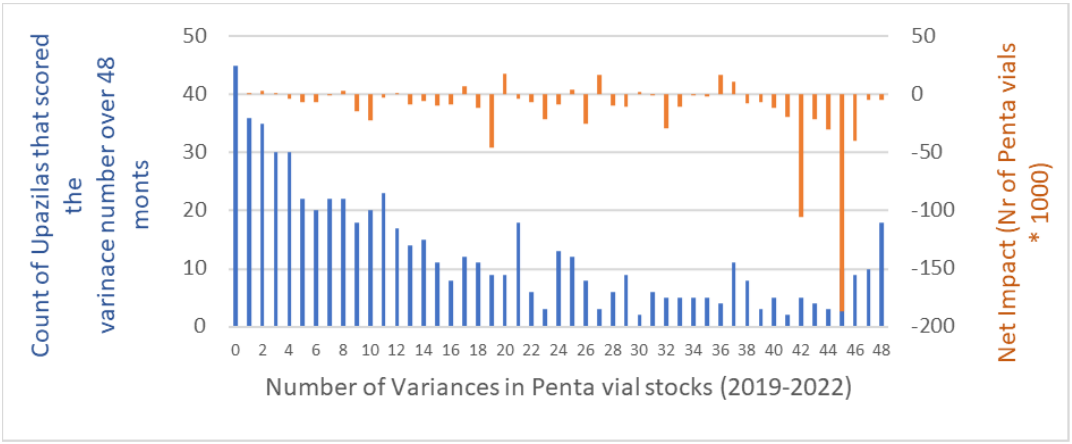
9.2: PCV reconciliation for 2019 – 2022 across all 64 districts.



9.3: Penta vaccines reconciliation for 2019 – 2022 across all 628 subdistricts reporting in DHIS2.



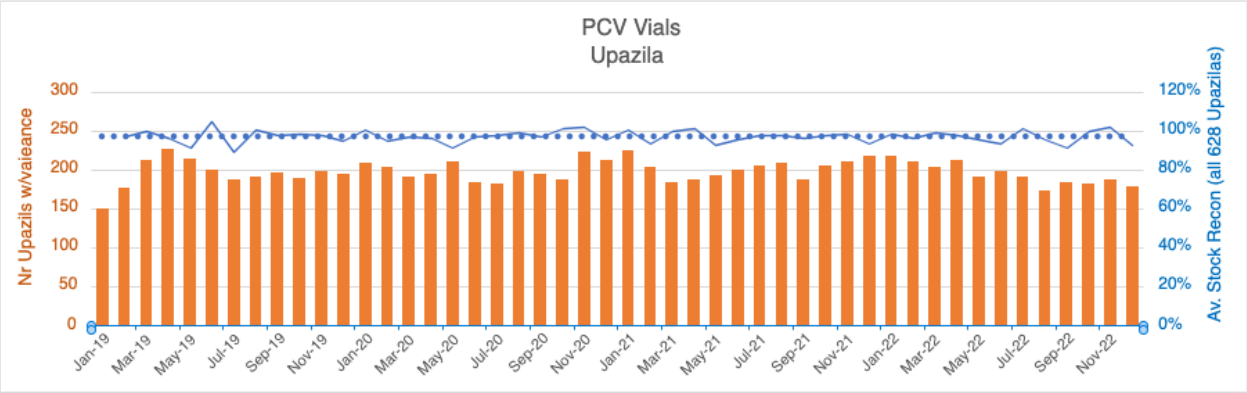
9.4: Detailed analysis for Penta vials at Upazila level focusing on subdistricts contributing to discrepancies.



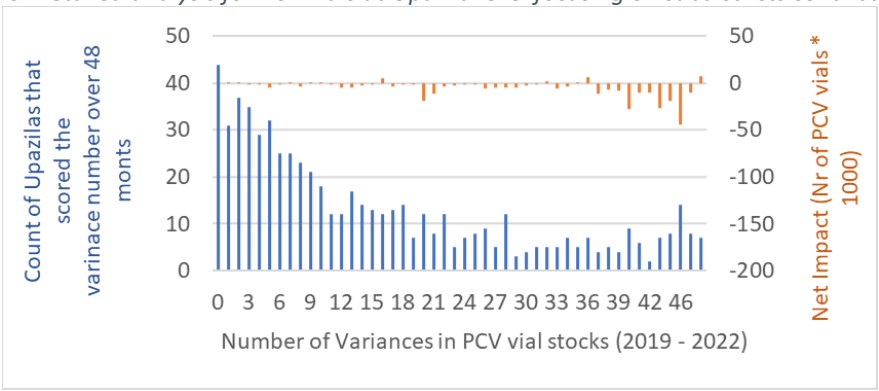
The most significant impact was observed at 10 Upazila Health Complexes (UpHCs) which exhibited 45 variations over the span of 48 months. This resulted in a negative reconciliation of 186,733 vials which contributed to an overall negative figure of 621,073 vials. These UpHCs were Haim Char Upazila, Kawkhali RM Upazila, Matlab (South) Upazila, Gazipur City Corporation, Bhairab Municipality, Gazipur City Corporation, Jamalpur Municipality, Madaripur Municipality, Bhaluka Upazila, and Dhaka City Corporation North.

Following closely, the second group involves 5 UpHCs that collectively exhibited 42 variations, leading to a negative reconciliation of 105,879 vials. The UpHCs in this group consist of Rajapur Upazila, Kurigram Municipality, Ruma Upazila, Birganj Upazila, and Dhaka City Corporation South.

9.5: PCV reconciliation for 2019 – 2022 across all 628 subdistricts reporting in DHIS2.



9.6: Detailed analysis for PCV vials at Upazila level focusing on subdistricts contributing to discrepancies.



The most substantial impact was observed at 14 Upazila Health Complexes (UpHCs) which exhibited 46 variations over a 48-month period. This resulted in a negative reconciliation of 44,349 vials which contributed to a cumulative negative figure of 245,535. These UpHCs were Dhaka City Corporation South, Roumari Upazila, Harirampur Upazila, Mymensingh Municipality, Tangail Municipality, Hakimpur Upazila, Adamdighi Upazila, Gazipur City Corporation, Kalmakanda Upazila, Belkuchi Upazila, Madhabpur Upazila, Kashiani Upazila, Ulipur Upazila, and Dhaka City Corporation North.

Following behind, the second and third group consists of 7 UpHCs and 9 UpHCs, respectively, which together experienced 44 variations and 40 variations. These variations led to a combined negative reconciliation of 26,206 vials and 27,779 vials. The UpHCs in the second group include Saturia Upazila, Bhaluka Upazila, Bhairab Municipality, Chauhali Upazila, Madaripur Municipality, Shariatpur Sadar Upazila, and Dhaka City Corporation North. The third UpHC group consists of Naikhongchhari Upazila, Sunamganj Municipality, Madhupur Upazila, Matlab (South) Upazila, Sujanagar Upazila, Sreenagar Upazila, Coxs Bazar Municipality, Mahalchhari Upazila, and Dhaka City Corporation South.

Annex 10: Stock out and negative stocks for Penta and PCV

10.1: Names of districts which experienced pentavalent stockouts exceeding 1 month within a calendar year, during the period 2019 – 2022.

District	Stockouts exceeding 1 month period summarised by month and calendar year [2019 – 2022]
Chuadanga	2019 (February to March)
Brahmanbaria	2020 and July 2021 to June 2022
Chapai Nababganj	2020
Gazipur	2020
Narshingdi	2020
Sunamganj	2020
Natore	2020
Meherpur	2021 (August and September)
Dinajpur	2021 (> than 3 months), 2022 (> than 2 months)
Chattogram	2022
Sirajganj	2022
Joypurhat	2022

10.2: District Level PCV Stockouts Exceeding 1 Month Within a Year between 2019 – 2022.

District	Stockouts exceeding 1 month period summarised by month and calendar year [2019 – 2022]
Brahmanbaria	April 2020 to June 2020
Brahmanbaria	August 2021 to March 2022
Brahmanbaria	January to February 2023 (Zero stock)
Dinajpur	September to November 2022
Other Six Districts	February to March 2023 (Replenished)

10.3: Instances of Penta and PCV Stockouts and Negative balance at Subdistricts/ Upazila – total number of months during 2019 - 2022.

Year	Vaccine	Zero Balances	Negative Balances
2019	Penta	144	228
	PCV	624	179
2020	Penta	245	246
	PCV	290	226
2021	Penta	152	250
	PCV	204	256
2022	Penta	280	222
	PCV	299	206

10.4: Analysis of consecutive months when stores' pentavalent and PCV stock levels were below half of the average monthly consumption.

Consecutive months that the subdistrict stores were operating with low stock levels – i.e., below 0.5 million doses	**2019** Total months		**2020** Total months		**2021** Total months		**2022** Total months	
	Penta	PCV	Penta	PCV	Penta	PCV	Penta	PCV
1 month	38	80	46	79	39	65	30	60
> 2 months	535 (84%)	393 (78%)	463 (86%)	370 (79%)	506 (83%)	398 (78%)	518 (83%)	426 (79%)
> 10 months	66	33	27	20	62	46	79	55

Annex 11: Inconsistencies in monthly / annual immunisation targets

11.1 - Examples of static monthly immunisation targets.

District	Upazila	Facilities	Total 2019	Total 2020	Total 2021	Total 2022	Remarks
Chuadanga District	Alamdanga Mun.	Alamdanga Mun.	852	852	852	852	Static target from 2019 to 2022
Barishal District	Babuganj Upazila	Babuganj Upazila Health Complex	3,624	3,624	3,624	3,624	
Rajshahi District	Bagha Upazila	Bagha Upazila Health Complex	3,756	3,756	3,756	3,756	
Chapai Nababganj District	Bholahat Upazila	Bholahat Upazila Health Complex	2,724	2,724	2,724	2,724	
Dhaka District	Dhaka CC North	Dhaka CC North Zone-02	26,652	26,652	26,652	26,652	
Bhola District	Lalmohan Upazila	Lalmohan Upazila Health Complex	8,532	8,532	8,532	8,532	
Lalmonirhat District	Lalmonirhat Mun.	Lalmonirhat Mun.	1,584	1,584	1,584	1,584	
Manikganj District	Manikganj Sadar Upazila	Manikganj (sadar) Upazila Health Office	5,592	5,592	5,592	5,592	
Natore District	Natore Sadar Upazila	Natore (sadar) Upazila Health Office	7,500	7,500	7,500	7,500	
Madaripur District	Shib Char Upazila	Shibchar Upazila Health Complex	9,060	9,060	9,060	9,060	
Habiganj District	Ajmiriganj Upazila	Ajmiriganj Upazila Health Complex	3,672	3,672	3,672	3,792	
Bandarban District	Bandarban Mun.	Bandarban Mun.	1,056	1,056	1,056	1,128	Static target from 2019 to 2021
Gaibandha District	Fulchhari Upazila	Fulchari Upazila Health Complex	5,232	5,232	5,232	5,368	
Khulna District	Fultala Upazila	Fultala Upazila Health Complex	2,880	2,880	2,880	2,892	
Kishoreganj District	Itna Upazila	Itna Upazila Health Complex	5,916	5,916	5,916	6,036	
Joypurhat District	Kalai Upazila	Kalai Upazila Health Complex	2,592	2,592	2,592	2,652	
Jhenaidaha District	Maheshpur Mun.	Maheshpur Mun.	600	600	600	612	
Bhola District	Monpura Upazila	Manpura Upazila Health Complex	2,976	2,976	2,976	3,058	
Rajshahi District	Rajshahi CC	Rajshahi CC Zone-1	1,800	1,800	1,800	1,896	
Naogaon District	Rani Nagar Upazila	Raninagar Upazila Health Complex	3,864	3,864	3,864	3,932	
Manikganj District	Saturia Upazila	Saturia Upazila Health Complex	4,140	4,140	4,140	4,008	
Naogaon District	Badalgachhi Upazila	Badalgachi Upazila Health Complex	4,172	3,984	3,984	3,984	Static target from 2020 to 2022
Pabna District	Bera Upazila	Bera Upazila Health Complex	8,904	8,784	8,784	8,784	
Chuadanga District	Chuadanga Mun.	Chuadanga Mun.	2,052	2,088	2,088	2,088	
Coxs Bazar District	Coxs Bazar Municipality	Coxs Bazar Municipality	6,384	6,684	6,684	6,684	
Manikganj District	Daulatpur MG Upazila	Daulatpur Upazila Health Complex	4,512	4,548	4,548	4,548	

District	Upazila	Facilities	Total 2019	Total 2020	Total 2021	Total 2022	Remarks
Dhaka District	Dhaka CC South	Dhaka CC South Zone-01	12,072	12,924	12,924	12,924	
Joypurhat District	Joypurhat Sadar Upazila	Joypurhat (sadar) Upazila Health Office	3,948	3,696	3,696	3,696	
Narail District	Kalia Mun.	Kalia Mun.	420	636	636	636	
Gazipur District	Kapasia Upazila	Kapasia Upazila Health Complex	7,872	7,596	7,596	7,596	
Jhalokati District	Kathalia Upazila	Kathalia Upazila Health Complex	2,772	2,628	2,628	2,628	
Kishoreganj District	Kishoreganj Mun.	Kishoreganj Mun.	4,908	4,320	4,320	4,320	
Kustia District	Kushtia Mun.	Kushtia Mun.	4,500	4,260	4,260	4,260	
Netrokona District	Madan Upazila	Madan Upazila Health Complex	5,095	5,196	5,196	5,196	
Chapai Nababganj District	Nachole Upazila	Nachol Upazila Health Complex	3,888	3,924	3,924	3,924	
Dinajpur District	Nawabganj DP Upazila	Nawabganj Upazila Health Complex	5,448	5,484	5,484	5,484	
Pirojpur District	Nazirpur Upazila	Nazirpur Upazila Health Complex	4,428	4,452	4,452	4,452	
Netrokona District	Netrokona Mun.	Netrokona Mun.	2,612	2,652	2,652	2,652	
Naogaon District	Patnitola Upazila	Patnitala Upazila Health Complex	4,968	4,656	4,656	4,656	
Munshiganj District	Tongibari Upazila	Tungibari Upazila Health Complex	5,028	5,124	5,124	5,124	
Barishal District	Wazirpur Upazila	Wazirpur Upazila Health Complex	5,976	6,288	6,288	6,288	
Joypurhat District	Akkelpur Upazila	Akkelpur Upazila Health Complex	2,676	2,676	2,677	2,687	Example for Static target from 2019 and 2020
Barishal District	Banaripara Upazila	Banaripara Upazila Health Complex	4,968	4,968	4,872	4,860	
Rangamati District	Belai Chhari Upazila	Belaichari Upazila Health Complex	636	636	648	672	
Kishoreganj District	Bhairab Mun.	Bhairab Mun.	3,792	3,792	3,804	3,816	
Chandpur District	Chandpur Mun.	Chandpur Mun.	5,616	5,616	5,712	5,880	
Bhola District	Char Fassion Upazila	Charfassion Mun.	984	984	1,020	1,008	
Bhola District	Char Fassion Upazila	Charfession Upazila Health Complex	15,300	15,300	15,816	16,368	
Lalmonirhat District	Aditmari Upazila	Aditmari Upazila Health Complex	5,568	5,532	5,532	5,952	Static target identified during 2020 and 2021
Barguna District	Amtali Upazila	Amtali Upazila Health Complex	7,260	7,368	7,368	7,710	
Pabna District	Atgharia Upazila	Atgharia Upazila Health Complex	4,104	3,984	3,984	4,032	
Naogaon District	Atrai Upazila	Atrai Upazila Health Complex	3,852	3,696	3,696	3,852	
Bagerhat District	Bagerhat Sadar Upazila	Bagerhat (sadar) Upazila Health Office	4,284	4,332	4,332	4,392	
Sylhet District	Balaganj Upazila	Balaganj Upazila Health Complex	7,560	7,464	7,464	4,998	
Jhenaidaha District	Jhenaidah Mun.	Jhenaidah Mun.	3,060	3,072	2,688	2,688	

District	Upazila	Facilities	Total 2019	Total 2020	Total 2021	Total 2022	Remarks
Khagrachhari District	Khagrachhari Mun.	Khagrachhari Mun.	1,184	1,200	1,188	1,188	Static target identified during 2021 and 2022
Madaripur District	Madaripur Sadar Upazila	Madaripur (sadar) Upazila Health Office	7,088	7,091	7,092	7,092	
Maulavi Bazar District	Maulvibazar Mun.	Maulvibazar Mun.	1,766	1,740	1,812	1,812	
Netrokona District	Netrokona Sadar Upazila	Netrokona (sadar) Upazila Health Office	7,248	7,236	7,320	7,320	
Nilphamari District	Nilphamari Sadar Upazila	Nilphamari (sadar) Upazila Health Office	8,088	8,268	8,280	8,280	

11.2 - Examples of decreasing monthly immunisation target.

District	Upazila	Facilities	Total 19	Total 20	Total 21	Total 22	Remarks
Mymensingh District	Phulpur Upazila	Phulpur Upazila Health Complex	17,580	17,185	17,124	11,680	Each year, there is an incremental reduction in the subsequent year's target since 2019
Gaibandha District	Sundarganj Upazila	Sundarganj Upazila Health Complex	12,452	12,264	12,240	8,226	
Chattogram District	Chittagong CC	Chittagong CC Zone-5	15,408	15,192	14,916	14,220	
Maulavi Bazar District	Rajnagar Upazila	Rajnagar Upazila Health Complex	6,144	5,992	5,892	5,652	
Feni District	Chhagalnaiya Upazila	Chhagalnaya Upazila Health Complex	5,472	5,436	5,364	5,088	
Dhaka District	Dhaka CC North	Dhaka CC North Zone-01	12,672	12,160	8,484	8,402	
Barguna District	Bamna Upazila	Bamna Upazila Health Complex	1,949	1,942	1,884	1,848	
Bandarban District	Bandarban Sadar Upazila	Bandarban (sadar) Upazila Health Office	1,332	1,299	1,296	1,284	
Rajshahi District	Paba Upazila	Paba Upazila Health Complex	6,588	6,540	6,324	6,300	
Sylhet District	Zakiganj Upazila	Zokiganj Upazila Health Complex	7,152	7,092	6,861	6,844	
Barishal District	Banaripara Upazila	Banaripara Upazila Health Complex	4,968	4,968	4,872	4,860	
Khulna District	Khulna CC	Khulna CC Zone-4	2,472	2,472	2,238	2,221	
Rajshahi District	Rajshahi CC	Rajshahi CC Zone-3	2,944	2,941	2,940	2,846	
Rangamati District	Rangamati Sadar Upazila	Rangamati (sadar) Upazila Health Office	780	768	766	722	
Natore District	Bagatipara Upazila	Bagatipara Upazila Health Complex	2,508	2,583	2,534	2,520	Each year, there is an incremental reduction in the subsequent year's target since 2020
Chattogram District	Chittagong CC	Chittagong CC Zone-2	14,016	14,604	14,376	14,321	
Khulna District	Dacope Upazila	Dacope Upazila Health Complex	2,412	2,556	2,539	2,530	
Dhaka District	Dhaka CC North	Dhaka CC North Zone-03	22,656	24,364	22,933	22,656	
Dinajpur District	Fulbari DP Upazila	Fulbaria Mun.	673	881	597	450	
Chandpur District	Haim Char Upazila	Haimchar Upazila Health Complex	3,081	3,084	3,052	3,012	
Chattogram District	Hathazari Upazila	Hathazari Upazila Health Complex	10,920	11,292	11,256	10,884	

Sunamganj District	Jagannathpur Upazila	Jagannathpur Upazila Health Complex	5,856	5,880	5,808	5,628
Khulna District	Khulna CC	Khulna CC Zone-2	3,156	3,192	2,868	2,796
Sunamganj District	Sunamganj Sadar Upazila	Sunamganj (sadar) Upazila Health Office	6,240	6,350	6,316	6,300
Sylhet District	Sylhet Sadar Upazila	Sylhet (sadar) Upazila Health Office	10,704	10,848	10,819	9,084
Khulna District	Terokhada Upazila	Terokhada Upazila Health Complex	2,860	2,989	2,952	2,907
Sirajganj District	Ullahpara Upazila	Ullapara Upazila Health Complex	15,762	15,996	15,988	15,783

11.3 – Examples of continuous overachievement (the difference between the monthly target and significantly higher achievement reported) for years where it was not considered necessary to revise the target.

Organisation Name	2019					2020					2021					2022				
	Monthly Target	Penta1 given	Penta1 %	PCV1 given	PCV1 %	Monthly Target	Penta1 given	Penta1 %	PCV1 given	PCV1 %	Monthly Target	Penta1 given	Penta1 %	PCV1 given	PCV1 %	Monthly Target	Penta 1 given	Penta1 %	PCV1 given	PCV1 %
Bhaluka Upazila Health Complex	11,809	13,519	115	13,539	115	11,094	11,502	104	11,442	103	12,134	12,804	106	12,612	104	11,473	13,946	122	13,868	121
Dhaka CC North Zone-01	12,672	13,648	108	13,648	108	12,160	11,340	93	11,340	93	8,484	9,283	109	9,283	109	8,402	9,497	113	9,461	113
Dhaka CC North Zone-02	26,652	26,933	101	26,933	101	26,652	25,067	94	25,067	94	26,652	25,941	97	25,941	97	26,652	28,447	107	28,447	107
Kabirhat Upazila Health Complex	5,544	6,127	111	5,942	107	5,784	6,178	107	6,178	107	6,101	6,805	112	6,805	112	6,570	7,295	111	7,287	111
Manikganj Municipality	1,508	1,946	129	1,946	129	1,211	1,877	155	1,877	155	1,215	1,846	152	1,846	152	1,209	2,173	180	2,173	180
Pirojpur Mun.	948	1,273	134	1,273	134	996	1,234	124	1,234	124	1,020	1,369	134	1,369	134	1,080	1,447	134	1,447	134
Savar Upazila Health Complex	34,004	37,593	111	37,515	110	36,612	37,373	102	37,373	102	38,316	40,174	105	40,174	105	39,324	42,096	107	42,096	107
Sunamganj Mun.	1,596	1,770	111	1,770	111	1,608	1,780	111	1,771	110	1,612	1,914	119	1,914	119	1,644	2,079	127	2,079	127

11.4 - Examples of inconsistent monthly targets entered in DHIS2 – annual target when multiplied by 12 months should result in a consistent number for the whole year. Figures in red highlight target changes.

Upazila	Facilities	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22
Bandar	Bandar Upazila Health Complex	348	343	340	348	348	348	348	348	348	348	348	348
Dewanganj	Dewanganj Upazila Health Complex	626	628	629	626	629	626	626	626	626	626	626	626
Jamalpur Mun.	Jamalpur Mun.	348	352	349	352	350	349	349	349	349	349	349	349
Juri	Juri Upazila Health Complex	324	322	318	317	318	320	320	320	320	320	320	320
Keraniganj	Keraniganj Upazila Health Complex	2,205	2,229	2,205	2,204	2,205	2,205	2,205	2,205	2,205	2,205	2,205	2,205
Koyra	Koyra Upazila Health Complex	350	354	350	354	354	354	354	354	354	354	354	354

Rupganj	Rupganj Upazila Health Complex	1,454	1,259	1,260	1,259	1,260	1,512	1,260	1,259	1,260	1,260	1,260	1,260
Shariatpur Sadar	Shariatpur (sadar) Upazila Health Office	340	341	338	340	335	340	340	341	340	340	340	440
Sreemangal Mun.	Sreemangal Mun.	52	51	61	51	61	61	61	51	51	51	51	51
Trishal	Trisal Upazila Health Complex	1,022	1,080	1,041	1,020	1,020	1,001	1,020	1,020	1,020	1,020	1,020	1,050

11.5 - Examples of some UpHC/Municipalities not reporting the immunisation data (targets and achievements) in DHIS2. Only units with significant discrepancies shown below.

Facilities	Data name	Total 21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Total 22
Sundarganj Upazila Health Complex	EPI Infant Monthly Target	12,240	1,020					1,020	1,020	1,035	1,036	1,025	1,035	1,035	8,226
	PCV1 given 0-11m	12,915	1,185					1,141	1,020	1,066	1,088	1,002	1,088	973	8,563
	PCV2 given 0-11m	12,687	1,097					1,144	1,025	1,090	1,089	1,027	1,077	1,011	8,560
	PCV3 given 0-11m	12,699	979					1,115	1,090	1,073	1,112	992	1,062	1,026	8,449
	PCV 1 Crude Coverage %	1,266	116					112	100	103	105	98	105	94	833
	PCV 2 Crude Coverage %	1,244	108					112	101	105	105	100	104	98	833
	PCV 3 Crude Coverage %	1,245	96					109	107	104	107	97	103	99	822
	Penta 1 given (0-11m)	12,945	1,185					1,141	1,020	1,066	1,088	1,002	1,088	973	8,563
	Penta 2 given (0-11m)	12,757	1,097					1,144	1,025	1,090	1,089	1,027	1,077	1,011	8,560
	Penta 3 given 0-11m	12,682	979					1,115	1,090	1,073	1,112	992	1,062	1,026	8,449
	Penta 1 Crude Coverage %	1,269	116					112	100	103	105	98	105	94	833
	Penta 2 Crude Coverage %	1,251	108					112	101	105	105	100	104	98	833
	Penta 3 Crude Coverage %	1,243	96					109	107	104	107	97	103	99	822
	IPV1 given (0-11m)	12,620	1,185					1,141	1,020	1,002	413	1,171	1,078	1,079	8,089
	IPV2 given (0-11m)	12,506	979					1,115	1,090	1,009	477	1,073	1,040		6,783
	IPV1 Crude Coverage %	1,237	116					112	100	97	40	114	104	104	788
	IPV2 Crude Coverage %	1,226	96					109	107	98	46	105	101		661
Birampur Municipality	EPI Infant Monthly Target	390									777				777
	PCV1 given 0-11m	234									50				50
	PCV2 given 0-11m	215									53				53
	PCV3 given 0-11m	213									45				45
	PCV 1 Crude Coverage %	360									6				6
	PCV 2 Crude Coverage %	331									7				7
	PCV 3 Crude Coverage %	328									6				6
	Penta 1 given (0-11m)	234									50				50

Facilities	Data name	Total 21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Total 22
	Penta 2 given (0-11m)	215									53				53
	Penta 3 given 0-11m	213									45				45
	Penta 1 Crude Coverage %	360									6				6
	Penta 2 Crude Coverage %	331									7				7
	Penta 3 Crude Coverage %	328									6				6
	IPV1 given (0-11m)	234									50				50
	IPV2 given (0-11m)	213									45				45
	IPV1 Crude Coverage %	360									6				6
	IPV2 Crude Coverage %	328									6				6
Fulbaria Mun.	EPI Infant Monthly Target	597	75							75	75	75	75	75	450
	PCV1 given 0-11m	459	71							76	64	54	71	90	426
	PCV2 given 0-11m	412	68							79	51	61	68	56	383
	PCV3 given 0-11m	399	65							67	94	51	65	61	403
	PCV 1 Crude Coverage %	616	95							101	85	72	95	120	568
	PCV 2 Crude Coverage %	553	91							105	68	81	91	75	511
	PCV 3 Crude Coverage %	536	87							89	125	68	87	81	537
	Penta 1 given (0-11m)	459	71							76	64	54	71	90	426
	Penta 2 given (0-11m)	412	68							79	51	61	68	60	387
	Penta 3 given 0-11m	399	65							67	84	51	65	61	393
	Penta 1 Crude Coverage %	616	95							101	85	72	95	120	568
	Penta 2 Crude Coverage %	553	91							105	68	81	91	80	516
	Penta 3 Crude Coverage %	536	87							89	112	68	87	81	524
	IPV1 given (0-11m)	459	71							76	64	54	71	90	426
	IPV2 given (0-11m)	399	65							67	84	51	65	61	393
	IPV1 Crude Coverage %	616	95							101	85	72	95	120	568
	IPV2 Crude Coverage %	536	87							89	112	68	87	81	524
Lalmohan Mun.	EPI Infant Monthly Target	958	71	71	88								88	88	406
	PCV1 given 0-11m	1,088	87	89	93								106	73	448
	PCV2 given 0-11m	1,082	87	87	121								104	79	478
	PCV3 given 0-11m	1,085	95	100	42								99	79	415
	PCV 1 Crude Coverage %	1,152	123	125	106								121	83	557

Facilities	Data name	Total 21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Total 22
	PCV 2 Crude Coverage %	1,145	123	123	138								118	90	591
	PCV 3 Crude Coverage %	1,153	134	141	48								113	90	525
	Penta 1 given (0-11m)	1,092	87	89	41								106	73	396
	Penta 2 given (0-11m)	1,082	87	87	47								104	79	404
	Penta 3 given 0-11m	1,085	89	92	42								99	79	401
	Penta 1 Crude Coverage %	1,152	123	125	47								121	83	498
	Penta 2 Crude Coverage %	1,145	123	123	53								118	90	506
	Penta 3 Crude Coverage %	1,153	125	130	48								113	90	505
	IPV1 given (0-11m)	1,088	87	92	41								106	73	399
	IPV2 given (0-11m)	1,085	87	87	92								99	79	444
	IPV1 Crude Coverage %	1,152	123	130	47								121	83	502
	IPV2 Crude Coverage %	1,153	123	123	105								113	90	552
Mathbaria Mun.	EPI Infant Monthly Target	468	39	39	39	39	39	39	39	39	39	39		39	429
	PCV1 given 0-11m	454	42	41	36	35	38	47	32	44	44	39		49	447
	PCV2 given 0-11m	446	43	42	41	36	38	31	48	43	42	41		47	452
	PCV3 given 0-11m	463	44	43	42	41	40	41	30	45	35	38		48	447
	PCV 1 Crude Coverage %	1,164	108	105	92	90	97	121	82	113	113	100		126	1,146
	PCV 2 Crude Coverage %	1,143	110	108	105	92	97	80	123	110	108	105		121	1,159
	PCV 3 Crude Coverage %	1,187	113	110	108	105	103	105	77	115	90	97		123	1,146
	Penta 1 given (0-11m)	454	42	41	36	35	38	37	47	44	44	39		49	452
	Penta 2 given (0-11m)	446	43	42	41	36	38	21	42	50	43	41		47	444
	Penta 3 given 0-11m	463	44	43	42	41	40	31	24	44	47	40		47	443
	Penta 1 Crude Coverage %	1,164	108	105	92	90	97	95	121	113	113	100		126	1,159
	Penta 2 Crude Coverage %	1,143	110	108	105	92	97	54	108	128	110	105		121	1,138
	Penta 3 Crude Coverage %	1,187	113	110	108	105	103	80	62	113	121	103		121	1,136
	IPV1 given (0-11m)	417	66	48	32	39	38	30	29					185	467
	IPV2 given (0-11m)	442	57	57	38	45	40	32	22					68	359
	IPV1 Crude Coverage %	1,069	169	123	82	100	97	77	74					474	1,198
	IPV2 Crude Coverage %	1,133	146	146	97	115	103	82	56					174	921

Annex 12: Inconsistencies in Data Reporting

12.1 - Summary of instances where the negative wastages that were reported were due to data entry errors.

Months	Penta				PCV				IPV			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
January	19	17	37	33	37	23	27	32	69	43	37	42
February	22	21	28	36	28	28	19	37	45	38	28	38
March	14	19	26	30	39	21	29	33	31	29	32	34
April	26	34	20	34	36	31	24	37	33	31	29	27
May	21	22	22	29	29	24	26	35	35	25	33	27
June	23	34	27	43	29	34	25	37	41	29	28	27
July	20	24	42	36	32	29	30	29	31	35	26	29
August	28	25	29	23	22	22	27	29	25	33	23	31
September	25	23	35	25	28	29	30	31	44	39	25	28
October	27	26	35	32	24	24	40	38	40	28	30	29
November	22	40	33	35	26	31	35	36	36	29	39	26
December	31	37	38	20	26	39	29	34	41	42	31	30
Total	**278**	**322**	**372**	**376**	**356**	**335**	**341**	**408**	**471**	**401**	**361**	**368**

12.2 - Summary of examples for Incomplete data in respect of admin coverage data reported without reporting vaccine used data (data extraction below downloaded directly from DHIS2).

Districts	Reporting Unit	Nov-22									Dec-22								
		Penta given	Penta used	Penta wastage	PCV given	PCV used	PCV wastage	IPV given	IPV used	IPV wastage	Penta given	Penta used	Penta wastage	PCV given	PCV used	PCV wastage	IPV given	IPV used	IPV wastage
Coxs Bazar	Coxs Bazar Municipality	1,690			1,690			1,115			1,745			1,745			1,166		
Dhaka	Dhaka City Corporation North Zone-06	1,332	1,332	-	1,332	333	-	903	37	2	1,394	1,394	-	1,394	355	2	925		
Dhaka	Dhaka City Corporation South Zone-02	4,718	4,718	-	4,718	1,188	1	3,137	144	13	4,785			4,785			3,208		
Dhaka	Dhaka City Corporation South Zone-06	828			828			554			709			709			459		
Dinajpur	Dinajpur Sadar Upazila	1,701	1,701	-	1,701	452	6	1,174	52	10	1,799			1,799			1,180		
Mymensingh	Gauripur Mun.	121			121			91			184			184			124		
Barishal	Hijla Upazila	1,273	1,273	-	1,273			868			1,255			1,255			789		

Jashore	Jessore Mun.	2,538			2,538			1,692			2,548			2,548			1,699		
Joypurhat	Joypurhat Mun.	531	530	(0)	577	145	1	392	20	22	487	495	2	536	134	-	372		
Bhola	Lalmohan Mun.	309			309			205			231			231			152		
Tangail	Madhupur Mun.	343			343			239			305			315			210		
Pirojpur	Mathbaria Mun.										143			144			253		
Narshingdi	Narsingdi Mun.	1,199			1,199			1,048			1,110			1,110			742		
Naogaon	Niamatpur Upazila	1,797	1,797	-	1,797	457	2	1,173	38	(24)	1,144			1,144			752		
Rangpur	Pirganj RP Upazila	2,434	2,434	-	2,434	665	9	1,654	71	7	2,265	2,265	-	2,265	613	8	1,484		
Dinajpur	Setabganj Mun	74			74			52			67			67			43		
Gaibandha	Sundarganj Upazila	3,227	3,227	-	3,227	808	0	2,118	91	7	3,010	3,010	-	3,010	753	0	1,079		

When the vaccine usage data is not inputted in the system, DHIS2 fails to calculate the wastage rate and also does not generate an error message. Vaccine given represents number of children immunised and vaccine used represents actual vials used. In DHIS2, vaccine quantities for PCV and IPV are measured in vials. Whereas, for Penta, the measurement is based on a ratio of 1 dose per vial. The wastage rates are expressed in percentages but DHIS2 shows them as absolute numbers.

12.3 - Summary of examples for Incomplete data in respect of vaccine used data reported without reporting admin coverage data.

Districts	Reporting Units	Pentavalent			PCV			IPV		
		Given	Used	Wastage Rate	Given	Used	Wastage Rate	Given	Used	Wastage Rate
December-19										
Rajshahi	Durgapur Upazila		782	100%	382	197	51.5%	534	22	2.9%
Pirojpur	Mathbaria Mun.		131	100%		33	100%		4	100%
April-20										
Madaripur	Shibchar Mun.		140	100%		36	100%		5	100%
May-20										
Gazipur	Gazipur Sadar Upazila		1,262	100%		304	100%		33	100%
Narshingdi	Manohardi Upazila		279	100%		363	100%		31	100%
November-20										
Mymensingh	Bhaluka Upazila		2,161	100%		615	100%		66	100%
Dhaka	Dhaka City Corporation South Zone-07		3,000	100%		750	100%		90	100%
Rajshahi	Durgapur Mun					3	100%		5	100%
Shariatpur	Zanzira Upazila	299	1,414	78.9%		376	100%		43	100%
November-21										
Tangail	Gopalpur Mun.		272	100%		68	100%		8	100%

Khagrachhari	Matiranga Upazila	1,110	1,110	-	1,110	275	(1)%		30	100%
Meherpur	Mujibnagar Upazila		585	100%		150	100%		17	100%
December-21										
Chapai Nababganj	Chapai Nababganj (Sadar) Upazila		2,454	100%		656	100%		70	100%
Dinajpur	Khansama Upazila	1,214	1,214	-	1,214	328	7.5%		39	100%
Mymensingh	Trishal Upazila	2,997	2,997	-	3,632	908	-		99	100%

#Wastage rates are automatically calculated by DHIS2. The system's logic results in a wastage rate of 100%, when the only data completed by the reporting units is the vaccine used field. This is because the vaccine used data is the denominator for wastage rate calculation. 100% wastage rate is therefore the default option with a zero-value denominator, rather than prompting an error message.
The cell highlighted in above table is for admin coverage data not reported by reporting unit.

12.4 - Example of discrepancies between the Penta1 and PCV1 vaccinations recorded as administered – despite the fact that both vaccines have an identical schedule, i.e., doses are given at the same time.

Facilities	Variables	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22
Araihazar Upazila Health Complex	PCV1 given 0-11m	782	957	1,085	945	977	831	987
Araihazar Upazila Health Complex	Penta 1 given (0-11m)	375	1,312	1,125	945	564	1,188	1,028
Atrai Upazila Health Complex	PCV1 given 0-11m	319	366	353	265	273	365	294
Atrai Upazila Health Complex	Penta 1 given (0-11m)	319	366	353	97	65	572	331
Badalgachi Upazila Health Complex	PCV1 given 0-11m	326	339	360	314	359	336	458
Badalgachi Upazila Health Complex	Penta 1 given (0-11m)	226	390	360	96	39	589	452
Bhedarganj Upazila Health Complex	PCV1 given 0-11m	35	842	574	604	744	671	733
Bhedarganj Upazila Health Complex	Penta 1 given (0-11m)	150	997	460	97	1,013	584	603
Damudya Upazila Health Complex	PCV1 given 0-11m	84	312	304	257	255	207	226
Damudya Upazila Health Complex	Penta 1 given (0-11m)	194	301	215	74	381	212	170
Fulbaria Upazila Health Complex	PCV1 given 0-11m	968	943	1,381	944	1,284	92	1,346
Fulbaria Upazila Health Complex	Penta 1 given (0-11m)	968	1,492	1,271	1,200	1,078	903	926
Gazipur City Corporation Zone-3 (old Gazipur Mun)	PCV1 given 0-11m	833	952	815	971	801	656	1,001
Gazipur City Corporation Zone-3 (old Gazipur Mun)	Penta 1 given (0-11m)	833	901	427	1,245	624	544	1,097
Gomastapur Upazila Health Complex	PCV1 given 0-11m	251	529	985	539	244	883	562
Gomastapur Upazila Health Complex	Penta 1 given (0-11m)	251	529	985	518	89	992	577
Hathazari Upazila Health Complex	PCV1 given 0-11m	901	1,006	944	979	887	937	927
Hathazari Upazila Health Complex	Penta 1 given (0-11m)	672	854	1,007	929	631	946	1,053
Iswarganj Upazila Health Complex	PCV1 given 0-11m	934	712	1,128	178	1,436	129	1,017
Iswarganj Upazila Health Complex	Penta 1 given (0-11m)	934	1,044	739	998	978	220	968

Jeshore (sadar) Upazila Health Office	PCV1 given 0-11m	965	263	1,180	966	1,220	780	1,100
Jeshore (sadar) Upazila Health Office	Penta 1 given (0-11m)	485	1,169	1,088	279	1,510	988	1,057
Jhikargacha Upazila Health Complex	PCV1 given 0-11m	465	450	724	446	723	477	508
Jhikargacha Upazila Health Complex	Penta 1 given (0-11m)	435	450	724	44	956	517	495
Joypurhat Mun.	PCV1 given 0-11m	145	210	175	12	264	221	186
Joypurhat Mun.	Penta 1 given (0-11m)	77	210	175	12		287	193
Kotchandpur Upazila Health Complex	PCV1 given 0-11m	132	264	328	245	204	297	286
Kotchandpur Upazila Health Complex	Penta 1 given (0-11m)	216	320	327	100	304	297	286

Annex 13: Discrepancies between manual and system records

13.1 - Discrepancy between tally sheets (recounted) and monthly reports for Penta.

Activity location: UpHC /or city corporation zone	Month	Dose	Number of immunisations as per tally sheets	Number of immunisations as per monthly report	Variance
Kathalia Upazila	Jun-18	Penta 2 given (0-11m)	214	213	(1)
Bakerganj Upazila	Jun-20	Penta 1 given (0-11m)	747	768	21
Bakerganj Upazila	Jun-20	Penta 2 given (0-11m)	622	639	17
Bakerganj Upazila	Jun-20	Penta 3 given 0-11m	640	658	18
Barisal Sadar Upazila	Jun-20	Penta 3 given 0-11m	405	395	(10)
Gournadi Upazila	Jun-20	Penta 1 given (0-11m)	559	459	(100)
Gournadi Upazila	Jun-20	Penta 2 given (0-11m)	342	416	74
Gournadi Upazila	Jun-20	Penta 3 given 0-11m	347	398	51
Kathalia Upazila	Jun-20	Penta 1 given (0-11m)	265	268	3
Dhaka City Corporation North, Zone-04, Mirpur	Jun-22	Penta 2 given (0-11m)	1,043	1,035	(8)
Dhaka City Corporation South, Zone 5	Jun-22	Penta 1 given (0-11m)	1,427	1,441	14
Dhaka City Corporation South, Zone 5	Jun-22	Penta 2 given (0-11m)	1,472	1,486	14
Dhaka City Corporation South, Zone 5	Jun-22	Penta 3 given 0-11m	1,546	1,561	15
Bakerganj Upazila	Jun-22	Penta 1 given (0-11m)	725	745	20
Bakerganj Upazila	Jun-22	Penta 2 given (0-11m)	762	783	21
Bakerganj Upazila	Jun-22	Penta 3 given 0-11m	722	742	20
Gournadi Upazila	Jun-22	Penta 1 given (0-11m)	411	421	10
Kathalia Upazila	Jun-22	Penta 2 given (0-11m)	210	211	1
Sylhet Sadar Upazila	Jun-22	Penta 1 given (0-11m)	488	489	1
Barlekha Upazila	Jun-22	Penta 3 given 0-11m	417	421	4
Lama Upazila	Jun-22	Penta 1 given (0-11m)	379	375	(4)
Lama Upazila	Jun-22	Penta 2 given (0-11m)	343	353	10
Lama Upazila	Jun-22	Penta 3 given 0-11m	345	350	5

13.2 - Discrepancy between monthly report and DHIS.

Activity location: UpHC/ or city corporation zone	Month	Dose	Number of immunisations as per monthly report	Number of immunisations as per DHIS2	Variance
Pentavalent					
Dhaka City Corporation South, Zone 5	Jun-18	Penta 3 to child (0-11m)	993	994	1
Bakerganj Upazila	Jun-18	Penta 2 to child (0-11m)	668	640	(28)
Bakerganj Upazila	Jun-20	Penta 1 to child (0-11m)	783	883	100
Barisal Sadar Upazila	Jun-20	Penta 2 to child (0-11m)	395	394	(1)
PCV					
Bakerganj Upazila	Jun-18	PCV2 to child 0-11m	660	607	(53)
Barisal Sadar Upazila	Jun-18	PCV2 to child 0-11m	404	407	3
Maheshkhali Upazila	Jun-20	PCV1 to child 0-11m	1,521	1,284	(237)
Maheshkhali Upazila	Jun-20	PCV2 to child 0-11m	1,219	992	(227)
Bakerganj Upazila	Jun-22	PCV2 to child 0-11m	783	883	100
IPV					
Dhaka City Corporation South, Zone 5	Jun-18	IPV2 to child (0-11m)	507	607	100
Gournadi Upazila	Jun-20	IPV1 to child (0-11m)	450	459	9

Annex 14: Errors in DHIS2

14.1 - Examples of DHIS2 manual data entry errors by reporting units at the time of recording the next period's opening stock balance.

Districts	Reporting Unit	Aug-22	Sep-22	Difference	Sep-22	Oct-22	Difference	Oct-22	Nov-22	Difference	Nov-22	Dec-22	Difference
		Closing Balance	Opening stock		Closing Balance	Opening stock		Closing Balance	Opening stock		Closing Balance	Opening stock	
Lalmonirhat	Aditmari Upazila	915	710	205	400	899	(499)	1,104	637	467	1,026	739	287
Kishoreganj	Bhairab Mun.	(476)	1,200	(1,676)	840	1,369	(529)	392	1,369	(977)	1,785	875	910
Dinajpur	Birganj Upazila	2,016	1,226	790	2,603	1,377	1,226	2,263	886	1,377	1,800	914	886
Dinajpur	Chirirbandar Upazila	(1,305)	1,475	(2,780)	2,988	1,475	1,513	1,342	1,475	(133)	1,372	1,476	(104)
Nilphamari	Dimla Upazila	116	1,000	(884)	1,010	800	210	830	600	230	414	560	(146)
Feni	Fulgazi Upazila	854	450	404	782	550	232	886	500	386	774	350	424
Rangpur	Gangachara Upazila	870	2,142	(1,272)	1,801	529	1,272	133	529	(396)	1,087	133	954
Manikganj	Ghior Upazila	97	288	(191)	576	629	(53)	1,257	405	852	810	181	629
Chandpur	Haimchar Upazila	709	1,056	(347)	1,376	434	942	12	1,389	(1,377)	506	1,389	(883)
Dinajpur	Hakimpur Upazila	347	400	(53)	659	500	159	379	500	(121)	331	500	(169)
Lalmonirhat	Hatibandha Upazila	1,844	2,244	(400)	2,215	1,815	400	2,038	2,438	(400)	2,477	2,077	400
Jashore	Jessore Mun.	25	277	(252)	277	343	(66)	343	43	300	43	193	(150)
Jashore	Jhikargacha Upazila	1,227	932	295	127	971	(844)	350	975	(625)	411	1,116	(705)
Gazipur	Kaliakair Upazila	947	4,207	(3,260)	2,879	3,213	(334)	1,909	3,530	(1,621)	3,957	1,571	2,386
Lalmonirhat	Kaliganj Upazila	796	561	235	483	738	(255)	708	502	206	678	602	76
Netrokona	Kalmakanda Upazila	1,228	600	628	1,130	618	512	1,711	1,600	111	1,142	850	292
Kustia	Kushtia (sadar) Upazila	237	541	(304)	1,379	926	453	946	422	524	569	730	(161)
Habiganj	Madhabpur Upazila	1,161	942	219	1,552	1,274	278	1,080	808	272	1,305	1,015	290
Khulna	Paikgacha Upazila	301	562	(261)	719	600	119	638	334	304	98	884	(786)
Dinajpur	Parbatipur Upazila	973	871	102	1,352	1,254	98	1,324	1,217	107	1,159	1,033	126
Rajshahi	Puthia Upazila	527	359	168	621	300	321	1,056	300	756	728	1,028	(300)
Madaripur	Shibchar Upazila	1,253	1,400	(147)	3,300	1,400	1,900	1,230	1,500	(270)	3,500	1,500	2,000
Khulna	Terokhada Upazila	173	376	(203)	350	147	203	280	383	(103)	550	447	103

The above data is based on a sample review of pentavalent transactions during the latter part of 2022; the same issue was observed with other antigens as well (but is not shown here).

14.2 - Examples of DHIS2 reporting units failing to record an opening stock balance (in one dose vials) despite there being a closing balance in the previous month.

Districts	Reporting Unit	Aug-22	Sep-22	Sep-22	Oct-22	Oct-22	Nov-22	Nov-22	Dec-22
		Closing Balance	Opening stock	Closing Balance	Opening stock	Closing Balance	Opening stock	Closing Balance	Opening stock
Sirajganj	Chowhali Upazila	613	600	417	No data input	-107	No data input	4	No data input
Dhaka	Dhaka City Corporation North Zone-03	186	400	585	No data input	1,057	No data input	710	No data input
Dhaka	Dhaka City Corporation North Zone-06	934	No data input	903	No data input	903	No data input	668	No data input
Dhaka	Dhaka City Corporation North Zone-09	156	200	700	No data input	33	No data input	47	No data input
Dhaka	Dhaka City Corporation South Zone-04	1,992	No data input	-2,044	No data input	-2,102	No data input	573	No data input
Dhaka	Dhaka City Corporation South Zone-07	3,165	No data input	-791	No data input	-815	No data input	-803	No data input
Dhaka	Dhaka City Corporation South Zone-08	-961	No data input	1,991	No data input	-1,222	No data input	1,292	No data input
Dhaka	Dhaka City Corporation South Zone-09	-641	No data input	-1,780	No data input	3,767	No data input	-2,188	No data input
Dhaka	Dhaka City Corporation South Zone-10	2,646	No data input	-1,483	No data input	-1,570	No data input	1,295	No data input
Tangail	Gopalpur Mun.	95	No data input	117	No data input	99	No data input	122	No data input
Nilphamari	Nilphamari Mun.	-242	No data input	-98	No data input	-364	No data input	-320	No data input

The above data is based on a sample review of pentavalent transactions during the latter part of 2022; the same issue was observed with other antigens as well (but is not shown here).

14.3 - Number of instances where negative stocks were reported in DHIS2 without the system prompting a warning message at the level of reporting units (upazila, Zones (city corporation) and Municipalities)

Count of negative stock balances at month-end in DHIS2	Pentavalent				PCV				IPV			
	2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
Jan	33	20	16	23	21	17	18	22	36	25	17	19
Feb	20	23	27	28	13	19	31	26	16	24	14	19
Mar	24	20	23	23	20	18	22	23	22	28	22	12
Apr	21	22	22	25	14	15	19	26	23	25	16	19
May	24	35	17	22	10	25	18	19	18	33	14	11
Jun	13	20	16	19	10	18	23	19	26	25	16	20
Jul	17	22	24	13	15	21	20	15	19	20	20	11
Aug	14	16	21	13	10	18	20	10	19	19	17	8
Sep	14	21	24	14	13	23	22	19	17	27	21	19
Oct	15	18	14	19	19	20	16	22	20	16	10	23
Nov	20	19	23	9	15	14	21	9	20	11	21	16
Dec	14	14	16	13	18	17	18	15	26	21	18	13
Total instances	**229**	**250**	**243**	**221**	**178**	**225**	**248**	**225**	**262**	**274**	**206**	**190**

Annex 15: Status of DQIP

15.1 – Status of data quality improvement plan 2020.

Activity #	Activity Description	Status
1	Desk review at national, district and upazila level	Partially carried out
2	Periodic in-depth EPI data quality assessment	Partially carried out
3	Training of managers and data management team on DHIS2 and regular review of immunisation data	Delayed
4	Demonstration of remote sensing satellite observation to identify missed communities (short-term)	Delayed
5	Development of a consolidated DQS database and approaches for targeted DQS (short-term)	Delayed
6	Demonstration of digital supportive supervisory checklists (short- / medium-term)	Delayed
7	Develop/improve linkages between supply and service utilisation data within DHIS2 (medium-term)	Delayed
8	Improving the availability and retention of documented evidence of vaccination in home-based records (short- / medium-term)	Delayed
9	Pilot revised micro plan guidance	Delayed
10	Expand training of SIMOs	Completed
11	DHIS2 dashboard development	Completed
12	Targeted supportive supervision enhancement activity	Delayed
13	Evaluation	Delayed
14	Coverage evaluation survey (CES) of routine immunisation	Not Done

15.2– Status of Data Quality Improvement Plan 2022 – 2025 as represented by WHO country office.

Activity #	Activity Description	Status
1	Desk review at national, district and upazila level	Planned for 2023
2	Periodic in-depth EPI data quality assessment	Planned for 2023
3	Data quality review of Immunisation and Vaccine Preventable Disease Surveillance System	Planned for 2023
4	Estimating Denominator for EPI from Bangladesh Bureau of Statistics (BSS) Census-2022	Initiated
5	Pilot revised micro plan guidance	Ongoing
6	Implementation of Online Microplan in routine immunisation	Ongoing
7	Implementation of Immunisation e-Tracker	Ongoing
8	Enhance Concurrent monitoring (House to house and EPI Session) focusing on identification of Zero dose (ZD) and under vaccinated (UV) by government and partners	Completed
9	Multisectoral involvement to assess Coverage and Equity through Routine Immunisation Rapid Convenient Assessment (RCA) with a focus to identify Zero dose/Under vaccinated children	Ongoing
10	Strengthen Routine Immunisation, VPDs and AEFI Surveillance through Geographical Information Management System	Ongoing
11	Online Platform for VPDs Case based Surveillance	Ongoing
12	Development of an online data quality self-assessment tool for targeted DQS	Not Started
13	Developing a training package for data handlers and their supervisors on reporting and recording issues, data validation and Data Triangulation:	Planned for 2023
14	Refresher training of Data Handlers on routine immunisation, VPDs and AEFI Surveillance in reporting and recording systems:	Planned for 2023

Activity #	Activity Description	Status
15	Training to techno Mangers on Data quality and Data Triangulation analysis	Planned for 2023
16	Online Data Triangulation Dashboard development	Not Started
17	Develop linkages between supply and service utilisation data between DHIS2 and ELMIS	Initiated
18	Demonstration of digital supportive supervisory checklists	Ongoing
19	Establish a Monitoring and Evaluation committee for ensuring Data quality	Ongoing
20	Evaluation	Not Started
21	Coverage evaluation survey (CES) of routine immunisation	Initiated

Annex 16: Detailed management responses

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
Lack of an effectively functioning oversight mechanism	**Recommendation 1** The MOHFW should revise and formally endorse the inter-agency coordination committee's terms of reference. As a minimum, the revised TORs should include the following element: • Clear, comprehensive details of the ICC's roles and responsibilities. Clarify what are the respective reporting mechanisms for technical working groups (such as the vaccine and logistics management technical working group). • Specify proportional representation and member composition for different ICC constituencies, including representatives from the sub-national level and urban areas. Define a process to select the vice-chair position. • Articulate what the minimum quorum for a meeting consists of. Put in place a suitable mechanism in case the ICC needs to escalate any key functional gaps or weaknesses to Gavi, for additional support.	**Action 1** ICC was first formed in the year 1985 then it was revised in 2001. As per the 63rd ICC meeting held on 15 January 2023, decision was made to reconstitute the ICC committee including revising the Terms of Reference (ToR). EPI, Bangladesh has taken the initiative to reconstitute the ICC as well as revising the Terms of Reference which is under process. The revised ToR would duly take into consideration the recommendations made by the Programme Audit. **Action 2** EPI will consider the observations while reconstituting the ICC committee. In the present ICC committee there is no provision for vice chair position. Secretary, MOH&FW is the chair of the committee. In absence of the Secretary, MOH&FW in charge of the chair presides the meeting. Urban representative already exists in the ICC Committee. However, there is no representative from sub national level as this is a National level committee. **Action 3** In the present ToR, there is no minimum quorum for a meeting. However, EPI will consider the observations while revising the ToR and reconstituting the ICC committee.	**Action 1** EPI, DGHS and MOH&FW **Action 2** EPI, DGHS and MOH&FW **Action 3** EPI, DGHS and MOH&FW	**Action 1** Jul-24 **Action 2** Jul-24 **Action 3** Jul-24
	Recommendation 2 The MOHFW should enhance the effectiveness of its inter-agency coordination committee through: • Improving programme monitoring – by developing a programme monitoring framework that includes regular reviews of key initiatives such as the: EPI operational plans, partnership engagement framework (including technical assistance), effective vaccine management improvement plan, and follow-up of grant management requirements and audit recommendations, and transition planning. Establish pre-	**Action 4** ICC is a stand alone committee. However, based on the necessity ICC forms working group with relevant members for specific activities. Such as working group for National Immunisation Strategy (NIS), EVM assessment and cIP review etc. Further, while revising the TOR, a standing agenda would be developed which would duly involve programme monitoring framework as suggested as part of the	**Action 4** EPI, DGHS and MOH&FW	**Action 4** Jul-24

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	agreed targets for programme performance oversight to ensure regular and effective monitoring processes. • Consistently holding meetings – the ICC should respect the frequency of its quarterly meetings, as per its TORs. Meeting attendance records should be maintained to evidence minimum quorum, and identify which stakeholders attended. • Discussing strategic issues – by ensuring that matters with strategic importance are prioritised on the agenda, so that key issues are promptly discussed and escalated to the MOHFW for attention. This could include for example: turnover in the national EPI team, sustainability of using temporary health workers in upazilas, transition planning, and progress on the "urban immunisation strategy." • Enhancing follow-up – by establishing a systematic follow-up process to track and ensure decisions and resultant action points are implemented, so that accountabilities are maintained. This includes minuting: the agreed actions , who is the responsible for implementation and the corresponding timeline to complete.	standing agenda. The standing agenda would be duly discussed at the beginning of each meeting. **Action 5** EPI will consider the recommendation in this regard. The revised ToR would duly be updated accordingly and the minutes would be maintained appropriately. **Action 6** EPI is well concerned regarding strategic issues and always prioritised to discuss in ICC. While revising the TOR, a standing agenda would be developed which would duly involve review and discussion of strategic issues as suggested as part of the standing agenda. The standing agenda would be duly discussed at the beginning of each meeting. **Action 7** In each and every ICC meeting, decisions are taken based on the discussions which are well minuted where implementing agencies or department is well identified against each decision. Discussion held on the progress of decisions taken in preceding ICC meeting and necessary action points are taken accordingly. While revising the TOR, a standing agenda would be developed which would duly involve review and monitoring of the agreed actions as suggested as part of the standing agenda. The standing agenda would be duly discussed at the beginning of each meeting.	**Action 5** EPI, DGHS and MOH&FW **Action 6** EPI, DGHS and MOH&FW **Action 7** EPI, DGHS and MOH&FW	**Action 5** Jul-24 **Action 6** Jul-24 **Action 7** Jul-24
Coordination roles and mandates need to be clarified across governance bodies	**Recommendation 3** The MOHFW should: • Undertake a comprehensive review across the various oversight bodies' terms of reference to clarify their respective coordination and reporting responsibilities and ensure that effective collaboration is aligned with other bodies' roles. Specifically, each governance body's TORs should define their	**Action 8** EPI will consider the observations while reconstituting the ICC committee along with revising the ToRs. Further, the ToRs for other oversight bodies would also be updated accordingly. **Action 9**	**Action 8** EPI, DGHS and MOH&FW **Action 9**	**Action 8** Jul-24 **Action 9**

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	coordination role vis-a-vis other governance elements also operating within the national immunisation landscape. • Develop a process for regular review and dissolution of committees that become inactive or redundant, in order formally rescind them. In particular, it is recommended that the current status of National Committee for Immunisation Practices (NCIP) should be clarified in relation to National Immunisation Technical Advisory Groups (NITAG).	National Immunisation Technical Advisory Groups (NITAG) has already replaced the National Committee for Immunisation Practices (NCIP). However, EPI will review further whether there is any inactive or redundant committee.	EPI, DGHS and MOH&FW	Dec-23
Funds managed by the MOHFW were not subject to national assurance mechanisms	**Recommendation 4** The MOHFW should: Strengthen the Financial Management and Audit Unit (FMAU) function by: • Allocate adequate resources (including experienced personnel and necessary IT tools), to enhance the capacity of the FMAU's internal audit function. Also provide training and professional development opportunities to internal auditors to build their capacity further in financial management and auditing. • Ensure that a comprehensive risk-based internal audit work plan is developed and implemented by FMAU, specifically targeting Gavi-funded programmes, including those where monies are sub-contracted by UNICEF and WHO partners, to ensure regular and systematic internal audits are done.	**Action 10** MOHFW has well functioning Financial Management and Audit Unit (FMAU). EPI would duly place the recommendations in the ICC meeting and thereafter these would be submitted to the MOH through the DGHS. World Bank is already working on increasing the capacity of the FMAU and specific disbursement linked indicators have been identified under the World Bank funded Program for strengthening the FMAU. We would duly seek the status update through the DGHS on the progress of capacity building. It should be noted that the EPI would have limited role in the same and the MOH would directly implement the same. **Action 11** EPI, Bangladesh will raise the issue in ICC meeting after discussing with the development partners who are receiving the Gavi fund. Based on the decision of ICC, FMAU will be informed to take necessary steps regarding comprehensive risk-based internal audit work plan. However, we would like to highlight that the FMAU duly undertakes the audit of the entire Operational Plan (OP) every year. The recent audit has also been completed, however, the report has not yet been issued. Further, the audit of the OP includes other departments / wings including the EPI, hence the audit is not focused on the EPI itself.	**Action 10** EPI, DGHS and MOH&FW **Action 11** EPI, DGHS, MOH&FW and development partners	**Action 10** Jul-25 **Action 11** Jul-25

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	Recommendation 5 Ensure that Gavi's funds are included in OCAG's external audits scope/ mandate: Actively engage with the Office of the Comptroller and Auditor General (OCAG) and its relevant audit directorates to ensure the inclusion of Gavi funds allocated to the EPI within OCAG's annual audit scope.	**Action 12** EPI will discuss with the accounts offices of development partners and relevant Government offices to address the recommendation. Based on that EPI, Bangladesh will propose OCAG to include Gavi fund in annual audit scope. Further, the recommendation would also be discussed in the next ICC meeting and necessary action would be taken.	**Action 12** EPI, DGHS, MOH&FW and DP	**Action 12** Dec-25
Gaps in the development, implementation, and monitoring of annual work plans	**Recommendation 6** The MOHFW should consider strengthening the EPI's authority and influence in managing the overall programme by instituting the following systematic and recurrent processes, by: • Developing a comprehensive annual EPI work plan consolidating both Government and direct project aid budget sources. This plan should summarise all EPI activities, including those financed by Gavi's targeted country assistance funding (PEF-TCA). • Establishing a joint process with the Gavi alliance partners to regularly review and monitor the comprehensive annual work plan, to enable the national EPI team obtain an overview of the implementation status of grants' sum total activities.	**Action 13** EPI develops the comprehensive annual EPI work plan regularly (except last couple of years) where both Government and direct project aid budget sources are reflected. Moreover, EPI implements the activities following approved Operational Plan (OP) of MNC&AH where all EPI activities for all the years are included irrespective of financial support by GoB and partner agencies. The OP is at a high level and the detailed activities are outlined in the work plan. The OP is currently being finalised, thereafter the work plan for the year starting from Jan 2025 would be developed by the EPI. The consolidated work plan cannot be developed without the finalisation of the OP. The 5th OP period is from Jul 2024 to June 2029. **Action 14** There is existing system to monitor and review program activities. WHO conduct biennium review meeting regularly with GoB to monitor the implementation. Similarly, UNICEF regularly conducts half yearly and annually joint review meeting with the Government and other relevant stakeholders. The work plan for the period Jan 2025 to Dec 2025 would be developed after the finalisation of the OP and the review of the work plan would be undertaken on a continuous basis along with a formal review at the end of	**Action 13** EPI, DGHS **Action 14** EPI, DGHS, MOH&FW and DP	**Action 13** Jan-25 **Action 14** Dec-25

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		the year. The review would be duly supported with the minutes, actions points, attendance among others.		
	Recommendation 7 The MOHFW should adopt a standardised method to estimate population figures for immunisation purposes, in order to apply a consistent figure across the range of activities including the: MNC&AH OP, EPI microplans, and vaccine forecasting. This so as to avoid any major discrepancies when determining appropriate resource requirements such as for budgeting, procurement, and service delivery.	**Action 15** EPI under MOHFW fixes the population figures based on EPI microplan each year. However, process has been started to determine the precise population figure under EPI involving MOHFW, Bangladesh Bureau of Statistics (BBS) and other relevant departments. Discussions are going on with the BBS for resolving the issue. The DG has been updated about the same and further discussions are being undertaken along with the MOH. This would take some time to be resolved considering the nature of variance noted.	**Action 15** EPI, DGHS, MOH&FW, BBS, Ministry of Planning and DP	**Action 15** Dec-25
Gaps in health workers management strategy, planning and manpower shortages	**Recommendation 8** The audit team recognises the nationwide moratorium on health worker recruitment due to a pending legal case. However, the MOHFW should immediately address the human resource challenges to ensure a sustainable immunisation program, namely: • Ensure national EPI team stability: Devise strategies to retain key personnel and minimise turnover with a minimum service tenure of three years. This might may be achievable introducing incentives for longer tenures, structured skill development programs, and creating an environment that fosters professional growth. • Develop workforce strategy and fill vacant positions: Considering the risk to programme quality and sustainability due to current reliance on temporary health workers, the MOHFW should reevaluate the actual staffing need vis-à-vis the current needs and devise a strategy to recruit either permanently or temporarily with a minimum tenure. Such recruitment should have clear accountability and reporting lines. This would provide a level of stability necessary to ensure continuity in service delivery and programme management.	**Action 16** Both MOHFW and MOLGRD&C have already started the recruitment of Health Workers at field level. EPI has proposed additional HR for the National EPI HQ in their operational plan of the 5th sector program (2024-2029) which is under discussion with Planning wing of HSD, MOHFW. **Action 17** Bangladesh Government has its own recruitment policy according to which the recruitment of Health Assistants has already been initiated. EPI has proposed additional HR for the National EPI HQ in their operational plan of the 5th sector program (2024-2029) which is under discussion with Planning wing of HSD, MOHFW.	**Action 16** EPI, DGHS, MOH&FW, MOLGRD&C **Action 17** EPI, DGHS, MOH&FW	**Action 16** Dec-25 **Action 17** Dec-25
The national EPI lacked authority to ensure minimum service	**Recommendation 9** The MOHFW is recommended to establish a comprehensive memorandum of understanding with the Ministry of Local	**Action 18** MOHFW in collaboration with the MOLGRDC has already developed an Urban Immunisation Strategy in 2019.	**Action 18**	**Action 18** Dec-25

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
standards across urban areas	Government, Rural Development and Cooperatives (MOLGRD&C) to strengthen urban-level immunisation services. As a minimum, the memorandum should consider the following areas: • Roles and responsibilities between MOHFW and MOLGRD&C in planning, implementation, supervision, and monitoring of immunisation services in urban areas. • Coordination mechanism such as ICC meetings or task forces, to facilitate communication and collaboration between the two ministries for effective programme management. • Oversight and accountability framework applicable to the NGOs ensuring that both MOHFW and MOLGRD&C are informed about service delivery, coverage, and challenges. • Programme supervision mechanisms for supervision, monitoring, and quality assurance of immunisation services within the urban areas, outlining the roles of both ministries. • Implementation framework for strategies and plans, such as the 2019 Urban Immunisation Strategy and the EVM implementation plan clarifying roles and responsibilities between the ministries. • Human resources training including training plans and appointment of vaccinators and health workers. • Data sharing and integration framework for data sharing and reporting between the ministries and ensuring that accurate and comprehensive immunisation data is available for decision-making. • Resource allocation and funding covering allocation of resources for immunisation services, including any financial support from central or local government sources. • User fee collection policy to address the collection and management of user fees for immunisation services, ensuring transparency and equity.	Recently, EPI has developed a costed action plan based on the strategy. Besides, EPI has proposed activities and budget to strengthen the urban immunisation through the Urban Primary Healthcare Centers to be established by the Primary Health Care operational plan over the period of 2024-2029. However, EPI understands the importance of the suggestion and aligned with it an urban immunisation cell will be formed comprised of all the relevant stakeholders at the national level. **Action 19** In the current ICC, representative from MoLGRD&C is one of the important members. However, there is a Coordination committee at Ministry level to facilitate communication and collaboration between MoHFW and MoLGRD&C for effective programme management including EPI **Action 20** There is a Coordination committee at Ministry level to facilitate communication and collaboration between MoHFW and MoLGRD&C for effective programme management including EPI. On an overall basis and Urban Immunisation Strategy has been developed and a National Urban Health Working Group has also been institutionalised apart from the Coordination committee. The recommendation would be duly discussed during the next ICC meeting for the development of the Oversight and Accountability framework and based on the decision in the ICC suitable steps would be undertaken. The EPI envisages to develop the framework and get the same approved in the Coordination Committee. However, it should be noted that EPI would not be able to monitor whether the same is being implemented or not due to the jurisdiction of the Local Government and the MoLGRDC would be responsible to monitor and implement the same.	EPI, DGHS, MOH&FW, MOLGRD&C **Action 19** EPI, DGHS, MOH&FW, MOLGRD&C **Action 20** EPI, DGHS, MOH&FW, MOLGRD&C	 **Action 19** Dec-25 **Action 20** Dec-25

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		It should be noted that EPI duly undertakes regular monitoring of the EPI activities and also provide capacity building and hand holding support as and when required. Further, Health Standing Committee has been created in every city corporation so as to have an oversight on the immunisation activities. Further, micro plan is also being developed by each city corporation and discussions are duly undertaken with EPI whenever there are any new NGO centre being opened.		
		Action 21	**Action 21**	**Action 21**
		EPI has its own supervision and monitoring system in place. Besides, the Annual Performance Agreement (APA) between DGHS and MOHFW, like all the programs of DGHS EPI also is responsible to carry out a certain number of supervision and monitoring each month. However, due to lack of HR at the national level it has always been difficult to achieve sufficient number of supervision and monitoring. During the launch of the HPV vaccine EPI has introduced digitalised online version of the supervision & monitoring checklist with user specific id and passwords. In terms of the urban areas and outlining the roles and responsibilities between the ministries, we hope the proposed Urban Immunisation Cell will be able to address these issues in the coming days.	EPI, DGHS, MOH&FW	Dec-25
		Action 22	**Action 22**	**Action 22**
		Based on the approved National Urban Immunisation Strategy, Development of Costed Action Plan of said approved National Urban Immunisation Strategy is ongoing where the roles and responsibilities of different implementing will be spelled out clearly	EPI, DGHS, MOH&FW, MOLGRD&C	Dec-24
		Action 23	**Action 23**	**Action 23**
		City Corporations have started the recruitment of vaccinators to provide the immunisation services to the urban dwellers and city corporations authority EPI has proposed activities and budget to strengthen the urban	EPI, DGHS, MOH&FW, MOLGRD&C	Dec-25

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		immunisation through the Urban Primary Healthcare Centers to be established by the Primary Health Care operational plan over the period of 2024-2029. Till date EPI has been providing support for capacity building of the city corporation personnel to strengthen urban immunisation. EPI has also conducted countrywide advocacies at city corporation offices in collaboration with WHO and UNICEF and stated concern about the future sustainability of urban immunisation and the need of allocating funds upon approval of their ministry (ministry of local government, rural development and cooperatives) to strengthen their immunisation system rather than depending solely on EPI and NGOs.		
		Action 24 There is a Coordination committee at Ministry level to facilitate communication and collaboration between MoHFW and MoLGRD&C for effective programme management including EPI. The recommendation would be discussed in the ICC, before being taken up in the coordination committee. The same would duly be formed part of the Oversight and Accountability framework.	**Action 24** EPI, DGHS, MOH&FW, MOLGRD&C	**Action 24** Dec-25
		Action 25 EPI will advocate with local government to allocate sufficient fund for EPI program	**Action 25** EPI, DGHS, MOH&FW, MOLGRD&C and DP	**Action 25** Dec-25
		Action 26 Immunisation under EPI is universally free of cost in the country. However, EPI will take the initiative to hold the policy level discussion involving all the relevant stakeholders on addressing the collection and management of user fees for immunisation services, ensuring transparency and equity.	**Action 26** EPI, DGHS, MOH&FW, MOLGRD&C and DP	**Action 26** Dec-25

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
Inadequate supportive supervision and absence of feedback on programme performance	**Recommendation 10** The MOHFW should implement a comprehensive supervision mechanism that ensures that supportive supervisions are sustained, and that the role of the alliance partners in this area is progressively reduced. This requires the MOHFW undertaking the following actions: • Establish a structured thematic or technical working group dedicated to designing and developing a framework directing how supervision activities are to be implemented. This framework should include clear objectives, roles, and responsibilities for those involved, both in the EPI and externally, including the partners. • Each year to develop a costed supervision plan which complies with WHO guidelines. The supervision activity should be included in as a mandatory item in the MOHFW's operational plan and could be a prerequisite before the GOB allocates funding. • Secure the necessary resources from the GOB's domestic budget to finance the implementation of annual supervision plans. • Develop mechanisms to record and document the outcomes from supervisions and track the follow-up of any recommendations arising. • Conduct periodic evaluations of the effectiveness of the supervision activities including the involvement of the alliance partners. Ideally, these evaluations should be carried out by a team of individuals who are suitably independent from the process of conducting supervisions.	**Action 27** EPI under MOHFW has the mechanism of supportive supervision for EPI activities at different levels. However, EPI will consider the recommendations of the program audit for strengthening the existing supervision mechanism including the areas highlighted in the recommendations. **Action 28** EPI has proposed to allocate budget from the GOB's domestic budget for supervision. A costed supervision plan which complies with WHO guideline will be developed and followed. **Action 29** EPI has proposed to allocate budget from the GOB's domestic budget to finance the implementation of annual supervision plans in the 5th sector program. **Action 30** With WHO support, EPI has already developed an online supervision and monitoring checklist. Currently, EPI is developing a dashboard which will allow tracking of S&M activities and make evidence based decisions. **Action 31** Members of different independent technical committees of EPI such as NITAG, NVC, AEFI ERC, NCCPE have always been welcomed to carry out such evaluations and inform the program to improve further. Further, the EPI needs to provide reports on the supervisions carried out to the Ministry of Planning as part of the Annual Performance Agreement signed by the ministry. The APA committee undertakes an independent evaluation of the supervisions carried out on quarterly basis and provides guidance.	**Action 27** EPI, DGHS, MOH&FW **Action 28** EPI, DGHS, MOH&FW **Action 29** EPI, DGHS, MOH&FW **Action 30** EPI, DGHS, MOH&FW and DP **Action 31** EPI, DGHS, MOH&FW, Technical committee members and DP	**Action 27** Dec-24 **Action 28** Dec-24 **Action 29** Dec-24 **Action 30** Dec-24 **Action 31** Dec-23

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		However, EPI can always consider of forming a dedicated independent evaluation committee composed of members from the committees mentioned above if required in future.		
Absence of key groups such as technical working group for vaccine logistics	**Recommendation 11** The MOHFW should expedite the establishment of a functional National Logistics Working Group (NLWG) overseeing its vaccine logistics and supply chain management. The MOHFW, in collaboration with partners, should ensure that the NLWG is equipped with clear TORs outlining roles, responsibilities, and accountabilities of its members. The inclusion of a suitable data focal point in the NLWG is recommended so as to contribute the use of data and analytics in enhancing deliberations on vaccination supplies, decision-making and logistics optimisation	**Action 32** NLWG has already been formed in 2023 **Action 33** Current NLWG has been formed comprising relevant stakeholders with clear ToRs outlining roles, responsibilities and accountabilities of the members which is approved by ICC. **Action 34** EPI will include the data focal point in the next NLWG meeting expected to be held in the end of the 1st quarter of 2024.	**Action 32** EPI, DGHS, MOH&FW, and DP **Action 33** EPI, DGHS, MOH&FW, and DP **Action 34** EPI, DGHS, MOH&FW, and DP	**Action 32** Dec-23 **Action 33** Dec-23 **Action 34** Apr-24
Several factors could undermine the transition process from Gavi support	**Recommendation 12** To address the gaps and audit-related areas of concern potentially affecting the transition process financing, the MOHFW should formulate a comprehensive National Immunisation Strategy (NIS) which spans the rest of the period until transition (approximately 8 years). As a minimum, this NIS should include: • Establishment of a dedicated transition committee with suitable representation, to provide cross-ministerial coordination and effective management over the transition of donor funded health programmes. • Development of a detailed roadmap setting out key transition milestones from Gavi support, including comprehensive financial planning covering vaccine procurement and related operational costs. • Integration of the urban immunisation strategy as part of the NIS.	**Action 35** An initiative has already been taken by EPI, Bangladesh to form a dedicated cell/ working group at Ministry level to expedite the Gavi transition process. The file for the creation of the working group has been initiated and the working group is expected to be formed soon. Thereafter, the cell would work on the transition strategy for Immunisation. **Action 36** The proposed dedicated cell/ working group will work on implementing all the recommendations. The transition roadmap would be developed after the formation of the cell. **Action 37** The NIS is a living document. The UIS has already been reflected in the NIS. However, as per the country context	**Action 35** EPI, DGHS, MOH&FW, and DP **Action 36** EPI, DGHS, MOH&FW, and DP **Action 37** EPI, DGHS, MOH&FW, and DP	**Action 35** Jun-25 **Action 36** Jun-26 **Action 37** Dec-24

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	• Consideration for any knock-on effect between the polio and the routine immunisation programme, such as the financing of surveillance and immunisation officer (SIMO) positions should be anticipated and planned for, plus any risks mitigated.	NIS can be revised. EPI is working on getting the ministry approval for the National Urban Immunisation Strategy Costed Action Plan. Besides, EPI has proposed several activities from the National Urban Immunisation Strategy Costed Action Plan in the 5th sector program in coordination with Primary Health Care operational plan. **Action 38** EPI has proposed the cost of WHO SIMO network in the 5th sector program plan. However, taking over the responsibilities of the WHO SIMO network by the government is a time consuming process that requires coordination between different ministries and govt. entities such as the Ministry of Public Administration, Public Service Commission, Ministry of Finance etc. EPI will try to ensure coordination to ensure the transition in the coming days as per the approved Polio Transition Plan.	**Action 38** EPI, DGHS, MOH&FW, and DP	**Action 38** Dec-25
Vaccine forecasts need to be improved	**Recommendation 13** The MOHFW should: Define roles, responsibilities, and accountabilities for all stakeholders participating in the vaccine forecasting process. Implement a consistent review mechanism for vaccine forecasting, incorporating regular meetings with relevant parties, including the EPI and Alliance Partners.	**Action 39** Traditionally EPI is forecasting the vaccine requirements in collaboration with UNICEF and WHO. The roles, responsibilities, accountability and review mechanism of this vaccine forecasting process will be assigned by the NLWG. The forecasting process would be further strengthened after the finalisation of the population estimates.	**Action 39** EPI, DGHS, MOH&FW, and DP	**Action 39** Dec-24
	Recommendation 14 Standardise and ensure consistency in the target population denominators used for vaccine forecasting, reporting immunisation coverage and calculating vaccine requirements (micro planning).	**Action 40** EPI under MOHFW fixes the population figures based on EPI microplan each year. However, process has been started to have the precise the population figure under EPI involving MOHFW, Bangladesh Bureau of Statistics (BBS) and other relevant departments. EPI already took initiative to introduce GIS based online microplanning, e-tracker to fix the target population and immunisation coverage which will ultimately help to vaccine forecast.	**Action 40** EPI, DGHS, MOH&FW, and DP	**Action 40** Dec-25
Lack of stock management system and weak inventory controls	**Recommendation 15** The MOHFW is recommended to implement an electronic Logistic Management Information System (eLMIS) at the central and subnational level, able to comprehensively track and	**Action 41** MOHFW has already taken the initiative to introduce a robust eVLMIS system through technical support by UNICEF. An agency has already been hired to develop the	**Action 41** EPI, DGHS, MOH&FW, and DP	**Action 41** Jun-24

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	manage vaccines and immunisation supported supplies. Such a system will provide visibility over stock levels, expirations, and will improve the accountability and management of supplies.	system, and 5 modules out of 13 modules have been developed to date. The eVLMIS implementation will be started in June 2024. This eVLMIS will address all vaccine and logistic related stock inconsistencies and strengthen the vaccine & logistic management system at all level.		
	Recommendation 16 The EPI is recommended to standardise the unit for vaccine records by complying with best practice and consistently recording all vaccines by dose only, to improve the legibility and accuracy of all vaccine stock entries.	**Action 42** EPI will update the vaccine stock register to record both doses and vials. This is also planned to be introduced by 2024 as per the EVM cIP recommendation.	**Action 42** EPI, DGHS, MOH&FW, and DP	**Action 42** Dec-24
	Recommendation 17 The national EPI team is recommended to ensure that its storekeepers' and stores handling vaccines comply with EEFO by adhering to the following processes and practices: • Implement clear, visual markings on storage units and shelving, as part of standard operating procedures to help comply with EEFO principles. Placards or labelling that can signal which batches should be issued first, separating these from stocks which are can only be issued afterwards. Colour-coding can be used to designate different vaccine batches. If adopted, such practices should be included in standard operating procedures for vaccine storage and distribution. • Undertake routine supervisions on stock turnover. A routine mechanism to check for EEFO adherence should be established, to review and ensure the effectiveness of manually labelling stocks and storage locations. This will help ensure that any further poor storage practices are identified and promptly addressed. Refer to Recommendation 10 for additional details on supervision.	**Action 43** EPI is following EVM standards for EPI vaccine and logistics management from the very beginning. Also EPI introduced new EVM guideline since 2018 and all EPI personnel from National to sub national level are trained in this new EVM guideline. Also EPI conducted EVM assessment using EVMA 2.0 tools where the EVMA score is 84. Necessary advocacy and capacity building measures would be undertaken and would be covered through the training to be undertaken. **Action 44** EPI receives vaccine & logistic indent quarterly from district level. The responsible EPI and development partner personnel supervise and monitor these indents and take necessary rational actions. Besides whenever EPI and development partners visit the sub national level EPI store they also conduct supportive supervision and provide feedback. EPI already took the initiative for the self EVM assessment at all level that will address routine supervision on stock and vaccine & logistic store management.	**Action 43** EPI, DGHS, MOH&FW, and DP **Action 44** EPI, DGHS, MOH&FW, and DP	**Action 43** Dec-24 **Action 44** Dec-24
The cold chain equipment inventory register was not up to date	**Recommendation 18** The MOHFW should periodically conduct a comprehensive assessment of the national immunisation programme's endowment of cold chain equipment. This assessment result in developing a plan, including as a minimum the following:	**Action 45** Data collection of Cold Chain Equipments is ongoing for initiating the process of condemnation of CCE which includes the inventory as well as the functionality status. According to the Last National Logistics Working Group (NLWG) meeting, it was decided that within June 2024, all	**Action 45** EPI, DGHS, MOH&FW and DP	**Action 45** Dec-24

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	• Review the functionality of equipment to determine the condition of and performance of existing equipment. • Assess the existing cold chain storage capacity and determine whether it is sufficient in terms of meeting future needs and requirements. • Conduct a CCE lifecycle analysis to determine when equipment units should be replaced. • Develop capital and operational expenditure estimates for the financing of CCE additions, replacements, and ongoing maintenance. • Advocate and mobilise for additional resources and likely sources of funding, such as government budgetary allocations or external donor financing. • Document the processes and timelines for new CCE procurement and installation, as well as the proper disposal of decommissioned units. • Develop a training plan for sub-national personnel located at district and upazila levels, to ensure that understand and are able to operate and conduct preventative and curative CCE maintenance effectively. • Establish suitable monitoring and evaluation mechanisms, to track the lifecycle, economic life and performance of cold chain equipment units.	irreparable and unusable CCE will be condemned throughout the country. **Action 46** During Covid-19 Pandemic situation, cold chain capacity has been strengthened which met the sufficient requirements. Presently, cold chain capacity is sufficient for the current demand. For the future needs and the new vaccines introduction, it requires further assessment to fulfil the needs. with inventory data of the previous row, we could assess the capacity again. The assessment is planned to be conducted in the current year 2024. **Action 47** EPI is working on developing e-VLMIS with the support of unicef (GAVI HSS FUND), this system will allow us to conduct CCE lifecyle analysis in future. **Action 48** Capital and operational expenditure estimation has been proposed in next 5th Sector Operation Plan **Action 49** Capital and operational expenditure estimation has been proposed in next 5th Sector Operation Plan **Action 50** Tracking will be done through the eVLMIS once its developed and implemented countrywide **Action 51** Training Plan for sub-national personnel has been proposed in next 5th sector Operational Plan (2024-2029). Currently, EPI is planning to conduct a training for the district level cold chain personnel for increase the	**Action 46** EPI, DGHS, MOH&FW and DP **Action 47** EPI, DGHS, MOH&FW and DP **Action 48** EPI, DGHS, MOH&FW and DP **Action 49** EPI, DGHS, MOH&FW and DP **Action 50** EPI, DGHS, MOH&FW and DP **Action 51** EPI, DGHS, MOH&FW and DP	**Action 46** Dec-24 **Action 47** Dec-24 **Action 48** Jun-24 **Action 49** Jul-24 **Action 50** Dec-24 **Action 51** Jun-24

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		capacity to operate and conduct preventive and curative CCE maintenance effectively **Action 52** Monitoring and Evaluation mechanism to track the lifecycle, economic life and performance of cold chain equipment units will be conducted through e-VLMIS once it developed	**Action 52** EPI, DGHS, MOH&FW and DP	**Action 52** Dec-24
The accuracy and completeness of immunisation targets was questionable	**Recommendation 19** The MOHFW and the EPI should improve the target setting process by: • Standardising DHIS2 monthly target setting as the default option, when the initial monthly target is first entered at the start of the reporting year, that this target should become the default option for all other months of the year. The system should also flag to users if any monthly targets are subsequently changed, from the initial default target set. • Requiring reporting units to maintain records justifying what basis they used to set targets (if different from the instruction letter), including the growth rate used. A formal review process should be established to assess and approve these targets, including a step to cross-check that the target is consistent with prior year's performance.	**Action 53** EPI is well aware of this issue about the limitation of DHIS2 system and considering those, EPI has taken this issue seriously and with the support of MIS, EPI is planning to shift this system to OpenSRP. Besides that EPI has taken many initiatives like GIS based mapping and online Microplanning, E-tracker, Apps based EPI Monitoring and Supervision, EPI Vaccination Center Mapping, Data Triangulation and routine monitoring and providing feedback to field. **Action 54** Immunisation denominator data has been historically a challenging issue. However, with WHO support EPI worked with the Bureau of Statistics (BBS) to get an authentic target for the program which will be finalised in a high level meeting	**Action 53** EPI, DGHS, MOH&FW and DP **Action 54** EPI, DGHS, MOH&FW and DP	**Action 53** Dec-25 **Action 54** Dec-25
Immunisation coverage – systemic errors and data management gaps	**Recommendation 20** The MOHFW and the EPI should: • Conduct routine data triangulation: Regularly conduct data triangulation exercises, encompassing accuracy and completeness assessments, to compare administrative coverage data with vaccine availability and utilisation. This analysis should be carried out at the national EPI level, Districts/City Corporations, and reporting units (UpHC/Municipalities). • Enhance DHIS2 with warning mechanisms: Integrate warning messages or red flags within the DHIS2 system to alert	**Action 55** Data triangulation exercise is now being done at field level to review data quality as well as EPI-HQ is also closely monitoring this issue. The EPI is currently developing a new package for undertaking data triangulation on regular basis. This would also involve EPI surveillance and would have features of data handler and data manager. **Action 56**	**Action 55** EPI, DGHS, MOH&FW and DP **Action 56** EPI, DGHS, MOH&FW and DP	**Action 55** Dec-25 **Action 56** Dec-25

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	users about incomplete data and instances of high variances between expected and reported figures.	EPI is planning to switch from DHIS2 to OpenSRP, so the recommendation would be duly addressed in the new application.		
Immunisation coverage – errors in data flow process undermined the integrity of the data reported	**Recommendation 21** The MOHFW should strengthen its process of recording immunisation data by: • Data validation mechanisms: establishing a data quality validation mechanism at the UpHC and city corporations incorporating periodic reviews of data inputs before submitting the information to statisticians for input into DHIS2. The validation mechanism should also cross-check that inputs into DHIS2 are consistent with data from the monthly reports. • Data quality oversight: designating dedicated personnel at the Civil Surgeon's Office (i.e., district level) who are responsible for monitoring data quality for their districts' upazilas. These individuals will be charged with ensuring that the implementation of mitigation and corrections of any data discrepancies is done, as well as to regularly follow-up on the status of agreed actions. • Data quality assessments: jointly the MOHFW and EPI should develop standard operating procedures requiring that regular data quality assessments (i.e., spot checks) are done, in collaboration with the partners. These assessments should be conducted at regular intervals to ensure the ongoing accuracy and reliability of sub-national immunisation data.	**Action 57** EPI has develop a mechanism to do data validation exercise for National to Upazlia level as well as to strengthen EPI data quality through monitoring. Currently, EPI is getting monthly data from field. However, EPI has been scaling up the GIS based online microplanning and daily vaccination reporting system by 2024 nationwide to improve the data quality. EPI already disbursed official letter to sub national level proposing to form data quality monitoring teams with specific directives to ensure consistency of data. In addition, EPI has planned to conduct periodic DQSA in selected districts, upazila, city corporation ward starting from March 2024 onwards. **Action 58** EPI has a plan to establish small M&E working group for Monitoring Data quality from National to Upazila level with the designated persons. **Action 59** EPI has already practicing the assessments through DQSA, RCA, EPI Session Visit, Desk review in various level (National to Upazila) including monthly and quarterly meeting . However, EPI is planning to strengthen those activities.	**Action 57** EPI, DGHS, MOH&FW and DP **Action 58** EPI, DGHS, MOH&FW and DP **Action 59** EPI, DGHS, MOH&FW and DP	**Action 57** Dec-25 **Action 58** Dec-25 **Action 59** Dec-25
Data quality – gaps in controls over the immunisation data system	**Recommendation 22** The MOHFW should require the EPI to rectify the identified deficiencies within the DHIS2 by: • Enhancing DHIS2's integrity and functionality: Initiate system upgrades addressing the flaws identified. Any amendments to the systems should prioritise critical functionalities such as automating the transfer of closing stock balances from the previous month's into the subsequent month's opening stock	**Action 60** EPI has taken the initiative to shift VLMIS system from DHIS2 to blockchain based dedicated eVLMIS system, according to the decision of NLWG Bangladesh. The deficiencies in the existing application would duly be addressed in the new application. **Action 61**	**Action 60** EPI, DGHS, MOH&FW & DP **Action 61**	**Action 60** Dec-25 **Action 61**

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	and enforcing data entry cut-off dates. Such enhancements can help to improve the data quality in DHIS2. • Revising roles and responsibilities in the DHIS2 manual: Update the DHIS2 manual, to clearly define responsibilities for reviewing data and to reinforce the segregation of duties between data input and review of data roles. This will ensure that data entry and quality checks are performed by different individuals, to increase the integrity of the data. • Reviewing and streamlining users' access: Conduct a comprehensive review of users with access to DHIS2. Consider removing users other than those linked to reporting units responsible for inputting immunisation data, in order to: rationalise access; improve accountability; and align with dashboard indicators, such as reporting timeliness.	As EPI is planning to shift from DHIS2 to OpenSRP reporting platform, the role and responsibilities incorporated in OpenSRP guidelines for data entry and quality check. **Action 62** MIS, DGHS addressed this observation in OpenSRP and eVLMIS system by providing access to dedicated persons who have HRIS id as per users roles and responsibilities. The DHIS2 is not being updated as the issue will be addressed in the new application being developed.	EPI, DGHS, MOH&FW & DP **Action 62** EPI, DGHS, MOH&FW & DP	Dec-25 **Action 62** Dec-25
Inadequate progress in improving data quality	**Recommendation 23** The MOHFW is recommended to collaborate closely with the alliance partners to ensure that CES survey are undertaken each year. These results will serve as a resource to help localise gaps in data quality and thereafter to tailor DQIP activities targeted at specific reporting units most warranting improvement assistance.	**Action 63** Based on the previous experience country was conducting CES in each year. However, the survey process and finalisation of the report takes considerable amount of time. Evaluation of the results coming from the survey conducting each year is not feasible to implement yearly. Considering the fact, EPI has decided to conduct CES every alternate year. The CES is currently going on and the results are expected by Sep 2024.	**Action 63** EPI, DGHS, MOH&FW & DP	**Action 63** Oct-24
	Recommendation 24 The MOHFW is recommended to prioritise implementation of its data quality improvement plan and establish suitable mechanisms to regularly monitor and review progress on the plan's execution. This includes ensuring that activities are accomplished in accordance with the plan, and promptly carrying out the necessary corrective actions to address issues.	**Action 64** National EPI prioritise DQSA, RCA, GIS based Mapping and Online Microplanning, Digital Supportive supervision, Target population estimate etc interventions to improve the data quality. To monitor the implementation of the priority activities National EPI has been conducting meeting and workshop. Further, the HSS3 funding covers various activities to be undertaken as per DQIP. The plan has been developed and is awaiting approval from Line Director for inclusion in work plan and implementation. Data assessment has been done in 2023 and data quality monitoring team has been set up in each Upazila. Monitoring would be undertaken as per the plan.	**Action 64** EPI, DGHS, MOH&FW & DP	**Action 64** Dec-24