Memorandum on the Republic of Indonesia Programme Audit report

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

The audit team reviewed the NIP and implementing partners' management of Gavi support to the routine immunisation programme provided during the period between 1 January 2018 to 31 December 2022. The audit scope including the following grants: "coverage equity and sustainability action plan", vaccine introduction for inactivated poliovirus vaccine, the measles rubella campaign, as well as vaccines and cold chain equipment. The audit also covered the vaccine and cash provided by Gavi's COVAX facility in support of Indonesia's COVID-19 emergency operations in 2021 and 2022.

Funds directly executed by WHO and UNICEF were not subject to this programme audit and were considered out of scope, in accordance with the United Nations single audit principle.

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

1. There is an overall audit rating of **"needs significant improvement"**, which means, "One or few significant issues were 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."
2. In total, fourteen issues were identified in the following areas: (i) governance, oversight and programme management; (ii) sustainability of Gavi's post transition investments; (iii) vaccine supply management; and (iv) immunisation data management.
3. To address the risks associated with the issues, the audit team raised 28 recommendations of which 11 were rated as high priority.
4. Key findings were that:
    a. The scope of the Health Sector Coordination Committee needs to be expanded to cover the entire immunisation programme. Discussions by this committee have primarily focused on Gavi grant performance and lacked integration with the national immunisation agenda, obtaining only partial oversight over the overall immunisation programme, though necessary given that the country self-finances its national programme.
    b. The MoH's role in monitoring and coordinating partner-led activities should be

enhanced. There was limited MoH oversight over Gavi-funded programme activities implemented by partners, given the absence of a dedicated forum for such discussions and reviews. Also, the NIP did not have visibility over the Gavi funding allotted to civil society organisations and other MoH departments, hindering effective monitoring and utilisation tracking.

c. There were gaps in the sustainability planning for the Sistem Monitoring Imunisasi dan Logistik secara Elektronik *(*SMILE) system. There was no comprehensive plan to transfer this system's related expenditures over to the government's budget, with the donors still continuing to play a key role in the day-to-day operation of the system including overseeing maintenance, backup and providing technical support.
d. The country lacks a central vaccine store, relying on a third party for vaccine manufacturing and distribution, which resulted in some disruptions in the continuity of supplies.
e. Shortcomings in the forecasting and procurement increased the risk of vaccine stock outs, including a recurring shortfall between the amounts of vaccines initially forecast as required and what was ordered.
f. There are challenges in immunisation coverage monitoring, which included the NIP continuing to use outdated census data from 2010 for the purpose of monitoring immunisation coverage, despite the availability of more recent data from the 2020 census.

The findings of the programme audit were discussed with the Ministry of Health 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 to ensure that their commitments are implemented, and to agree on how to make the programme whole.

Geneva, April 2024

PROGRAMME AUDIT REPORT

Republic of Indonesia
March 2024

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1. Executive Summary

1.1 Overall audit opinion

Audit opinion:

The audit team assessed the Ministry of Health's management of Gavi support during the period 1 January 2017 to 31 December 2022 as "**Needs significant improvement**" which means, "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."

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

Through our audit procedures, we have identified high risk issues relating to programme management; governance and oversight; vaccine and supply chain management; immunisation data processes; and fixed assets management. To address the risks associated with these issues, the audit team raised 28 recommendations, of which 11 (39%) were rated as high risk. These recommendations need to be addressed by implementing remedial measures according to the agreed management actions.

1.2 Summary of key audit issues

** The audit ratings attributed to each section of this report, the level of risk assigned to each audit issue and each recommendation, are defined in Annex 2 of this report.*

1.3 Summary of issues

Through our audit procedures, we identified six high risk and eight medium risk issues relating to the use and management of Gavi support. The high-risk issues are summarised below. The detailed issues are in Section 4 of this report.

Governance, Oversight and Programme management

The governance structure for the immunisation programme comprises three key bodies: the Health Sector Coordination Committee (HSCC), the Indonesian Technical Advisory Group on Immunisation (ITAGI), and the Technical Working Group (TWG). The HSCC is meant to play a pivotal role in overseeing the operations of the National Immunisation Programme (NIP). However, we noted that discussions within the Health Sector Coordination Committee (HSCC) primarily focussed on Gavi grant performance, lacking integration with the national immunisation agenda and hindering ongoing immunisation programme oversight, especially relevant as the country is self-financing. Furthermore, certain functions outlined in the HSCC terms of reference were not fulfilled including review of financial performance of Gavi grants and overseeing implementation of partner led activities. All governance bodies did not meet frequently as required resulting in gaps in monitoring and implementing of recommendations.

The audit also highlighted gaps in the monitoring of targeted country assistance (TCA) support and other partner-led programme activities within the Ministry of Health (MoH). The MoH's lack of involvement in monitoring and validating completed TCA milestones was evident, as partners independently submitted reports through an online Gavi reporting portal without MoH review. The audit team identified at least four TCA activities which were incorrectly reported as completed by December 2022 but were not. The HSCC's quarterly reviews of progress and performance of TCA implementation activities, required by Gavi's 2019 guidelines, were not evidenced. Furthermore, there was limited MoH oversight of Gavi-funded programme activities implemented by partners, lacking a dedicated forum for discussions and reviews. The NIP did not have visibility of Gavi funding allocated to civil society organisations and other MoH departments, hindering effective monitoring and utilisation tracking. These issues were compounded by the absence of discussions on the financial performance of various Gavi grants during HSCC meetings.

The above underscores the need to strengthen and document governance and oversight mechanisms over partner-led activities given that key components of Gavi's support to middle-income countries depends on the roles executed by partners. This will also bolster ownership of the programme and underpin its sustained continuity once the post transition support from Gavi ceases.

Sustainability of Gavi investments

Sistem Monitoring Imunisasi dan Logistik secara Elektronik (SMILE) operational and sustainability challenges.
The country used SMILE as its Logistics Management Information System (LMIS). SMILE was developed as a mobile and web-based application, implemented by the Ministry of Health (MoH) with the assistance of the United Nations Development Program (UNDP). The audit identified several gaps in the management and sustainability of this system.

While the system has been deployed nationwide and is hosted at the Ministry of Health (MoH) data centre, there is no comprehensive plan to transfer system related expenditures to the government's budget. The UNDP, funded by Gavi and other donors, continues to play a pivotal role in day-to-day management of the system including overseeing maintenance, backup and providing technical support. The licensing arrangements for SMILE are not clearly defined, leading to uncertainty about ownership and data access. The cold chain equipment (CCE) component of SMILE is incompletely developed, with vital CCE data elements missing and errors in the details recorded in the system. The audit also noted gaps in the e-learning platform design which hinders targeted capacity development and fails to meet system security and standards.

Furthermore, the absence of comprehensive user audit logs and outdated end-user manuals endanger the system's effectiveness and security. Addressing these gaps is crucial for ensuring the sustained success of the SMILE system.
The audit team noted that one reason for these deficiencies was the absence of frequent quality assurance reviews over the system development. The last such quality assessment was undertaken in 2021, despite substantial system updates thereafter.

Challenges in the design of the (Aplikasi Sehat IndonesiaKu) *ASIK system impacting its operational effectiveness.*
In 2022, the Digital Transformation Office (DTO) of the Indonesian Ministry of Health inaugurated the ASIK system for management of immunisation data. The audit identified challenges in the ASIK system's design impacting its operational effectiveness. Firstly, the implementation of a uniform unique identifier for children under the age of five is incomplete, relying on insufficient data points such as names and birthdates, which may lead to identification issues due to commonality and variations. Additionally, the system does not include data validation checks, hence errors or duplicate records are tolerated during data entry. Furthermore, the immunisation dashboards performed sub-optimally due to prolonged loading times, whilst the mobile version of the ASIK system lacked an offline mode. The MoH is exploring alternative solutions to the dashboard and offline functionality, but such initiatives remain in the preliminary, conceptual stage.

Given Indonesia's transition into the self-financing phase, it is crucial to give thoughtful and specific consideration to the sustainability of Gavi investments, including SMILE and ASIK.

Vaccine supply management

The audit noted that the country lacks a central vaccine store, relying on PT Biofarma for vaccine manufacturing and distribution. While PT Biofarma serves as the primary storage facility at the national level, the absence of essential features of a central warehouse is evident. The arrangement lacks defined minimum and maximum stock levels, hindering stock reorders and order scheduling. Additionally, PT Biofarma operates separate information management systems not integrated with SMILE, limiting end-to-end logistics data visibility. The current distribution model to provincial vaccine stores lacks defined schedules and plans, impeding informed order scheduling by provinces and providing no clarity on distribution windows for anticipated vaccine supplies from PT Biofarma.

Additionally, based on the audit team's analysis of vaccine forecasts for the period 2018 to 2023, it was noted that there was consistently a shortfall between the amounts initially forecast and what was ordered. For pentavalent doses, the reduction between the forecast and orders placed ranged from 20% (2021) up to 88% (2023), and an average reduction in fulfilments of 45% over the period.

The audit noted substantial delays in the vaccine procurement process, particularly in the key steps from the initiation of a procurement request by the national immunisation programme to the issuance of contracts in the e-catalogue. On average this process took up to 240 days for pentavalent and 187 days for IPV. The audit team also noted there were insufficient stocks, with only 0.06 months of BCG, 0.12 months of IPV and 0.0 months of pentavalent being available at the national level during the audit visit in October 2023.

The absence of a central vaccine store, coupled with gaps in forecasting and procurement practices, has resulted in the country maintaining markedly low stock levels at the central level, falling below the designated buffer thresholds. This situation significantly elevates the risk of stockouts and potential disruptions to the vaccination program.

Immunisation data

The National Immunisation Programme (NIP) has continued to use outdated census data from 2010 for monitoring immunisation coverage, despite the availability of more recent data from the 2020 census. While the net impact of both these censuses on the national target population estimates may be minimal, the audit team noted that the impact on the provinces' target population was often significant. For instance, the variance in total population estimates for 2020 based on the 2010 and 2020 census is 1.36%, resulting in a marginal reduction of only 1.07% in reported administration coverage for DPT3 in 2020. However, provincial analysis revealed significant variances ranging from -15.92% to 11.57%, with nine provinces exceeding a 5% difference. Another error was noted in the computation of coverage for 2022 due to the use of an incorrect denominator, leading to an inflated reported administrative coverage by 5%, with seven provinces reporting DPT3 coverage exceeding 100%.

The reported administrative coverage for DPT3 was consistently higher than the WHO / UNICEF estimates of national immunisation coverage (WUENIC) over the period 2018 to 2022. Additionally, a Demographic Health Survey (DHS) conducted in 2018 reported lower DPT3 coverage estimates when compared to both WUENIC and the reported administrative coverage.

The audit team noted that while the immunisation data challenges are known, and undermine the credibility of the reported immunisation administrative coverage, addressing them remains a challenge. Indonesia has never conducted an immunisation coverage evaluation survey nor a specific WUENIC survey, relying upon desk reviews of national official estimates.

2. Objectives and scope

2.1 Audit objectives

In line with the respective country agreements and 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 and equipment) to the Republic of Indonesia so as to assess if: the transition and post-transition engagement arrangements are effective, the existing grant oversight mechanisms provide continuous and reliable assurance on Gavi's investments, 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 management and operational information; the effectiveness of operations; the physical security of assets and resources; and compliance with national procedures and regulations.

2.2 Audit scope

We adopted a risk-based audit approach informed by our assessment of the risks in all the areas of the immunisation programme supported by Gavi. This included: vaccine and supply chain management, programme management and oversight, immunisation data management, cold chain equipment management, Covid 19 Vaccine Global Access (COVAX) support, and the sustainability of post transition support.

The audit scope covered the five-year period from 1 January 2018 to 31 December 2022. This scope was extended until to 30 June 2023 with respect to the Covid-19 response and COVAX vaccine deliveries. The review of cash support provided by Gavi is not included in this report; it will be subject to a separate audit in 2024.

The total cash, vaccine and ancillary support provided by Gavi to Indonesia as of 31 December 2022 is presented in Table 2 below.

Table 2: Cash, equipment, and vaccine support as of 31 December 2022

Amounts in USD		Grants in audit scope period (USD)					
Cash grants	**2000 to 2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**Total**
ISS and HSS	37,463,500	-	-	-	-	-	**37,463,500**
IPV	3,688,500	-	-	-	92,264	1,144,250	**4,925,014**
INS	9,856,844	-	-	-	-	-	**9,856,844**
HPV	170,000	-	-	-	-	-	**170,000**
Hep-B	100,000	-	-	-	-	-	**100,000**
CSO	4,000,500	-	-	-	-	-	**4,000,500**
JEV	100,000	-	-	-	-	-	**100,000**
MR	-	3,914,383	-	-	-	(469)	**3,913,914**
VIG	3,791,000	-	-	-	-	-	**3,791,000**
COVAX CDS	-	-	-	-	-	3,985,015	**3,985,015**
Total (Cash)	**59,170,344**	**3,914,383**	**-**	**-**	**92,264**	**5,128,796**	**68,305,787**
Technical Assistance							
Total (PEF TCA)	**-**	**-**	**7,091**	**2,366,763**	**223,000**	**-**	**2,596,854**
Equipment support							
Total (Equipment)	**-**	**-**	**-**	**-**	**-**	**1,216,233**	**1,216,233**
Vaccines support							
Hep-B	17,511,000	-	-	-	-	-	**17,511,000**
HPV	96,909	86,892	817	-	-	-	**184,618**
IPV	10,812,000	8,131,000	14,426,500	-	8,458,500	9,831,723	**51,659,723**
ISD	163,500	184,667	204,837	-	-	-	**553,004**
JEV	343,500	-	-	-	-	-	**343,500**
MR	27,769,500	-	-	-	-	-	**27,769,500**
OSI	290,237	-	-	-	-	-	**290,237**
Pentavalent	44,321,000	2,507,859	4,092,909	254,583	-	-	**51,176,351**
Covid19 Vaccines	-	-	-	-	502,871,097	181,791,912	**684,663,009**
Total (Vaccines)	**101,307,646**	**10,910,418**	**18,725,063**	**254,583**	**511,329,597**	**191,623,635**	**834,150,942**
Total (Vaccines + Equipment + Technical assistance + Cash)	**160,477,990**	**14,824,801**	**18,732,154**	**2,621,346**	**511,644,861**	**197,968,664**	**906,269,816**

In preparation for transition out of Gavi support in 2017, a consensus between Gavi and the country was reached to reinvest unspent grant funds, accumulated interest, and savings derived from the self-procurement of the pentavalent vaccine in previous years. This initiative was directed towards a comprehensive two-year strategy prioritising coverage, equity, and sustainability, leading to the establishment of the *Coverage Equity and Sustainability Action Plan* (CESAP) with funds totalling USD 17,997,191. These funds (presented in Table 3 below) also formed part of the audit scope.

Table 3: Source of funds reprogrammed into CESAP.

Source	Amount (USD)
Pentavalent (NVS) – funds not disbursed	6,855,500
Pentavalent (NVS) -in country funds	5,949,449
Pentavalent – VIG	1,103,558
HSS 1 and ISS	1,792,344
Accumulated interest	2,296,340
TOTAL	**17,997,191**

2.3 Audit approach

The programme audit was conducted in two phases: an initial in-country scoping visit between 3 and 7 July 2023, followed by four weeks fieldwork conducted between 2 and 31 October 2023.

The audit team visited the in-country vaccine manufacturer (PT Biofarma); seven provincial offices and vaccine stores; 13 district offices and vaccine stores; and 24 Puskesmas (i.e., health facilities). See Annex 4 for a list of sites visited.

Gavi support to Indonesia over the audit period was channelled through the Ministry of Health (MoH), World Health Organisation (WHO), United Nations Children Fund (UNICEF), United Nations Development Programme

(UNDP), John Snow, Inc (JSI) and Clinton Health Access Initiative (CHAI). Gavi disbursed amounts totalling USD 29,729,488 to the six implementers as illustrated in Table below.

Table 4: Cash disbursements by grant and implementer as of 31st December 2022

Cash grant	MoH	UNICEF^	WHO^^	JSI~	UNDP*	CHAI~	TOTAL
IPV	*1,236,514*						***1,236,514***
MR		*1,180,008*	*2,733,906*				***3,913,914***
CESAP	*11,141,691*	*2,276,129*	*4,313,559*	*265,812*			***17,997,191***
COVAX CDS		*719,165*			*3,050,000*	*215,850*	***3,985,015***
PEF TCA		*108,000*	*122,895*		*2,365,959*		***2,596,854***
TOTAL	***12,378,205***	***4,283,302***	***7,170,360***	***265,812***	***5,415,959***	***215,850***	***29,729,488***

^ Not subject to our audit review due to the Single Audit Principle[1].
^^The funds received by WHO had two components with 75% of the funds directly utilised by the organisation and therefore not subject to our audit review.
**The funds received by UNDP were used mainly to support the design and implementation of the SMILE system. While the audit did not review specific expenditure at UNDP per the grant agreement signed between Gavi and UNDP, detailed work was done on the SMILE system design, policies and implementation at national and sampled provinces.*
~ Scoped out as part of the audit risk assessment process.

During the audit scoping and fieldwork phases, the team interacted with key stakeholders comprising the: MOH/NIP Team, PT Biofarma, Gavi Alliance partners; WHO and UNICEF, Gavi implementing partners; UNDP and CHAI, donors (World Bank, Asian Development Bank and United States Agency for International Development (USAID)), assurance providers (Badan Pengawasan Keuangan dan Pembangunan (BPKP)[2] and the Inspectorate General (internal auditors) of the MoH).

2.4 Exchange rate

For information purposes and as part of the summary of this report, overall total amounts were reflected in United States Dollars (USD). Most in-country expenditure is in Indonesian Rupiah (IDR). An average period exchange rate of IDR 14,497 to USD 1 was applied in the conversion.

[1] The Single Audit Principle is part of a common internal control and audit framework in the United Nations system organisations. The Single Audit Principle foresees a control system, where the control and audit functions are based on common methods enabling auditors of one institution to rely on the work of auditors from another institution instead of re-performing the audit themselves.

[2] External auditors: non-ministerial government institution reporting to the President as head of government.

3. Background

3.1 Introduction

Indonesia, officially known as the Republic of Indonesia, is a nation located in Southeast Asia and Oceania, positioned between the Indian and Pacific Oceans. It is the largest country in Southeast Asia and holds the distinction of being the world's largest archipelagic state, spanning 5,120 kilometres (3,181 miles) from east to west and 1,760 kilometres (1,094 miles) from north to south. The archipelago of Indonesia comprises over 17,000 islands, with more than 7,000 of them remaining uninhabited. Key regions within Indonesia include the islands of Java, Bali, and Sumatra, alongside substantial portions of Borneo and New Guinea. The country shares borders with Malaysia in the northern part of Borneo and with Papua New Guinea in the central region of New Guinea.[3]

Administrative arrangements

Indonesia's administrative structure has several tiers of subdivisions including provinces, regencies and cities, districts, and villages. The provinces are each governed by a legislature known as Dewan Perwakilan Rakyat Daerah (DPRD) and an elected governor. Since the initial establishment of eight provinces in 1945, the count has expanded to 38, with the most recent modification occurring in 2022 through the division of Southwest Papua from the province of West Papua[4].

The second level are regencies (tabulate) and cities (kota) which are overseen by regents (bupati) and mayors (walikota) respectively. Each of these entities is equipped with a legislative body known as DPRD Kabupaten/Kota and there are currently 416 regencies and 98 cities. The third level are districts (kecamatan), referred to as distrik in Papua or kapanewon and kemantren in Yogyakarta and there are currently 7,266 districts. Finally, at the fourth level, we find villages, known as desa, kelurahan, kampung, nagari in West Sumatra, or gampong in Aceh. There are currently 83,467 villages[5].

Economy and demographics

Indonesia has a mixed economy in which the private sector and government play vital roles. As the only G20 member state in Southeast Asia, the country has the largest economy in the region and is classified as a newly industrialised country[6]. Per a 2023 estimate, it is the world's 16th largest economy by nominal Gross Domestic Product (GDP) and 7th in terms of GDP at purchasing power parity (PPP), estimated to be USD 1.417 trillion and USD 4.393 trillion, respectively. Per capita GDP in PPP is US$15,835, while nominal per capita GDP is US$5,108[7].

The country is in the midst of a fundamental demographic shift as the working-age population increases relative to the rest of the population. The 2020 census recorded Indonesia's population as 270.2 million, the fourth largest in the world, with a moderately high population growth rate of 1.25%. Java is the country's (and world's) most populous island, where 56% of the country's population lives[8]. This large population includes numerous ethnic, cultural and linguistic groups, speaking 724 distinct languages and dialects with the Javanese constituting the largest among them.

3.2 National health sector

The Indonesian health system has a mixture of public and private providers and financing. The public system is administered in line with the decentralised government system (see administrative arrangements above) in Indonesia, with central, provincial and district government responsibilities.

The central Ministry of Health is responsible for management of some tertiary and specialist hospitals, provision of strategic direction, setting of standards, regulation, and ensuring availability of financial and

[3] Britannica Encyclopaedia - Indonesia

[4] Now Indonesia has 38 provinces

[5] Ministry of Internal Affairs: Indonesia Administrative arrangements

[6] Indonesia: G-20 Members overview

[7] IMF: Indonesia Economic Outlook

[8] Indonesia central bureau of statistics: Results from 2020 Population Census

human resources. Provincial governments are responsible for management of provincial-level hospitals, provide technical oversight and monitoring of district health services, and coordinate cross-district health issues within the province. District/municipal governments are responsible for management of district/city hospitals and the district public health network of community health centres (puskesmas) and associated subdistrict facilities.[9] The community health system is organised in three tiers: on top are the community health centres (Puskesmas), followed by health sub-centres on the second level, and village-level integrated health posts (Posyandu) at the third level. Puskesmas, of which there are over 10,000, provide both curative and public health services, with a focus on six essential service areas: health promotion, communicable disease control, ambulatory care, maternal and child health, family planning and community nutrition, and environmental health including water and sanitation.

In January 2014, the government launched Jaminan Kesehatan Nasional (JKN, "National Health Insurance"), a scheme to implement universal health care. Under JKN, all Indonesians receive coverage for a range of treatments via health services from public providers as well as private organisations that have opted to join the scheme.

3.3 Immunisation in Indonesia

Immunisation is one of the Indonesian government's priorities which has been declared in Law No.36/2009 on Health and Law No.23/2014 on Local Government which state that immunisation is a mandatory program and has composite indicators[10] for minimum service standards that must be met by the government.

The National Immunisation Programme (NIP) in Indonesia has been implemented since 1977 and is located under the Directorate of Epidemiology, Surveillance, Immunisation and Maternal Health under the oversight of the Director-General of Disease Control and Prevention within the Ministry of Health[11]. Local governments are responsible for the delivery of immunisation programmes in their areas, but the central government through the Ministry of Health (MoH)/NIP is responsible for provision of vaccines and logistics across the country, developing guidelines and standards, planning, monitoring and evaluation including supportive supervision, vaccine preventable disease (VPD) surveillance, cold chain monitoring, quality control and capacity building through training for the healthcare workers.

The NIP provides basic immunisation for children aged 0–1 years, school-age children, and tetanus immunisation for girls before they enter reproductive age. The national immunisation schedule includes vaccines against Hepatitis B (Hep B), Polio, Diphtheria, Pertussis, Haemophilus influenzae type b, Tetanus (Td), and Measles. Five immunisations are given to children under one year, under the government's slogan of "Complete Five Immunisation, or L-I-L" (Lima Imunisasi Lengkap). See immunisation schedule on Annex 5.

Most of the population accesses vaccination services through the public sector with an estimated 80% of children vaccinated in Posyandu (health posts), 10% in Puskesmas (health centres) and 5% in Polindes (birth facilities). The remaining children (approximately 5%) are vaccinated in private clinics and hospitals. At public health facilities, both JKN and non-JKN members can receive immunisation services for free, while at private facilities eligible for JKN reimbursements, only JKN members receive immunisation services for free[12].

3.4 Immunisation supply chain structure

The Government of Indonesia has streamlined the functions of procuring, storing, and distributing medicines, including immunisation supplies, within the Directorate General of Pharmaceuticals and Medical Devices at the Ministry of Health. The National Immunisation Program (NIP), guided by the Department of Disease Control and the Indonesia Technical Advisory Group on Immunisation (ITAGI), manages the forecasting and quantification of vaccines. The outcomes of this process are then submitted to the Directorate General of

[9] Comprehensive Multi Year Plan National Immunisation Program Indonesia, 2020 - 2024

[10] Basic services under minimum service standards related to immunisation indicators are: (i) maternal health service, (ii) neonatal health service, (iii) health service for infant < 5 years, and (iv) health services for students.

[11] Organogram of Directorate of Surveillance and Health Quarantine, MoH, Indonesia, 2020

[12] ThinkWell, 2017

Pharmaceuticals and Medical Devices for centralised procurement. The procurement, managed through an e-catalogue system by the Directorate General of Pharmaceuticals and Medical Devices, involves international competitive bidding and direct procurement through the in-country manufacturer i.e., PT Biofarma.

PT Biofarma currently manufactures most of the vaccines on the national immunisation schedule, including bOPV, DT, Pentavalent, Hepatitis B, IPV, and Td. The company also holds the ministerial mandate for importing and distributing new vaccines not locally produced.

Vaccine distribution utilises a push system, with manufacturers or importers delivering directly to provincial vaccine stores (PVS) using cold chain trucks equipped with temperature and location monitoring. Immunisation-related dry supplies are procured separately and distributed to the provincial vaccine stores. Each of the 34 provinces maintains a PVS, typically located at the provincial health headquarters and equipped with cold rooms for proper vaccine storage.

At the district level, a pull system is employed, where districts place monthly vaccine orders via the Sistem Monitoring Imunisasi dan Logistik secara Elektronik (SMILE) application based on consumption and stock levels. District vaccine stores (DVS), situated at district health headquarters and equipped with cold rooms and vaccine refrigerators/freezers, receive and store vaccines. Puskesmas, following a pull system, place monthly orders to the DVS, collect vaccines, and transport them in cooler boxes. Puskesmas store vaccines in vaccine refrigerators/freezers and distribute them to service delivery points, such as integrated service posts (posyandus), on a monthly basis in alignment with district vaccination schedules.

Presently, the country utilises SMILE as its Logistics Management Information System (LMIS). Developed as a mobile and web-based application, SMILE was implemented by the Ministry of Health (MoH) with the assistance of UNDP. This system facilitates real-time visibility of vaccine cold chain logistics through daily-updated information, digitising stock supplies and monitoring storage temperatures at various vaccine cold chain points. SMILE is an adaptation of the technology used for the Electronic Vaccine Intelligence Network (eVIN) in India, also through UNDP, taking into account lessons learned through eVIN. The national scale-up of the SMILE system extends its reach to over 12,000 healthcare centres across 34 provinces in Indonesia, with more than 25,000 active accounts to date.

SMILE is deployed in conjunction with manual/physical stock ledgers and tally sheets at all vaccine storage points.

3.5 Immunisation data

To address the fragmentation of information systems within the public sector, the Government of Indonesia launched the One Data Indonesia (One Data, Satu Data) policy in 2018. This initiative, guided by the principles of data systems interoperability, aimed to enhance the utilisation of government data[13].

Within the health sector, the corresponding policy is known as 'Satu Data Kesehatan' or One Health Data. This policy emphasises the adoption of a singular standard, metadata, and portal for the dissemination of information. Administered by the Centre for Data and Information at the Ministry of Health, named Pusdatin (Pusat Data dan Informasi), the Satu Data Kesehatan policy seeks to streamline and unify health data practices[14].

Immunisation data are reported monthly, with reports from the puskesmas/health facilities to the districts due on the 5th of every month, from district to province on the 10th of every month, and from province to central level on the 15th of the month.

[13] Glenn Maail A (2018). Understanding Barriers in the Implementation of the One Data Policy in Indonesia: Insights from Health Data Journey Modelling. ITU Journal: ICT Discoveries, Special Issue No. 2, 16 Nov. 2018. Open Data Lab Jakarta

[14] Sitompul T et al. (2019). Convergence of technical and policy processes: A study of Indonesia's health information systems. April 2019. Research Gate.

At the puskesmas/health facility level, a cohort register is maintained to document maternal and child health interventions, including immunisation. Subsequently, data from these service points is recorded onto the puskesmas cohort register, and the information is then consolidated on an MS Excel spreadsheet. This spreadsheet is transmitted via email to the District Health Office (DHO).

At the district level, this data undergoes further aggregation with information from other health facilities within the district. The compiled MS Excel spreadsheet is then forwarded via email to the Provincial Health Office (PHO). The PHO then aggregates the data from all districts in the province and submits the consolidated provincial data to the central level i.e., NIP.

In 2022, the Digital Transformation Office (DTO) of the Indonesian Ministry of Health inaugurated the ASIK (Aplikasi Sehat IndonesiaKu) application in Tanjung Pinang, Riau Islands. ASIK, acronym for *"My Indonesian Healthy Application*," was developed aimed at streamlining immunisation procedures. Its core functionalities centre around the digitisation of immunisation records and the augmentation of support for healthcare providers. The application aids healthcare providers in conducting more efficient and effective immunisation monitoring. ASIK implementation had extended its reach to over 10,000 Puskesmas throughout Indonesia by November 2023.

The Indonesian Ministry of Health also uses DHIS2 as part of the One Health Data applications for data integration and visualisation. Aggregate immunisation data is input into DHIS2 on an annual basis.

3.6 Covid-19 context, response and impact

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

From January to February 2020, Indonesia reported no cases of Covid-19, despite being surrounded by infected countries like Malaysia, Singapore, the Philippines, and Australia[15]. On 2 March 2020, President Joko Widodo disclosed the first cases in the country: a dance instructor and her mother in Depok, West Java. By 9 April 2020, the pandemic had spread to all 34 provinces in the country. Jakarta, West Java, and Central Java emerged as the worst-hit provinces, collectively accounting for over half of the national total cases[16]. On 13 April 2020, President Jokowi declared Covid-19 a national disaster after it had affected 4,557 individuals and caused 399 deaths in Indonesia at that time.

In preparation for the Covid-19 vaccination, a multisectoral Committee for the Prevention of Covid-19 and National Economic Recovery (KPC PEN) was established on June 20, 2020, in accordance with Presidential Regulation No. 82 of 2020. KPC PEN was entrusted with the following primary responsibilities: formulating strategic recommendations for the President to expedite the management of Covid-19, economic recovery, and national economic transformation; integrating and determining steps to implement strategic policies and innovations essential for accelerating the handling of Covid-19, economic recovery, and national economic transformation; and overseeing and evaluating the implementation of strategic policies to expedite the management of Covid-19, economic recovery, and national economic transformation. Concurrently, the Indonesian Ministry of Health constituted a technical team known as the Covid-19 Vaccination Implementation Team, in alignment with the Indonesian Minister of Health decree No. HK.01.07/MENKES/6573/2020. This team was responsible for overseeing five crucial aspects of Covid-19 vaccination, including planning, logistics, implementation, communication, and monitoring and evaluation[17].

[15] "Why Are There No Reported Cases of Coronavirus in Indonesia?". Al Jazeera.

[16] Indonesia's COVID-19 recoveries beat active cases for the first time". Jakarta Globe.

[17] MoH Covid-19 vaccination implementation at national level - Vol 02 (February 2021)

On 16 December 2020, President Jokowi announced that Covid-19 vaccines would be provided free of charge to all Indonesians. Indonesia had procured 400 million doses from Sinovac, Novavax, Pfizer, and AstraZeneca. The Covid-19 vaccination program commenced on 13 January 2021, with President Joko Widodo receiving the vaccine at the presidential palace. On 8 March 2021, Indonesia received its first shipment of vaccines from the COVAX initiative, totaling 1.1 million doses of the Oxford–AstraZeneca vaccine. On 13 October 2022, President Joko Widodo officially launched IndoVac, a Covid-19 vaccine developed by the Indonesian pharmaceutical company PT Biofarma and Baylor College of Medicine in Houston, Texas[18].

As of 22 November 2023, reporting to WHO indicated 6,813,429 confirmed cases of Covid-19 in Indonesia with 161,918 deaths. Indonesia ranks second in Asia and ninth globally for the number of deaths. As of the same date, a total of 448,199,860 vaccine doses had been administered. Among them, 203,878,473 individuals had received at least one dose, and 174,965,137 people had completed the full primary series[19].

Impact on routine immunisation

The 2021 WHO/UNICEF estimates of national immunisation coverage (WUENIC) data revealed that 25 million children worldwide missed one or more doses of the diphtheria, tetanus, and pertussis (DTP3) vaccine through routine immunisation services in 2021. This marked an increase of two million from those who missed out in 2020 and six million more than in 2019. Notably, 62% of the children who did not receive a single dose of DTP during the year, were in just 10 countries including Indonesia[20].

Indonesia's National Immunisation Program faced substantial challenges due to the Covid-19 pandemic. Routine immunisation coverage, aiming to prevent childhood diseases like measles, rubella, and diphtheria, saw a decline with complete vaccination coverage rates dropping by 11 percent in 2020 compared to 2019. The coverage of complete basic immunisation decreased from 84.2 percent in 2020 to 79.6 percent in 2021, leaving children across Indonesia more vulnerable to vaccine-preventable diseases such as diphtheria, tetanus, measles, rubella, and polio[21].

In response, a significant government-led catch-up campaign called BIAN was executed in 2022. This initiative administered one dose of measles-rubella immunisation to target groups in alignment with regional recommendations. Additionally, one or more types of other immunisations, such as DPT and polio, were provided to complete the immunisation status of children under five years.

The 2022 WUENIC data indicates that Indonesia has shown a robust recovery from the pandemic disruptions, reflecting a reduction of approximately 600,000 zero-dose children. However, the country remains one of the ten nations accounting for 58% of zero-dose children worldwide. The country is estimated to have 571,000 zero dose children[22].

3.7 Gavi's relationship with Indonesia

Since 2002, the Republic of Indonesia, through the Ministry of Health, has been a recipient of vaccines and cash support from Gavi. In 2014, a partnership framework agreement was signed between Gavi and the Republic of Indonesia, establishing a structured framework for the management of Gavi's support to the country.

Indonesia entered Gavi's accelerated transition phase in 2011 and subsequently transitioned in January 2017 to fully self-financing status except for the exceptional catalytic support for Measle Rubella (MR) campaign,

[18] "Jokowi launches domestically manufactured IndoVac COVID-19 vaccine". Antara.

[19] Indonesia Covid-19 vaccination coverage-WHO

[20] 2020 WUENIC data

[21] Impact of Covid-19 on routine immunisation

[22] 2022 WUENIC data

Inactivated Polio Vaccine (IPV) switch, Human papillomavirus (HPV) demo, Japanese encephalitis (JE) campaign and Covid-19 related support.

Although no specific transition assessment report was generated, the World Bank Health Sector Financing Assessment identified various programmatic and financial challenges impacting the sustainability of Indonesia's immunisation programme. Following the Gavi Deputy CEO's High-Level Mission to Indonesia in November 2016, an agreement was reached to reinvest unspent grant funds, accrued interest, and savings resulting from the self-procurement of the pentavalent vaccine. These funds were directed towards a two-year plan focused on coverage, equity, and sustainability. This initiative led to the formulation of the Coverage Equity and Sustainability Action Plan (CESAP) with funds amounting to USD 17.9 million.

Cash support (new grants) for the period 2018 to 2022 amounted to USD 7.7 million including funding for IPV (USD 1.2 million), MR (USD 3.9 million) and technical assistance (USD 2.6 million). Indonesia received vaccine support of USD 40.8 million for Inactivated Polio Vaccine (IPV), and USD 6.9 million for Pentavalent vaccine.

On 4 June 2020, Gavi launched the COVID-19 vaccines advance market commitment (COVAX AMC) to be managed by the COVAX Facility. The COVAX AMC is an innovative financing instrument which supports the participation of 92 low- and middle-income economies – enabling them access to donor-funded doses of COVID-19 vaccines[23]. Indonesia was one of the participating AMC countries and signed onto Gavi's standard terms and conditions for COVAX advance market commitment (AMC) group participants in December 2020.

Gavi provided Covid-19 vaccines valued at USD 684.7 million, cash for Covid-19 vaccines delivery support amounting to USD 3.9 million and USD 1.2 million for cold chain equipment from the COVAX Facility in the period 2021-2022.

3.8 Entities involved in the executing and managing Gavi's funds.

Gavi funds are channelled through the Ministry of Health, alliance partners (WHO and UNICEF), and expanded partners including UNDP, CHAI and JSI. Gavi has signed agreements with each of the partners to direct the programme implementation. Each of them is responsible for developing the budget for each project in coordination with Gavi, the MoH, the NIP and other stakeholders.

3.9 Good Practices

The audit team noted the following good practices while executing the audit:

a) ***Significant efforts made in recovering immunisation coverage after the Covid-19 pandemic***: In response to the decline in routine immunisation coverage due to the Covid-19 pandemic, a significant government-led catch-up campaign locally known as Bulan Imunisasi Anak Nasional (BIAN) was executed in 2022. This initiative administered one dose of measles-rubella immunisation to target groups in alignment with regional recommendations. Additionally, one or more types of other immunisations, such as DPT and polio, were provided to complete the immunisation status of children under five years. The 2022 WUENIC data indicates that Indonesia has shown a robust recovery from the pandemic disruptions, reflecting a reduction of approximately 600,000 zero-dose children.

b) ***Competitive vaccine prices were obtained by the country after transition from Gavi support***: Post-transition, the country has consistently procured vaccines from PT Biofarma at rates lower than the UNICEF reference prices, even when factoring in the cost of distributing vaccines from PT Biofarma to Provincial Vaccine Stores (PVS). This achievement is attributed to the effective implementation of the e-catalogue for vaccine procurement, which ensures transparent and competitive pricing. Additionally, the

[23] About Gavi COVAX AMC

e-catalogue system incorporates mechanisms to assess supplier performance, considering factors such as on-time delivery and supplier responsiveness.

c) ***Policy framework in place streamline and unify health data practices***: The Government of Indonesia introduced the One Data Indonesia policy in 2018 to tackle information system fragmentation in the public sector. This initiative, focusing on data systems interoperability principles, seeks to enhance the utilisation of government data. In the health sector, a corresponding policy named 'Satu Data Kesehatan' or One Health Data has been implemented. Administered by the Centre for Data and Information at the Ministry of Health (Pusdatin), this policy emphasises adopting a singular standard, metadata, and portal for health information dissemination.

d) ***Post transition support was aligned to the country's priorities***: Indonesia entered Gavi's final phase of support in 2011, known as the accelerated transition phase, and fully transitioned from Gavi support in January 2017. The country designed a Coverage Equity and Sustainability Action Plan (CESAP) to address key challenges faced by the national immunisation programme at the time including data strengthening, demand generation, evidence generation for policy advocacy for a sustainable EPI programme, vaccination in emergencies, vaccine hesitancy communications and supply chain strengthening.

e) ***Successful roll out of the Covid-19 vaccination programme:*** The country administered over 448 million doses (including booster doses) of Covid-19 vaccines to 181 million people with over 70% of the target adult and adolescent population vaccinated with the primary series. The country was able to effectively utilise all the Covid-19 vaccines received with only 9% wastage rate for all vaccines received. The audit noted the following key factors underpinning the successful roll out of the vaccination programme:

- *Securing a sufficient COVID-19 vaccine supply*: Indonesia's vaccine diplomacy efforts engaged all levels of the government to advocate for timely delivery of vaccines and associated supplies. The private sector was also onboarded to augment human resources for the vaccination rollout.
- *Enabling legal environment was set up for Covid-19 vaccine roll out*: Presidential decree No.99/2020 (including revised second decree No. 50/2021 and third No.33/2022) regarding Vaccine procurement and COVID-19 vaccination. The Minister of Health issued decree No. 11135/2020 establishing a taskforce for Covid-19 vaccination to oversee the immunisation programme.
- *Operational plan to support Covid-19 vaccination*: There was a comprehensive plan for the deployment and vaccination for Covid-19 during 2021-2022 and the country developed tailored approaches for different target groups for Covid-19 vaccination.
- *Use of technology*: The country developed the Satu Sehat Mobile national health application with expanded features including registration and generation of electronic Covid-19 certificates. The system has now become an integrated mobile platform that stores complete health data.

4. Findings

4.1 Oversight and Programme management

4.1.1 Immunisation programme sustainability challenges were not fully addressed after transition

Context and Criteria

The aim of the Gavi Transition Policy is to contribute to the vision that, when countries transition out of Gavi support, they have successfully expanded their national immunisation programmes with vaccines of public health importance and sustain these vaccines post transition with high and equitable coverage of target populations, while having robust systems and decision-making processes in place to support the introduction of future vaccines[24].

As noted in section 3.7, during Indonesia's accelerated transition phase, there was no dedicated transition assessment report. Instead, the World Bank Health Sector Financing assessment report was utilised to identify programmatic and financial challenges affecting the sustainability of Indonesia's immunisation program. Subsequently, the Coverage, Equity, and Sustainability Action Plan (CESAP) was formulated to specifically tackle these identified challenges.

Condition

Key post transition interventions aimed at immunisation programme sustainability were not implemented: The Coverage, Equity, and Sustainability Action Plan (CESAP), initially scheduled for completion by December 31, 2020, experienced delays with several activities not implemented or completed as of October 2023. The audit team noted that crucial interventions aimed at ensuring the sustainability of the immunisation program were reprogrammed. These interventions encompassed capacity building to enhance Vaccine-Preventable Diseases (VPD) surveillance laboratory testing, a study on the open vial policy, impact assessment of the Pneumococcal Conjugate Vaccine (PCV) demo project, a study on the burden of Rotavirus disease, and an economic study on PCV and Rotavirus.

The anticipated outcomes of these activities was to establish an expanded network of VPD surveillance laboratories to support timely detection and response activities, meet WHO accreditation standards, understand the impact of changing vial policy to enhance coverage and reduce vaccine wastage, gain insights into the impact of reducing pneumococcal, gather baseline data on types of Rotavirus and the percentage of hospitalisation of severe diarrhoea cases, and incorporate the cost of PCV and Rotavirus into the national insurance scheme (BPJS).

The audit team also observed that the Coverage, Equity, and Sustainability Action Plan (CESAP) did not adequately address the capacity challenges related to human resources for health (HRH) that were highlighted in the World Bank health sector financing assessment. Specifically, while the assessment emphasised staff training for immunisation as a significant gap and a key challenge to sustainability, neither CESAP nor any other donor or government intervention has addressed this issue. The assessment report

Recommendation 1

The Ministry of Health (MoH) should:

- Review all transition activities and align them with the strategy for Middle-Income Countries (MICs).
- Ensure that new applications under the MICs strategy prioritise catalytic investments and effectively address any remaining gaps or challenges to sustainability within the program.
- Undertake advocacy measures to enhance budget allocation to the Expanded Program on Immunisation (EPI) at both national and sub-national levels.

[24] Gavi Transition Policy

pointed out that only 45% of Puskesmas in the country had at least one staff member trained on the national immunisation programme.

Reduced financial allocation to the immunisation programme despite increasing health allocation: The audit observed a decline in financial allocations by the Government of Indonesia to the national immunisation program (NIP) over the seven-year period 2016 to 2022. This reduction in funding raises concerns about the sustainability of the immunisation programme especially with the planned introduction of new vaccines by the Government of Indonesia, highlighting potential challenges in sustaining and expanding immunisation efforts without adequate financial support.

Table 5: Comparison of funding for health sector and immunisation

Particulars	2016	2017	2018	2019	2020	2021	2022
Funding to Health Sector as a % of National Budget	4.98%	4.60%	4.93%	4.93%	6.64%	6.17%	9.41%
Funding to NIP as a % of Health Sector Budget	0.70%	2.12%	2.38%	1.16%	0.77%	0.91%	1.16%

The latest comprehensive multi-year plan (cMYP) for the immunisation program covering the period 2020-2024 indicates an estimated 17% funding gap, considering only secured funding for future resource requirements. Over the five-year period 2020-2024, the national immunisation programme aims to extend the roll-out of the Pneumococcal Conjugate Vaccine (PCV) to additional provinces, with the goal of achieving nationwide coverage by 2024. The 2020 multi-stakeholder dialogue report highlighted that, based on an analysis by CHAI at the subnational level, 11 out of 34 provinces in Indonesia exhibited a medium to high level of dependence on Gavi funds for immunisation activities. There is currently no clear plan outlined on how the country intends to address and close the identified funding gap. The audit also noted that the MoH has limited engagement over provincial EPI operational budget allocations.

Root Cause

- The challenges to sustainability raised in the World Bank report were not comprehensively mapped to corresponding interventions.
- The Covid-19 pandemic impacted the implementation of CESAP activities leading to delays.
- Advocacy for immunisation funding has not yielded funding allocation.

Management comments

See detailed management responses - Annex 8

Risk / Impact / Implications

- Failure to implement interventions aimed and addressing immunisation programme sustainability.
- Key activities including support supervision to the sub national level and immunisation data quality assessments are not being executed due to reduction in financing to the immunisation programme. This has led to challenges with immunisation data quality and vaccine stock accountability gaps identified on 4.3.3 and 4.4.2. This situation is expected to have ongoing adverse effects on the programme, particularly when introducing new vaccines. The immunisation programme will face difficulties overseeing a larger portfolio of vaccines without the necessary financial resources.

Responsibility

Directorate of Immunisation with support from partners

Deadline / Timetable

See Annex 8

4.1.2 The scope of the Health Sector Coordination Committee (HSCC) needs to be expanded to cover the entire immunisation programme

Context and Criteria

In Indonesia, the governance structure for immunisation comprises three key bodies: the Health Sector Coordination Committee (HSCC), the Indonesian Technical Advisory Group on Immunisation (ITAGI), and the Technical Working Group (TWG).

The HSCC plays a pivotal role in coordinating and guiding the use of support from the Gavi through ISS/HSS and NVS grants. It includes representatives from various international organisations and government bodies, such as WHO, UNICEF, World Bank, USAID, and others. The HSCC's responsibilities include:

- Providing technical support to National Immunisation Programme (NIP) as necessary.
- Coordinating with international partners in the delivery of immunisation services including resource mobilisation.
- Coordinating and monitoring with other health programmes to enhance effectiveness and quality service in immunisation and to assure programme sustainability.
- Inviting any other international/national partners involved in immunisation programme for their input, feedback, and expertise.
- Forming sub-committees and working groups as necessary.
- Coordinating with CSOs and international development partners for mobilisation of resources for immunisation programme.
- Assuring effective and efficient use of overall immunisation and Gavi funds.
- Providing input during preparation of immunisation annual work plan.
- Providing support and monitor ongoing polio eradication activities.

Established in 2007, ITAGI, officially known as The Indonesian Technical Advisory Group on Immunisation, is mandated to provide medical, scientific, and public health advice on vaccines to the Ministry of Health. Comprising recognised experts in various relevant fields, ITAGI monitors vaccine science developments, submits recommendations for the immunisation programs, recommends technology in the field of immunisation and Vaccine Preventable Diseases (VPDs), and coordinates with government agencies, institutions, and professional organisations.

The TWG consists of technical focal points from health-sector stakeholders, including government, development partners, and multinational organisations. The TWG aims to monitor and evaluate the National Immunisation Programme (NIP), identify challenges and innovation strategies, coordinate data quality of Expanded Program on Immunisation (EPI) performance, and establish closer working relationships with the government and other donor agencies. It conducts quarterly meetings, develops harmonised plans for routine data quality assurance activities, and ensures adequate governance of public health information systems.

The terms of reference for the HSCC, ITAGI and TWG specify that they are required to convene quarterly meetings. One key governance principle for the successful management of meetings, is to ensure that the meetings' recommendations are accomplished and/or action items identified and followed up.

Condition	Recommendation 2
Discussions within the Health Sector Coordination Committee (HSCC) lacked comprehensive coverage of the entire immunisation program: The audit reviewed the minutes of the HSCC and noted that the discussions predominantly centred on the performance of Gavi grants. This focus included topics such as funds absorption, challenges in implementation, and the approval of grant applications to ensure alignment and complementarity of support from development partners. There was a noticeable absence of integration with the national immunisation agenda, raising concerns about ongoing oversight after the cessation of Gavi post-transition support. This oversight is crucial for Indonesia, a self-financing country. Additionally, certain functions outlined in the HSCC Terms of Reference (ToRs) were not executed. These included coordinating and monitoring with other health programs to enhance effectiveness and quality service in immunisation, ensuring program sustainability, providing input during the preparation of the immunisation annual work plan, supporting and monitoring ongoing polio eradication activities, ensuring the effective and efficient use of overall immunisation and Gavi funds. ***Governance bodies did not meet per their terms of reference***: The audit team's review of available meeting minutes revealed that only five out of the expected 20 HSCC and TWG meetings were convened during the audit period. Similarly, while ITAGI was also mandated to meet quarterly, records indicate that only four out of the anticipated 20 meetings occurred during the same period. ***Gaps in monitoring governance bodies recommendations:*** There was no defined process for implementing and monitoring the status of recommendations/action points from the governance bodies. Furthermore, the minutes of meetings provided for all governance bodies were not documented in a standardised format and did not capture key aspects such as action points/recommendations, responsible parties, timelines among others. ***There is a need to strengthen the controls around conflict of interest*:** Although the terms of reference (TORs) for ITAGI require members to make an annual conflict of interest (COI) declaration, the audit team noted that declaration of conflict of interest was not undertaken by members during the period under review. The audit team was informed by the ITAGI secretariat that a declaration was done at the start of the ITAGI term of office in 2019 but no evidence was provided to support this. ***Agency for finance and development supervision (BPKP) Audit reports not discussed at any governance structure –*** Gavi grant activities were audited by BPKP in the financial years 2018, 2019, 2020 and 2021. For each of these annual audits, an audit report was issued and presented to MoH. However, there is no evidence that these reports were discussed at HSCC, the supreme governance structure. Consequently, the identified gaps remain unresolved.	The MoH should: • Revise the terms of reference of the HSCC to cover the entire immunisation programme. • Develop and use a standardised format for documenting meeting minutes and develop a dashboard to track the follow-up and implementation of its HSCC, ITAGI and TWG recommendations. For the purposes of accountability, each recommendation should be assigned to a designated officer responsible for its implementation, along with a deadline by which time the action is to be completed.

<table>
<tr><td>Root Cause
• Absence of standardised templates for meeting minutes. Minutes of meetings are documented in summary form without provision for action points and follow up of actions from previous meetings.
• The ministerial decrees are silent on conflict-of-interest policies and declarations.
• BPKP reports not discussed at any governance structure as per minutes provided.</td><td colspan="2">Management comments
See detailed management responses - Annex 8</td></tr>
<tr><td>Risk / Impact / Implications
Inadequate governance oversight can result in delays in identifying and addressing crucial issues within the immunisation programme which may hinder the programme's ability to accomplish its objectives effectively.</td><td>Responsibility
Directorate of Immunisation</td><td>Deadline / Timetable
See Annex 8</td></tr>
</table>

4.1.3 The role of the ministry of health in monitoring and coordinating partner-led activities should be enhanced

Context and Criteria

Gavi provides funding to partners through the partners' engagement framework (PEF). This allows them, in turn, to support countries' immunisation programmes. Support under PEF is divided into three main areas: targeted country assistance, special investment for strategic focus areas and foundational support. The technical assistance provided by partners through PEF is called targeted country assistance (TCA).

Two of the key guiding principles is TCA are:

- Country ownership which requires that assistance provided by expanded partners is based on technical assistance needs identified by countries to help them overcome key immunisation bottlenecks.
- Strong accountability: which requires clearly defined semi-annual milestones to be reported against to ensure transparent and timely monitoring of indicators and deliverables. This principle also requires countries to have complete insight into this reporting and be able to review their partner's performance on a regular basis.

The Gavi approach for Middle-Income Countries (MICs) to which Indonesia is eligible is a collaborative effort involving close cooperation with both core and expanded partners to achieve specific outcomes. This approach encompasses activities such as mobilising political commitment to establish sustainable and equitable routine immunisation programs and facilitate the introduction of new vaccines. Additionally, it involves providing technical assistance to address common barriers associated with introducing new vaccines and mitigating risk factors for regression across multiple countries. Furthermore, the approach includes supporting peer-to-peer learning platforms, fostering an environment where countries and partners can exchange best practices and lessons learned in the realm of immunisation[25].

Condition

Targeted country assistance support and other partner led programme activities were not effectively monitored: The audit observed a lack of Ministry of Health (MoH) involvement in monitoring and validating completed TCA milestones. Partners independently prepare and submit reports through an online Gavi reporting portal without a mechanism for MoH to review and validate the reported milestones before submission to Gavi. Consequently, the audit team identified a sample of unimplemented activities reported as completed in the milestone report during the audit in October 2023. These activities included capacity building, Open Vial Policy study, PCV demo project impact assessment, studies on the burden of Rotavirus disease and economic impact studies of PCV and Rotavirus vaccines, which were meant to be completed by December 2022. Additionally, there was no evidence that TCA implementation progress and performance were reviewed quarterly by the Health Sector Coordination Committee (HSCC), as outlined in the Gavi PEF TCA guideline (2019). Furthermore, there was limited oversight by MoH on Gavi funded program activities undertaken by partners as there was no dedicated forum for the MoH and partners to discuss and review progress on partner-led activities. Although MoH and partners convened at various platforms such as the HSCC and Technical Working Group, these meetings did not specifically address the progress of partner-led activities.

Recommendation 3

Given that Gavi's MICs approach is reliant on core and expanded partners for some of the interventions, the MoH should document the government's role for partner-led activities. This would serve to enhance ownership of the programme and ensure continuity within the context of this transitioned country. The documentation should include:

- A mechanism for monitoring partner led activities and validating reported milestones.
- Avenues or forum where MoH will collaborate in shaping the TCA delivery approach to ensure that the designated activities are specific, measurable, accurate, relevant and include well-defined timelines.
- Periodic review meetings e.g., quarterly meetings with TCA partners to review TCA activities, monitor progress, and validate reported deliverables before submission through the Gavi PEF portal.

[25] Gavi's approach to engaging with middle-income countries

<table>
<tr><td colspan="2">The Immunisation Programme did not have visibility of Gavi funding to civil society organisations and other MoH departments: The audit team observed that certain funds directed through partners are allocated to CSOs and other MOH departments outside the Immunisation Programme. However, the programme lacks visibility over these funds, hindering its ability to monitor their utilisation and track the progress of implementation. This challenge is exacerbated by the absence of discussions on the financial performance of various Gavi grants during Health Sector Coordination Committee (HSCC) meetings.</td></tr>
<tr><td>Root Cause
PEF TCA partners report through the Gavi PEF reporting portal to which the MoH has no access. The audit team also noted that the PEF reporting portal does not provide visibility over the outcome of prior year milestones that were still incomplete at the year end, and for which outstanding actions remained.
Absence of a reporting and validation mechanism for partner led activities and milestones</td><td>Management comments

See detailed management responses - Annex 8</td></tr>
<tr><td>Risk / Impact / Implications

In the absence of robust accountability measures, there is a risk that the Technical Assistance (TA) provided may fall short of its intended objectives. Investments made through Targeted Country Assistance (TCA) may lack sustained follow-through, and without active engagement by the Ministry of Health (MOH), partner-facilitated TCA activities might not be executed in a manner that prioritises sustainability.</td><td>Responsibility

Directorate of Immunisation with support from partners</td><td>Deadline / Timetable

See Annex 8</td></tr>
</table>

4.1.4 Significant variations remain in the attainment of immunisations targets by province

Context and Criteria

Under Gavi 5.0, Gavi initiated a global call to bring an end to immunisation inequity, making reaching zero-dose children –" defined *as children who don't receive a single dose of diphtheria, tetanus and pertussis-containing vaccine"* – a key priority for the next five years. The stated goal is to reduce the number of zero-dose children by 25% by 2025, and by 50% by 2030, coinciding with the Sustainable Development Goals.[26]

In December 2020, the Gavi Board approved a new approach to engage with middle-income countries during the Gavi 5.0 strategic period (the "MICs Approach"). Serving as a key tool for addressing threats to the equity and sustainability of routine immunisation programmes, the MICs approach contributes to Gavi's overall vision of leaving no one behind with immunisation. Whilst most countries maintain programme performance following transition from Gavi support, some have gaps in programmatic capacities which can create a risk of backsliding in vaccine coverage. This risk has increasingly become a reality in the context of the pandemic, presenting a significant threat to intra-country equity, as backsliding disproportionately impacts the most vulnerable populations[27].

Condition

Substantial disparities in immunisation administrative coverage among provinces: While the National immunisation program managed to meet the targets outlined in the National Strategic Plan (NSP) for the years 2018 to 2022, with exceptions in 2020 and 2021 due to the impact of the Covid-19 pandemic, there were considerable discrepancies observed across provinces. The audit team noted that the provinces that underperformed consistently did so throughout the entire period, and those that overperformed also maintained a consistent pattern of exceeding targets. Table below demonstrates the coverage disparities, see Annex 7e for details.

Table 6: Provincial administrative coverage

Administrative Coverage	No. of provinces
Less than 85%	8
85% - 90%	5
90% - 95%	7
95% - 100%	7
More than 100%	7

This underscores the need for targeted interventions and strategies to address the persistent disparities in immunisation coverage among provinces.

As indicated on section 3.6, Indonesia remains one of the ten nations accounting for 58% of zero-dose children worldwide. The country is estimated to have 571,000 zero dose children. The country is yet to introduce the Rotavirus vaccine and the Human papillomavirus vaccine (HPV) is not yet accessible across the whole of the country.

Recommendation 4

The MoH should develop a clear catch-up plan for provinces that are not performing well.

Recommendation 5

WHO and UNICEF have published guidance on considerations for integrating Covid-19 vaccination into immunisation programmes and primary health care for 2022 and beyond. The MoH should review, document and develop a national strategy for transitioning its Covid-19 vaccination response and integrating this into its routine immunisation, highlighting the: relevant delivery strategies, resources required and timeframe to complete this transition.

[26] The Zero-Dose Child: Explained

[27] Gavi's approach to engaging with middle-income countries

<table>
<tr><td>Root Cause
The audit team noted the following root causes:
• The Immunisation programme's attention had been focused on prioritising the Covid-19 response.
• The immunisation programme's financial resources have not grown to address equity challenges faced by the country. See 4.1.1.
• The low coverage provinces are hard to reach due to geographical challenges.</td><td colspan="2">Management comments
See detailed management responses - Annex 8</td></tr>
<tr><td>Risk / Impact / Implications
• Some of the provinces' low immunisation coverage could hinder the country's its goal of saving lives from vaccine-preventable diseases.
• The immunisation agenda 2030 and the Gavi's objectives will be impacted if there is an increase in under and unvaccinated children.</td><td>Responsibility
Directorate of Immunisation with support from partners</td><td>Deadline / Timetable
See Annex 8</td></tr>
</table>

4.2 Sustainability of post transition investments

4.2.1 SMILE system sustainability challenges must be addressed

Context and Criteria

As detailed in section 3.4, Indonesia employs SMILE as its vaccine logistics management information system. The data entry process within the system commences at the provincial vaccine store, where information is input following vaccine deliveries from the manufacturer, PT Biofarma. This process then advances to the district vaccine store and puskesmas levels, where additional data is recorded. The SMILE system comprises the following components:

a) Mobile Application: Specifically designed for personnel responsible for managing the vaccine cold chain, this mobile app serves as a data entry point for vaccine logistics and cold chain-related information. The application features an offline mode, ensuring data upload when connectivity is established.
b) Web Interface: Data inputted through the mobile app is seamlessly integrated into a web interface, acting as a centralised platform for managing and viewing the accumulated data.
c) Cold chain equipment and Real time temperature monitoring (RTM): SIM-enabled temperature loggers affixed to cold chain equipment automatically transmit the vaccine storage temperature. In case of a temperature excursion, the logger issues an SMS alert.
d) Analytics and Reporting: The SMILE web interface includes analytics capabilities, enabling health officials to assess vaccine stock levels. This functionality allows officials to determine whether vaccines are stocked out, overstocked, or understocked.
e) e-Learning platform: The SMILE web interface has an e-learning platform to facilitate continuous vaccine logistics skills development of health workers.

Gavi developed specific software standards (GAVI TSS) to optimise vaccine supply chain information systems, focusing on key reporting and decision support functions including intuitive dashboards and reports with drill-down capabilities. Furthermore, incorporating open standards to facilitate seamless data exchange of essential metadata, facilities, and products, promoting interoperability among different systems.

Sharable Content Object Reference Model (SCORM) is a set of technical standards for eLearning products. It provides the communication method and data models that allow eLearning content and Learning Management Systems (LMS) to work together. It tells programmers how to write code so that what they build will “play well” with other eLearning software. SCORM is the most widely used eLearning standard available[28].

Experience API (xAPI) is an e-learning software specification, expected to superceed SCORM in the future, that records and tracks various types of learning experiences for learning systems and makes it possible to collect data about the wide range of experiences a person has (online and offline). The new Experience API allows trainers to deploy several new capabilities that were not supported with SCORM at the time, such as:

- Recording learning from non-browser activities, such as games and simulations;
- Platform transition: e.g. start e-learning on a mobile device, finish it on a computer;
- Team-based e-learning; and
- Tracking learning plans and goals.

[28] SCORM model explained

The implementation guideline for ISO 22600:2014 Health Informatics – Privilege Management and Access Control (Part 1 through 3) serves as an advisory standard for policy-based access control. The audit log section of this guideline articulates the following principles:

- All actions stemming from user-defined events should be meticulously recorded.
- Either all recorded audit information or a specified subset thereof must be electronically displayed or printed for user/administrative review upon request or at predetermined intervals.

Condition

The sustainability of the SMILE system necessitates the transition of all costs, both fixed and operational, to national and provincial/district budgets. The audit team identified the following gaps:

There was no comprehensive plan to transition all donor supported SMILE costs at national and subnational levels: While the SMILE system has achieved nationwide implementation and is hosted at the Ministry of Health (MoH) data centre, there is no comprehensive plan defining how expenditures for both current and future maintenance are to be transferred to the government (MoH and provinces/districts). The United Nations Development Programme (UNDP), supported by donor funding including Gavi, remains pivotal in the day-to-day management and maintenance of the system. This includes tasks such as extending the system to puskesmas yet to adopt it, covering data costs for SIM cards linked to temperature data loggers and mobile devices, overseeing system maintenance (including patch management, software development, and cloud backup), implementing functional modifications, and providing technical support through the help desk. Furthermore, as the system undergoes expanded deployment and utilisation, additional costs are anticipated. These may include investments in technology hardware (including upgrades to server infrastructure and the provision of extra temperature loggers for all refrigerators), internet usage, and personnel training.

Licensing arrangements for the SMILE system have not been defined: The audit team noted that the licensing arrangements for SMILE, including transferable rights, data access, and license scope, remain undefined. There is also a lack of clarity regarding when the source code becomes the property of the Ministry of Health (MoH).

The development of the cold chain equipment (CCE) component of the system is incomplete: The audit team observed that vital CCE data elements, such as cold chain storage capacity at the Puskesmas level, and details related to CCE maintenance and calibration, were not incorporated into the system. Furthermore, the audit identified errors in the recording of CCE details in the system, such as instances where dates of CCE manufacture were inaccurately set in the future.

Gaps in the design of the e-learning platform: The SMILE eLearning system does not capture details regarding enrolment and course completion, posing challenges in delivering targeted capacity

While the SMILE investment was implemented through UNDP, the overall responsibility for the SMILE system is MoH who will be responsible for addressing the recommendations and sustaining the system after transition.

Recommendation 6

To address the sustainability challenges noted, the Ministry of Health (MoH) should:

- Request and assess a comprehensive quantification of all fixed and recurring operational costs related to SMILE maintenance, ensuring the inclusion of all costs for national and provincial/district-level planning.
- Perform a data growth projection to anticipate the current and future storage and processing requirements for SMILE. This will facilitate adequate planning for the necessary resources, such as disk space, memory, and processing power, to ensure optimal performance.
- Ensure a comprehensive transition plan detailing all associated costs necessary for operating and maintaining SMILE at the province/district and national levels is developed.
- Utilise the plan as a resource mobilisation tool in collaboration to ensure that SMILE operational costs are budgeted for and fully financed.

Recommendation 7

The Ministry of Health (MOH) should gain a clear understanding of the existing licensing terms and agreements and explicitly define the transferable rights of the software. This is crucial to ensure the sustainable and efficient management of the SMILE system during the transition phase.

Recommendation 8

To address design challenges identified in the system, MoH, in liaison with UNDPshould:

- Introduce features the e-learning platform that facilitate needs-based enrolment and enable the monitoring of performance for health workers enrolled on the platform.
- Implement audit trail for all user actions.
- Update end-user manuals and TOT guides to enhance end user utilisation and experience.

development tailored to specific user gaps. Additionally, it impedes the tracking of training outcomes and the exchange of feedback between learners and course facilitators. Furthermore, the eLearning platform does not adhere to fundamental security and LMS standards, including SCORM and xAPI (Experience API). These standards advocate for robust data capture related to enrolment, learner progress, course completion, and engagement between learners and facilitators. This is essential for facilitating personalised learning experiences and conducting a comprehensive assessment of training impact.

There were no comprehensive user audit logs maintained for the SMILE system: Audit logs to trace user actions on the front end of the SMILE application were not maintained. ISO 27002 standards and Gavi targeted software standards require that a system maintains a comprehensive audit log. This log should include transactional data fields, providing essential support for troubleshooting security issues and expeditiously restoring the system in the event of a security breach.

The end user manuals and TOT (Training of Trainers) guides for the SMILE application were not updated*:* Despite the system undergoing application updates in 2023, the end-user manuals accessible on the system were last updated in 2020. The absence of updated user guides hinders the effective utilisation of the system by end users, as they lack a current reference guide.

Root Cause

The audit team noted the following root causes:

- While transition planning had commenced, there was no overall cost schedule to ensure all fixed and operational costs were known and budgeted for.
- Periodic quality assurance (QA) reviews were not conducted on system development activities. The most recent quality assessment was undertaken by a third-party vendor, Trygin Technologies, on behalf of UNDP in 2021. After this assessment, the system underwent substantial design changes. However, no follow-up QA assessment has been conducted by end of October 2023. The issues highlighted earlier, such as the incomplete CCE module and gaps in the design of the eLearning platform, could have been identified and addressed through continuous QA reviews.

Management comments

See detailed management responses - Annex 8

Risk / Impact / Implications

Given Indonesia's transition into the self-financing phase, it is crucial to give thoughtful and specific consideration to the sustainability of Gavi investments, including SMILE. While there are inherent limitations associated with implementing a system within a federalised context, there exists a risk that user challenges and the inability to absorb fixed and operational costs, particularly at subnational levels, may constrain the return on Gavi's investment.

Responsibility

Directorate of Immunisation, Directorate of Pharmaceutical and Medical Devices, The Health Data and Information centre with support from partners

Deadline / Timetable

See Annex 8

4.2.2 Challenges in the design of ASIK impacting the system's operating effectiveness

Context and Criteria

As detailed in section 3.5, Indonesia employs ASIK for immunisation data collection. The ASIK system is comprised of a mobile application and a web dashboard, presenting a dual-component structure designed to enhance the efficiency and effectiveness of immunisation monitoring by healthcare providers.

- Mobile Application: The mobile app facilitates the recording of individual service results across various primary care programs, including maternal and child health, disease surveillance, and chronic disease screening. Additionally, it supports community health programs like Posyandu. Accessible to health workers in Puskemas (community health centres) and other health cadres, this application serves as a valuable tool in diverse healthcare settings.
- Web Application: The ASIK web application offers functionalities for editing and adding individual profile data specific to Puskemas. It also provides tools for monitoring program achievements at both Puskemas and regional levels, accessible to health offices at the district, provincial, and national levels, including the Ministry of Health. Furthermore, the web app tracks the utilisation of the ASIK system, offering comprehensive oversight and management capabilities. The Web application also includes immunisation dashboards designed utilising Tableau[29] as its visualisation tool.

In Indonesia, the Ministry of Home Affairs initiates the issuance of citizen identity cards (IDs) when individuals reach the age of five. The registration of children below the age of five is optional and left to the discretion of parents. The absence of a legal mandate enforcing birth registration results in a non-uniform implementation and many parents choose to register their children at the time of enrolling them in primary education. To record vaccinations, the ASIK system utilises citizen ID card number as the primary unique identifier. However, this approach is limited to children aged 5 or older who have received their citizen ID cards. For children under the age of 5, the ASIK system utilises alternative identifiers, including the child's name, the mother's name, and the child's date of birth.

At the beginning of 2023, the Ministry of Health (MOH) conducted a baseline study to assess the quality of internet connectivity at Puskesmas' across Indonesia. The study revealed a lack of internet access at a total of 745 Puskesmas nationwide. Additionally, the study emphasised that these connectivity challenges were especially pronounced at the sub-district level.

Condition	Recommendation 9
Uniform unique identifier not fully implemented for children under the age of five: We noted that during registration of children under the age of five in the ASIK system, the child's full name, date of birth, and mother's name are collected and utilised for the formation of an identifier. These data points are inadequate for creating a unique ID due to possibility of common names and birthdates as well as changes in child's name and variations in spelling. ***Data validation checks were not inbuilt in the system:*** The audit team noted gaps in system validation controls to prevent data entry errors and incomplete or duplicate record entries. During a walkthrough test, the system did not detect or prevent attempts to register the same child more than once.	The MoH should ensure the effective implementation of a unique identifier for immunisation records to prevent data inaccuracies arising from redundancy or duplicate entries. The chosen unique identifier for immunisation records should consider the following key factors: • Uniqueness: The identifier must be distinct to prevent any mix-ups or duplications in the system. • Consistency: Uniform application of the identifier across all healthcare facilities and immunisation centres is crucial for seamless data integration and maintaining data accuracy. • Standardisation: Adherence to WHO norms for identifier formats and coding systems is necessary to enable interoperability and efficient data exchange across various health systems. • Security: Strong security protocols are required to safeguard the confidentiality and integrity of patient data linked to the unique ID.

[29] About Tableau

Suboptimal performance of immunisation dashboards: During the audit review, it was noted that the routine immunisation dashboards experienced excessively long loading times, often exceeding an hour. The Ministry of Health indicated that they plan to create and implement native dashboards as a potential solution to the current performance issues. However, this initiative is still in the preliminary concept stage. ***The ASIK mobile application lacks an offline mode:*** The lack of an offline mode implies that users can only access the application when connected to the internet. This limitation may impede the system's usability in situations where internet access is unreliable, intermittent, or where the costs of acquiring internet services are prohibitive for health workers. Presently, the Ministry of Health is making efforts to resolve this issue by considering the addition of an offline function; however, this initiative is still in the conceptual stage.	• Compatibility: The identifier system should integrate smoothly with existing health information systems and electronic health record platforms for effective data sharing. • Accessibility: The ID system should be user-friendly and accessible to healthcare providers, facilitating streamlined data entry and retrieval. • Scalability: The identifier system must be capable of expanding to meet the increasing demands of vaccination programs and population growth. Recommendation 10 The MoH should establish data validation requirements within the ASIK system to implement controls that prevent inaccurate data entry and the creation of duplicate records. Recommendation 11 The MoH should initiate an independent data quality assurance review for ASIK, with a primary focus on identifying and rectifying duplicate and inaccurate immunisation records within the system. Recommendation 12 The Ministry of Health should conduct an assessment to precisely determine both current and future data growth requirements for the ASIK system. This measure ensures that the server infrastructure can scale effectively to meet the expanding data needs. Additionally, the Ministry of Health should then consider adopting a visualisation tool specifically designed for handling large datasets. Recommendation 13 The MoH should: • Explore the inclusion of an offline function within the ASIK mobile app to enhance usability in situations with intermittent connectivity. • Concurrently, establish guidelines for the standardisation of devices intended for use in offline mode, emphasising adequate phone memory support to store data for up to a week on the device.
Root Cause The audit team noted the following root causes: • There is no legal mandate enforcing birth registration results before children turn five years. • ASIK system data validation requirements have not been documented and defined. • Prolonged dashboard loading times are indicative of a combination of infrastructure and design challenges. Specifically, the server capacity may be insufficient to handle the data load, and/or the chosen visualisation tool, Tableau, may have encountered performance limitations when processing large datasets. • Offline mode for ASIK mobile is yet to be designed and implemented.	Management comments See detailed management responses - Annex 8

Risk / Impact / Implications	Responsibility	Deadline / Timetable
• Establishing a unique identifier for each child in the ASIK system is vital to enhance the accuracy and completeness of immunisation records. The absence of a distinct unique ID poses a risk of generating duplicate records for the same individual, thereby creating challenges in accurately tracking a child's immunisation history. • The lack of data validation checks negatively impacts the accuracy of reported immunisation coverage. See 4.4.2 for details. • Sub-optimal performance of dashboards causes delays in accessing crucial information to provide comprehensive and actionable insights for the immunisation programme.	Directorate of Immunisation, Directorate of Pharmaceutical and Medical Devices, The Health Data and Information centre with support from partners	See Annex 8

4.2.3 Limited interoperability between immunisation digital health systems

Context and Criteria

As highlighted in Section 3.5, the Ministry of Health (MoH) adheres to a "One Health Data" policy aimed at digitising the health sector, encompassing prenatal care to integrated health services for elderly patients. This vision is enshrined in Law No. 21 of 2020 of the Minister of Health of the Republic of Indonesia, mandating health governance reform that includes the integration of information systems, research, and health development.

In pursuit of this vision, the Ministry of Health has crafted a blueprint through the digital health transformation strategy 2024. The blueprint is designed to achieve a healthy Indonesia in collaboration with all stakeholders in the health industry under the Indonesia Health Services (IHS) Platform. The IHS platform serves as a digital health ecosystem platform, offering data connectivity, analysis, and services to support and integrate various health applications in Indonesia.

Indonesia has several digital health tools, including:

- ASIK: Used for immunisation, non-communicable disease (NCD) screening reporting, and analytics.
- SMILE System: Utilised for vaccine inventory, orders, disposal, CCE, reporting, and early alerts.
- SATU SEHAT Mobile: Utilised for patient identity, healthcare worker information, patient visits, diagnostic data, and medical records.
- DHIS2: Applied for aggregate reporting in immunisation, NCDs, nutrition, disease, and maternal programs.
- Satu Sehat Platform: Proposed as an integration platform in alignment with the One Data Policy, as outlined in the Blueprint for Digital Health Transformation Strategy 2024.

Gavi developed target software standards for vaccine supply chain information systems to include open standards for data exchange of key metadata, facilities, and products, (*interoperability*) using industry data standards (e.g., GS1 and HL7), support for data acquisition from barcode readers and remote temperature monitoring devices.[30]

Condition	Recommendation 14
The audit evaluated the interoperability of systems within the immunisation data ecosystems, focusing on integration efforts between the SMILE and ASIK systems. Despite the legal and policy frameworks in Indonesia supporting such integration, active system interoperability had not been achieved at the time of the audit. Efforts made in 2022 to link the two systems were unsuccessful, primarily due to the systems being incompatible.	The Ministry of Health should recommence interoperability engagements and formulate a tailored roadmap to facilitate integration between SMILE, ASIK, and other digital health tools. This roadmap should include the detailed definition of data formats, strategies for change management, and mechanisms for data mapping. Such an approach will foster seamless data exchange, minimise data redundancy, and enhance data quality and completeness. Additionally, a systems maturity assessment should be conducted to evaluate the readiness of the systems for integration.
Root Cause	**Management comments**
Data errors were generated because of the systems were at different maturity levels with incompatible data formats and undefined communication protocols.	See detailed management responses - Annex 8

[30] Gavi targeted software standards

Risk / Impact / Implications	Responsibility	Deadline / Timetable
Limited interoperability leads to data redundancies and potential vulnerabilities in the ongoing operation of systems. Consequently, the continued usage of these systems may face sustainability challenges.	Directorate of Immunisation, Directorate of Pharmaceutical and Medical Devices, The Health Data and Information centre with support from partners	See Annex 8

4.3 Vaccine supply management

4.3.1 Establishing a central vaccine store would minimise potential disruptions in the supply chain

Context and Criteria

The prevailing and effective in-country distribution system typically involves the movement of products from central medical stores to sub-national stores. Acting as the initial point of receipt for vaccines, the central vaccine store plays a crucial role. By maintaining a stock of vaccines at this central location, the distribution system is able to mitigate the impact of uncertainties in international supply and disruptions in vaccine production caused by factors such as heightened demand or the unavailability of raw materials.

As noted on section 3.4, PT Biofarma currently manufactures the majority of vaccines on the national immunisation schedule and vaccine distribution utilises a push system, with manufacturers or importers delivering directly to provincial vaccine stores (PVS). The storage and distribution of vaccine related dry supplies is managed by the pharmacy unit of the MoH at the central level.

Section 2.3 of the WHO Guidelines on stock records for Immunisation programme and vaccines store managers states that, *"Minimum/maximum (min/max) inventory control system is recommended in vaccine stock management in which, each organisational level of the programme is assigned maximum and minimum levels for its supplies. Using a min/max inventory control system will help managers to prevent both over-stocking (which leads to higher wastage) and shortages or stock outs of vaccine and other Immunisation supplies*". Relatedly, section 2.1 of the Guidance for Immunisation Supply Chain Operations in Indonesia states one of the activities at the central level and dry materials store for safe injection as determining minimum and maximum stock and re-order levels for each antigen and maintaining stock within these limits by the respective cadres[31].

Condition

The country does not have a central vaccine store: The audit team conducted a visit to PT Biofarma, which functions as the manufacturing and central distribution hub for vaccines in the country. PT Biofarma also serves as the primary storage facility for all vaccines produced by the plant and those imported into the country. Annually contracted by the Ministry of Health (MOH), PT Biofarma is tasked with supplying vaccines to 34 provincial vaccine stores (PVS). The contractual agreement outlines the precise quantity of vaccines to be manufactured and distributed to each province leaving minimal to no stock at the manufacturing facility.

Despite PT Biofarma having ample storage capacity that could be optimally utilised to support the storage of vaccines for the immunisation program, the current arrangement lacks the essential features of a central warehouse. This is evident in several aspects including:

- Absence of defined minimum and maximum stock levels, leading to a lack of guidance for stock reorders and the scheduling of orders.
- PT Biofarma operates multiple information management systems that are not integrated with SMILE, the national v-LMIS. This disjointed approach restricts end-to-end logistics data visibility across various vaccine handling points in the supply chain.
- In its current capacity of distributing vaccines to respective PVS, PT Biofarma lacks distribution schedules and plans. This absence hinders informed order scheduling by provinces and provides no clarity on distribution windows for when the provinces should anticipate vaccine supplies from PT Biofarma.

Recommendation 15

The MoH should establish a central warehouse facility.

Recommendation 16

The MoH should develop comprehensive central vaccine store standard operating procedures defining the roles and responsibilities of MOH and PT Biofarma as a third-party logistics provider.

Recommendation 17

The MoH should design distribution schedules and plans from the central vaccine store to the PVS defining ordering and delivery timelines for vaccines

[31] Guidance for Immunisation Supply Chain Operations in Indonesia, 2011

<table>
<tr><td>Root Cause
• There has been no directive from Ministry of Health to establish a central vaccine store.
• PT Biofarma manufactures vaccines on contract which does not require them to have buffer stock</td><td colspan="2">Management comments

See detailed management responses - Annex 8</td></tr>
<tr><td>Risk / Impact / Implications
The lack of a central vaccine store has led to markedly low stock levels at the central/national level. Specifically, on the day of the visit, only 0.06 and 0.12 months of stock were available for BCG and IPV vaccines. Furthermore, there were no stocks of pentavalent vaccine at the national level on the day of the visit contributing to the observed stockouts, as highlighted in section 4.3.3.</td><td>Responsibility

Directorate of Immunisation, Directorate of Pharmaceutical and Medical Devices, The Health Data and Information centre with support from partners</td><td>Deadline / Timetable

See Annex 8</td></tr>
</table>

4.3.2 Challenges in forecasting and procurement increase the risk of vaccine stock outs

Context and Criteria

Vaccine procurement is a complex process composed of a pre-buying phase (identify needs, select prequalified products and suppliers, establish specifications and legal criteria, prepare for bidding and evaluation) and a post-buying phase (ensuring availability, timeliness, monitoring the safety, and reporting performance)[32]. For vaccines to be beneficial to the national immunisation programmes, procurement of the vaccines needs to be done in a timely manner to ensure uninterrupted supply to meet individual client needs.

In Indonesia, the determination of vaccine needs follows an annual forecasting process facilitated by a country-specific Excel-based tool. This tool is custom designed to align with the nation's requirements and incorporates the following parameters to guide the forecast:

a) Immunisation targets for respective vaccines as outlined in the national plan, typically set at 100% for routine immunisation vaccines and 90% for new vaccines such as HPV, Rota, and JE.
b) Usage Index for each vaccine, sourced from internal guideline books.
c) Estimated stock on hand at the end of the year for the entire country.
d) Buffer stock, assumed within the range of 10-25%.

The outcomes of the forecast are then presented by the Immunisation Sub Directorate within the Directorate of Surveillance and Health Quarantine to the Procurement Service Unit.
Section 4.5.1 of the Guidance for Immunisation Supply Chain Operations in Indonesia states that "*Accurate and timely forecasts optimise immunisation supply chains and ensures bundled vaccine availability at all levels of the supply chain*", underscoring the need for generation of accurate forecasts to ensure that vaccines are procured in right quantities to avert incidents of low stock and stock outs at the different levels of the supply chain.

The procurement of vaccines and related supplies in Indonesia is under the mandate of the Procurement Service Unit within the Directorate General of Pharmaceutical and Medical Devices and is facilitated through the e-catalogue platform. As a transitioned country, Indonesia opted to self-procure vaccines and through the Minister of Health decree No 12/2017 assigned the state-owned enterprise PT Biofarma the mandate to provide vaccines for the national immunisation programme either through local production or importation.
There is a distinct procurement mechanism in place for the Pneumococcal Conjugate Vaccine (PCV) facilitated by UNICEF. Vaccines acquired through this specific mechanism are directly delivered to the Provincial Vaccine Stores (PVS), bypassing the central holding facility at PT Biofarma.

Enhancing access to affordable and timely vaccine supplies by bolstering procurement skills and knowledge is a key focus area for the Middle-Income Countries (MIC) strategy. Consequently, countries like Indonesia, categorised as MICs, are urged to enhance their vaccine procurement processes. This improvement is essential to ensure that programs have sufficient quantities to meet the needs of their clients effectively.

Condition

Significant delays in procurement process: The audit team reviewed the procurement timelines for a sample of vaccines to assess the duration of key steps in the procurement process from the moment EPI initiated a procurement request. We noted a considerable time lag between the procurement request and the issuance of contracts (procurement initiation phase in the e-catalogue).

For instance, in the case of the pentavalent vaccine, the average duration between a procurement request and procurement initiation in the e-catalogue was 240 days, with the shortest duration for a single procurement recorded at 59 days. In the case

Recommendation 18

The Ministry of Health Procurement Service Unit should:

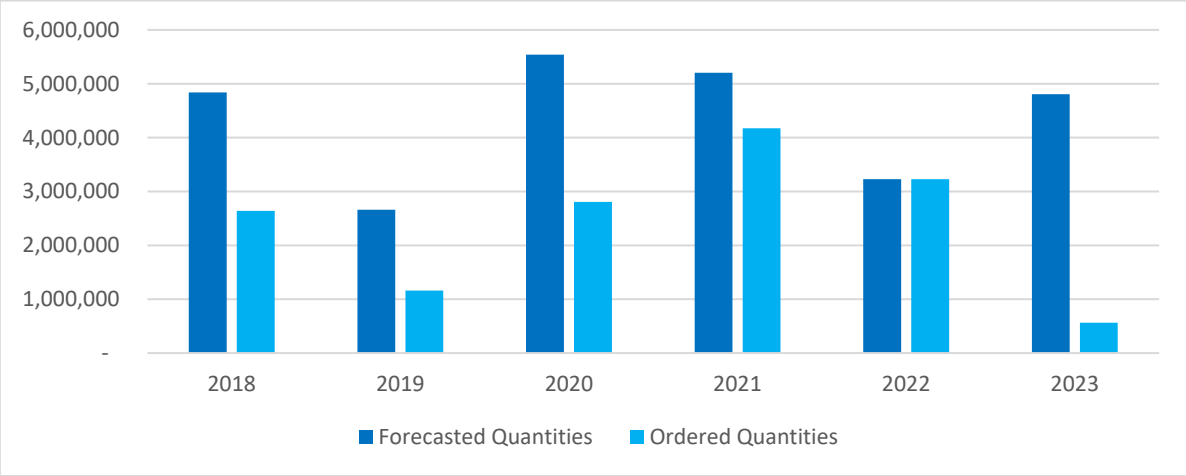
- Establish and assess the timeliness of various processes within the procurement cycle.
- Capitalise on recent efficiency improvements in utilising the e-catalogue system to streamline timelines in the procurement cycle.

[32] Gianfredi et al Vaccine Procurement: A Conceptual Framework Based on Literature Review. Vaccines 2021, 9, 1434.

of IPV, the average duration between a procurement request and procurement initiation in the e-catalogue was 186.5 days, and the minimum duration for a single procurement was also 59 days. See Annex 6a for details.

Variations between forecasted quantities and ordered quantities: The audit team reviewed forecast reports for a sample of vaccines during the period 2018 to 2023 and noted significant variations between the forecasted quantities and the ordered quantities. Specifically, for pentavalent vaccine, variances were recorded ranging from 20% in 2021 to 88% in 2023. The overall variation during the review period was 45% implying that the Country was generally ordering fewer quantities of pentavalent vaccine to be procured compared to the forecasted quantities as indicated in the below graph.

Figure 1: Variances between forecasted quantities and ordered quantities for pentavalent vaccine 2018-2023



Recommendation 19

The Ministry of Health should regularly review forecasts to enhance and refine assumptions in subsequent forecasting exercises.

Root Cause

- The outputs of vaccine forecasts are not communicated to the awarded suppliers.
- There is a lack of documented evidence regarding periodic assessments of the usage index for respective vaccines, crucial for informing vaccine forecast assumptions.
- The introduction of the e-catalogue system in 2018 experienced delays in implementation.
- There are no established timelines for various activities within the procurement cycle.

Management comments

See detailed management responses - Annex 8

Risk / Impact / Implications	Responsibility	Deadline / Timetable
The country is maintaining stock levels below the designated buffer thresholds, increasing the risk of stockouts and potential disruptions to the vaccination program. Corresponding to the low quantities ordered, there were observed declines in stock over the review period, leading to stock levels falling below the established buffer quantities outlined in the forecast. Specifically, for pentavalent vaccines, stock dipped below the buffer levels in 2018 and 2021; IPV experienced levels below the buffer stock in 2018, 2020, and 2021, while BCG encountered levels below the buffer stock in 2020 and 2021. This consequently led to stock outs as noted on 4.3.3	Directorate of Immunisation, Directorate of Pharmaceutical and Medical Devices, The Health Data and Information centre with support from partners	See Annex 8

4.3.3 Inventory management practices at national and sub national level need improvement

Context and Criteria

Successful immunisation programmes are built on functional, end-to-end supply chain and logistics systems. These systems enable effective vaccine storage, distribution, handling, and management, ensure rigorous temperature control in the cold chain; and leverage logistics management information systems to promote resilient and efficient system performance. The ultimate goal is to ensure the uninterrupted availability of quality vaccines from manufacturer to service-delivery levels, so that opportunities to vaccinate are not missed because vaccines are unavailable[33].

Section 4.5.5 of the Guidance for Immunisation Supply Chain Operations in Indonesia states that, "*physical counts should be conducted at every vaccine store at all levels of the immunisation supply chain: Central level – Quarterly; Provincial stores – bimonthly; Districts, Puskesmas – monthly; stock records should be adjusted* to *match the stock count and reasons for adjustment recorded in the stock control system. If the physical stock count for any supply is greater than ±1% of the figure recorded in the stock control system, investigations for the discrepancy should be conducted."*

Immunisation supply chains are a key component of the health system for reaching zero-dose children, enabling delivery of services to underserved communities, ensuring vaccine availability and potency, and maximising efficiency where possible. The equity goal of Gavi's 5.0 strategy is, *"Health systems sustainably reach all zero-dose and under-immunised children and their communities with the full range of vaccines as the first step towards providing integrated Primary Health Care (PHC) services"*. Gavi defines zero-dose children as those children who lack the first dose of the diphtheria-pertussis-tetanus containing vaccine (DPT1)[34].

Condition

Stock outs of vaccines at the sub national level: The audit noted instances of vaccine stockouts on the day of the audit visit. The pentavalent vaccine was stocked out at two out of seven provincial vaccine stores (PVS), four out of 13 district vaccine stores (DVS), and five out of 24 Puskesmas. Additionally, the BCG vaccine was stocked outs at one out of 7 PVS. The audit team extended its review to vaccine stock records at the sampled sub-national vaccine storage points. This review spanned the period from January 2018 to May 2023 and revealed instances of stockouts in key routine immunisation vaccines, including:

Table 7: Instances of stock outs at sub-national level

Level	Vaccine	Number of sampled vaccine stores with stockouts	Average Cumulative Stock Out Days	Maximum number of Stock Out days
Provincial vaccine store	Inactivated Polio vaccine (IPV)	1/7	107	324
	Pentavalent vaccine	3/7	30	106
	BCG	2/7	90	177
District vaccine store	Inactivated Polio vaccine (IPV)	3/13	130	629
	Pentavalent vaccine	2/13	10	29
	BCG	1/13	14	14
Puskesmas	Inactivated Polio vaccine (IPV)	5/24	78	516
	Pentavalent vaccine	6/24	135	1011
	BCG	3/24	341	1096

Recommendation 20

The MoH should establish and document the required vaccine buffer levels for provinces and districts vaccine stores.

Recommendation 21

The MoH should strengthen support supervision initiatives related to inventory management by documenting supporting supervision visits, providing feedback, and following up on the agreed upon action items. The support supervision visits should check to confirm that:

- regular physical counts are conducted and documented in line with MoH guidelines.
- Stock records are appropriately documented and archived.

[33] WHO: Importance of vaccine supply chains

[34] Gavi: Defining zero dose.

See Annex 6d for details.

Variances noted on executing a stock count: The audit team performed a physical inventory count at different vaccine storage locations and identified disparities between the recorded vaccine stock balances and the actual counts. These variances were observed in at least one of the sampled vaccines across all storage levels, encompassing 3 out of 7 Primary Vaccination Sites (PVS), 3 out of 13 at District Vaccination Sites (DVS), and 5 out of 24 Puskesmas facilities. See Annex 6b for details.

Variances noted on stock reconciliation: The audit team conducted vaccine stock reconciliations for the period January 2022 to the audit day, covering the calculation of opening stock plus receipts minus issuances and wastages. Variances were observed between the expected stock balance and the actual stock balance for at least one vaccine antigen at three out of seven provincial vaccine stores and five out of thirteen district vaccine stores. Refer to the Annex 6c for detailed information.

Missing inventory management records: The audit team reviewed stock records available throughout the audit period (2018-2022) and noted the absence of records at various vaccine handling points.
- Central Java Province lacked stock records from 2018 to 2019.
- Sawah Besar Puskesmas (Jakarta Province) lacked stock records for 2018.
- Menteng Puskesmas (Jakarta Province) lacked stock records from 2018 to 2020.
- Arbepura Puskesmas (Papua Province) lacked stock records for 2020.

Significant expiry of COVAX-donated vaccines: As of September 30, 2023, the country had recorded 45 million doses as expired, constituting 9% of all received Covid-19 vaccine doses from various sources, including COVAX, bilateral donations, and government procurements. The audit team observed that COVAX-donated vaccines accounted for the largest proportion of expiries from a single source, with 24% of the delivered COVAX vaccines expiring, equivalent to 58% of the total expiries in the country.

Root Cause

- Stock outs are partly caused by challenges in forecasting and procurement noted on 4.3.2 and the lack of central level buffer for vaccine stock as noted on 4.3.1.
- Absence of period-end physical counts: No evidence of period-end physical counts was found at all PVS, DVS and Puskesmas visited during the reviewed period.
- Arithmetic errors and operational lapses: Instances of arithmetic errors, failure to investigate discrepancies, untimely recording of vaccine issuances, and delayed posting of entries were noted.
- Insufficient controls for stock counts: Inadequate controls were identified in stock counts, including a lack of reviews and variance investigations.
- Training and capacity Gaps: Limited training and capacity gaps in vaccine stock management were evident at all levels.
- Inadequate archiving and storage of vaccine Records: Poor practices were observed in archiving and storing vaccine records.

Management comments

See detailed management responses - Annex 8

• Gaps in support supervision as there was no documented feedback provided to the provinces, districts and Puskesmas to address any inventory management challenges identified. • Receipt of short-dated COVID-19 Vaccines: The receipt of short-dated COVID-19 vaccines partially contributed to their expiration. Specifically, the minimum shelf life upon receiving Moderna vaccine was 12 days, AstraZeneca 14 days, and Pfizer 42 days. • Reduced demand for Covid-19 vaccines also contributed to expiry of vaccines.		
Risk / Impact / Implications • Vaccine stocks outs could interrupt achievement of immunisation coverage targets and the nations targets at reducing the number of zero dose children. • Inadequacies in stock counts, reconciliations and stock transaction record management processes may lead to gaps in vaccine accountability	Responsibility Directorate of Immunisation, Directorate of Pharmaceutical and Medical Devices, The Health Data and Information centre with support from partners	Deadline / Timetable See Annex 8

4.3.4 Cold chain management practices need to be strengthened

Context and Criteria

The quality of cold chain commodities can only be assured by a functional cold chain system[35]. Cold chain management is a critical component of the national immunisation programme to maintain the conditions of vaccines as they are distributed along the supply chain to the beneficiaries.
For bulk storage of vaccines, ensuring that all areas of a cold room are maintaining optimal temperatures for vaccine storage is critical to prevent exposure of vaccines to temperatures outside. the recommended range. All new temperature-controlled storage areas must be temperature-mapped as part of a fully documented verification process and subsequent mapping exercises must be carried out periodically to demonstrate continuing compliance[36].

Section 4.5.3 of the Guidance for Immunisation Supply Chain Operations in Indonesia states that VVM[37] *status should always be checked and recorded manually on the arrival voucher when it is being collected at the higher-level store or when it reaches the puskesmas whichever is applicable; Section 4.4.2 underscores the need and procedures for preventive maintenance of CCE and* Section 4.2.2 states that *staff responsible for vaccine management should know when and how to respond in the event of an emergency related to a cold chain equipment breakdown, a major power supply failure or any other situation that puts vaccine at risk. Managers and storekeepers should develop detailed written protocols (contingency plans) that clearly describe the steps and actions to take in response to common emergencies.*

Condition

Vaccine Vial Monitor (VVM) status not verified on vaccine arrival at the sub national level stores: The audit team identified gaps in vaccine receipt process at the subnational level. At three out of seven Provincial Vaccine Stores (PVS), five out of thirteen District Vaccine Stores (DVS), and two out of twenty-four Community Health Centres (Puskesmas), there was no documented evidence of verifying the Vaccine Vial Monitor (VVM) status upon the arrival of vaccines.

Temperature mapping and calibration of Walk-In Cold Rooms (WICRs) not consistently done: The audit team noted that evidence of temperature mapping for Walk-In Cold Rooms (WICRs) was lacking for two out of seven WICRs and provincial vaccine stores. Additionally, calibration was not conducted for one out of seven PVSs with WICRs.

No contingency plans and long turnaround time for CCE Repair: Documented contingency plans outlining steps for addressing equipment breakdown were not available at two out of seven PVS, eight out of thirteen DVS, and six out of twenty-four Puskesmas. Additionally, one out of seven PVS, two out of thirteen DVS, and five out of twenty-four Puskesmas reported a prolonged turnaround time (TAT) exceeding twenty-one days for equipment repair following breakdown.

No preventive maintenance plans and equipment maintenance logs at the puskesmas: The audit team noted that four out of twenty-four puskesmas lacked preventive maintenance plans, showing activities conducted on a daily, weekly, and monthly basis. Furthermore, fifteen out of twenty-four Puskesmas lacked equipment maintenance logs for their Cold Chain Equipment (CCE) to document both preventive and curative activities on the machines.

Recommendation 22

The MoH should:

- Develop and disseminate job aids on cold chain management to all vaccine handing points.
- Develop and disseminate preventive maintenance check lists to all vaccine handing points and enforce their utilisation.

Recommendation 23

The MoH should support sub national vaccine handling points to design vaccine contingency plans tailor made to suit their context and train staff on how to implement them.

[35] Bishara RH. Cold chain management—an essential component of the global pharmaceutical supply chain. Am Pharm Rev. 2006; 9:105–9.
[36] Cold Chain mapping studies - WHO-IVB-18.05-eng
[37] VVM is a WHO Performance, Quality and Safety (PQS) prequalified cumulative time and temperature integrator.

<table>
<tr><td colspan="2">Late Installation of COVAX CCE: Indonesia received 35 COVAX refrigerators in July 2022 to augment cold chain capacity for managing COVID-19 vaccines. The installation of this Cold Chain Equipment (CCE) took place between October 2022 and January 2023, after the peak of the COVID-19 pandemic. Post installation inspections were still ongoing during the audit i.e., October 2023.
Based on the country's Covid-19 vaccination coverage results and having reached its overall target population, the audit team questioned whether this equipment was needed, as the country was able to reach a high level of vaccination without using many of these items.
The installation and commissioning of the Cold Chain Equipment (CCE) units continued according to the original Covid-19 vaccination deployment plan, prioritising highly populated areas to accommodate the surge in vaccine volumes required to reach the target population. Despite the prolonged distribution period, there was no revalidation of the CCE deployment plan to assess the continued relevance of the initial plan, which was based on a Covid-19 CCE needs assessment. Additionally, there was no reconsideration of the plan to explore whether other locations associated with integrating Covid-19 vaccines into routine immunisation might be more appropriate.</td></tr>
<tr><td>Root Cause
The observed deficiencies in cold chain management at some of the vaccine handling points were attributed to nonadherence to cold chain management SOPs and lack of job aids on cold chain management at the vaccine handling point.
There were delays in the receipt of COVAX CCE equipment.</td><td>Management comments
See detailed management responses - Annex 8</td></tr>
<tr><td>Risk / Impact / Implications
The absence of equipment contingency plans may lead to vaccine loss in case of equipment break down for prolonged periods.
Lack of preventive maintenance plans leads to increased risk of equipment breakdown and loss of equipment service life.
failure to check the VVM status on arrival of the vaccines means that any temperature changes during transportation may go undetected.
Critical CCE infrastructure may not be located in areas where it is needed to support routine immunisation, including for example hard-to-reach areas. By not promptly revisiting the CCE deployment plan, an opportunity was potentially missed for the programme to fully capitalise on this equipment consignment and redeploy items where there were most needed or useful.</td><td>Responsibility
Directorate of Immunisation, Directorate of Pharmaceutical and Medical Devices, The Health Data and Information centre with support from partners</td><td>Deadline / Timetable
See Annex 8</td></tr>
</table>

4.3.5 Recommendations from the Effective Vaccine Management assessment should be implemented

Context and Criteria

The Effective Vaccine Management (EVM) initiative furnishes essential information for monitoring and evaluating vaccine supply chains, aiding countries in enhancing their supply chain performance. Before 2019, countries underwent assessments using the EVM 1.0 tool, which evaluated nine criteria pertaining to vaccine management.
In 2019, a new iteration of the EVM assessment tool, EVM 2.0, was introduced. This updated tool evaluates a total of thirteen criteria, encompassing nine criteria for assessing supply chain operations and four criteria for assessing supply chain management. Following an EVMA assessment, countries receive an improvement plan outlining specific activities and timelines to address identified challenges and areas of improvement. It is imperative for countries to prioritise, budget for, and execute the plan to fortify their supply chain systems.

In 2020, the Republic of Indonesia underwent an Effective Vaccine Management (EVM) Assessment. Preceding this evaluation, two EVM assessments of the immunisation supply chain in the public sector were conducted using the EVM 1.0 tool. The initial assessment occurred in two phases: phase one in 2011 for Java Island and phase two in 2012 for the whole country. The second assessment was conducted in 2015. The 2020 EVM Assessment employed the EVM 2.0 tool. The overall EVMA score in 2015 was 69%, whereas the score in 2020 improved to 78%[38].

Condition

Decline in performance of key parameters: Decline in performance of key parameters: While the overall vaccine management showed improvement when comparing the EVMA scores of 2015 and 2020, there was a notable decline in two specific criteria. The performance in temperature management decreased from 63% in 2015 to 58% in 2020, and storage capacity performance dropped from 82% to 78% during the same period. See details on Annex 6e.

No comprehensive improvement plan: The audit team was not provided with a comprehensive implementation plan subsequent to the 2020 Effective Vaccine Management Assessment (EVMA). A review of the overall recommendations stemming from the 2020 EVMA revealed that, at the time of the audit, only one out of the seven recommendations had been acted upon. This singular implemented recommendation involved the development of a unified Electronic Logistics Management Information System (eLMIS) aimed at enhancing the availability of precise and accurate data on vaccine stocks, wastage, temperature excursions, and Cold Chain Equipment (CCE) functionality across all levels of the supply chain. See details of recommendations on Annex 6f.

Recommendation 24

The MoH should develop a comprehensive effective vaccine management continuous improvement plan, prioritise the activities based on impact, feasibility, and available resources and cost the activities.

Root Cause

The 2020 EVM improvement plan was not costed to ensure that critical recommendations were prioritised, budgeted and implemented.

Management comments

See detailed management responses - Annex 8

Risk / Impact / Implications

The delay in following through and implementing past EVM recommendations has been substantiated through risks materialising, as evidenced by the challenges experienced by the vaccine supply chain on sections 4.3.3 and 4.3.4

Responsibility

Directorate of Immunisation, Directorate of Pharmaceutical and Medical Devices, The Health Data and Information centre with support from partners

Deadline / Timetable

See Annex 8

[38] Effective Vaccine Management (EVM 2.0) Assessment Report – Indonesia 2020

4.4 Immunisation data management

4.4.1 There are challenges in immunisation coverage monitoring

Context and Criteria

The Gavi Health System Strengthening (HSS) new vaccine support general guidelines (2015-2018) recommend that countries receiving Gavi support ensure alignment between the country's population projection of live births and external projections. Additionally, these guidelines advise Gavi-supported nations to conduct high-quality, nationally representative household surveys every five years.

The National Immunisation Programme currently relies on population estimates derived from the 2010 population census. The Ministry of Health utilised this census data to generate population projections up to 2025, providing comprehensive insights into province-wise populations and age-wise breakdowns within each province. The MoH applied a consistent growth factor to calculate these estimated population figures.

A new population census was conducted in 2020, with the report released in January 2021, the MoH has not yet issued the updated population projections.

The primary objective of an immunisation coverage survey is to provide a coverage estimate for selected vaccines or a set of vaccines (fully vaccinated for age) among infants, children and/or women of childbearing age, etc. Furthermore, surveys facilitate assessing equity in immunisation, by allowing disaggregating coverage by factors such as place of residence, sex, maternal education, economic status or subnational region[39].

The WHO recommends that immunisation coverage surveys using survey methods recommended by WHO should be conducted periodically i.e., 3-5 years[40].

Condition

***Continued reliance on outdated census data for immunisation coverage monitoring*:** Despite the availability of updated census data from the 2020 census, the National Immunisation Programme (NIP) has continued to utilise target population estimates based on the 2010 census for the period 2021 to 2022. The audit team observed that, while the overall variances in target population estimates may be minimal, there are significant variances at the provincial level.

To illustrate, the variance in total population estimates for 2020 based on the 2010 census and the 2020 census is 1.36%, resulting in a marginal reduction of only 1.07% in the reported administration coverage for DPT3 in 2020. However, a similar analysis at the provincial level unveils significant variances ranging from -15.92% to 11.57%, with 9 provinces having variances exceeding 5%. See Annex 7a for detailed analysis for 2020 data.

Error in 2022 reported coverage due to use of incorrect Denominator: The audit noted an error in the computation of coverage for 2022 attributable to the use of an incorrect denominator. Consequently, the reported administrative coverage for 2022 was inflated by 5% and seven out of 34 provinces reported DPT3 coverage exceeding 100%.

Recommendation 25

The MoH should:

- Conduct a comprehensive analysis of the data derived from the census of 2020 to rebase and realign the denominator.
- Plan for a coverage evaluation survey in as soon as it is practical to help establish more precise immunisation coverage figures and to accurately target zero dose children.

[39] WHO on coverage evaluation surveys
[40] WHO on immunisation coverage frequency

Country has not carried out immunisation coverage evaluation survey: The audit team noted that the country has never conducted an immunisation coverage evaluation survey. Relatedly, the WHO/UNICEF estimates of national immunisation coverage (WUENIC) have relied on the official estimates provided by the country, and no specific WUENIC survey has been undertaken. Furthermore, the audit team noted that the reported administrative coverage for DPT3 is consistently higher than the WHO / UNICEF estimates of national immunisation coverage (WUENIC) over the period 2018 to 2022. Additionally, a Demographic Health Survey (DHS) conducted in 2018 reported even lower coverage estimates for DPT3 compared to both WUENIC and the reported administrative coverage.

Table 8: Comparison between admin coverage, WUENIC and DHS 2018

Year	DPT 3 Admin coverage (%) (EPI)	DPT3 WUENIC (%) WHO/UNICEF	% Variance Admin and WUENIC	DPT3 DHS 2018 (%)
2018	93	85	8	61.3
2019	96	85	11	-
2020	87	77	10	-
2021	80	67	13	-
2022	102	85	17	-

Root Cause

- There are no policies or guidelines that outline methods for computing, estimating, and revising coverage data to allow for necessary adjustments and enhance data accuracy.
- No coverage evaluation surveys have ever been conducted.
- No WUENIC reviews have been conducted since 2018

Management comments

See detailed management responses - Annex 8

Risk / Impact / Implications

The challenges in immunisation data coverage monitoring identified undermine the credibility of the reported immunisation administrative coverage.

Responsibility

Directorate of Immunisation with support from partners

Deadline / Timetable

See Annex 8

4.4.2 There were gaps in the quality of immunisation data

Context and Criteria

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

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

Data Quality Assessments (DQA), conducted by immunisation programs, offer countries an opportunity for self-assessment to identify their data-related challenges and develop plans for improvement. Gavi-supported countries are urged to create a strategic data improvement plan following a recent assessment. This plan should identify critical priority areas that need to be addressed, clarify roles and responsibilities, outline the required and available resources, establish timelines, and define key milestones. Since 2015, Gavi has mandated that countries conduct DQAs using the WHO-approved methodology. While a DQA is not required each year, it is recommended that an assessment is performed at least every three to five years.

Condition

Inconsistencies in reported administrative coverage: Discrepancies were noted between the data reported for administrative coverage and the actual vaccine doses available in the provinces. At the provincial level, the audit team conducted a comprehensive data triangulation exercise spanning the five-year period from January 2018 to December 2022. This exercise involved cross-referencing the reported number of vaccinations in administrative coverage reports with the total vaccine doses available in the respective provinces, considering the doses supplied from the central level during the same period. The findings revealed that in 24 out of 34 provinces, the reported number of vaccinated children exceeded the actual vaccine doses physically available. This resulted in an unexplained difference, attributing an additional coverage of 5,251,814 vaccinations for DPT3 in these 24 provinces over the five-year period. See Annex 7b for details.

Similarly, the audit team conducted a comparison between the reported IPV vaccinations at the Puskesmas and the consumption of IPV vaccines based on the movement recorded in stock records for a sample of months. Variances were observed at all 14 Puskesmas where such analysis could be carried out across six sampled provinces. The discrepancies ranged from 3 doses to 244 doses for the verified months. See Annex 7c for details.

Inconsistences in the recorded number of children receiving DPT3 and IPV vaccinations administered at the same time: The audit team compared the reported vaccinations for vaccines administered at the same time based on the Indonesia immunisation schedule (See Annex 5) and noted variances for ranging from 11% to 133% across the period 2018 to 2022. The variance is decreasing over the period and the audit team is cognizant that it may take a few years to stabilise and match the reported immunisations for the two antigens. However, there should have been minimal difference between DPT 3 and IPV in the year 2021 and 2022. The variances in 2021 and 2022 represents a missed opportunity to reach over 1 million children with the IPV vaccine.

Recommendation 26

The MoH should:

- Routinely perform a data triangulation of their immunisation data between doses distributed, vaccine utilisation and administrative coverage; and
- Consistently complete data verification and validation exercises at the health facility levels.

Recommendation 27

MoH should:

- Take necessary steps to conduct a new DQA and develop a costed data quality improvement plan, prioritise the actions to be undertaken, implement the same for improving the quality of data and should include it as part of the ICC dashboard.
- Properly monitor all the activities identified in the DQIP and implement in a time bound manner.
- Design and put in place a consistent process that systematically identifies and corrects data anomalies at both national and sub-national levels.

Table 9: Comparison of DPT3 and IPV administered at the same time.

Year	DPT3	IPV	Variance	% Variance
2018	4,394,635	3,108,212	1,286,423	41%
2019	4,510,096	3,600,970	909,126	25%
2020	4,078,614	1,752,593	2,326,021	133%
2021	3,497,051	2,892,288	604,763	21%
2022	4,199,289	3,787,690	411,599	11%

Variance between immunisations reports and ASIK system: The audit team reviewed 38 monthly reports submitted by the 24 sampled Puskesmas to the districts for the months of December 2022 and June 2023. Variances were identified between the reported vaccinations and those recorded in the ASIK system. Out of the total reports, 37% (14/38) indicated lower vaccinations than recorded in the ASIK system, while 63% of the reports demonstrated higher vaccination figures than those documented in the ASIK system. See details on Annex 7d.

Absence of a data quality improvement plan for the National Immunisation Programme: Despite undergoing a data quality review (DQR) conducted by WHO in 2019 and annual data quality surveys (DQS) by the national immunisation program for selected Puskesmas, Indonesia faces persistent challenges in immunisation data quality management. The DQR highlighted various issues, such as gaps in recording and reporting by Puskesmas/Posyandus, lack of standardised tools at Posyandu level, a monthly reporting tool that was not user-friendly, absence of mechanisms for setting local targets, and underutilisation of data for decision-making. Recommendations from the DQR included standardising tools for recording immunisations at Posyandu, developing a user-friendly monthly tool, establishing a monitoring framework, updating guidelines, providing training and capacity building, and crafting a data improvement plan with specified activities, target dates, roles, responsibilities, prioritisation, and budgets.

The DQSs conducted by the EPI revealed recurring gaps in immunisation data reported by Puskesmas, such as inappropriate data storage, lack of data analysis, absence of feedback from districts, and inadequate monitoring and evaluation practices. Despite these well-known challenges highlighted in both the DQR and recurrently in the DQS, the EPI has not formulated a costed Data Quality Improvement Plan with clear action points and strategies to address these data quality challenges. Furthermore, Indonesia has not conducted a nationwide data quality audit (DQA) to comprehensively assess the extent of gaps in data quality across the country.

Recommendation 28

MoH should:

- Introduce standardised tools for daily reporting by the Posyandus to the Puskesmas
- Consistently complete and document data verification and validation exercises at the health facility and district levels as required by the guidelines.
- Ensure adequate supervision at subnational level over data collection and management including follow up of recommendations to address data management gaps from routine supervision visits and programme audits.

Root Cause

- There was an absence of evidence of immunisation data verification at the Puskesmas level.
- Data reviews conducted at the national level on a monthly basis were found to exclusively prioritise aspects of data timeliness and completeness of reporting, neglecting crucial data quality dimensions such as triangulation of coverage data to logistics Data and reconciliations between tally sheets and monthly reports.

Management comments

See detailed management responses - Annex 8

<table>
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- During the field visit, it was observed that no evidence existed of any data reviews being undertaken at the province or district level, and there was a lack of feedback provided to the lower offices.
- Lack of supportive supervision initiatives concerning data management and reviews and there were no records evidencing that data issues were regularly identified, timebound actions proposed and thereafter followed up.

</td><td></td></tr>
<tr><td>

Risk / Impact / Implications

- Unexplained data anomalies undermine the credibility of the reported immunisation administrative coverage.
- Reporting inaccurate coverage via Gavi's performance framework is not compliant with the partnership framework agreement.
- Lack of reliable vaccination coverage compromises the immunisation programme's ability to identify under immunised children

</td><td>

Responsibility

Directorate of Immunisation with support from partners

</td><td>

Deadline / Timetable

See Annex 8

</td></tr>
</table>

5. Annexes

Annex 1 : Acronyms

AEFI	Adverse Events Following Immunisation
ASIK	Aplikasi Sehat IndonesiaKu
AZ	Astra Zeneca
BCG	Bacillus Calmette Guerin
BPKP	Badan Pengawasan Keuangan dan Pembangunan
C19	Covid 19
CCE	Cold Chain Equipment
CCEOP	Cold chain equipment optimisation plan
CDS	Covid 19 Delivery Support
CES	Coverage Evaluation Survey
CESAP	Coverage Equity and Sustainability Action Plan
CHAI	Clinton Health Access Initiative
COVAX	Covid-19 Vaccine Global Access
DHS	Demographic Health Survey
DTP	Diphtheria, Tetanus, Pertussis
EVMA	Effective Vaccine Management Assessment
GAVI	Global Alliance for Vaccine and Immunisation
GDP	Gross Domestic Product
HMIS	Health Management Information System
HPV	Human Papillomavirus
HSCC	Health Sector Coordination Committee
HSS	Health Sector Strengthening
ITAGI	Indonesian Technical Advisory Group on Immunisation
JSI	John Snow Inc
LMIS	Logistic Management Information System
MIC	Middle Income Countries
MoH	Ministry of Health
MR	Measles Rubella
NIP	National Immunisation Programme
NVS	New Vaccine Support
OPV	Oral Polio Vaccine
PEF	Partnership Engagement Framework
PHEIC	Primary Health Emergency of International Concern
SMILE	Sistem Monitoring Imunisasi dan Logistik secara Elektronik
TB	Tuberculosis
TCA	Targeted Country Assistance
TWG	Technical Working Group
UN	United Nations
UNICEF	United Nations Children Fund
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USD	United States Dollar
VIG	Vaccine Introduction Grants
VVM	Vaccine Vial Monitor
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 Core Principles for the Professional Practice of Internal Auditing, the definition of Internal Auditing, the Code of Ethics, and the International Standards for the Professional Practice of Internal Auditing (Standards). This mandatory guidance constitutes principles of the fundamental requirements for the professional practice of internal auditing and for evaluating the effectiveness of the audit activity's performance. The Institute of Internal Auditors' Practice Advisories, Practice Guides, and Position Papers are also be adhered to as applicable to guide operations. In addition, A&I staff will adhere to A&I's standard operating procedures manual.

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

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

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

A. Overall Audit Opinion

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

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

B. Issue Rating

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

Rating	Implication
High	At least one instance of the criteria described below is applicable to the finding raised: • Controls mitigating high inherent risks or strategic business risks are either inadequate or ineffective. • The issues identified may result in a risk materialising that could either have: a major impact on delivery of organisational objectives; major reputation damage; or major financial consequences. • The risk has either materialised or the probability of it occurring is very likely and the mitigations put in place do not mitigate the risk. • Management attention is required as a matter of priority. • Fraud and unethical behaviour including management override of key controls.
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

National	Provinces	Districts	Puskesmas
PT Biofarma	Aceh	Banda Aceh	Jeulingke
			Kopelma Darusallam
		Aceh Besar	Ingin Jaya
			Darul Imarah
	West Kalimantan	Pontianak	Khatulistiwa
			Alianyang
		Bengkayang	Sanggau Ledo
			Jagoi Babang
	Papua	Jayapura	Kotaraja
			Abepura
		Keerom	Arso 3
			Arso Kota
	Jakarta	Cengkareng	Sawah Besar
		Kemayoran	Menteng
	Central Java	Semarang	Bergas
			Semowo
		Batang	Tulis
			Limpung
	West Java	Bandung	Soreang
			Katapang
		Sumedung	Situ
			Tanjungsari
	North Sulawesi	Manado	Ranomut
			Sario

Annex 5 : Indonesia immunisation schedule

Routine Immunisation Schedule

AGE (months)	ANTIGEN
0	Hepatitis B (< 24 hours)
1	BCG, OPV 1
2	DPT-HB-Hib 1, OPV 2
3	DPT-HB-Hib 2, OPV 3
4	DPT-HB-Hib 3, OPV 4, IPV
9	Measles-Rubella 1[41]
10	JE[42]
18	DPT-HB-Hib 4, Measles-Rubella 2

TARGET	ANTIGEN
School children 1st grade	Measles or MR, DT
School children 2nd grade	Td
School children 5th grade	Td

Immunisation Program for Child-Bearing-Age Women

Immunisation Status	Minimal Interval to Provide	Immunity Period
T1	-	-
T2	4 weeks after T1	3 years
T3	6 months after T2	5 years
T4	1 year after T3	10 years
T5	1 year after T4	25+ years

[41] MR has replaced measles vaccine since 2017 on the Java islands, and since 2018 outside the Java islands.

[42] Only in Bali province

Annex 6: Gaps in Vaccine Supply Chain Management

Annex 6a: Time lag between procurement Request and Procurement initiation in e-catalogue

Year	Procurement Reference Number	Date of Procurement Request by EPI (A)	Date of Procurement Initiation in e-catalogue (B)	B-A (Days)
DTP-HB-Hib				
2018	KN.01.01/6/859-PK/2018	Jan-18	Nov-18	304
	KN.01.01/6/866-PK/2018		Nov-18	
	KN.01.01/6/867-PK/2018		Nov-18	
2019	KN.01.01/6/775-PK/2019	Feb-19	Nov-19	273
2020	KN.01.01/6/1830-PK/2020	Sep-19	Jun-20	274
	KN.01.01/6/2640-PK/2020		Aug-20	335
2021	KN.01.01/6/1067-PK/2021	May-20	Mar-21	304
	KN.01.01/6/2514-PK/2021		Aug-21	457
2022	KN.01.01/6/1485-PK/2022	Feb-22	Apr-22	59
	KN.01.01/6/1751-PK/2022	Feb-22	May-22	89
2023	BJ.02.02/E.IV.10/2537-PK/2023	Jun-23	Aug-23	61
IPV				
2019	KN.01.01/6/280-PK/2019	Feb-19	Jun-19	120
2020	KN.01.01/6/3149-PK/2020	Sep-19	Sep-20	366
2021	KN.01.01/6/970-PK/2021	May-20	Mar-21	304
2022	KN.01.01/6/1852-PK/2022	Feb-22	May-22	89
	KN.01.01/6/1478-PK/2022	Feb-22	Apr-22	59
	KN.01.01/6/2468-PK/2022	Feb-22	Aug-22	181

Summary

Vaccine	Average time taken between procurement Initiation and procurement (Days)	Minimum Duration (Days)
DTP-HB-Hib	240	59
IPV	186.5	59

Annex 6b: Variances between physical counts and inventory records at various Vaccine Stores

Province Vaccine Store	Pentavalent			IPV			Moderna			AstraZeneca		
	Stock Record	Physical Count	Variance	Stock Record	Physical Count	Variance	Stock Record	Physical Count	Variance	Stock Record	Physical Count	Variance
Central Java	30,500	32,000	1,500									
West Java				282,690	257,690	25,000						
North Sulawesi							2,280	110	2,170	2,890	290	2,600

District Vaccine Store	BCG			Pentavalent			IPV		
	Stock Record	Physical Count	Variance	Stock Record	Physical Count	Variance	Stock Record	Physical Count	Variance
West Jakarta	4,000	2,000	2,000						
Manado	3,780	3,080	700	1,490	490	1,000	6,750	500	6,250
Kab. Bandung				9,240	9,995	-755			

District	Puskesmas	Pentavalent			IPV			BCG		
		Stock Record	Physical Count	Variance	Stock Record	Physical Count	Variance	Stock Record	Physical Count	Variance
Aceh Besar	Daarul Imarah				70	350	-280	1,260	1,400	-140
Semarang	Semowo	205	215	-10	115	110	5	60	40	20
Batang	Tulis	115	90	25	100	145	-45	240	120	120
Central Jakarta	Meteng	325	315	10						

Annex 6c: Stock reconciliation variances at PVS and DVS

Vaccine Storage Level	PVS/DVS	Pentavalent			IPV		
		Expected Closing Balance	Stock Record	Variance	Expected Closing Balance	Stock Record	Variance
Province Level	North Sulawesi	-9,545	2,200	-11,745	3,318	3,113	205
	Papua	59,345	50	59,295	50,450	13,950	36,500
	West Kalimantan	211,000	105,500	105,500	45,250	31,110	14,140
District Level	Central Jakarta	20,950	6,200	14,750			
	West Jakarta	0	200	-200			
	Keerom	-3,035	100	-3,135	-605	620	-1,225
	Jayapura	210	0	210	0	850	-850
	Kab.Sumedang	94,785	4,765	90,020	-29	6,100	6,129

Annex 6d: Stock outs at sub national level

Province Vaccine Store	Vaccine	Stockout 1 (Days)	Stockout 2 (Days)	Stockout 3 (Days)	Stockout 4 (Days)	Stockout 5 (Days)	Stockout 6 (Days)
Ache Province	*						
Jakarta Province	Pentavalent vaccine	6	15				
Jakarta Province	Inactivated Polio vaccine (IPV)	23	324	49	10		
Noth Sulawesi Province	Pentavalent vaccine	16	8	5			
Noth Sulawesi Province	BCG	90					
West Java Province	Pentavalent vaccine	5	76	54	35	6	106
West Java Province	Inactivated Polio vaccine (IPV)	130					
West Java Province	BCG	3	177				

Summary

Vaccine	Average Number of Stock out days	Maximum Number of Stock out days
Inactivated Polio vaccine (IPV)	107	324
Pentavalent vaccine	30	106
BCG	90	177

Province	District Vaccine Store	Vaccine	Stockout 1 (Days)	Stockout 2 (Days)	Stockout 3 (Days)	Stockout 4 (Days)	Stockout 5 (Days)	Stockout 6 (Days)
Central Java Province	Semarang	Inactivated Polio vaccine (IPV)	629	61	90	32		
Jakarta Province	Central Jakarta	Pentavalent vaccine	7	14	7	5	7	5
Jakarta Province	Central Jakarta	Inactivated Polio vaccine (IPV)	17	17	276	42		
Jakarta Province	Central Jakarta	BCG	14					
Jakarta Province	West Jakarta	Pentavalent vaccine	4	29				
Jakarta Province	West Jakarta	Inactivated Polio vaccine (IPV)	7					

Summary

Vaccine	Average Number of Stock out days	Maximum Number of Stock out days
Inactivated Polio vaccine (IPV)	130	629
Pentavalent vaccine	10	29
BCG	14	14

Province	District	Puskesmas	Vaccine	Stockout 1	Stockout 2	Stockout 3	Stockout 4	Stockout 5	Stockout 6
Central Java Province	Semarang	Semowo	Pentavalent vaccine	1011	199	782			
Central Java Province	Semarang	Semowo	Inactivated Polio vaccine (IPV)	35	104	49	51	87	30
Central Java Province	Semarang	Semowo	BCG	172	184	154	621	738	
Central Java Province	Semarang	Bergas	Pentavalent vaccine	761	61	92	123	29	29
Central Java Province	Semarang	Bergas	Inactivated Polio vaccine (IPV)	516	92	29	326	26	89
Central Java Province	Semarang	Bergas	BCG	1096	181	727			
Central Java Province	Batang	Tulis	Pentavalent vaccine	58	60	30	29	30	30
Central Java Province	Batang	Tulis	Inactivated Polio vaccine (IPV)	30	27	30	153	30	120
Central Java Province	Batang	Tulis	BCG	58	244	30	27	91	457
Noth Sulawesi Province	Manado	Ranomut	Pentavalent vaccine	10	9	1	1	6	
Noth Sulawesi Province	Manado	Ranomut	Inactivated Polio vaccine (IPV)	1	23	7	1	6	
Papua Province	Jayapura	Kotaraja	Pentavalent vaccine	11					
Papua Province	Jayapura	Arbepura	Inactivated Polio vaccine (IPV)	7					
West Java Province	Kab. Banding	Ketapang	Pentavalent vaccine	7	2	4	12		

Summary

Vaccine	Average Number of Stock out days	Maximum Number of Stock out days
Inactivated Polio vaccine (IPV)	78	516
Pentavalent vaccine	135	1011
BCG	341	1096

Annex 6e: Comparison of EVMA scores for 2015 and 2020

		Infrastructure	Equipment	Information technology	Human resources	Policies & procedures	Financial resources	Outputs	Performance	Overall Score 2020	Overall Score 2015
		C1	C2	C3	C4	C5	C6				
Vaccine arrivals	E1										100
Temperature management	E2			53	64	89		63	50	58	63
Storage and transportation capacity	E3	83	61		100	91	100	71	100	78	82
Facility infrastructure and equipment	E4	85	77	94			100	82		85	74
Maintenance and repair	E5			32	85	95	100	70	87	84	63
Stock management	E6			87	74	85		57	56	69	55
Distribution of vaccines and dry goods	E7		100	4	61	50	100	70	97	75	69
Vaccine management	E8				82	74		99		85	74
Waste management	E9		91		64	83	100	69	96	81	42
Annual needs forecasting	M1				82	100		93	87	90	
Annual work planning	M2				74	93	99	94	76	91	
Supportive supervision	M3	100	100	93	56	100	100	72		88	
iSC performance monitoring	M4			78	63	94		36		61	
Overall EVM Score		86	74	76	73	87	100	68	78	78	69

Annex 6f: Extent of implementation of EVMA 2020 recommendations

#	Recommendations	Status of implementation based on Audit
1	Strengthen the temperature monitoring system by procuring and installing computerised temperature monitoring systems at all the cold/freezer rooms and 30 DTRs at all refrigerators.	Sites lacked computerised temperature monitoring systems
2	Limited storage capacity	
	o Assess the dry storage capacity at all the SNs and LDs, and decide whether to increase the capacity (if possible) or decrease the supply interval (biannual or quarterly instead of annually)	No evidence seen for undertaking this activity
	o Based on an updated cold chain inventory, identify the storage gaps in the cold chain equipment at all the levels and develop an up-to-date forecast for the CCE needed and a proper maintenance plan	No evidence seen for undertaking this activity
3	Develop a unified eLMIS to improve availability of precise and accurate data on vaccine stocks, wastage, temperature excursions, CCE functionality at all levels of the supply chain	SMILE system installed and operational since 2021 for Covid-19 vaccines and 2023 for Routine Immunisation vaccines
4	Develop a comprehensive training program which guarantee that all the iSC staffs are trained on the vaccine and cold chain management practices and functions and update the existing SOPs to include all the missing functions of vaccine management.	No evidence seen for undertaking this activity
5	Assess the waste facilities at all the sites and ensure all are according to the standards. This may be done in collaboration with other departments.	No evidence seen for undertaking this activity
6	Strengthen the supervisory visits through documenting the visits with the findings and actions taken and giving written and verbal feedback to the supervised staff.	Sites lacked comprehensive support supervision plans
7	Develop KPIs to monitor the iSC performance with guidance materials and integrate the KPI in the reporting system.	No evidence seen for undertaking this activity

Annex 7: Gaps in data management

Annex 7a: Comparing Penta 3 (DPT3) administrative coverage based on 2020 and 2010 census data.

Province	Penta 3	2020 target as per 2010 census	2020 target as per 2020 census	% Coverage as per 2010 census	% Coverage as per 2020 census	%Variance
PAPUA	50,887	68,370	86,974	74.43	58.51	(15.92)
PAPUA BARAT	16,314	21,018	24,654	77.62	66.17	(11.45)
LAMPUNG	139,452	144,947	157,018	96.21	88.81	(7.40)
JAWA TENGAH	517,259	515,630	546,872	100.32	94.59	(5.73)
NUSA TENGGARA BARAT	103,517	98,746	104,341	104.83	99.21	(5.62)
KALIMANTAN BARAT	69,493	97,024	104,408	71.62	66.56	(5.07)
SULAWESI UTARA	34,153	39,874	42,005	85.65	81.31	(4.35)
JAWA TIMUR	535,720	553,845	571,856	96.73	93.68	(3.05)
SULAWESI SELATAN	140,437	163,336	168,332	85.98	83.43	(2.55)
SUMATERA UTARA	241,071	292,890	300,877	82.31	80.12	(2.18)
DKI JAKARTA	120,861	164,925	168,811	73.28	71.60	(1.69)
MALUKU	32,549	42,758	43,604	76.12	74.65	(1.48)
SULAWESI BARAT	22,133	31,448	32,113	70.38	68.92	(1.46)
MALUKU UTARA	21,020	28,239	28,765	74.44	73.07	(1.36)
SUMATERA BARAT	61,791	106,527	109,085	58.01	56.64	(1.36)
BENGKULU	31,808	35,977	36,481	88.41	87.19	(1.22)
KALIMANTAN TIMUR	61,849	70,500	71,468	87.73	86.54	(1.19)
SUMATERA SELATAN	143,261	154,836	156,295	92.52	91.66	(0.86)
BALI	65,128	63,566	63,445	102.46	102.65	0.20
ACEH	55,522	112,964	111,733	49.15	49.69	0.54
KALIMANTAN TENGAH	41,091	51,813	50,928	79.31	80.68	1.38
JAWA BARAT	791,797	858,498	844,771	92.23	93.73	1.50
JAMBI	60,884	63,835	62,768	95.38	97.00	1.62
SULAWESI TENGAH	53,341	60,404	59,193	88.31	90.11	1.81
BANGKA BELITUNG	22,945	26,948	26,290	85.15	87.28	2.13
GORONTALO	16,709	23,094	22,432	72.35	74.49	2.14
KALIMANTAN SELATAN	59,632	77,340	74,914	77.10	79.60	2.50
NUSA TENGGARA TIMUR	104,448	134,740	130,040	77.52	80.32	2.80
SULAWESI TENGGARA	51,204	60,966	58,932	83.99	86.89	2.90
KEPULAUAN RIAU	35,127	40,565	38,795	86.59	90.55	3.95

Province	Penta 3	2020 target as per 2010 census	2020 target as per 2020 census	% Coverage as per 2010 census	% Coverage as per 2020 census	%Variance
KALIMANTAN UTARA	10,190	15,499	14,445	65.75	70.54	4.80
RIAU	106,191	152,064	138,929	69.83	76.44	6.60
BANTEN	220,726	234,891	218,263	93.97	101.13	7.16
DI YOGYAKARTA	40,104	40,669	36,399	98.61	110.18	11.57
TOTAL	**4,078,615**	**4,648,746**	**4,706,236**	**87.74**	**86.66**	**(1.07)**

Annex 7b: Comparison of the children immunised for DPT3 and doses available in each province

Province	DPT 3 reported vaccinations	DPT3 doses available	Variance
KALIMANTAN TIMUR	1,177,609	1,166,244	11,365
RIAU	1,951,333	1,925,260	26,073
JAWA BARAT	16,300,742	15,957,960	342,782
SULAWESI SELATAN	2,861,138	2,778,116	83,022
BENGKULU	637,743	618,664	19,079
NUSA TENGGARA TIMUR	1,825,485	1,767,780	57,705
BANGKA BELITUNG	423,588	409,856	13,732
DKI JAKARTA	3,174,078	3,015,084	158,994
GORONTALO	335,556	315,792	19,764
SULAWESI TENGGARA	941,028	881,884	59,144
PAPUA	845,759	783,768	61,991
SUMATERA SELATAN	2,990,284	2,743,632	246,652
LAMPUNG	2,753,140	2,493,768	259,372
NUSA TENGGARA BARAT	1,887,838	1,664,700	223,138
JAWA TENGAH	9,917,243	8,668,928	1,248,315
BALI	1,244,700	1,083,328	161,372
KALIMANTAN SELATAN	1,173,556	1,015,560	157,996
SULAWESI TENGAH	1,008,933	869,748	139,185
DI YOGYAKARTA	779,676	645,028	134,648
KEPULAUAN RIAU	744,128	611,592	132,536
JAMBI	1,218,564	988,528	230,036
SUMATERA UTARA	4,797,472	3,616,008	1,181,464
MALUKU	641,315	479,168	162,147
MALUKU UTARA	408,427	287,124	121,303
TOTAL	**60,039,335**	**54,787,520**	**5,251,815**

Annex 7c: Variance between reported immunisations and the doses consumed as per vaccine stock register

Province	District	Puskesmas	Month	Monthly report	Consumption (Stock register)	Variance
Central Java Province	Batang	Limpung	Dec-22	36	280	-244
	Semarang	Bergas	Jun-23	299	320	-21
	Semarang	Semowo	Jun-21	17	30	-13
	Semarang	Semowo	Dec-22	10	20	-10
	Semarang	Semowo	Jun-23	42	50	-8
	Semarang	Bergas	Jun-21	4	10	-6
	Batang	Tulis	Jun-23	39	45	-6
	Batang	Limpung	Jun-23	45	50	-5
	Semarang	Bergas	Dec-22	84	80	4
	Batang	Tulis	Dec-22	59	45	14

Province	District	Puskesmas	Month	Monthly report	Consumption (Stock register)	Variance
Jakarta Province	Central Jakarta	Meteng	Jun-23	155	300	-145
	Central Jakarta	Meteng	Apr-23	96	170	-74
	Central Jakarta	Sawah Besar	Jun-23	51	95	-44
	Central Jakarta	Sawah Besar	Dec-22	25	50	-25
	Central Jakarta	Sawah Besar	Jun-23	66	75	-9
	Central Jakarta	Meteng	Aug-23	219	90	129
	Central Jakarta	Meteng	Feb-23	198	40	158
Noth Sulawesi Province	Manado	Sario	Jun-23	0	70	-70
	Manado	Ranomut	Jun-23	95	155	-60
	Manado	Ranomut	Jun-20	167	225	-58
	Manado	Ranomut	Dec-22	98	130	-32
	Manado	Sario	Jun-23	91	100	-9
	Manado	Sario	Dec-22	101	110	-9
	Manado	Sario	Jun-23	90	50	40
Papua Province	Jayapura	Arbepura	Jun-23	36	80	-44
	Jayapura	Arbepura	Dec-22	68	95	-27
	Jayapura	Arbepura	Jun-23	48	30	18
West Java Province	Kab. Banding	Ketapang	Jun-23	72	175	-103
	Kab. Banding	Ketapang	Dec-22	83	155	-72
	Kab.Sumedang	Situ	Dec-22	49	115	-66
	Kab.Sumedang	Tanjung	Jun-23	17	20	-3
	Kab.Sumedang	Tanjung	Dec-22	24	20	4
	Kab. Banding	Soreang	Dec-22	61	46	15
	Kab. Banding	Soreang	Jun-23	64	33	31
	Kab.Sumedang	Situ	Jun-23	158	105	53
West Kalimantan Province	Pontianak	Khatulistiwa	Dec-22	40	240	-200
	Pontianak	Khatulistiwa	Jun-23	5	180	-175
	Pontianak	Khatulistiwa	Jun-23	55	220	-165
	Pontianak	Khatulistiwa	Jun-23	75	210	-135
TOTAL				**2,942**	**4,314**	**(1,372)**

Annex 7d: Variance between reported immunisations and vaccinations recorded in ASIK

Province	District	Puskesmas	Month	Monthly report	ASIK	Variance	Var %
Jakarta Province	Central Jakarta	Meteng	Jun-23	155	343	-188	(121.29)
	Central Jakarta	Sawah Besar	Dec-22	25	126	-101	(404.00)
	Central Jakarta	Sawah Besar	Jun-23	150	167	-17	(11.33)
Central Java Province	Batang	Tulis	Jun-23	39	70	-31	(79.49)
	Semarang	Semowo	Dec-22	10	34	-24	(240.00)
	Semarang	Bergas	Dec-22	84	89	-5	(5.95)
	Batang	Tulis	Dec-22	59	64	-5	(8.47)
	Batang	Limpung	Jun-23	45	59	-14	(31.11)
West Java Province	Kab.Sumedang	Situ	Dec-22	49	62	-13	(26.53)
	Kab. Banding	Soreang	Jun-23	64	76	-12	(18.75)
	Kab. Banding	Soreang	Dec-22	61	69	-8	(13.11)
Noth Sulawesi Province	Manado	Ranomut	Jun-23	32	36	-4	(12.50)
Papua Province	Keerom	Arso Kota	Jun-23	25	28	-3	(12.00)
Aceh Province	Banda Aceh	Kopelma	Jun-23	4	5	-1	(25.00)
Papua Province	Jayapura	Kotaraja	Jun-23	25	25	0	-
	Keerom	Arso 3	Jun-23	5	4	1	20.00
	Jayapura	Arbepura	Dec-22	68	4	64	94.12
	Jayapura	Kotaraja	Dec-22	30	3	27	90.00
	Jayapura	Arbepura	Jun-23	36	8	28	77.78
Central Java Province	Batang	Limpung	Dec-22	36	34	2	5.56
	Semarang	Bergas	Jun-23	299	235	64	21.40
	Semarang	Semowo	Jun-23	42	35	7	16.67
Aceh Province	Banda Aceh	Kopelma	Dec-22	5	1	4	80.00
	Banda Aceh	Jeulingke	Jun-23	61	6	55	90.16
	Aceh Besar	Ingin Jaya	Jun-23	114	9	105	92.11

Province	District	Puskesmas	Month	Monthly report	ASIK	Variance	Var %
Papua Province	Keerom	Arso 3	Dec-22	20	15	5	25.00
	Keerom	Arso Kota	Dec-22	23	17	6	26.09
Noth Sulawesi Province	Manado	Ranomut	Dec-22	17	10	7	41.18
	Manado	Sario	Jun-23	30	20	10	33.33
	Manado	Sario	Dec-22	35	11	24	68.57
West Java Province	Kab.Sumedang	Tanjung	Jun-23	17	4	13	76.47
	Kab.Sumedang	Tanjung	Dec-22	24	2	22	91.67
	Kab. Banding	Ketapang	Jun-23	72	37	35	48.61
	Kab. Banding	Ketapang	Dec-22	83	34	49	59.04
	Kab.Sumedang	Situ	Jun-23	158	85	73	46.20
West Kalimantan Province	Bengkayang	Jagoi Babang	Jun-23	55	32	23	41.82
	Pontianak	Khatulistiwa	Dec-22	40	15	25	62.50
	Pontianak	Khatulistiwa	Jun-23	75	23	52	69.33

Annex 7e: Administrative coverage by province 2018 to 2022

Province	Admin Coverage %				
	2018	2019	2020	2021	2022
ACEH	65.05	56.3	49.15	46.31	45.15
SUMATERA UTARA	90.67	90.58	82.31	80.77	93.05
SUMATERA BARAT	76.29	78.59	58.01	62.8	69.29
RIAU	75.94	78.42	69.83	64.22	85
JAMBI	99.21	104.03	95.38	93.12	101.37
SUMATERA SELATAN	102.15	104.68	92.52	83.56	98.8
BENGKULU	93.71	93.85	88.41	86.97	98.15
LAMPUNG	99.12	100.52	96.21	85.24	101.67
BANGKA BELITUNG	89.66	89.95	85.15	74.22	83.45
KEPULAUAN RIAU	97.79	97.17	86.59	80.2	89.07
DKI JAKARTA	103.06	98.28	73.28	63.65	97.4
JAWA BARAT	102.88	103.7	92.23	89.72	103
JAWA TENGAH	101.16	104.32	100.32	76.75	112.09
DI YOGYAKARTA	98.58	103.6	98.61	95.71	99.2
JAWA TIMUR	98.23	104.18	96.73	75.38	95.71
BANTEN	96.03	101.13	93.97	94.94	103.86
BALI	100.04	104.9	102.46	93.62	97.66
NUSA TENGGARA BARAT	101.1	106.09	104.83	84.35	105.1
NUSA TENGGARA TIMUR	59.09	81.11	77.52	73.81	87.9
KALIMANTAN BARAT	83.21	85.93	71.62	73.41	84.96
KALIMANTAN TENGAH	87.91	89.77	79.31	83.27	90.85
KALIMANTAN SELATAN	82.12	87.26	77.1	79	82.51
KALIMANTAN TIMUR	95.49	95.15	87.73	88.21	93.94
KALIMANTAN UTARA	74.43	77.13	65.75	69.71	89.24
SULAWESI UTARA	94.47	96.25	85.65	74.99	98.2
SULAWESI TENGAH	90.74	94.6	88.31	86.71	88.73
SULAWESI SELATAN	88.67	96.62	85.98	95.08	105.33
SULAWESI TENGGARA	83.19	87.63	83.99	70.57	90.2
GORONTALO	80.53	81.38	72.35	85.35	92.19
SULAWESI BARAT	73.17	79.97	70.38	70.55	83.1
MALUKU	82.58	86.35	76.12	77.9	94.33
MALUKU UTARA	75.84	82.9	74.44	82.86	93.42
PAPUA BARAT	75.01	87.16	77.62	60.35	86.28
PAPUA	65.12	68.18	74.43	61.93	64.36
Overall	**93.48**	**96.47**	**87.74**	**80.07**	**96.44**

Annex 8: Detailed management responses

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
Immunisation programme sustainability challenges not fully addressed after transition	**Recommendation 1** The Ministry of Health (MoH) should: • Review all transition activities and align them with the strategy for Middle-Income Countries (MICs). • Ensure that new applications under the MICs strategy prioritise catalytic investments and effectively address any remaining gaps or challenges to sustainability within the program. • Undertake advocacy measures to enhance budget allocation to the Expanded Program on Immunisation (EPI) at both national and sub-national levels.	**Action 1** Agreed. The Gavi's application filled gaps in the state budget and helped address some challenges to sustainability. This included improving routine immunisation, strengthening data management & HIMS, New Vaccine Introduction, governance and collaboration. In addition, we have been meeting with development partners and discussing with the technical working group (TWG) to align it with the strategy for Middle-Income Countries (MICs). The January review was conducted on 24 January 2024. **Action 2** Agreed. The Gavi's recommendation was well taken and was discussed during the Gavi - BMGF mission on October 30, 2023. Discussions and evaluation of activities to prioritise catalytic investments will continue in the Technical Working Group Meeting for the implementation of activities as listed in the MICs application. **Action 3** Agreed. Advocacy efforts are being made to encourage regional commitment to this cause, as the government system is decentralised. The Ministry of Health has developed and allocated a budget for immunisation programs through BOK (transfer fund from central to districts and puskesmas). MOH will conduct a Post Gavi Transition Risk Assessment, disseminate and use the results of the assessment as part of an advocacy tool. The results of this assessment will be shared with Gavi.	**Action 1** Directorate of Immunisation, and implementing partners (WHO, UNICEF, UNDP and CHAI) **Action 2** Directorate of Immunisation, and implementing partners (WHO, UNICEF, UNDP and CHAI) **Action 3** Directorate of Immunisation	**Action 1** January 2024 **Action 2** November 2023 **Action 3** December 2024
The scope of the Health Sector Coordination Committee (HSCC) needs to be expanded to cover the entire immunisation programme	**Recommendation 2** The MoH should: • Revise the terms of reference of the HSCC to cover the entire immunisation programme. • Develop and use a standardised format for documenting meeting minutes and develop a dashboard to track the follow-up and implementation of its HSCC, ITAGI and TWG recommendations. For the purposes of accountability, each recommendation should be assigned to a designated officer responsible for its implementation, along with a deadline by which time the action is to be completed.	**Action 4** • Agreed. We will revise the TOR of HSCC and use the HSCC meeting minute template. The meeting will be conducted 2-3 times per year. The Health Partnership meeting was conducted in December 2023 and attended by implementing partners to discuss challenges within immunisation and prioritise improvements. **Action 5** Agreed. We will create a consistent structure for recording meeting minutes and share with stakeholders such as MoH staff and development partners through official letter signed by the Director/MoH staff responsible for the topic of discussion. As an example, the report of TWG meeting in January 2024 was shared with audit team in January 2024. The ITAGI (National Immunisation Committee) decision letter will seek advice from the Law Bureau regarding the establishment of this format.	**Action 4** Directorate of Immunisation **Action 5** Directorate of Immunisation	**Action 4** June 2024 **Action 5** January 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
The role of the ministry of health in monitoring and coordinating partner-led activities should be enhanced	**Recommendation 3** Given that Gavi's MICs approach is reliant on core and expanded partners for some of the interventions, the MoH should document the government's role for partner-led activities. This would serve to enhance ownership of the programme and ensure continuity within the context of this transitioned country. The documentation should include: • a mechanism for monitoring partner led activities and validating reported milestones. • Avenues or forum where MoH will collaborate in shaping the TCA delivery approach to ensure that the designated activities are specific, measurable, accurate, relevant and include well-defined timelines. • Periodic review meetings e.g., quarterly meetings with TCA partners to review TCA activities, monitor progress, and validate reported deliverables before submission through the Gavi PEF portal.	**Action 6** Agreed. • Gavi has developed a reporting mechanism for its partners to report to the government through the country portal. This mechanism aims to ensure a streamlined and efficient flow of information and to facilitate the effective implementation of the immunisation program. The country representative who is responsible for managing the Gavi country portal will report and upload all reports in accordance with the agreed timelines. • In support of this initiative, the government has established a coordination and monitoring forum known as the Technical Working Group (TWG). This forum is composed of representatives from various development partners and is tasked with overseeing the implementation of the immunisation program. • To ensure effective communication and coordination, the TWG will hold regular meetings and prepare tracking sheets to monitor progress. In addition, a WhatsApp group has been established to facilitate timely and effective communication between the members of the TWG. **Action 7** Agreed. The MoH will collaborate with Bappenas to set annual targets (done as stipulated in National Strategy 2020 - 2024) and monitor the progress of development partners within the immunisation programme on a quarterly basis. The activities will be led by Bappenas. **Action 8** Agreed. • UNICEF periodically once a year invites related Ministries/Agencies to conduct joint monitoring visits (this activity has been running for several years), WHO - mid-term review meetings, UNDP - board meeting • MoH, through the finance unit, will monitor quarterly financial report to ensure adequate financial management.	**Action 6** Directorate of Immunisation (Team 1 and 3), WHO **Action 7** Directorate of Immunisation, WHO and UNICEF **Action 8** UNICEF	**Action 6** Started January 2024 **Action 7** Quarterly and will be started in April 2024 **Action 8** January 2024 and continue as schedule
Significant variations remain in the attainment of immunisations targets by province	**Recommendation 4** The MoH should develop a clear catch-up plan for provinces that are not performing well.	**Action 9** Agreed. MoH has developed a technical guideline for immunisation catch-up immunisation. Indonesia adopts a decentralised governance system, wherein the budgetary allocation from the central government does not reach the regions. In 2024, the Gavi budget (IPV2 switch) will be disbursed to several provinces (e.g. risk and high-risk provinces)	**Action 9** Directorate of immunisation	**Action 9** May 2024
	Recommendation 5 WHO and UNICEF have published guidance on considerations for integrating Covid-19 vaccination into immunisation programmes and primary health care for 2022 and beyond. The	**Action 10** Agreed. The administration of COVID-19 vaccines shall be implemented in accordance with the COVID-19 immunisation program, as stipulated by the Minister of Health in decree No. 2193 of the year 2023, which adheres to the guidelines formulated by the World Health Organisation (WHO) and the United Nations International Children's	**Action 10** Directorate of immunisation (Team 1 and 3), WHO	**Action 10** January 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	MoH should review, document and develop a national strategy for transitioning its Covid-19 vaccination response and integrating this into its routine immunisation, highlighting the: relevant delivery strategies, resources required and timeframe to complete this transition.	Emergency Fund (UNICEF). This program will ensure that the vaccination process is executed in a manner that is consistent with the standards and recommendations laid out by these international organisations. IEC material regarding the COVID-19 immunisation program will be available in Q2 2024.		
SMILE system sustainability challenges must be addressed	**Recommendation 6** While the SMILE investment was implemented through UNDP, the overall responsibility for the SMILE system is MoH who will be responsible for addressing the recommendations and sustaining the system after transition. To address the sustainability challenges noted, the Ministry of Health (MoH) should: • Request and assess a comprehensive quantification of all fixed and recurring operational costs related to SMILE maintenance, ensuring the inclusion of all costs for national and provincial/district-level planning. • perform a data growth projection to anticipate the current and future storage and processing requirements for SMILE. This will facilitate adequate planning for the necessary resources, such as disk space, memory, and processing power, to ensure optimal performance. • Ensure a comprehensive transition plan detailing all associated costs necessary for operating and maintaining SMILE at the province/district and national levels is developed. • Utilise the plan as a resource mobilisation tool in collaboration to ensure that SMILE operational costs are budgeted for and fully financed.	**Action 11** Agreed. • The Ministry of Health developed a Ministerial decree with respect to the SMILE program. This decree outlines the scope of work for directorates involved in the implementation of SMILE, as well as the budget resources required for its operational aspects, including development, maintenance, data storage, and security. • Additionally, the decree articulates the cost-sharing arrangements between APBN and APBD. Collaboratively led by the Pharmaceutical Directorate and other relevant departments, the decree is expected to be finalised and signed by mid-2024. **Action 12** Agreed. • In January of 2023, a joint evaluation and projection of SMILE data storage growth was conducted. The analysis was subsequently accepted by the Directorate of immunisation and DTO. • Following this, the Directorate of immunisation submitted an official request to the Data Centre as a basis for the Ministry of Health to procure cloud services for the SMILE system for the upcoming years of 2024-2025. The objective of this effort is to equip the Data Centre and DTO with the means to evaluate future data usage and storage requirements every six months. **Action 13** • The cost details for SMILE will be specified in an attachment to the Minister of Health decree. However, the cost estimation needs to be updated after the SMILE platform has been used for all health commodities, including vaccines and waste, by the end of 2024. Once the Minister of Health decree is approved, the relevant directorate at the central level and the health service can allocate the related costs for SMILE. The cost needed should be listed in the National immunisation Strategy 2025 – 2029	**Action 11** Directorate of immunisation (Team 2 and 4), Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre **Action 12** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre **Action 13** Directorate of immunisation (Team 2 and 4), Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 11** SMILE: June 2024 **Action 12** March 2024 **Action 13** December 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		Action 14 • This decision will provide a strong basis for ensuring that SMILE's operational costs are fully funded by the Ministry of Health and the Health Service. The Economic Assessment for SMILE application was done	**Action 14** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 4** January 2025
	Recommendation 7 The Ministry of Health (MoH) should gain a clear understanding of the existing licensing terms and agreements and explicitly define the transferable rights of the software. This is crucial to ensure the sustainable and efficient management of the SMILE system during the transition phase.	**Action 15** • Directorate of immunisation will collaborate with DTO regarding ASIK and with UNDP to ensure that SMILE the current license terms agreements and transferable software rights are understood for continued and efficient management of SMILE. • The software license is owned by UNDP and is transferable to the Ministry of Health. UNDP submits the source code to the MoH annually (as the SMILE version is updated) as part of the handover records. UNDP will consult with MoH when applying this system in other countries as needed.	**Action 15** Directorate of immunisation (Team 2 and 4), Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 15** June 2024
	Recommendation 8 To address design challenges identified in the system, MoH, in liaison with UNDP should: • Introduce features the e-learning platform that facilitate needs-based enrolment and enable the monitoring of performance for health workers enrolled on the platform. • implement audit trail for all user actions. • update end-user manuals and TOT guides to enhance end user utilisation and experience.	**Action 16** Agreed. • MoH in collaboration with UNDP and other partners will ensure that the use of SMILE e-learning platform is revitalised and promoted. Additionally, training for MoH staff as the main user, health service staff to be able to utilise SMILE (dashboard, feature) as a tool in monitoring Puskesmas performance, improving the quality and real-time data to produce better information.	**Action 16** Directorate of immunisation (Team 2 and 4), Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 16** January 2024
Challenges in the design of ASIK impacting the system's operating effectiveness	**Recommendation 9** The MoH should ensure the effective implementation of a unique identifier for immunisation records to prevent data inaccuracies arising from redundancy or duplicate entries. The chosen unique identifier for immunisation records should consider the following key factors: • Uniqueness: The identifier must be distinct to prevent any mix-ups or duplications in the system. • Consistency: Uniform application of the identifier across all healthcare facilities and	**Action 17** The Indonesian government made it mandatory to register the birth of every child. As stated in the Regulation of the Minister of Home Affairs of the Republic of Indonesia Number 2 of 2016, which explains that children under the age of 5 must be issued with a Child Identity Card (KIA) at the same time as their birth certificate excerpt. To ensure the uniqueness, consistency, security, compatibility, and scalability of the Child Identity Cards, the Ministry of Health uses the Nomor Induk Kependudukan (NIK) as the unique ID, as provided by the Civil Registry Service Office (Dukcapil) Ministry of Home Affairs. For recording immunisations, the ASIK implemented the Fast Healthcare Interoperability Resources (FHIR) standard, which allows for interoperability between different healthcare service providers. However, there has been a technical obstacle when it comes to immunisation services provided from birth, i.e. not all parents register their	**Action 17** Directorate of immunisation (Team 2 and 4), Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 17** December 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	immunisation centres is crucial for seamless data integration and maintaining data accuracy. • Standardisation: Adherence to WHO norms for identifier formats and coding systems is necessary to enable interoperability and efficient data exchange across various health systems. • Security: Strong security protocols are required to safeguard the confidentiality and integrity of patient data linked to the unique ID. • Compatibility: The identifier system should integrate smoothly with existing health information systems and electronic health record platforms for effective data sharing. • Accessibility: The ID system should be user-friendly and accessible to healthcare providers, facilitating streamlined data entry and retrieval. • Scalability: The identifier system must be capable of expanding to meet the increasing demands of vaccination programs and population growth.	children with Dukcapil, which means that they do not have a NIK. To address this issue, the Ministry of Health's DTO-Pusdatin is currently working on bridging birth data with the Dukcapil birth certificate. Satu Sehat system is connected to Dukcapil and uses the NIK. To address the challenge of children without a NIK, there are two possible solutions: 1) Plan to bridge birth data from healthcare facilities using a standardised format integrated into Satu Sehat. Satu Sehat will feed the data into Dukcapil. Dukcapil will generate a unique identifier (NIK) for the newborn, including publishing the birth certificate. Using this method, Satu Sehat will get the NIK data since birth and possibly capture the continuous health care services received by each individual. For this approach, DTO is coordinating with Dukcapil, Ministry of Home Affairs. Referring to the acceleration of digital transformation and integration of national digital services strategy (Presidential decree No. 82 the year 2023), we will collaborate with the Digital ID team in Dukcapil. The Indonesian government is currently accelerating the inter-ministerial digital collaboration using this decree, and it may take some time as the government technology strategy is currently being established with reference to the decree. 2) Should the data integration at health care facilities into Satu Sehat experience delays due to factors such as limited human resources, infrastructure, etc., or fif a child is not born at the hospital or Puskesmas, we will also develop the 'Data Sasaran' feature to capture name and address format at Posyandu level. Cadres or health care workers can identify each targeted individual based on their domicile. The list of individuals as targeted groups will be aggregated as program denominators. For this approach, we are still developing the 'data sasaran' feature in ASIK and plan to roll it out in June 2024.		
	Recommendation 10 The MoH should establish data validation requirements within the ASIK system to implement controls that prevent inaccurate data entry and the creation of duplicate records.	**Action 18** The validation of individual data on ASIK relies on NIK, an identification number issued by the Ministry of Home Affairs. At present, DTO-Pusdatin is developing a target data feature that will record individual data on immunisation targets, using BNBa (by name by address) as an identifier. This feature will streamline the process of validating target data and associated immunisation services, allowing the immunisation coordinator at the Community Health Centre to carry out the validation process. The district/city and provincial health services will monitor the validation, thereby ensuring its accuracy and reliability.	**Action 18** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 18** August 2024 under the INEY phase 2 - World bank
	Recommendation 11 The MoH should initiate an independent data quality assurance review for ASIK, with a primary focus on identifying and rectifying duplicate and	**Action 19** Agreed. We are currently working on a new tool to detect any duplicated records of immunisation services. Our goal is to guarantee that the data gathered by ASIK is of the utmost quality. To maintain the accuracy and integrity of the data collected, regular desk	**Action 19** Directorate of immunisation, Directorate of Pharmaceutical and Medical	**Action 19** 1/1/2024 and regular desk review

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	inaccurate immunisation records within the system.	reviews will be carried out by different stakeholders, such as the DTO-Pusdatin, the immunisation Directorate, the Public Health Office, and development partners. This practice will help emphasise the significance of upholding high standards of data precision and reliability.	Devices, UNDP, UNICEF, The Health Data and Information Centre	
	Recommendation 12 The Ministry of Health should conduct an assessment to precisely determine both current and future data growth requirements for the ASIK system. This measure ensures that the server infrastructure can scale effectively to meet the expanding data needs. Additionally, the Ministry of Health should then consider adopting a visualisation tool specifically designed for handling large datasets.	**Action 20** Agreed. • The team at DTO-Pusdatin is meticulously monitoring the server capacity requirements and proactively increasing the system performance to meet national needs. • Currently, the team is engaged in developing the ASIK immunisation dashboard on a native platform, which will significantly improve the performance of data analysis and process voluminous data sets.	**Action 20** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 20** June 2024
	Recommendation 13 The MoH should: • Explore the inclusion of an offline function within the ASIK mobile app to enhance usability in situations with intermittent connectivity. • Concurrently, establish guidelines for the standardisation of devices intended for use in offline mode, emphasising adequate phone memory support to store data for up to a week on the device.	**Action 21** Agreed. • The Ministry of Health (MoH) has undertaken a feasibility study to investigate the viability of implementing an offline reporting feature within the ASIK mobile application. The feature, which is expected to be completed by 2024, will enable users to submit reports without requiring an internet connection. **Action 22** • The team from DTO-Pusdatin has conducted an assessment to determine the standardisation of gadget requirements that can utilise offline features. In particular, the provision of telephones with adequate memory will be discussed in collaboration with the immunisation directorate, primarily for areas where internet access is limited. This initiative aims to facilitate efficient communication and data management within the jurisdiction of the directorate.	**Action 21** Directorate of immunisation (Team 2 and 4), Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre **Action 22** Directorate of immunisation (Team 2 and 4), Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 21** July 2024 **Action 22** March 2024
Limited interoperability between immunisation digital health systems	**Recommendation 14** The Ministry of Health should recommence interoperability engagements and formulate a tailored roadmap to facilitate integration between SMILE, ASIK, and other digital health tools. This roadmap should include the detailed definition of data formats, strategies for change management, and mechanisms for data mapping. Such an approach will foster seamless data exchange, minimise data redundancy, and enhance data quality and completeness. Additionally, a systems maturity assessment	**Action 23** Agreed. • The Ministry of Health initiated the development of interoperability using the Satu Sehat platform as part of its digital transformation agenda for the health sector. The Satu Sehat platform aims to provide a compilation of health data standardisation using Fast Healthcare Interoperability Resources (FHIR) and create a health master data that can serve as a reference for interoperability. • The adoption of the One Healthy standard for all health facilities has been mandated by the relevant government decree (KMK).	**Action 23** Directorate of immunisation (Team 2 and 4), Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 23** December 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	should be conducted to evaluate the readiness of the systems for integration.	• The Directorate General of Health Services is conducting an evaluation of the readiness of health facilities to integrate, and this will continue. • In 2022, logistics recording was integrated with immunisation services at the nationwide immunisation campaign (BIAN). However, the initiative failed due to a lack of readiness among the human resources in the field to carry out logistics recording in a consistent and timely manner. • The Satu Sehat platform's future plans include the integration of logistics and service records, as well as enhancing the digital maturity of health facilities and health human resources. • The Ministry of Health guarantees the functionality of the Satu Sehat platform as a reference and access point for all health program information. However, maintaining the large number of platforms will entail significant costs.		
There is need to establish a central vaccine store to minimise potential disruptions in the supply chain	**Recommendation 15** The MoH should establish of a central warehouse facility.	**Action 24** • The Ministry of Health is engaged in discussions pertaining to the development of a legal instrument that would enable the establishment of vaccine storage facilities. The land to build the vaccine storage for the national level is available and plan to discuss with a contractor for the design of the CVS. State budget will be allocated in 2025.	**Action 24** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 24** 2025 to design CVS
	Recommendation 16 The MoH should develop comprehensive central vaccine store standard operating procedures defining the roles and responsibilities of MOH and PT Biofarma as a third-party logistics provider.	**Action 25** • The Ministry of Health is scheduled to convene a meeting with PT. Bio Farma to discuss the standard operating procedures (SOPs) for vaccine storage at the centre, as well as the division of roles in managing vaccines and vaccination logistics. • The primary objective of the meeting is to ensure that the vaccine storage protocols comply with the recommended guidelines and regulations. Additionally, the meeting aims to establish clear and well-defined roles for managing the vaccine supply chain and logistics, thus facilitating the efficient distribution and administration of vaccines.	**Action 25** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 25** December 2024
	Recommendation 17 The MoH should design distribution schedules and plans from the central vaccine store to the PVS defining ordering and delivery timelines for vaccines	**Action 26** • The Ministry of Health is set to engage in further coordination with PT BioFarma and the Provincial Health Office to establish a distribution schedule for the allocated vaccine. • The objective of this collaboration is to ensure that the vaccine is distributed in the most efficient and effective manner possible.	**Action 26** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 26** June 2024 to start, thereafter process will follow the min max stock status in SMILE
Challenges in forecasting and procurement	**Recommendation 18** The Ministry of Health Procurement Service Unit should:	**Action 27** • The implementation of government procurement of goods and services is governed by the guidelines set forth in Presidential decree No. 12 of 2021. Commencing in 2022,	**Action 27** Directorate of immunisation, Directorate of	**Action 27** Done

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
increase the risk of vaccine stock outs	• Establish and assess the timeliness of various processes within the procurement cycle. • Capitalise on recent efficiency improvements in utilising the e-catalogue system to streamline timelines in the procurement cycle.	procurement through electronic means is to be carried out by the Goods and Services Procurement Bureau. In issuing procurement cycle documents, the Ministry of Health works in close coordination with related units to ensure compliance with applicable regulations. We will make pre procurement (Pra DIPA) to ensure sufficient vaccine stock **Action 28** • In the fiscal year 2022-2023, the Bureau of Procurement centralised procurement through E-Catalog, which aims to streamline the process and enhance transparency. By consolidating procurement at the Bureau, procurement officers can expect a simplified and more efficient procurement process. • This centralised approach is part of a broader initiative to optimise procurement procedures and improve accountability.	Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre **Action 28** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 28** Done
	Recommendation 19 The Ministry of Health should regularly review forecasts to enhance and refine assumptions in subsequent forecasting exercises.	**Action 29** Agreed. • The Ministry of Health has instituted a series of evaluations to ensure that vaccines are distributed effectively, from the planning stage to final fulfillment. Critical variables, such as storage capacity, distribution rate, vaccination achievements in different regions, and vaccine wastage rate, are assessed to evaluate the vaccine usage index. • To meet the upcoming vaccine demand, the Ministry initiates planning six months before its actual need and begins the procurement process two to three months before the stated need. The accuracy of vaccine demand figures is regularly reviewed in coordination with the Provincial Health Office. The vaccine stock review will be conducted regularly under the responsibility of the Pharmaceutical Unit MoH.	**Action 29** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 29** December 2024
Inventory management practices at national and sub national level need improvement	**Recommendation 20** The MoH should establish and document the required vaccine buffer levels for provinces and districts vaccine stores.	**Action 30** Agreed. • In accordance with the Minister of Health Regulation Number 12 of 2017 regarding immunisation, it has been deemed obligatory for provincial warehouses to maintain a maximum stock of each type of routine vaccine for two months' needs, in addition to one month's reserve. The vaccines will be subsequently disseminated to districts/cities, who should maintain a maximum stock of one month, with a reserve for another month before distributing them to Community Health Centres. The Community Health Centres, in turn, are required to store vaccines for one month's need along with a week's reserve. Nonetheless, the implementation of this provision has not been fully realised at the Provincial, Regency/City Health Service, or Community Health Centre level due to a lack of storage space or the inability of vaccine managers to calculate or manage stock according to the vaccination period. • Consequently, the Ministry of Health is collaborating with the United Nations Development Programme (UNDP) to enhance the features of the SMILE application. This	**Action 30** Directorate of Immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information Centre	**Action 30** December 2024 for efficient implementation

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		application will display alerts/notifications when an entity has reached its minimum stock, thereby enabling the immediate request for vaccine needs from superior levels.		
	Recommendation 21 The MoH should strengthen support supervision initiatives related to inventory management by documenting supporting supervision visits, providing feedback, and following up on the agreed upon action items. The support supervision visits should check to confirm that: • regular physical counts are conducted and documented in line with MoH guidelines. • Stock records are appropriately documented and archived.	**Action 31** • To guarantee the availability of vaccines at both central and regional levels, the SMILE application is employed for stock monitoring purposes. The Directorate General of Pharmacy and Medical Devices issued a circular in 2022, specifying guidelines for implementing routine monthly stocktaking to monitor vaccine availability in Community Health Centres, Districts/Cities, and Provinces. From 2023 onwards, the results of the stocktaking implementation are also evaluated by providing feedback to all entities in the region to facilitate continual improvement. • One of the most notable features of the SMILE application is its capability to provide vaccine stock capacity information, which allows for monitoring of the minimum and maximum stock conditions required at each level. Assets are recorded in SMILE and updated every six months. • The Ministry of Health has also reviewed the application of the SMILE software as a tool for vaccine management. To make better use of SMILE, technical assistance is required for in-depth analysis, enabling the software to support the management of vaccination logistics and achieve the targets of the National immunisation Program (NIP). MoH circulated an official letter about procedure of vaccine request to support the vaccine management stock to prevent the stock out (dated January 19, 2024)	**Action 31** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information centre	**Action 31** Started January 2024 and will be completed the end of Year 2024
Cold chain management practices need to be strengthened	**Recommendation 22** The MoH should: • Develop and disseminate job aids on cold chain management to all vaccine handing points. • Develop and disseminate preventive maintenance check lists to all vaccine handing points and enforce their utilisation.	**Action 32** Agreed. MoH has developed electronic job aids containing ten modules about vaccines and cold chain management. **Action 33** Agreed. The Ministry of Health is set to develop Standard Operating Procedures (SOPs) and technical guideline to streamline the management of vaccines and cold chain management. the technical guidelines about cold chain management are available and disseminated to Provinces, Regencies, Cities, and Puskesmas.	**Action 32** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information centre **Action 33** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information centre	**Action 32** (November 2023) Done **Action 33** November 2022 (technical guidelines) and SOP (plan Mid of 2024)
	Recommendation 23 The MoH should support sub national vaccine handling points to design vaccine contingency plans tailor made to suit their context and train staff on how to implement them.	**Action 34** • The Ministry of Health shall collaborate with related units to devise contingency plans for the administration of vaccines, while concurrently conducting internal socialisation and training implementation. This shall involve a coordinated effort to ensure that appropriate protocols and procedures are in place to manage any unforeseen	**Action 34** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The	**Action 34** June 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		circumstances that may arise, and to facilitate the effective dissemination of information across relevant personnel.	Health Data and Information centre	
There is a need to hasten implementation of recommendations from EVM assessment	**Recommendation 24** The MoH should develop a comprehensive effective vaccine management continuous improvement plan, prioritise the activities based on impact, feasibility, and available resources and cost the activities.	**Action 35** Agreed. The Ministry of Health, in conjunction with UNICEF, has formulated a comprehensive plan to bolster EVM, which aims to enhance resource availability and activity budgets. This collaborative effort is expected to yield improved health outcomes and ensure the sustainability of EVM interventions. The strategic plan is poised to facilitate the effective implementation of EVM initiatives by providing a framework for resource allocation and budgetary planning. The EVM assessment plan is developing	**Action 35** Directorate of immunisation, Directorate of Pharmaceutical and Medical Devices, UNDP, UNICEF, The Health Data and Information centre	**Action 35** March 2024
There are challenges in immunisation coverage monitoring	**Recommendation 25** The MoH should: • Conduct a comprehensive analysis of the data derived from the census of 2020 to rebase and realign the denominator. • Plan for a coverage evaluation survey in as soon as it is practical to help establish more precise immunisation coverage figures and to accurately target zero dose children.	**Action 36** • The Indonesian Ministry of Health, in collaboration with the Bureau of Public Statistics (BPS), has performed a comprehensive analysis to calculate the targets for the 5-year health program, which includes the critical area of immunisation. The data for this analysis was obtained from the Population Census, and subsequently updated using the latest census results, with the assistance of the Health Data and Information centre (Pusdatin). On January 9, 2024, the MOH circulated an official letter regarding the targets for EPI and the denominator. **Action 37** Agreed. • The Bureau of Public Statistics (BPS) conducts annual surveys to evaluate the extent of immunisation coverage, as stated in the Health Statistics Profile. In parallel, the Indonesian Ministry of Health conducts similar surveys every five years, following the guidelines provided in the Basic Health Research Report (RISKESDAS). • In addition, the Indonesian Ministry of Health will collaborate with GAVI-WHO-UNICEF to conduct another survey to assess immunisation coverage. The collaboration aims to facilitate the proper identification of gaps in immunisation coverage and to design appropriate interventions to address these gaps. This survey will provide critical data to inform the development of policies and programs aimed at improving immunisation coverage and ultimately reducing the burden of vaccine-preventable diseases. Please kindly find attached the MICs TA application.	**Action 36** Directorate of immunisation **Action 37** Directorate of immunisation and WHO	**Action 36** January 2024 **Action 37** Mid 2025
There were gaps in the quality of immunisation data	**Recommendation 26** The MoH should: • Routinely perform a data triangulation of their immunisation data between doses distributed, vaccine utilisation and administrative coverage; and • Consistently complete data verification and validation exercises at the health facility levels.	**Action 38** Agreed. • The Indonesian Ministry of Health regular provides constructive feedback to regional and provincial health service heads, which comprises a comprehensive analysis of coverage data in comparison with set targets. The provision of such informative feedback is essential to ensure that the health service delivery mechanisms operate optimally and efficiently. The quarterly and annual reports are an essential tool for tracking progress against targets, identifying challenges and opportunities, and ultimately achieving the overarching health objectives of the nation.	**Action 38** Directorate of immunisation and WHO	**Action 38** May 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
		• The Indonesian Ministry of Health has initiated efforts to enhance health management practices through the development of an electronic coverage recording and reporting system, as well as a vaccine and logistics monitoring system. These measures, set to commence in 2022, are designed to improve data quality and simplify analytical procedures. The Ministry's objective is to optimise the health management system by leveraging technology to enhance data accuracy, accessibility, and analysis.		
	Recommendation 27 MoH should: • Take necessary steps to conduct a new DQA and develop a costed data quality improvement plan, prioritise the actions to be undertaken, implement the same for improving the quality of data and should include it as part of the ICC dashboard. • Properly monitor all the activities identified in the DQIP and implement in a time bound manner. • Design and put in place a consistent process that systematically identifies and corrects data anomalies at both national and sub-national levels.	**Action 39** MoH has a manual DQA (manual recording) and plans to digitalisation the tool. The DQA tool for the electronic immunisation registry is currently being developed in consultation with global experts (ERAPO and SEARO) and adjusted according to country's context. **Action 40** Action. We will monitor the activities in the DQIP. **Action 41** • To enhance the quality of coverage data, the Directorate of immunisation will continue desk reviews of coverage data. In addition, the Directorate General of Pharmaceuticals and Medical Devices will continue to evaluate the availability and utilisation of vaccine logistics. • These routine assessments play a crucial role in ensuring that vaccination coverage data is accurate and reliable. By conducting desk reviews, the Directorate immunisation can identify any potential issues or discrepancies in coverage data, allowing for timely intervention and corrective measures. Similarly, the evaluations performed by the Directorate General of Pharmaceuticals and Medical Devices help to ensure that vaccine logistics are readily available and utilised effectively, thereby increasing the accessibility of vaccines to the public.	**Action 39** Directorate of immunisation and WHO **Action 40** Directorate of immunisation and WHO **Action 41** Directorate of immunisation and WHO	**Action 39** December 2024 **Action 40** December 2024 **Action 41** December 2024
	Recommendation 28 MoH should: • Introduce standardised tools for daily reporting by the Posyandus to the Puskesmas • Consistently complete and document data verification and validation exercises at the health facility and district levels as required by the guidelines. • Ensure adequate supervision at subnational level over data collection and management including follow up of recommendations to address data management gaps from	**Action 42** Posyandu is a community-based health service activity to improve access to health services. All immunisation activities at the posyandu are carried out by a team of puskesmas officers including in preparing microplans so that puskesmas officers will record the results of immunisation services that have been carried out at the posyandu in the immunisation recording and reporting book, and or the ASIK application. Currently ASIK is available, Puskesmas officers on duty at the posyandu on the day of service can electronically record and report through ASIK both offline and online. **Action 43** • The government intends to incorporate data triangulation guidelines into the practical guidelines for immunisation management in community health centres and the immunisation training curricula. This move is aimed at improving the accuracy, reliability, and completeness of data collection, management, and analysis in the immunisation	**Action 42** Directorate of immunisation and WHO **Action 43** Directorate of immunisation and WHO	**Action 42** June 2024 **Action 43** June 2024

Issues	Audit Recommendations	Management Action	Action Owner	Timelines
	routine supervision visits and programme audits.	sector. The inclusion of data triangulation guidelines is expected to enhance the quality of data obtained from multiple sources, thereby promoting evidence-based decision-making and improving the overall effectiveness of immunisation programs. These guidelines will be developed in line with established best practices and standards for data triangulation and will be made available to all stakeholders involved in immunisation management and training activities. **Action 44** • Monitoring and evaluation visits to the field will be customised to align with the objectives of each specific activity. The data evaluation activities are especially dedicated to DQS activities and or will use ASIK to ensure data quality through regular desk with PHO.	**Action 44** Directorate of immunisation and, WHO	**Action 44** December 2024