



Journal of Health and Medical Sciences

Ayuningtyas, D., Sitepu, E. S., Rooslanda, E., Damayanti, L., & Safitri, N. (2024), Dynamics of COVID-19 Vaccination Policy in Indonesia: Analysis of Readiness and Implementation. *Journal of Health and Medical Sciences*, 7(4), 1-11

ISSN 2622-7258

DOI: 10.31014/aior.1994.07.04.324

The online version of this article can be found at:
<https://www.asianinstituteofresearch.org/>

Published by:
The Asian Institute of Research

The *Journal of Health and Medical Sciences* is an Open Access publication. It may be read, copied, and distributed free of charge according to the conditions of the Creative Commons Attribution 4.0 International license.

The Asian Institute of Research *Journal of Health and Medical Sciences* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Medicine and Public Health, including medicine, surgery, ophthalmology, gynecology and obstetrics, psychiatry, anesthesia, pediatrics, orthopedics, microbiology, pathology and laboratory medicine, medical education, research methodology, forensic medicine, medical ethics, community medicine, public health, community health, behavioral health, health policy, health service, health education, health economics, medical ethics, health protection, environmental health, and equity in health. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Journal of Health and Medical Sciences* aims to facilitate scholarly work on recent theoretical and practical aspects of Health and Medical Sciences.



ASIAN INSTITUTE OF RESEARCH
Connecting Scholars Worldwide

Dynamics of COVID-19 Vaccination Policy in Indonesia: Analysis of Readiness and Implementation

Dumilah Ayuningtyas¹, Eme Stepani Sitepu^{1,2}, Elfrida Rooslanda¹, Lili Damayanti¹, Nurul Safitri¹

¹ Health Policy and Administration Department Faculty of Public Health Universitas Indonesia, F Building, 1st Floor, Depok, Republic of Indonesia

² Faculty of Pharmacy Universitas Indonesia, Depok, Republic of Indonesia

Correspondence: Dumilah Ayuningtyas. Faculty of Public Health, Universitas Indonesia 16424 Depok – West Java, Indonesia. Email: dumilah.ayuningtyas@gmail.com

Abstract

Implementing COVID-19 vaccination in Indonesia, a country with 17,000 islands and 38 provinces presents significant challenges, including reducing transmission risk and promoting economic recovery. This study aims to raise a policy issue perspective on the implementation of COVID-19 vaccination. It begins by exploring the influencing factors using the policy analysis triangle framework, examining the content, context, processes, and actors involved, to understand the dynamics of vaccination policy readiness and implementation. The analysis investigates the current landscape, regulatory framework, and execution, which serve as indicators of Indonesia's readiness for COVID-19 vaccination. Between March 2020 and February 2022, the Indonesian government enacted 16 regulations, including Government Regulations, Ministerial Regulations, and Ministerial Decrees, to facilitate vaccination efforts against the pandemic. Despite these efforts, significant challenges remain, such as limited vaccine availability, distribution logistics, and public acceptance pose significant hurdles to the policy's successful implementation. The study highlights that Indonesia's vaccination strategy is influenced by political, social, and economic factors, along with global pandemic trends. Despite initial unpreparedness, evident in the rapid policy development during the pandemic's early phases, Indonesia's strategic adjustments facilitated a notable vaccination coverage milestone, achieving over 70% for the first dose by 2021 and the second dose by mid-2022. This progression showcases the country's resilience and capacity to navigate the multifaceted obstacles inherent in a large-scale vaccination campaign.

Keywords: Implementation, Readiness, Vaccination Policy, COVID-19 Pandemic, Indonesia

1. Introduction and Standing Position

One of the efforts made by the Indonesian government to overcome the Coronavirus Disease-2019 (COVID-19) pandemic is to follow vaccination developments that various countries have carried out as input for the national vaccination program (Dewi, 2022). The vaccination program aims to reduce the risk of transmission of COVID-19 through the establishment of herd immunity, ultimately achieving group protection.

Implementing vaccination against COVID-19 demands meticulous planning, resource optimization, diligent field

execution, and adherence to scientific advancements for policy formulation. Indonesia, home to 275.7 million people across 17,000 islands and 38 provinces as of mid-2022, faces challenges in resource allocation and mobilization for its vaccination efforts. On August 22, 2022, the national vaccination target was increased to 234.7 million, resulting in adjustments to the target achievement (Aditama, 2021). Coverage rates were 86.6% for the first dose 72.7% for the second dose, and 25.2% for the third dose. However, during this time, first-dose coverage fell below 70% in three provinces, namely Maluku, West Papua, and Papua. Additionally, 18 provinces had second dose rates under 70%, and 22 provinces saw less than 30% achievement for the third dose (Rokom, 2021). This article explores and discusses the existing varied implementation of COVID-19 vaccination across Indonesia from the public's perspective as beneficiaries of the policy. Then, it raises a debate on the pros and cons of implementing the COVID-19 vaccination policy, highlighting various perspectives on its rollout. It starts with providing the exploration of the influencing factors using the policy analysis triangle framework, by examining the content, context, processes, and actors involved, to understand the dynamics of vaccination policy readiness and implementation.

2. Methods

Data for this study, spanning October 2020 to February 2022, was gathered through a literature study (secondary) by examining sources from various literature, such as journals, books, policy documents, websites, online news media, and reports from valid and official sources. The methodology involves synthesizing and analyzing collected data to assess the situation regarding COVID-19 vaccination readiness, policy implementation, and regulatory frameworks in Indonesia. It also examines priorities, achievements, and policy goals, reflecting government efforts toward vaccination implementation. Utilizing the policy analysis triangle, the study analyzed content, context, processes, and actors, including a textual analysis of policies concerning vaccination criteria, community priorities, vaccine types, implementation schedules, and guidelines. The analysis also examined the impact of hoax news, infrastructure availability, vaccine supply constraints, and the need for additional health workers, exploring how these factors influenced the overall vaccination strategy and stakeholder involvement. This comprehensive approach provided a deep understanding of Indonesia's preparedness for implementing COVID-19 vaccination.

3. Results and Discussion

The results of the health policy analysis regarding the dynamics of the government's COVID-19 vaccine implementation reveal insights into governmental readiness for the implementation of COVID-19 vaccination. Based on field realities, these findings clarify the situation's what, why, and how. Consequently, this article integrates results and discussions into a single section, covering an overview of the current state, an analysis of vaccine readiness, regulatory frameworks, priorities, achievements, and policy objectives. This structure reflects the government's readiness efforts in implementing the COVID-19 vaccination.

3.1 Current situation: Analysis of Readiness for Implementation of COVID-19 Vaccination

Declared a global pandemic by the WHO, the COVID-19 virus reached Indonesia in early March 2020, spreading nationwide and profoundly affecting politics, economy, culture, and public health, resulting in fatalities (Presiden RI, 2020). To combat this, the Ministry of Health prioritized vaccination as a critical strategy to curb transmission, reduce morbidity and mortality, achieve herd immunity, and protect society so that it can be socially and economically productive (Farmalkes, 2022). Vaccination priorities were strategically implemented due to early limitations in vaccine availability and types. These constraints were caused by global increases in COVID-19 vaccine demand that exceeded production capacities.

Indonesia's archipelagic structure complicates vaccine distribution and implementation, with further challenges from varying infrastructure, storage facilities, and health personnel needs in its decentralized system (Rahayu, 2021). The strategy for prioritizing vaccine distribution to health facilities and community implementation involves equipping locations with essential refrigeration, personal protective equipment, and health supplies evenly across all regions. This initiative, launched in 2021 with a budget of 50.2 trillion rupiahs, was executed across all Indonesian provinces, coordinated at both the provincial level by governors and the regency/city level

by local government leaders. Fortunately, the expenses were offset through international collaborations, partnerships in vaccine programs, and multilateral agreements, ensuring efficient procurement of the necessary vaccine doses.

During the vaccine implementation, a significant challenge that occurred was the emergence of hoax news in various media regarding the COVID-19 vaccine, falsely claiming it contained harmful substances that could lead to death, infertility, an increase in male vital organ size, and DNA. A late 2020 survey by the World Health Organization (WHO), Technical Advisory Group on Immunization (ITAGI), United Nations International Children's Emergency Fund (UNICEF), and the Ministry of Health involving 115,000 respondents from all 34 provinces revealed that misinformation led to 8% refusal and 27% hesitancy towards vaccination. Aceh Province had the lowest acceptance rate at 46% (K. RI, 2020a). To boost COVID-19 vaccination acceptance, the government implemented a communication strategy involving community and religious leaders, organizations, and health partners to enhance public participation in the vaccination program. Additionally, it ensured that health service facilities, including community health centers, hospitals, and clinics, were prepared to meet vaccination requirements. These requirements included having qualified health professionals (doctors, nurses, or midwives), appropriate cold chain storage for vaccines, and operational permits for health service facilities (Farmalkes, 2022; K. RI, 2021).

Indonesia's first COVID-19 vaccination was administered to President Joko Widodo at the Istana Negara (State Palace) on January 13, 2021, using the Sinovac vaccine, the first to arrive in the country. Initially, the vaccination was prioritized for health workers across all 34 provinces in Indonesia (K. RI, 2022). Early challenges included a limited vaccine variety, inadequate facilities for vaccination and storage, and a shortage of vaccinators. In response, the government improved health facilities, diversified vaccine types, and expanded eligibility to more groups. By early 2022, Indonesia ranked fourth globally in vaccination numbers, following China, India, and the United States in terms of the number of people vaccinated compared to the total number of injections worldwide (Permenkes, 2020). This ranking reflects the dynamic health policies in place to address challenges and adapt quickly during the pandemic.

3.2 The dynamics of changes in policy regarding the implementation of COVID-19 vaccination in Indonesia

The dynamics of changes in policy for implementing COVID-19 vaccination were in response to societal challenges, aiming to speed up vaccination efforts regionally and nationally. The first regulation, Presidential Regulation Number 99 of 2020, on vaccine procurement and Implementation of Vaccinations for the COVID-19 Pandemic, was stipulated on October 6, 2020 (Pemerintah RI, 2020).

The data collection process and setting program vaccination targets were carried out into two categories, namely top-down and bottom-up data collection; then, the validated data were entered into the information system for the COVID-19 vaccination data (Kepmenkes, 2021a). The pandemic heavily impacted tourism-dependent areas and regions crucial for migrant workers, significantly affecting their economies. To rejuvenate tourism, Bali, Batam, and Bintan were prioritized for vaccination, requiring 13.3 million doses in total 4 million for Bali and 9.3 million for Batam and Bintan using Sinovac and AstraZeneca vaccines (Rosylin, Guntur, Khairina, & Yustriani, 2023). By July 2022, Bali exceeded a 50% third-dose vaccination rate, with DKI Jakarta and the Riau Islands above 40%, and Yogyakarta, West Java, and East Kalimantan above 30% (Amalia, 2022). Despite an initial increase in April 2022, the third dose coverage declined after May 2022, reaching only 26.45% by September. The uptake for the third dose was significantly lower compared to the first and second doses, which saw a 60% increase over six months (June-December 2021) (Amalia, 2022). In contrast to just a 20% increase for the third dose of vaccine (January-June 2022). This decrease was attributed to a decline in COVID-19 cases, indicating a need for new strategies to boost third-dose vaccination rates in adapting to the evolving situation. To address the COVID-19 pandemic, the Indonesian government issued 16 vaccination-related policies through Presidential and Minister of Health Regulations and Decrees from March 2020 to February 2022, as shown in Figure 1 below:

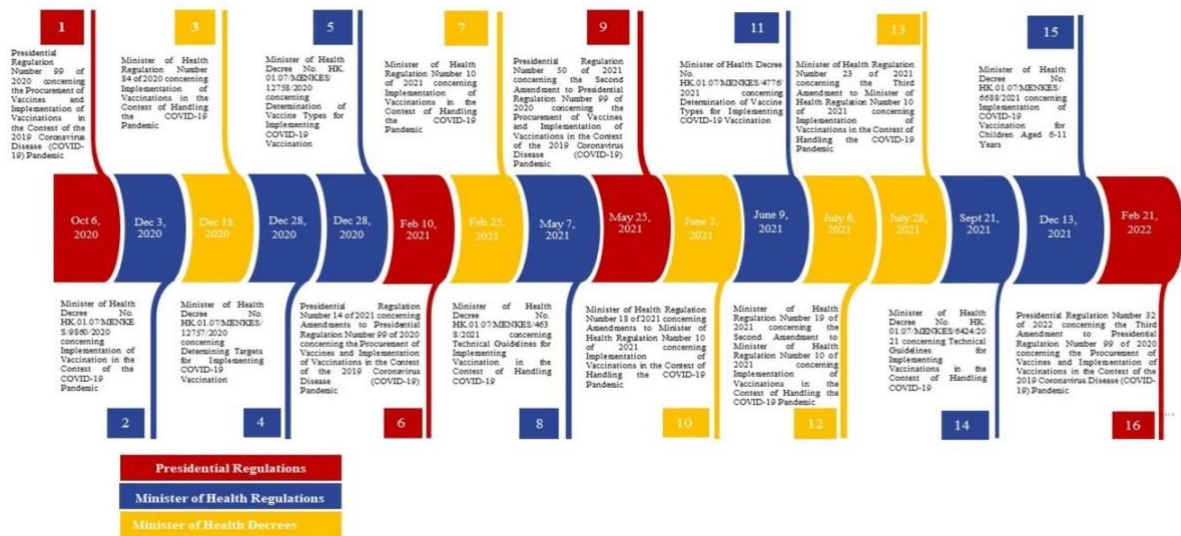


Figure 1: Policies related to the Implementation of COVID-19 Vaccination in Indonesia

The Changes in regulations for COVID-19 vaccination in Indonesia between 2020-2022 are evident in the aspects of vaccination implementation, vaccine types, vaccination targets, and vaccinations sites. Details of this policy can be seen in Table 1.

Table 1: Details of policies related to the implementation of COVID-19 vaccination in Indonesia

No	Type of Regulation	Regulations and Changes
	Implementation of Vaccination	
	Presidential Regulation	<p>The Presidential Regulations issued regarding the implementation of vaccination are:</p> <ol style="list-style-type: none"> Presidential Regulation Number 99 of 2020 Presidential Regulation Number 14 of 2021 Presidential Regulation Number 50 of 2021 Presidential Regulation Number 33 of 2022 <ul style="list-style-type: none"> Presidential Regulation Number 99 of 2020 regulates the criteria, priorities, regions, schedules, stages, and standards for implementing vaccination with considerations from the Committee for Handling COVID-19 and National Economic Recovery. The implementation involves collaboration between the Ministry of Health, other ministries, regional governments, State-Owned Enterprises (BUMN), private entities, and various organizations as needed. Regarding matters regarding the implementation of vaccinations that have been regulated, there have been no changes in Presidential Regulation Numbers 14 of 2021 and 50 of 2021 (Pemerintah RI, 2020; P. RI, 2021a, 2021b) However, in Presidential Regulation Number 33 of 2022, an additional article elucidates the involvement of legal entities/business entities in organizing vaccination implementation (P. RI, 2022).
	Minister of Health Regulation	<p>The Minister of Health Regulations issued regarding the implementation of vaccination are:</p> <ol style="list-style-type: none"> Minister of Health Regulation Number 84 of 2020 Minister of Health Regulation Number 10 of 2021 Minister of Health Regulation Number 18 of 2021 Minister of Health Regulation Number 19 of 2021 Minister of Health Regulation Number 23 of 2021 <ul style="list-style-type: none"> In Minister of Health Regulation Number 84 of 2020, it is elucidated that vaccination is free of charge, and implemented in stages according to the COVID-19 vaccine availability, with the Central Government leading, assisted by the Provincial, City/Regency Governments (Permenkes, 2020). Minister of Health Regulation Number 10 of 2021 largely repeats these terms but expands the list of implementers to include legal/business entities. Additionally, it distinguishes between program vaccinations and cooperative vaccinations, both free and dependent on the availability of the COVID-19 vaccine. In Minister of Health Regulation Number 18 of 2021, the provisions relating to the implementation of vaccination have not changed, and they are still the same as Minister of Health Regulation Number 10 of 2021 (Permenkes, 2021a, 2021b). Minister of Health Regulation Number 19 of 2021 discusses similar matters. However, there is an additional elucidation regarding cooperation vaccinations carried out by legal/business entities for employees and their

		<p>families or other individuals who are still related to the family, which can be carried out for individuals (Permenkes, 2021c).</p> <ul style="list-style-type: none"> - Minister of Health Regulation Number 23 of 2021 still contains the things written in the previous Minister of Health but omits the provisions regarding the individual implementation of cooperation vaccinations (Permenkes, 2021d).
	Minister of Health Decree	<p>Minister of Health Decrees issued regarding the implementation of vaccination include:</p> <ol style="list-style-type: none"> a. No. HK.01.07/MENKES/12757/2020 b. No. HK.01.07/MENKES/6688/2021 c. No. HK.01.07/MENKES/4638/2021 d. No. H.K. 01.07/MENKES/6424/2021 <ul style="list-style-type: none"> - In Minister of Health Decree No. HK.01.07/MENKES/12757/2020, it is explained how to notify the public who meet the criteria for receiving the COVID-19 vaccine via Short Message Service (SMS) Blast and is required to carry it out unless the SMS recipient does not meet the requirements set for COVID-19 vaccination (Kepmenkes, 2020a). - Minister of Health Decree No. HK.01.07/MENKES/6688/2021 regarding the Implementation of Vaccination for Children Aged 6-11 Years includes the type of vaccine used, namely Biofarma and/or Corona Vac, which is injected intramuscularly twice with an interval of 28 days. This injection must begin with screening first. - The stages of vaccination implementation are stipulated in detail in Minister of Health Decree No. HK.01.07/MENKES/4638/2021 and Minister of Health Decree No. H.K. 01.07/MENKES/6424/2021 (Kepmenkes, 2021a) (Kepmenkes, 2021c). These decrees regulate the implementation of vaccination in stage I (January 2021), stage II (February 2021), and stage III (July 2021).
	Vaccine Type	
	Presidential Regulation	<p>The Presidential Regulations issued regulating the types of vaccines are as follows:</p> <ol style="list-style-type: none"> a. Presidential Regulation Number 99 of 2020 b. Presidential Regulation Number 14 of 2021 c. Presidential Regulation Number 50 of 2021 d. Presidential Regulation Number 33 of 2022 <p>The type and number of vaccines determined by the Minister of Health are vaccines that meet Distribution Permit Number (NIE) and Emergency Use Authorization (EUA) from the Food and Drug Supervisory Agency (BPOM) and with consideration from the Committee for Handling COVID-19 and National Economic Recovery. The above is regulated in Presidential Regulation Number 99 of 2020 and has not been changed in Presidential Regulation Number 14 of 2021, Presidential Regulation Number 50 of 2021, and Presidential Regulation Number 33 of 2022 (Pemerintah RI, 2020; P. RI, 2021a, 2021b, 2022)</p>
	Minister of Health Regulation	<p>The Minister of Health Regulations issued regulating the types of vaccines are as follows:</p> <ol style="list-style-type: none"> a. Minister of Health Regulation Number 84 of 2020 b. Minister of Health Regulation Number 10 of 2021 c. Minister of Health Regulation Number 18 of 2021 d. Minister of Health Regulation Number 19 of 2021 e. Minister of Health Regulation Number 23 of 2021 <ul style="list-style-type: none"> - Minister of Health Regulation Number 84 of 2020 regulates the type of vaccine used, which must obtain approval from BPOM through EUA and NIE and by the recommendations of the National Immunization Expert Advisory Committee and the Committee for Handling COVID-19 and National Economic Recovery (Permenkes, 2020). - In Minister of Health Regulation Number 10 of 2021, additional provisions regarding the type of vaccine used in cooperation vaccination must differ from program vaccination (Permenkes, 2021a; P. RI, 2021b). In Minister of Health Regulation Number 18 of 2021, there are also changes to the provisions, namely (Permenkes, 2021b): <ul style="list-style-type: none"> ● If, under certain conditions, to meet vaccination needs, the COVID-19 vaccine used for cooperation vaccination can be the same as program vaccination. ● Certain conditions referred to as the type of COVID-19 vaccine can be obtained from grants, donations, or gifts from the community or other countries and cannot be traded. ● The COVID-19 vaccine used for the vaccination program is specially marked so the naked eye can recognize it. - In Minister of Health Regulation Number 19 of 2021 and Minister of Health Regulation Number 23 of 2021, the provisions regarding vaccine types have not changed and are still the same as Minister of Health Regulation Number 18 of 2021 (Permenkes, 2021c, 2021d).
	Minister of Health Decree	<p>The Minister of Health Decrees which regulate the types of vaccines are:</p> <ol style="list-style-type: none"> a. No.HK.01.07/MENKES/9860/2020 b. No.HK.01.07/MENKES/12758/2020 c. No.HK.01.07/MENKES/4776/2021 d. No.HK.01.07/MENKES/6688/2021 <ul style="list-style-type: none"> - In Minister of Health Decree No. HK.01.07/MENKES/9860/2020, it is regulated that the type of COVID-19 vaccine used is a vaccine that has completed the third phase of clinical trials and has received NIE and EUA from BPOM. The COVID-19 vaccine used was produced by PT Bio Farma, AstraZeneca, China National Pharmaceutical Group Corporation (Sinopharm), Moderna, Pfizer Inc. and BioNTech, and Sinovac Biotech Ltd. Changes can be made based on recommendations from the National Immunization Expert Advisor and

		<p>taking into account the considerations of the Committee for Handling COVID-19 and National Economic Recovery (Kepmenkes, 2020b).</p> <ul style="list-style-type: none"> - In Minister of Health Decree No. HK. 01.07/MENKES/12758/2020, there are additional types of COVID-19 vaccines, namely Novavax Inc. and Sinovac Life Sciences Co., Ltd. This vaccine uses the same provisions as the previous Minister of Health Decree (Kepmenkes, 2020c). - In Minister of Health Decree No. HK.01.07/MENKES/4776/2021, there are several changes to the type of vaccine, namely the addition of the type of COVID-19 vaccine, namely CanSino Biologics Inc, Genexine, Johnson and Johnson. Determining this type of vaccine also uses the same provisions as the previous Minister of Health Decree (Kepmenkes, 2021b). - Minister of Health Decree No. HK.01/07/MENKES/6688/2021 stipulates the type of vaccine for children aged 6-11 years, namely using the Biofarma COVID-19 vaccine and/or Coronavac, which have received EUA and NIE permits from BPOM (Kepmenkes, 2021d).
	Vaccination Targets	
	Presidential Regulation	<p>Three Presidential Regulations were issued which regulate the target recipients of the COVID-19 vaccine, namely:</p> <ol style="list-style-type: none"> a. Presidential Regulation Number 14 of 2021 b. Presidential Regulation Number 50 of 2021 c. Presidential Regulation Number 33 of 2022 <ul style="list-style-type: none"> - Vaccination targets are stated in Presidential Regulation Number 14 of 2021 and have not been changed in Presidential Regulation Number 50 of 2021 and Presidential Regulation Number 33 of 2022. The Ministry of Health determines targets for vaccine recipients based on data collection. Target recipients must participate in the vaccination unless they do not meet the criteria for receiving the COVID-19 vaccine. If the designated target recipient does not carry out the COVID-19 vaccination, administrative sanctions will be determined. However, if the refusal causes obstacles to controlling the spread of COVID-19, he can also be subject to witnessing the provisions of the law for infectious disease outbreaks (P. RI, 2021b, 2022) (P. RI, 2021a). - Vaccination targets are no longer regulated in Presidential Regulation 48 of 2023 concerning Ending the Handling of the 2019 Corona Virus Disease (COVID-19) Pandemic.
	Minister of Health Regulation	<p>The criteria for vaccine recipients are as follows:</p> <ol style="list-style-type: none"> a. Minister of Health Regulation Number 84 of 2020 b. Minister of Health Regulation Number 10 of 2021 <ul style="list-style-type: none"> - Minister of Health Regulation Number 84/2020 states that the determination of recipients of the COVID-19 vaccine is based on a study by ITAGI and/or the Strategic Advisory Group of Experts on Immunization of the World Health Organization (SAGE WHO). Recipients are categorized into priority groups, each registered in only one group. These groups, which include health personnel, legal and public officers, community leaders, educators, government officials, vulnerable populations, and economic actors, can be adjusted based on ITAGI's recommendations and insights from the COVID-19 and National Economic Recovery Committee (Permenkes, 2020). - In Minister of Health Regulation Number 10 of 2021, there are changes regarding the criteria for vaccine recipients. These are divided into four groups: health workers and health service facility supporters, older and public service workers, vulnerable people, and other communities (Permenkes, 2021a).
	Minister of Health Decree	<p>The vaccination targets are also stated in the Minister of Health Decree:</p> <ol style="list-style-type: none"> a. No.HK.01.07/MENKES/12757/2020 b. No.HK.01.07/MENKES/6688/2021 c. No.HK.01.07/MENKES/4638/2021 d. No.HK.01.07/MENKES/6424/2021 <ul style="list-style-type: none"> - In Minister of Health Decree No. HK.01.07/MENKES/12757/2020, setting targets for vaccination implementation uses the One Data Information System for COVID-19 Vaccination (Kepmenkes, 2020a). - Minister of Health Decree No. HK.01.07/MENKES/6688/2021 sets specific vaccination targets for children aged 6-11 (Kepmenkes, 2021d). - Minister of Health Decree No. HK.01.07/MENKES/4638/2021 explains the vaccination targets for each stage in more detail. Priority vaccination targets are divided into three stages; each recipient is detailed thoroughly (Kepmenkes, 2021a). - In Minister of Health Decree No. HK.01.07/MENKES/6424/2021, which was published, made several adjustments regarding vaccination targets, namely that ITAGI provides recommendations for types of vaccines that can be used for ages 12-17 years and pregnant women so that the target in stage 3 is added to the target ages 12- 17 years old and in pregnant women (Kepmenkes, 2021c).
	Vaccination Place	
	Presidential Regulation	The location for vaccination is not explicitly regulated in the Presidential Regulation.
	Minister of Health Regulation	<p>The Minister of Health Regulations that regulate the location of vaccine implementation include the following:</p> <ol style="list-style-type: none"> a. Minister of Health Regulation Number 84 of 2020 b. Minister of Health Regulation Number 10 of 2021 c. Minister of Health Regulation Number 19 of 2021 <ul style="list-style-type: none"> - Minister of Health Regulation Number 84 of 2020 regulates places for vaccine implementation in health

		<p>facilities owned by the Central Government, Regional Government, or community/private sector that meet the requirements (Permenkes, 2020).</p> <ul style="list-style-type: none"> - In Minister of Health Regulation Number 10 of 2021, there are additional provisions regarding additional vaccination implementation, namely (Permenkes, 2021a). <ol style="list-style-type: none"> 1) Vaccination implementation is added at the COVID-19 vaccination service post in coordination with the Community Health Center, Provincial Health Office, and City/Regency Health Office. 2) Cooperation vaccination is carried out by legal/business entities only with private health facilities or self-owned business health facilities that meet the requirements and coordinate with the regency/city health office. These health facilities are also not places for program vaccination services. - In Minister of Health Regulation Number 19 of 2021, there are additional locations for implementing COVID-19 vaccination as long as they meet the specified requirements (Permenkes, 2021c).
	Minister of Health Decree	<p>Several Minister of Health Decrees regulate vaccination locations as follows:</p> <ol style="list-style-type: none"> a. No.HK.01.07/MENKES/6688/2021 b. No.HK.01.07/MENKES/4638/2021 c. No.HK.01.07/MENKES/6424/2021 <ul style="list-style-type: none"> - Minister of Health Decree No. HK.01.07/MENKES/6688/2021 explains that the implementation of COVID-19 vaccination for ages 6-11 years is carried out at designated health facilities. Vaccination services can be carried out at schools, other educational units, or Child Welfare Institutions (LKSA) in collaboration with the Education Service, Regional Offices of the Ministry of Religion, or Social Services (Kepmenkes, 2021d). - In Minister of Health Decree No. HK.01.07/MENKES/4638/2021, there is an additional elucidation that the location for cooperation vaccination can only be carried out in public/private health facilities that meet the requirements and not program vaccination service facilities (Kepmenkes, 2021a). - In the Minister of Health Decree No. HK.01.07/MENKES/6424/2021, changes include allowing vaccinations for ages 12-17 at schools, madrasas, and Islamic boarding schools, monitored by the Regency/City Health Office or Community Health Center in coordination with the Education Office and the local Regional Office/Ministry of Religion. This regulation also explains that health facilities carrying out cooperation vaccinations must first stop program vaccination services. Once these activities are completed, they must report to the Local Regency/City Health Office before resuming the usual vaccination program (Kepmenkes, 2021c).

3.3 The government's readiness to implement the COVID-19 vaccination.

The Indonesian government aims to achieve herd immunity against COVID-19 by vaccinating 70% of the Indonesian population, or equivalent to 182 million people. Given the global demand for vaccines and limited suppliers meeting the required qualifications, reaching this goal presents a challenge (Aditama, 2021).

To manage the vaccination process, the Decree of the Director General of Disease Prevention and Control No. HK.02.02/4/423/2021 outlines technical instructions, dividing the vaccination into four phases based on the vaccine's availability, arrival time, and safety profile (Farmalkes, 2022). These stages are differentiated based on the implementation time and target groups, prioritizing regions with high numbers of confirmed cases (K. RI, 2020b). Stage 1 targets health workers and support staff, while Stage 2 prioritizes public service workers and those over 60 years. Stage 3 is aimed at vulnerable individuals aged 18 and over, and Stage 4 focuses on the broader community and economic actors using a cluster approach dependent on vaccine availability (Farmalkes, 2022; Kepmenkes, 2021a; Rosylin et al., 2023). Despite challenges, Indonesia accelerated its vaccination efforts, administering 283.6 million of the 439.76 million available doses by December 31, 2021, achieving a 76.8% distribution rate achieving a 76.8% distribution rate (Kepmenkes, 2021a). Figure 2 details the quarterly vaccination progress from 2021 to 2022.

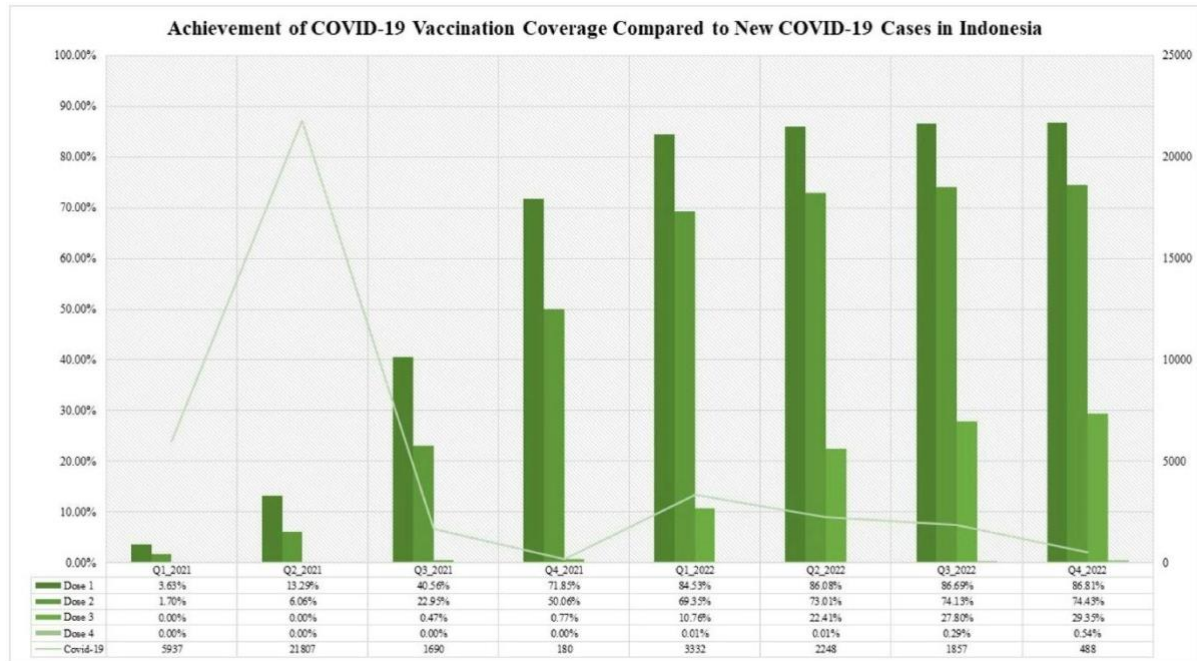


Figure 2: Development of Vaccination Achievement and COVID-19 Cases in Indonesia

Source: covid.go.id, which has been reprocessed

The figure shows that by the fourth quarter of 2021, Indonesia hit its vaccination target with a first dose coverage of 71.85%, and by mid-2022, second dose coverage reached 73.01% (Amalia, 2022). However, as of July 2022, only Bali surpassed a 50% third dose target, with DKI Jakarta and the Riau Islands above 40%, and Yogyakarta, West Java, and East Kalimantan above 30% (Permenkes, 2020). Third dose coverage increased in April 2022 but declined post-May, hitting only 26.45% by September (Rokom., 2022). This decline contrasts with the 60% increase seen in the first and second doses from June to December 2021 (Indonesia, 2021; Rokom., 2022), compared to just a 20% increase in the third dose from January to June 2022 (KPCPEN, 2022).

As COVID-19 cases decline, adapting strategies to boost third-dose coverage is essential. The numerous regulations reflect the government's cautious, resource-adjusted approach to the vaccine rollout. Initial challenges included limited vaccine types and quantities, distribution hurdles, and insufficient storage and healthcare facilities, emphasizing the need for preparatory planning. Yet, continuous policy updates in response to global shifts underscore the government's commitment to pandemic management via vaccination efforts.

Despite third dose coverage reaching only 30% in the second quarter of 2022 due to fewer COVID-19 cases, the success of Indonesia's vaccination effort can be seen in the achievement of coverage of the first dose of COVID-19 vaccination in 2021 and the second dose in the second quarter of 2021. By 2022, it will reach above 70% of Indonesian society.

Data-related policies, specifically Presidential Regulation Number 39 of 2019 on One Indonesian Data (*Kebijakan Satu Data*), streamline data management across central and regional agencies to enhance the planning and implementation of Indonesia's vaccination efforts. This initiative ensures high-quality data generation for policy development. Challenges include integrating numerous standalone applications, sectoral data-sharing hesitations, and inconsistencies in data collection across platforms. To facilitate efficient tracking of COVID-19 cases, the government introduced the PeduliLindungi application. Initially, the PeduliLindungi app helped track COVID-19, evolving to screen individuals in public areas, and manage lab results and vaccine certificates. In July 2022, the Satu Data Indonesia initiative launched the SATUSEHAT platform to manage health data, integrating with health facilities, labs, and pharmacies as well as BPJS Health. On March 1, 2023, PeduliLindungi became SATUSEHAT Mobile, adding features like electronic patient records. This data management enhancement aids Indonesia's crisis readiness and response, especially during health emergencies and threats. The limitation of this article is that the

analysis is from the perspective of writers who come from outside policymakers. Hence, it needs to be enriched with insights from policymakers or the government.

4. Conclusion

From March 2020 to February 2022, the Indonesian government issued 16 Presidential Regulations, Ministerial Regulations, and Ministerial Decrees to facilitate COVID-19 vaccination, focusing on staged implementation, taking into account vaccine availability, which necessitates prioritizing based on recipient's criteria, geographic areas, administration stages, and vaccination type. Initial policies highlighted government readiness amidst limitations in vaccine quantity and type, distribution issues, and resource constraints in healthcare. However, from 2020 to 2022, evolving vaccination policies significantly lowered COVID-19 cases in Indonesia, achieving over 70% coverage for both initial and follow-up doses. Effective vaccination strategy hinges on public education about vaccine safety and robust collaboration between government bodies and stakeholders. There is a critical need to strengthen the One Data Indonesia policy to ensure systematic data integration across central and regional agencies, enhancing data accessibility and usability for quality policy-making during health crises. Additionally, the Ministry of Health must augment human resources to better manage health crises like pandemics. Tailoring policies to regional and cultural specifics is crucial to building community trust and fostering effective health crisis management. Enhancing partnerships with stakeholders and community leaders is also vital for implementing successful health strategies.

Author Contributions: All the authors made substantial contributions to the conception or design of the work, acquisition of data, or analysis and interpretation of data. The original draft was prepared by DA, ESS, ER, LD, and NS. DA and ESS were responsible for reviewing and editing the manuscript. Data visualization was carried out by ESS, ER, LD, and NS. Overall project supervision was managed by DA and project administration was conducted by ESS. All the authors agreed to submit to the current journal and gave final approval of the version to be published.

Funding: The Authors receive no financial support for the research authorship, and/or publication of this article.

Conflicts of interest: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethics approval: Not applicable

References

- Aditama, T. Y. (2021). Perkembangan Vaksin COVID-19 [COVID-19 Vaccine Development]. *eJournal Kedokteran Indonesia*, 8(3). doi: 10.23886/ejki.8.12870
- Amalia, Y. (2022). Update Vaksinasi COVID-19 Per 8 Juli 2022: Capaian Booster Baru 24,80% [COVID-19 Vaccination Update as of July 8, 2022: New Booster Achievement 24.80%]. *Merdeka*. Retrieved from <https://www.merdeka.com/peristiwa/update-vaksinasi-covid-19-per-8-juli-2022-capaian-booster-baru-2480-persen.html>.
- Dewi, A. (2022). Penanggulangan Pandemi COVID-19 melalui Program Pengadaan Vaksin dan Pelaksanaan Vaksinasi COVID-19 [Overcoming the COVID-19 Pandemic through the Vaccine Procurement Program and Implementation of COVID-19 Vaccination]. Retrieved from <https://anggaran.kemkeu.go.id/in/post/penanggulangan-pandemi-covid-19-melalui-program-pengadaan-vaksin-dan-pelaksanaan-vaksinasi-covid-19>.
- Farmalkes, S. (2022). Dukungan Penyediaan Vaksin bagi Keberhasilan Pelaksanaan Vaksinasi COVID-19 [Support for Providing Vaccines for the Successful Implementation of COVID-19 Vaccination]. Retrieved from <https://farmalkes.kemkes.go.id/2022/01/dukungan-penyediaan-vaksin-bagi-keberhasilan-pelaksanaan-vaksinasi-covid-19/>.
- Indonesia, S. K. R. (2021). Pemerintah Luncurkan Program Vaksinasi bagi Ibu Hamil, Ibu Menyusui, dan Anak 12-18 tahun [Government Launches Vaccination Program for Pregnant Women, Breastfeeding Mothers and

- Children 12-18 Years Old]. Retrieved from <https://setkab.go.id/pemerintah-luncurkan-program-vaksinasi-bagi-ibu-hamil-ibu-menyusui-dan-anak-12-18-tahun/>.
- Kepmenkes. (2020a). *Keputusan Menteri Kesehatan Nomor HK 01.08/MENKES/12757/2020 tentang Penetapan Sasaran Pelaksanaan Vaksinasi CORONA VIRUS DISEASE 2019 (COVID-19)*. [Minister of Health Decree No. HK. 01.07/MENKES/12757/2020 concerning Determining Targets for Implementing COVID-19 Vaccination].
- Kepmenkes. (2020b). *Keputusan Menteri Kesehatan Nomor HK. 01.07/MENKES/9860/2020 tentang Pelaksanaan Vaksinasi dalam rangka Pandemi COVID-19* [Minister of Health Decree No. HK. 01.07/MENKES/9860/2020 Concerning Implementation of Vaccination in the Context of the COVID-19 Pandemic].
- Kepmenkes. (2020c). *Keputusan Menteri Kesehatan Nomor HK. 01.07/MENKES/12758/2020 tentang Penetapan Jenis Vaksin untuk Pelaksanaan Vaksinasi CORONA VIRUS DISEASE 2019 (COVID-19)* [Minister of Health Decree No. HK. 01.07/MENKES/12758/2020 Concerning Determination of Vaccine Types for Implementing COVID-19 Vaccination].
- Kepmenkes. (2021a). *Keputusan Menteri Kesehatan No.HK.01.07/Menkes/4638 tahun 2021 tentang Petunjuk Teknis Pelaksanaan Vaksinasi dalam Rangka Penanggulangan Pandemi Corona Virus Disease 2019 (COVID-19)* [Minister of Health Decree No.HK.01.07/Menkes/4638 of 2021 concerning Technical Instructions for Implementing Vaccination in the Context of Overcoming the Coronavirus Disease 2019 (COVID-19) Pandemic].
- Kepmenkes. (2021b). *Keputusan Menteri Kesehatan Nomor HK. 01.07/MENKES/4776/2021 tentang Penetapan Jenis Vaksin untuk Pelaksanaan Vaksinasi COVID-19* [Minister of Health Decree No. HK. 01.07/MENKES/4776/2021 Concerning Determination of Vaccine Types for Implementing COVID-19 Vaccination].
- Kepmenkes. (2021c). *Keputusan Menteri Kesehatan Nomor HK. 01.07/MENKES/6424/2021 tentang Juknis Pelaksanaan Vaksinasi dalam rangka Penanggulangan COVID-19* [Minister of Health Decree No. HK. 01.07/MENKES/6424/2021 Concerning Technical Guidelines for Implementing Vaccinations in the Context of Handling COVID-19].
- Kepmenkes. (2021d). *Keputusan Menteri Kesehatan Nomor HK. 01.07/MENKES/6688/2021 tentang Pelaksanaan Vaksinasi COVID-19 bagi Anak Usia 6 sampai dengan 11 Tahun* [Minister of Health Decree No. HK. 01.07/MENKES/6688/2021 Concerning Implementation of COVID-19 Vaccination for Children Aged 6-11 Years].
- KPCPEN. (2022). *Data Vaksinasi COVID-19* [COVID-19 Vaccination Data]. Retrieved from <https://covid19.go.id>
- Permenkes. (2020). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 84 Tahun 2020 Tentang Pelaksanaan Vaksinasi dalam Rangka Penanggulangan Pandemi* [The Minister of Health Regulation of the Republic of Indonesia Number 84 of 2020 concerning the Implementation of Vaccination in the Context of Pandemic Management].
- Permenkes. (2021a). *Peraturan Kementerian Kesehatan Republik Indonesia Nomor 10 Tahun 2021 Tentang Pelaksanaan Vaksinasi dalam rangka Penanggulangan Pandemi COVID-19* [Minister of Health Regulation Number 10 of 2021 concerning Implementation of Vaccinations in the Context of Handling the COVID-19 Pandemic].
- Permenkes. (2021b). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 18 Tahun 2021 Tentang Perubahan atas Permenkes 10/2021 tentang Pelaksanaan Vaksinasi dalam Rangka Penanggulangan Pandemi* [The Minister of Health Regulation of the Republic of Indonesia Number 18 of 2021 concerning Amendments to Minister of Health Regulation Number 10 of 2021 concerning Implementation of Vaccination in the Context of Pandemic].
- Permenkes. (2021c). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 19 Tahun 2021 Tentang Perubahan kedua atas Permenkes Nomor 10 Tahun 2021 tentang Pelaksanaan Vaksinasi dalam Rangka Penanggulangan Pandemi COVID-19* [The Minister of Health Regulation of the Republic of Indonesia Number 19 of 2021 concerning the Second Amendment to Minister of Health Regulation Number 10 of 2021 concerning Implementation of Vaccination in the Context of Pandemic].
- Permenkes. (2021d). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 23 Tahun 2021 Tentang Perubahan ketiga atas Permenkes Nomor 10 Tahun 2021 tentang Pelaksanaan Vaksinasi dalam Rangka Penanggulangan Pandemi COVID-19* [The Minister of Health Regulation of the Republic of Indonesia Number 23 of 2021 concerning the Third Amendment to Minister of Health Regulation Number 10 of 2021 concerning Implementation of Vaccination in the Context of Pandemic].
- Rahayu, R. N. (2021). *Vaksin COVID-19 di Indonesia: analisis berita hoax* [COVID-19 Vaccine in Indonesia: Analysis of Hoax News]. *Jurnal Ekonomi, Sosial & Humaniora.* , 2(07).
- RI, K. (2020a). *Kementerian Kesehatan RI. Kemenkes, ITAGI, UNICEF, WHO. Survei Penerimaan Vaksin COVID-19 di Indonesia* [Ministry of Health, ITAGI, UNICEF, WHO. COVID-19 Vaccine Acceptance Survey in Indonesia].

- RI, K. (2020b). Vaksinasi COVID-19 Dilakukan Bertahap [COVID-19 Vaccination Carried Out in Stages]. Retrieved from <https://www.kemkes.go.id/article/view/20112400002/vaksinasi-covid-19-dilakukan-bertahap.html>.
- RI, K. (2021). Program vaksinasi covid-19 mulai dilakukan presiden orang pertama penerima suntikan vaksin covid19. Retrieved from <http://p2p.kemkes.go.id/program-vaksinasi-covid-19-mulai-dilakukan-presiden-orang-pertama-penerima-suntikan-vaksin-covid-19/>
- RI, K. (2022). *Vaksinasi COVID-19 Nasional [National COVID-19 Vaccination]*. Retrieved from <https://vaksin.kemkes.go.id/#/vaccines>
- RI, P. (2020). *Keputusan Presiden Republik Indonesia Nomor 12 Tahun 2020 tentang Penetapan Bencana NonAlam Penyebaran Corona Virus Disease 2019 (COVID-19) sebagai Bencana Nasional [Presidential Decree of the Republic of Indonesia Number 12 of 2020 concerning the Determination of the Non-Natural Disaster of the Spread of Coronavirus Disease 2019 (COVID-19) as a National Disaster]*
- RI, P. (2020). *Peraturan Presiden Republik Indonesia Nomor 99 Tahun 2020 tentang Pengadaan Vaksin dan Pelaksanaan Vaksinasi dalam Rangka Penanggulangan Pandemi Corona Virus Disease 2019 (COVID-19) [Presidential Regulation of the Republic of Indonesia Number 99 of 2020 concerning Procurement of Vaccines and Implementation of Vaccinations in the Context of Overcoming the 2019 Coronavirus Disease (COVID-19) Pandemic]*.
- RI, P. (2021a). *Peraturan Presiden Nomor 14 Tahun 2021 Tentang Perubahan atas Peraturan Presiden No. 99 Tahun 2020 tentang Pengadaan Vaksin dan Pelaksanaan Vaksinasi dalam rangka Penanggulangan Pandemi COVID-19 [Presidential Regulation Number 14 of 2021 concerning Amendments to Presidential Regulation Number 99 of 2020 concerning and the Procurement of Vaccines and Implementation of Vaccinations in the Context of 2019 Coronavirus Disease (COVID-19) Pandemic]*.
- RI, P. (2021b). *Peraturan Presiden Nomor 50 Tahun 2021 Tentang Perubahan Kedua Perpres 99/2020 tentang atas Pengadaan Vaksin dan Pelaksanaan Vaksinasi dalam rangka Penanggulangan Pandemi COVID-19 [Presidential Regulation Number 50 of 2021 concerning the Second Amendments to Presidential Regulation Number 99 of 2020 concerning the Procurement of Vaccines and Implementation of Vaccinations in the Context of 2019 Coronavirus Disease (COVID-19) Pandemic]*.
- RI, P. (2022). *Peraturan Presiden Nomor 32 Tahun 2022 Tentang Perubahan Ketiga Perpres Nomor 99 Tahun 2020 tentang Pengadaan Vaksin dan Pelaksanaan Vaksinasi dalam rangka Penanggulangan Pandemi COVID-19 [Presidential Regulation Number 32 of 2022 concerning the third Amendments to Presidential Regulation Number 99 of 2020 concerning and the Procurement of Vaccines and Implementation of Vaccinations in the Context of 2019 Coronavirus Disease (COVID-19) Pandemic]*.
- Rokom. (2021). Indonesia dinyatakan sebagai Negara dengan Tingkat Penularan COVID-19 Rendah [Indonesia was declared a country with a low rate of COVID-19 Transmission. Retrieved from <https://sehatnegeriku.kemkes.go.id/baca/rilis-media/20211101/2138772/indonesia-dinyatakan-sebagai-negara-dengan-tingkat-penularan-covid-19-rendah/>.
- Rokom. (2022). Menuju Endemi, Kemenkes Minta Vaksinasi Booster COVID-19 Terus Digencarkan [Towards Endemic, Ministry of Health Requests that COVID-19 Booster Vaccination Continue to Be Intensified]. Retrieved from <https://sehatnegeriku.kemkes.go.id/baca/umum/20220916/3141087/menuju-endemi-kemenkes-minta-vaksinasi-booster-covid-19-terus-digencarkan/>
- Rosylin, L., Guntur, Khairina, F., & Yustriani, L. (2023). *Vaksinasi COVID-19 di Indonesia [COVID-19 Vaccination in Indonesia]*. Retrieved from <https://ekon.go.id/publikasi/detail/4880/buku-vaksinasi-covid-19-di-indonesia>.