

Jurnal Info Kesehatan

Vol. 24, No. 1, March 2026, pp. 33-45

P-ISSN 0216-504X, E-ISSN 2620-536X

DOI: [10.31965/infokes.Vol24.Iss1.1756](https://doi.org/10.31965/infokes.Vol24.Iss1.1756)

Journal homepage: <https://jurnal.poltekkeskupang.ac.id/index.php/infokes>



RESEARCH

Open Access

The Policy Analysis for Implementation of Mass Drug Administration of Filariasis: A Health Policy Triangle Framework

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Received: 30 October 2024

Revised: 6 September 2025

Accepted: 13 January 2026

Abstract

Lymphatic filariasis is a neglected tropical disease targeted for elimination through the World Health Organization's Global Programme to Eliminate Lymphatic Filariasis (GPELF), primarily via annual Mass Drug Administration (MDA) in endemic areas with microfilaria rates exceeding 1%. This study aims to analyze the implementation of filariasis MDA using the Ivermectin–Diethylcarbamazine–Albendazole (IDA) regimen through the Health Policy Triangle framework, focusing on policy content, context, process, and actors. A qualitative policy analysis was conducted using data from publicly available policy documents, relevant empirical literature, and in-depth interviews with key stakeholders in selected districts/cities implementing extended IDA-based MDA. This study involved 6 participants, including 3 local leaders in community mobilization and health promotion, and 3 residents. The analysis specifically examined the adequacy of Health Operational Assistance (BOK) funding and the effectiveness of community socialization strategies. Findings highlight gaps in funding flexibility and uneven dissemination of information, which contribute to suboptimal treatment coverage. Strengthening financial support mechanisms and implementing more equitable and context-sensitive socialization models are essential to improve the effectiveness of IDA-based MDA and accelerate progress toward filariasis elimination.

Keywords: Policy Analysis, Implementation of POPM, Triangle of Health Policy.

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1. INTRODUCTION

Filariasis is an infectious disease caused by nematode worms, including *Wuchereria bancrofti*, *Brugia malayi*, and *Brugia timori*, and transmitted by vectors from various mosquito genera (Tyagi, 2018). Data indicates that more than 882 million people in 44 countries around the world are still at risk of lymphatic filariasis and require preventive treatment to halt the spread of this parasitic infection (WHO, 2024). In response to this data, the World Health Organization (WHO) initiated the Global Program to Eliminate Lymphatic Filariasis (GPELF) to prevent the spread of filariasis infections through Mass Drug Administration (MDA), which is distributed annually in filariasis-endemic areas (microfilaria rate criteria > 1%) (Cromwell et al., 2020; Sinha et al., 2023). The data also reveals that over 9 billion treatments have been administered since 2000 to prevent the spread of infection. In 2018, the number of infected individuals decreased by 74% since the inception of the Global Program to Eliminate Lymphatic Filariasis (GPELF) and the implementation of the Mass Drug Administration (MDA), with as many as 51 million people being infected (WHO, 2024).

Indonesia has been actively working to eliminate lymphatic filariasis through the Mass Drug Administration (MDA) program. This program, now known as the MDA Program (WHO, 2020), is a crucial part of the country's effort to manage filariasis, as outlined in the Regulation of the Minister of Health of the Republic of Indonesia Number 94 of 2014. As of 2021, there were 9,354 chronic filariasis cases across 34 provinces, with 236 districts/cities (45.9%) still considered filariasis endemic areas (Kementerian Kesehatan Republik Indonesia, 2021). However, progress is being made, as the number of districts/cities implementing the MDA has decreased, with many areas transitioning to the post-MDA surveillance phase. It's worth noting that some districts/cities have even received an extension of treatment, demonstrating the ongoing commitment to combating filariasis in Indonesia.

Pekalongan City in Central Java Province and Biak Numfor Regency in Papua are among the districts that received an extension of mass drug administration (MDA) for filariasis using the IDA regimen (Istianah et al., 2021). Central Java has shown substantial progress, with microfilariae prevalence reduced to below 1%, although this achievement is uneven across districts (Istianah et al., 2021). Pekalongan City, one of the province's persistent endemic areas, reported 417 clinical cases between 2004 and 2017, including 40 chronic cases (Dinas Kesehatan Kota Pekalongan, 2017). To interrupt transmission, the city implemented five consecutive rounds of MDA with the diethylcarbamazine citrate and albendazole (DA) regimen between 2011 and 2015, achieving an average treatment coverage of 76.3% (Widjanarko et al., 2018). Additional rounds of MDA supported by WHO in 2017 and 2018 increased coverage to 86% and 88%, respectively (Dinas Kesehatan Kota Pekalongan, 2019).

These findings underscore two key issues: the persistence of localized transmission despite multiple treatment rounds in Pekalongan, and the extremely limited community participation in Biak Numfor. Consequently, both areas together with two other districts were selected for extended MDA using the IDA regimen beginning in 2021, in line with Indonesia's goal of filariasis elimination by 2030 (Azzahra et al., 2024). However, early evaluations of IDA implementation in Pekalongan revealed that treatment coverage in the first round remained below 65%, raising concerns about the feasibility of reaching elimination targets without renewed community engagement and programmatic strengthening. This could also be caused by the possible implementation of the POPM program not yet running as it should (Chakraborty & Bhattacharya, 2022).

Policy analysis is crucial as it helps to understand the reasons for the success or failure of policies. It also provides a roadmap for further planning (Gilson & Walt, 2023). This process assists decision-makers in making informed choices about the context and involvement of implicit and explicit actors in the policy implementation process. This program policy is analyzed based on the Health Policy Triangle (HPT) framework, which includes Content,

Context, and Process, as well as the role and involvement of related actors (O'Brien et al., 2020). Thus, this study aimed to analyze the implementation policy of the Mass Preventive Medication Program from initially using the DA regimen to the IDA regimen and the effectiveness of the MDA policy with the IDA regimen.

2. RESEARCH METHOD

This study employed a qualitative case study design to examine the implementation of the extended Mass Drug Administration (MDA) policy using the Ivermectin Diethylcarbamazine Albendazole (IDA) regimen in Pekalongan City, Indonesia. A qualitative policy analysis approach was selected to enable an in-depth exploration of contextual, procedural, and actor-related factors influencing policy implementation following five consecutive years of treatment with persistent microfilariae rates exceeding 1%. The Health Policy Triangle (HPT) framework guided the analysis, focusing on policy content, context, process, and actors involved (O'Brien et al., 2020; Zahidie et al., 2023).

The study was conducted in Pekalongan City, one of the districts implementing extended MDA with IDA, following evaluation outcomes indicating continued transmission of lymphatic filariasis. Three sub-districts were purposively selected to capture variation in implementation experiences and community engagement. Two primary data sources were used: document review (national and local policy documents, technical guidelines, evaluation reports, and publicly available program reports related to MDA and IDA implementation were reviewed) and in-depth interviews. Semi-structured interviews were conducted with key stakeholders involved in policy implementation and community participation. Participants were selected using purposive sampling to ensure representation of key actor groups within the Health Policy Triangle. Health system actors: Three health workers from Public Health Centers (Puskesmas) are directly involved in IDA implementation. Community leaders: Three local leaders engaged in community mobilization and health promotion. Community members: Three residents representing the local population and recipients of the IDA regimen. Inclusion criteria included direct involvement in or exposure to the IDA program and residence or employment within the selected sub-districts. Data were analyzed using descriptive analysis, guided deductively by the Health Policy Triangle framework and inductively to allow emerging themes.

3. RESULTS AND DISCUSSION

The results of the in-depth interviews on content indicators, including target, implementation, and funding of the filariasis MDA in Pekalongan City, are summarized in the table below.

Table 1. In-depth interview results regarding the target, implementation, and funding of the filariasis MDA.

Respondents	Target	Implementation	Funding
Tirto Health Center	<i>"I'm a bit confused. For instance, we hang out with the people in our community, and we also ask the local leadership (RT/RW) to join us and speak on behalf of the residents."</i>	<i>"Sufficient (availability of medicines), and according to schedule (implementation of MDA with IDA in 2021 and 2022)."</i>	<i>"The primary funding source for implementation is the Health Operational Assistance Fund. While there are other funds from the province, this year, none are available."</i>

Respondents	Target	Implementation	Funding
			<i>Previously, funding from the province was accessible, but only the Health Operational Assistance Fund from the health center is currently available."</i> <i>"We are excited to organize activities for each of them, but we need to figure out the logistics. How are we going to fund these activities? Well, the Health Operational Assistance Fund is sourced from health centers, and each health center has its own fund."</i> <i>"Because it has been planned, may be enough."</i> <i>"Because we have planned our needs, there should be enough because we have calculated accordingly and planned."</i>
Jenggot Health Center	<i>"There are 3 recommended packages (labeled 1, 2, 3) from the Ministry of Health for the treatment of filariasis. These packages are suitable for individuals aged 2 to 70 years and of various heights. The treatment includes the use of Ivermectin."</i>	<i>"If last year's value was lower because we concentrated on two specific Community Units, then in 2021, we replicated the previous year's results across all Community Units in 2022."</i>	<i>"In 2022, the assistance fund for operational costs will provide funding. On the designated day, fund for operational costs will be sufficient for the implementation. The process starts with data collection and then the collection cadres, followed by the implementation of targets. If everything goes according to plan on the designated day, that's enough."</i> <i>"When implementing the plan, the main obstacle is the cost exceeding the budget. For example, providing alternative options like bananas for</i>

Respondents	Target	Implementation	Funding
			<i>those who can't drink water requires additional funds, which we need to find."</i> <i>"We don't receive funding from the health center; our budget comes from various other sources. But we're still committed to assisting in any way we can, even if we can't help everyone."</i> <i>"Yes, it's adequate. It's optimized. Yesterday, we were at the event and provided drinking water. Around 50-60 similar instances occurred."</i>

Table 2 presents a comprehensive summary of the factors influencing the implementation of mass drug administration (MDA) for filariasis. Specifically, the analysis highlights the impact of reported side effects and various social influences on the program's effectiveness. The participants in this study were individuals from the Tirto and Jenggot Health Centers, representing diverse perspectives on the community's experiences and attitudes towards the MDA initiative.

Table 2. In-depth interview results regarding the side effects and social influence on the implementation of the filariasis MDA.

Respondents	Side Effect	Social Influence
Tirto Health Center	<i>"You know, many people are fed up with constantly taking medications. But if there are no or minimal side effects, and if taken regularly, there shouldn't be any issues at all. Some people might feel a bit lightheaded initially, while others may feel drowsy or fall asleep. They usually just buy their medications from the pharmacy. We have all been taught to watch out for side effects, so we can manage them at home, and if it gets serious, we can always seek help from a hospital or health center."</i>	<i>"Maybe not everyone is invited to socialize. If everyone is invited, you may not have enough funds for that. Therefore, it is expected that most of the costs will be carried by others."</i>
Jenggot Health Center	<i>"During the distribution of IDA drugs, the community's complaints are uninspired and lack substance, prompting the question as to why there is a lack of tangible progress."</i>	<i>"That's when the implementation time there were some quiet ones, the village head was there or the Village Guidance Officers or babinsa was there, they were a bit around and kept urging</i>

"In early 2011, many complaints led to my hospital admission or went unnoticed. Over the next two to three years, such reports from residents became rare. School children often experienced nausea or dizziness, requiring anti-nausea and anti-dizziness medication at school."

residents to the post (medicine post)."

The implementation process of the filariasis MDA was characterized by the effective flow and socialization of the agenda prior to its execution, as outlined below.

Table 3. Summary of in-depth interview results regarding the process of the implementation of the filariasis MDA.

Respondents	Implementation Flow	Socialization	Distribution
Tirto Health Center	<i>"We started by socializing from the office, organizing POPM activities, and having discussions at the health center to determine if the implementation should follow the set date. We will continue to train our cadres and socialize while repacking, collecting data, distributing, implementing, and evaluating. This process will continue until the evaluation is completed."</i>	<i>"It's important to remember that we shouldn't just take medicine randomly without proper information."</i> <i>"It's important to remember that we shouldn't just take medicine randomly without proper information."</i> <i>"Not everyone may be able to attend the socialization events, but if we target specific groups, we can make sure the message gets through to everyone."</i> <i>"Directly engaging with the community, such as socializing with residents at the RW level, may seem challenging, but it's a great way to reach people who might otherwise miss out."</i>	<i>"We distribute by cadres when determining the D-day, which depends on when the leader of Community Units wants to run."</i> <i>"We will continue to do door-to-door, because we have declared to take medicine, for example, in the village, so those who have not been invited will come."</i>
Jenggot Health Center	<i>"Before, we used to have an annual routine for the staff, where we would</i>	<i>"If we are part of the community, we take part in</i>	<i>"The 2 Community Units will be distributed by post, and the 3 means that</i>

Respondents	Implementation Flow	Socialization	Distribution
	<i>refresh our understanding of the implementation process. Later on, the same mechanism would be used in the field. In addition to this, there was also socialization at the village and chairman levels, with the head of Community Units continuing to be involved in the community. "We planned to distribute medicines last November and had prepared everything 1.5 months before the implementation. We refreshed our team and implemented data collection. After refreshing our team, we set our targets and adjusted our plans to match field requirements."</i>	<i>community events, such as yasinan or fatayat. "We conduct our usual socialization and counseling during the event. We usually take attendance of the residents and usually end the event by reciting the yasinan or similar prayers." "It is important to accept social interaction, even if unsure about it. The information for the leaflet is the same."</i>	<i>5 equals 11. Other responsibilities include attending to the house and being photographed. Documentation will be provided when needed, for example, if someone wants a drink. "We have been working closely with the village since the beginning. For example, the village head, staff, and they have all been involved. During the recent implementation, some members were less active while others, like the village head, were present and actively encouraging residents to participate."</i>

Key activities include health surveillance, patient management, risk-factor control, and public education. It also covers Mass Preventive Medicine for Filariasis. Stakeholders are classified as official and unofficial policy actors. Official actors include government officials, while citizens can also influence policy (Keys et al., 2018; Kwarteng et al., 2023). Detailed descriptions of the actors involved in the MDA policy follow.

Table 4. Guideline of Roles and Responsibilities of Actors/Stakeholders in Implementation Policy for Providing Mass Preventive Medication (POPM) for Filariasis with IDA.

Actors	Roles	Responsibility
Policy Actors	Determination of the expected positions/roles of the actors in the Republic of Indonesia, Minister of Health Regulation Number 94 of 2014	Determination of the expected positions/roles of the actors in the Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07/MENKES/445/2021
Central government	Responsible for implementing filariasis control, one of which is the activity of administering mass preventive medication for filaria.	Responsible for implementing filariasis control, one of which is the activity of administering mass preventive medication for filaria.
Ministry of Health	(Directorate General of Disease Control) Recapitulate and distribute the results of the Microfilaria Prevalence Evaluation	Not listed

Actors	Roles	Responsibility
	Survey to all Provincial Health Services and other related units.	
Regional Government (Governor, Regent/Mayor, Provincial and Regional Legislative Council, Regional Development Planning Agency, Subdistrict Head.	Support prevention programs and allocate sufficient funds for the implementation of Filariasis elimination in the region. Providing political, policy, and financial support to realize the Filariasis Control Program in the region.	Not listed
Provincial Health Service	Make a monitoring-evaluation analysis of the impact of the Filariasis Mass Preventive Drug Administration. Advocacy for the implementation of the Filariasis Mass Preventive Drug Administration in Filariasis Endemic Districts/Cities. Planning the drug stock program for the Filariasis Mass Preventive Drug Administration Carry out a Basic Data Survey on Microfilaria Prevalence in districts/cities before implementing the Filariasis Mass Preventive Drug Administration. Forming a Committee for Post-PoPM Filariasis Adverse Events in the Province. Assistance plan for implementing the Filariasis Mass Preventive Drug Administration. Plan an evaluation of the results of the Filariasis Mass Preventive Drug Administration.	Not listed
District/City Health Service	Create a Treatment Coverage Report on the Filariasis Mass Preventive Drug Administration. Carrying out Treatment Coverage Surveys. Surveillance during the Filariasis Mass Preventive Drug Administration Stop Period.	Not listed
Community health center	Organizing a Survey of Chronic Filariasis Sufferers to find out the whereabouts of every clinical	Not listed

Actors	Roles	Responsibility
	Filariasis sufferer according to village and sub-district, as well as their place of residence. Carry out the implementation of the Filariasis Mass Preventive Drug Administration together with the local Health Service.	
Village/community leaders	Report all data on chronic filariasis sufferers to the Community Health Center. Record the findings of chronic filariasis sufferers. Create clinical filariasis reports.	Not listed
Health and community cadres	Carry out Filariasis promotions and help distribute medicine to the population. Data collection on clinical filariasis sufferers.	Not listed

Table 5. Summary of in-depth interview results regarding the actors of the implementation of the filariasis MDA.

Respondents	Actors
Tirto Health Center	<i>"We need to follow a specific procedure. Each health center officer is responsible for accompanying one Community Unit and one officer in the 29 units. Each cadre, represented by one community unit, should ascertain the number of people to be accompanied. The distribution can be regulated later by the respective person in charge."</i> <i>"Yes, all 29 health center officers who are responsible must stay, as well as others who help technically. For example, those who hold the area are 29 people, and others assist in various ways."</i>
Jenggot Health Center	<i>"All health officers were involved."</i> <i>"Yes, around 34 health officers."</i> <i>"All of the health cadres were trained, around 75 people in the last year, combined with posyandu cadres."</i>

This policy analysis examined the implementation of Mass Drug Administration (MDA) for filariasis using the Ivermectin–Diethylcarbamazine–Albendazole (IDA) regimen as mandated by the Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07/MENKES/445/2021. The analysis covered four districts/cities Mamuju Regency, Biak Numfor Regency, Sorong City, and Pekalongan City selected due to their failure to interrupt transmission after five consecutive rounds of MDA using the diethylcarbamazine–albendazole (DA) regimen. The introduction of IDA was intended to improve program effectiveness and accelerate filariasis elimination in these persistent transmission settings.

Policy Content and Resource Adequacy

Findings from Pekalongan City indicate that the target population for IDA-based MDA includes individuals aged 2–70 years, consistent with national guidelines. The program was planned for two rounds in 2021 and 2022, and drug availability was reported to be sufficient.

Financing relied primarily on Health Operational Assistance (BOK) funds allocated to community health centers. Although official budget allocations were described as adequate, concerns expressed by health center officers suggest that formal budget sufficiency does not necessarily translate into operational adequacy. Additional informal expenditures such as providing drinking water or bananas to facilitate drug intake were required and were often covered by reallocating funds from other program components (Cocciolo et al., 2021). Similar findings have been reported in other MDA programs, where underestimation of implementation costs undermines program effectiveness despite formal funding availability (Branda et al., 2025; Mandrosovololona et al., 2024; Tripathi et al., 2022). These findings underscore the need for more realistic budgeting that accounts for context-specific implementation needs.

Contextual Factors and Community Acceptance

The contextual drivers of the IDA policy are closely tied to the documented failure of the DA regimen in the selected districts. The Ministerial Decree appropriately responds to this epidemiological context by authorizing an alternative regimen with higher expected efficacy. However, community acceptance remains a critical contextual determinant of success. Consistent with prior studies (Krentel et al., 2021; Niles et al., 2021), acceptance is shaped not only by drug efficacy but also by perceptions of safety and prior experiences with adverse events.

Interestingly, health center officers reported almost no side effects associated with IDA, in contrast to frequent adverse events reported during DA implementation, some of which required hospitalization. While this finding may indicate improved tolerability of IDA, it also raises concerns about program visibility and perceived risk, as the absence of side effects may reduce the perceived seriousness of drug consumption (Abdul Halim et al., 2022; Jacobson, 2022). It is suggested that low visibility of post-treatment effects can paradoxically lower compliance if community members do not perceive immediate benefits or consequences (Ratna et al., 2024; Tarricone et al., 2026). This concern is compounded by distribution practices in which drugs are left with households when targets are not present, creating uncertainty regarding actual drug ingestion.

Social Context and Information Dissemination

Socialization and information dissemination emerged as uneven and incomplete. Information about IDA distribution was primarily conveyed through community units and local representatives, yet not all community members were reached. In some areas, village supervisory non-commissioned officers played a pivotal role in encouraging attendance at medicine-taking posts, highlighting the importance of authority and social influence in mobilizing participation. These findings align with previous evidence showing that community motivation and social environment significantly influence compliance with filariasis MDA programs (Rohmana et al., 2017). However, reliance on informal social pressure also reflects weaknesses in systematic health communication strategies.

Policy Process and Implementation Gaps

The policy process for IDA implementation follows a standardized sequence—from directives issued by district health offices to socialization, cadre training, drug packaging, distribution, and evaluation. Despite this structured process, several gaps were identified. Socialization activities did not reach all sub-districts due to population size and funding constraints, leading to uneven awareness and participation (Bhullar & Maikere, 2010; Kibe et al., 2022). Distribution methods varied by endemicity status: medicine-taking posts were used in endemic sub-districts, while door-to-door delivery was employed elsewhere. While post-based distribution allows for directly observed treatment, it risks excluding individuals

unwilling or unable to attend. Conversely, door-to-door distribution lacks assurance of drug ingestion. The absence of a clear evaluation mechanism within the Ministerial Decree further limits the ability to assess program effectiveness and make iterative improvements.

Actors and Governance Challenges

Analysis of policy actors reveals a discrepancy between formal policy documents and implementation realities. The Ministerial Decree does not explicitly identify actors responsible for implementing IDA-based MDA, instead broadly assigning responsibility to the central government. In contrast, earlier regulations (Minister of Health Regulation Number 94 of 2014) provide detailed role delineations. In practice, implementation relies heavily on community health center officers, health cadres, village supervisory non-commissioned officers, and sub-district officials. The absence of updated, publicly accessible implementation guidelines and clearly defined funding requirements creates ambiguity and places a disproportionate burden on local implementers (Taylor et al., 2022).

Implications for Policy and Practice

Overall, analysis using the Health Policy Triangle framework indicates that while the IDA policy is epidemiologically justified and supported by adequate drug supply, its implementation is constrained by funding limitations, incomplete socialization, unclear governance arrangements, and weak evaluation mechanisms. Addressing community apathy, strengthening behaviorally informed communication strategies, ensuring realistic budgeting, and clarifying actor roles are critical for improving compliance and maximizing the impact of IDA-based MDA. Without these adjustments, the potential advantages of the IDA regimen may not translate into meaningful progress toward filariasis elimination.

4. CONCLUSION

This study highlights the urgent need to reassess and strengthen the Health Operational Assistance Fund for the implementation of filariasis Mass Drug Administration with the IDA regimen. Current funding mechanisms are insufficient to support all required implementation activities without reallocating resources from other essential programs. In addition, more effective and equitable socialization strategies are needed to ensure consistent outreach to all target communities at the district and city levels. Without addressing these financial and communication gaps, the implementation of POPM filariasis with IDA will remain suboptimal, as reflected by treatment coverage that continues to fall below 65% of the target population.

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