



Implementation of Vaccination Policy for Controlling Foot and Mouth Disease in Livestock in the Fisheries and Service Office

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Abstract

This research is motivated by the problem of effectiveness, efficiency and distribution of vaccines for Foot and Mouth Disease (FMD) in livestock in Bogor Regency. The purpose of this study is to analyze how the implementation of vaccination policies on livestock in Bogor Regency and what factors support and do not support the implementation of FMD vaccination. This research uses a qualitative descriptive research method using the model developed by George C. Edward III that policy implementation is influenced by 4 factors. Edward III that policy implementation is influenced by 4 (four) variables, namely communication, resources, disposition, and bureaucratic structure. The results showed that the implementation of FMD vaccination policy in Bogor District has been running well and successful in tackling FMD in livestock. The results include decreased FMD cases, improved livestock health and productivity. Communication, disposition, and bureaucratic structure variables are supporting factors for the successful implementation of FMD vaccination policy. Meanwhile, the resource dimension is a factor that does not support the implementation of FMD vaccination. This can be seen from the lack of staff (vaccination officers), inadequate vaccine storage (cool boxes), and lack of budget. Collaborative efforts with third parties (non-governmental organizations, private sector, universities) in terms of providing supporting facilities to ensure vaccine storage facilities meet the required standards and meet the availability of trained human resources.

Introduction

Indonesia is one of the countries that has a large population. Based on a report by the Central Statistics Agency (BPS), Indonesia's population in mid-2020 was 270.20 million, and in mid-2021 it increased to 272.68 million. Meanwhile, in mid-2022, the number continues to grow to 275.77 million people. This increase in population will certainly have an impact on the increase in consumption of the Indonesian people, including the need for animal protein. Sources of animal protein (other than poultry) that are widely consumed by the people of Indonesia are beef and buffalo (Hafizah et al., 2020). In the balance of beef supply and demand made by the Indonesian government, in 2022 per capita consumption reached 2.57 per kg per year, higher than in 2021 of 2.46 per kg per year. This means that meat demand in 2022 will increase from 669,731 tons to 706,388 tons. On the other hand, national meat production in 2022 is 436,704 tons, so meat imports are needed as much as 269,684 tons.

Indonesia is one of the world's 33rd largest beef importers (Rahayu, 2019), however, Indonesia gradually began to reduce import dependence by reducing imports of livestock products, the import value of livestock products in 2020 amounted to US \$ 3,567.1 million or decreased 9.59

percent from the previous year. Meanwhile, the import volume in 2020 was 1.80 million tons (a decrease of 6.57 percent compared to the previous year).

To reduce dependence on meat imports, the Indonesian government has launched several programs as an effort to be self-sufficient in meat (Daryanto et al. 2021), including the Beef Self-Sufficiency Program (PSDS) which was launched in 2014. Furthermore, in 2018, the Upsus Siwab program (Special Efforts for Mandatory Bunting Mother Cattle), and now the Sicommander program (Buffalo Cattle Commodity Mainstay of the Country) from the Ministry of Agriculture. However, the attempt is in danger of failing in mid-April 2022. This is due to the emergence of Mouth and Hoof Disease (FMD) which is reported to attack cloven-hoofed or even-hoofed animals such as cows, buffaloes, goats, sheep, and pigs. FMD is an acute and highly contagious infectious disease caused by a virus that belongs to the genus Aphovirus and the family Picornaviridae (Pamungkas et al., 2023). The impact arising from this virus is a decrease in livestock production and reproduction, a decrease in productivity, and huge economic losses to the community.

FMD outbreaks in Indonesia were first discovered in 1887 and had an impact on farmers. After various efforts were made to eradicate FMD, in 1986 Indonesia was declared free of FMD through the Decree of the Minister of Agriculture Number: 260 / KPTS / TN.510 / 5/1986 and then in 1990 FMD-free status was recognized by the Office of International Epizooties (OIE) or the World Animal Health Organization (Pamungkas et al., 2023). However, in April 2022, FMD virus was found again in various districts in East Java.

The spread of FMD virus makes some people afraid to buy meat for fear of transmitting it to humans, so this phenomenon causes people's purchasing power for meat to decrease and this will have an impact on the Indonesian economy (Girik Allo et al., 2018; Widada et al., 2017), even though the livestock sector only contributes around 1.58% of Gross Domestic Product (GDP) (Winaya et al., 2021). In 2020, the Gross Regional Domestic Product (GRDP) for the livestock sector decreased by 0.33 percent compared to the previous year of Rp.167.1 trillion. The province with the highest GDP of livestock subsector in 2018 is East Java Province of Rp55.4 trillion.

Based on data released by the Indonesian Ministry of Agriculture, until the end of December 2022, the FMD virus has spread to a number of provinces in Indonesia with the number of livestock affected by FMD (sick) as many as 593,083 heads. Provinces with the sickest livestock are East Java (192,169 heads), West Nusa Tenggara (124,769 heads), and West Java (68,581 heads).

Table 1. Number of Livestock Affected by FMD in 2022

Province	Affected Livestock (tail)
East Java	192.169
West Nusa Tenggara	124.769
West Java	68.581
Central Java	48.917
Aceh	46.287
West Sumatra	24.866
North Sumatra	24.201
Special Region of Yogyakarta	14.541
Bengkulu	13.654

South Sulawesi	11.968
Others	23.130
Total	593.083

Source: Ministry of Agriculture of the Republic of Indonesia (data processed)

The government has taken several steps to protect livestock from FMD attacks, including preventive vaccine programs, medicines, biosecurity measures, restrictions on livestock traffic, and IEC (Communication, Information, Education). FMD vaccination policy is outlined by the Government through the Decree of the Minister of Agriculture of the Republic of Indonesia No. 510/KPTS/PK.300/M/6/2022 dated June 28, 2022 concerning Vaccination in the Framework of Foot and Mouth Disease as amended through the Decree of the Minister of Agriculture of the Republic of Indonesia Number: 517/KPTS/PK.300/M/7/2022 dated July 7, 2022. Changes to the Decree are related to the specification of the type of vaccine in accordance with the FMD virus serotype.

The vaccination policy in order to overcome FMD outbreaks aims to provide immunity to susceptible animals and prevent the spread of FMD virus more widely. The vaccine used is a type of vaccine that has compatibility with FMD virus serotypes in Indonesia. Vaccination is carried out in three stages, namely the first, second, and booster doses and is carried out by veterinarians, veterinary paramedics, or other officers under the supervision of trained veterinarians who have received certification/training according to regulations.

The Government of Indonesia, until the end of 2022, has distributed 13,517,501 doses of FMD vaccine to local governments. Of these, 9,355,885 or 69.2% have been realized or injected. This indicates that the achievement of vaccine realization in several provinces has not been optimal. For this reason, it is necessary to conduct an analysis to examine the factors that hinder the process of implementing FMD vaccination.

Table 2. Number of FMD Vaccine Realization in 2022

Province	Vaccine Distribution (Dose)	Vaccine Realization (Dose)	Realization Percentage
East Java	3.064.985	2.560.824	83,60%
West Nusa Tenggara	1.445.700	404.576	28,00%
West Java	1.409.600	1.338.948	95,00%
Central Java	1.228.525	1.204.096	98,00%
Aceh	1.130.750	818.587	72,40%
West Sumatra	932.100	538.699	57,80%
North Sumatra	808.000	598.123	74,00%
Special Region of Yogyakarta	770.525	184.698	24,00%
Bengkulu	500.000	370.789	74,20%
South Sulawesi	428.850	98.557	23,00%
Others	1.798.466	1.237.988	46,8%
Total	13.517.501	9.355.885	69,20%

Source: Ministry of Agriculture of the Republic of Indonesia (data processed)

Bogor Regency is one of the districts in West Java affected by FMD outbreaks, which is as many as 910 head, The surge in cases is so fast that initially only 300 animals were infected in approximately 24 hours, and in July 2022 3,424 animals were infected, but as many as 1010 have recovered. Heavy livestock traffic plays a major role in the spread of FMD outbreaks, especially in the Bogor Regency area which has an area of 2,986 square km with a population of 5,489,536 people in 2021 and is the largest national population (Kusnandar, 2023).

Various efforts have been made by the Bogor Regency Government to prevent this outbreak from spreading even wider, one of which is to form a task force (satgas) handling FMD at the Bogor Regency level by maximizing 7 (seven) posts consisting of 1 post at the Bogor Regency Fisheries and Livestock Office (Diskanak), while the other 6 posts at the Bogor Regency Animal Health Center (Puskeswan) spread across Cibinong District, Jonggol, Babakanmadang, Jasinga, Pamijahan, and Laladon. The coverage area for each post is presented in the Table below.

Table 3. FMD Outbreak Management Post in Bogor Regency

Posts	Service Area (Sub-District)
1	Cibinong, Bojonggede, Kemang, Ciseeng, Parung, Gunungsindur
2	Babakan Madang, Citeureup, Sukaraja, Megamendung, Ciawi, Cisarua
3	Jonggol, Cariu, Tanjungsari, Sukamakmur, Klapanunggal, Cileungsi
4	Ciomas Laladon, Dramaga, Tamansari, Cijeruk, Cigombong, Caringin
5	Pamijahan, Cibungbulang, Rancabungur, Ciampea, Tenjolaya, Leuwiliang, Leuwisadeng
6	Jasinga, Cigudeg, Rumpin, Parung Panjang, Tenjo, Sukajaya, Nanggung
7	Bogor Regency Fisheries and Livestock Service Office

Source: Diskominfo Kabupaten Bogor

The FMD Task Force is tasked with controlling and eradicating outbreaks of Mouth and Hoof Disease in livestock in each region through monitoring, identification, prevention, security, eradication, and treatment of animals.

To carry out the FMD vaccination program, Bogor Regency needs 20,000 (twenty thousand) FMD vaccines, but only 7,900 doses have been obtained. This condition is still far from the target needed so that it becomes an evaluation material for the central and regional governments regarding the distribution of FMD vaccines, because of the rapid spread of this virus which can certainly have an impact on regional or state economic losses that are quite large. However, with this small number of doses, 4,081 animals have been vaccinated as of July 7, 2022. This difference between input and output is an indication of problems in the implementation of FMD vaccination in Bogor Regency.

Based on the initial survey in this study, initial observations and interviews were made to employees and farmers that FMD vaccination actually runs effectively in controlling FMD outbreaks, and this statement is also supported by the Directorate General of Livestock and Animal Health, that FMD vaccination has proven effective (Belsham, 2020). However, in the field, there are still problems such as concern or awareness of breeders who are still minimal and tend to be ignorant. Limited knowledge about FMD virus causes some farmers to be less aware of the impact caused by this disease and tend to ignore vaccination programs. In addition, vaccination accessibility in rural or remote areas is still difficult to achieve because vaccination accessibility is a frequent problem. Farmers in the area often find it difficult to get vaccinated due to lack of facilities and limited transportation. This can be caused by lack of resources both

human resources, budget and other supporting means. Therefore, it is necessary to conduct a study to assess whether the program is in accordance with what is expected.

Methods

Types of Research

The method used in this study is an evaluation method with a qualitative approach and is descriptive. The evaluation research aims to analyze the implementation of FMD vaccination policies that have been ongoing and provide a foundation for improvement.

Report

Informants consisted of officials and staff in the Bogor Regency Diskanak, especially the Head of the Bogor Regency Diskanak, the Head of the UPT Puskesmas, vaccination officers and breeders.

Data Collection Techniques

Data collection is done through interviews, observation, and documentation. Interviews involved Diskanak officials and staff as well as farmers to get in-depth information. Observations were made to observe the implementation of FMD vaccination policy. Document collection includes regulations or technical instructions for FMD vaccination, vaccination implementation reports, and other related records.

Data Analysis

Data analysis uses a qualitative approach with descriptive explanations. The analysis process involves data reduction, data presentation, and verification. Data reduction is carried out by summarizing the results of observations and interviews. The presentation of data is done through easy-to-read sheets of quotes, notes, or images. Verification is carried out to conclude the information most relevant to the research problem.

Result and Discussion

Implementation of FMD Vaccination Policy in Bogor Regency

Mouth and Hoof Disease (FMD) is a viral infectious disease that is acute and highly contagious in even-hoofed or split hoofed animals. FMD virus was found in April 2022 in several regencies/cities in Indonesia. Heavy livestock traffic plays a major role in the spread of FMD outbreaks. The government has made various efforts to protect farmers from FMD virus attacks, including preventive vaccine programs, medicines, biosecurity measures, restrictions on livestock traffic, and IEC (Communication, Information, Education).

According to George C. Edwards III, policy implementation is a crucial process because how good a policy is, if it is not prepared and planned properly, what is the goal of public policy will not be realized. Conversely, no matter how well prepared and planned for policy implementation, if the policy is not well formulated, then what is the policy objective is also difficult to achieve.

To see the extent of the implementation of FMD vaccination policy, researchers used an analytical model proposed by George C. Edwards III. According to Edward III (Luthfie, 2021), in the implementation of public policy there are four variables with each sub-variable related to each other, namely communications, *resources*, dispositions or attitudes, and *bureaucratic structure*.

Communication in the Implementation of FMD Vaccination Policy

Communication is concerned with the delivery of information, ideas, skills, rules, and others. Communication must be accurate and clearly understandable by the implementer. Communication in the implementation of FMD vaccination policy is the government's effort in conveying information and education about FMD to implementors and the community or farmers. According to Edward III, there are three important things that must be considered in the policy communication process, namely transmission, clarity, and consistency.

Transmission

Every policy must be communicated to all target groups either directly or indirectly. The way of delivering information must be done effectively and efficiently so that implementors can easily understand it. The results showed that the FMD vaccination policy in Bogor Regency has been disseminated in the form of intensive Information Communication and Education (KIE) through coordination meetings, evaluation meetings, direct socialization and through social media, print media, and radio. IEC is the right step to distribute the facts as widely as possible to the public about correct FMD information as a prevention and control effort that must be carried out by all stakeholders. This is reflected by increasing awareness among farmers, officers and business actors about FMD prevention and control. With this socialization, policy implementers (vaccination officers and the community / farmers) become more understanding and understand how to respond to FMD outbreaks and the benefits of vaccination for livestock.

Excuse

When a policy is implemented, it must be ensured that implementation guidelines are received and implementors gain clarity on when or how a program is conducted. The FMD vaccination policy regulated in the Decree of the Minister of Agriculture of the Republic of Indonesia No.510/KPTS/PK.300/M/6/2022 and the Decree of the Minister of Agriculture of the Republic of Indonesia Number 517/KPTS/PK.300/M/7/2022 has very clearly regulated the mechanism for implementing FMD vaccination starting from the provision of vaccines, funding, to the Standard Operating Procedure (SOP). The availability of a pocket book for the implementation of IEC is also an important point in providing true and clear information.

Consistency

FMD vaccination policy and various implementation guidelines are clear and consistent. A clear and consistent policy will provide direction and guidance for all parties involved to carry out the policies under their authority.

Resources in the Implementation of FMD Vaccination Policy

Resources are an important component in the implementation of a policy. If resources are inadequate, policy implementation will not run well so that it will have an impact on the success of policy implementation. Similarly, in the implementation of FMD vaccination policy, resources are needed, including human resources (vaccination officers who have competence), clear information and authority, budget, and supporting facilities or facilities.

Human Resources

Human resources are individuals who work as movers of an organization, both in government and non-government institutions and function as assets that must be trained and developed skills/abilities. Bogor Regency has a large area and some of them have terrain that is difficult to reach, especially remote areas and distances between livestock cages that are far apart, so

more vaccination officers are needed so that the acceleration of distribution and realization of FMD vaccine is more optimal. However, in the field, it was found that the availability of vaccination officers in Bogor Regency was considered insufficient and inadequate. Although there are efforts from the authorities to collaborate with IPB University to ensure that there are enough competent personnel who can support the implementation of FMD vaccination. The availability of competent human resources is very important for the smooth implementation of FMD vaccination policy. The limited number of vaccinators in the field can slow down the vaccination process. This effort is in line with the recognition that adequate human resources are an important factor in the success of FMD vaccination policy.

Information and Authority

In looking at the information and authority aspects, there is clear and structured information regarding the implementation of FMD vaccination policy through the Decree (SK) of the Minister of Agriculture of the Republic of Indonesia Number 517/KPTS/PK.300/M/7/2022 dated July 7, 2022. In addition, technical guidance activities (bimtek) for field officers ranging from livestock tagging activities to vaccination implementation are also a means to ensure implementors have the knowledge, skills and understanding needed to carry out their duties effectively and efficiently. This is reflected in the knowledge and understanding of policy implementers of their duties, authorities, and responsibilities. The availability of technical guidelines for vaccination implementation is one of the keys to success in implementing FMD vaccination policy.

Budget

According to Muttaqin (2023), the budget is a means to achieve state goals as an effort to improve people's welfare through optimal services to the community. The budget in the implementation of FMD vaccination policy is funds or money provided to finance the implementation of FMD vaccination policy.

The budget related to the implementation of vaccination has not been stated in the Regional Budget (APBD) of Bogor Regency. However, there are efforts by the Government and DPRD of Bogor Regency to utilize the Unsuspecting Shopping Post (BTT) and divert some other shopping posts that have not been realized. This will certainly interfere with other work programs. For this reason, the government needs to ensure that adequate budget is allocated for vaccination programs, as well as collaborate with international organizations and the private sector to obtain additional resources. Transparency and accountability in the use of funds are also very important to ensure the efficiency and successful implementation of FMD vaccination policies.

Supporting Facilities

Other resources of concern in the implementation of vaccination policy are supporting facilities/facilities including the availability of vaccines, means of transportation, and other facilities.

Regarding supporting facilities in the implementation of FMD vaccination policy, there are significant variations between regions in Bogor Regency (Sugema et al., 2023). In more remote areas, there are constraints in accessibility and availability of supporting facilities for vaccination. Some informants noted that the lack of adequate vaccine storage facilities can be challenging, especially in hard-to-reach areas. Various efforts continue to be made by evaluating the condition of infrastructure and trying to improve or improve existing facilities.

However, geographical challenges and differences in the level of regional development still present their own challenges.

Disposition or Attitude of Implementers in the Implementation of FMD Vaccination Policy

Disposition is the tendency of the attitude or will of the parties involved in the implementation of a policy. The attitude of policy implementers must be a concern because it is closely related to work capacity and readiness of implementers in implementing a policy. The understanding of each implementer largely determines the success of policy implementation. If the implementer supports the policy that has been set, then its implementation tends to be consistent with the expected objectives. Similarly, if the implementer does not support the policy, it will be difficult to achieve the predetermined goals.

In looking at the disposition aspect, the government, vaccination officers, and farmers show a strong commitment to support the implementation of the FMD vaccination program (Onduso, 2019). The government's commitment in handling FMD outbreaks is shown by taking more massive rapid steps by forming the FMD Handling Task Force. The FMD Task Force is tasked with coordinating various efforts to control and control FMD disease outbreaks, especially those related to the provision of vaccines and drugs, as well as the implementation of vaccinations. Other efforts are by regulating livestock traffic, preventing the spread of disease between regions, and implementing *biosafety* and *biosecurity procedures*.

Vaccination officers as implementers of policies in the field also show support and caring and responsible attitudes in an effort to support and succeed the implementation of FMD vaccination. This is reflected in the enthusiasm shown by vaccinators who are willing to work flexibly, especially when vaccination activities are in remote areas and have to vaccinate until night, and are responsible for the success of the vaccination program.

The commitment of farmers in vaccination is also a key role in the success of FMD vaccination implementation. The commitment of farmers to support the implementation of vaccination is a positive contribution to the health of their livestock and helps maintain the sustainability of the livestock industry. Although there are some small farmers who refuse vaccination. This is due to a lack of awareness and understanding about FMD vaccination.

The commitment of implementors is an essential factor to maintain the success of FMD vaccination policies and protect animal health. With good commitment and cooperation between the government, vaccination officers, and farmers, the implementation of vaccination can run effectively.

Bureaucratic Structure in the Implementation of FMD Vaccination Policy

The bureaucratic structure is a characteristic, norm and pattern of relations that occurs repeatedly in executive bodies. Bureaucracy is a formally organized and hierarchical organizational structure with clear levels from the highest level to the lowest level. The bureaucratic structure must be made as concise as possible so that the bureaucracy is more effective and efficient. Bureaucratic structures that are too long tend to weaken supervision and lead to complicated and long-winded bureaucratic procedures, resulting in inefficient organizational activities.

The implementation of FMD vaccination policy in Bogor Regency from the aspect of bureaucratic structure is quite good. Coordination between the central government, provincial government, and district/city government is carried out intensively. This inter-agency coordination is important to ensure a rapid and coordinated response to FMD outbreaks,

including monitoring, case mapping, isolation, quarantine, vaccination, and communication of information and education to farmers and the public. Thus, accurate and consistent information is conveyed to all stakeholders.

According to Edwards III, there are two main aspects related to bureaucracy that can affect the effectiveness of implementing a policy, namely first, the existence of Standard Operating Procedures (SOP) and the second fragmentation.

SOP is a guideline or reference in the implementation of duties according to the function of each implementer. This aims to simplify and clarify the duties, authorities, and responsibilities of each policy implementer. The SOP for the implementation of FMD vaccination is stated in the Decree of the Minister of Agriculture of the Republic of Indonesia Number 517/KPTS/PK.300/M/7/2022 dated July 7, 2022. The SOP stipulates the stages and mechanisms that must be carried out by each policy implementor starting from the stages of planning, providing vaccines, distributing vaccines and supporting equipment, implementing vaccinations, monitoring and evaluation. Thus, vaccination policies are implemented consistently and measurably to achieve the goals of disease prevention and control effectively.

The second aspect related to bureaucratic structure is fragmentation, which is the distribution of policy responsibilities to several different institutions so that coordination is needed. The greater the coordination required to implement a policy, the less likely a policy is to succeed. The implementation of FMD vaccination policy at the provincial level is coordinated by the Governor, while at the district / city level it is coordinated by the Regent / Mayor. In addition, in its implementation in collaboration with the Indonesian Police and / or TNI, Regional Disaster Management Agency (BPBD), professional / community organizations and other related parties. Each of these elements has coordinated with each other and carried out their respective functions and roles well so that there are no significant obstacles in the implementation of vaccination policies.

Factors that Support and Lack Support for FMD Vaccination Policy Implementation in Bogor Regency

One indicator to measure the success of livestock vaccination policies in the context of FMD control is a decrease in the number of FMD cases. Since the implementation of FMD vaccination policy in Indonesia, the number of FMD cases has decreased significantly both nationally and regionally. In 2022, the number of sick livestock in Bogor Regency was 3,831 heads and 3,376 recovered livestock. Meanwhile, in 2023 there will be a decrease in the number of sick livestock which is only 13 heads. This suggests that FMD vaccination effectively helps prevent and control the spread of FMD, which in turn improves the health and productivity of farm animals.

Vaccination policy is the right step to protect farm animals from FMD virus. The successful implementation of FMD vaccination policy is influenced by several factors, namely communication, resources, disposition, and bureaucratic structure. Each of these factors has a different carrying capacity for the implementation of FMD vaccination policy.

Supporting Factors for FMD Vaccination Policy Implementation in Bogor Regency

Factors that support the implementation of FMD vaccination policy in Bogor Regency are communication, disposition, and bureaucratic structure. In the aspect of communication, Communication, Information, and Education (KIE) is carried out intensively through coordination meetings, direct socialization, socialization through print media, social media and radio. IEC provides understanding and fosters strong commitment from vaccinators in the field

as well as community/farmer participation in supporting the implementation of FMD vaccination policy. This is reflected in the following aspects: (1) Vaccinators in the field already know and understand the procedures in carrying out FMD vaccination; (2) Most people have understood the risks of FMD and the benefits of vaccination as a preventive measure. This can be seen from the increased participation of the community/farmers in FMD vaccination activities; (3) Public response and participation to the FMD vaccination program is very high. This is evidenced by the number of vaccine realizations in 2023 in accordance with the predetermined target.

In the disposition aspect, there is a strong commitment from all parties involved, both government elements (central / regional), vaccination officers, and also the community / breeders are the main capital in the implementation of FMD vaccination policy. This can be seen from the attitude of the implementers of the FMD vaccination policy below: (1) The central government is committed to handling FMD outbreaks as shown by taking more massive rapid steps by forming a Task Force for FMD Handling, regulating livestock traffic, preventing the spread of disease between regions, and implementing biosafety and biosecurity procedures; (2) The commitment of the Regional Government is shown by carrying out various efforts to prevent the spread of FMD virus which includes communication and transparency efforts, prevention and education, monitoring and early detection, treatment and treatment, coordination between agencies; (3) The commitment of vaccination officers in the field shows a strong attitude and commitment as well as a caring and responsible attitude in an effort to support and succeed the implementation of FMD vaccination; (4) The participation of the community/farmers in supporting the FMD vaccination policy shows high commitment. This is inseparable from the government's efforts to provide information and education to the farming community.

Another supporting factor is in the structural aspect of the bureau. Vaccinators in the field have clearly understood the main duties and functions in carrying out vaccinations in livestock. The availability of Standard Operating Procedure (SOP) for FMD vaccination implementation is an important point in the implementation of vaccination policy. Good coordination and cooperation in each element and related institutions have been well established.

Factors That Lack Support for FMD Vaccination Policy Implementation in Bogor Regency

Although there is a significant decrease in cases of livestock affected by FMD in Bogor Regency, this does not mean that there are no challenges and obstacles in the implementation of FMD vaccination policy. Resource factors such as the availability of vaccination officers and supporting facilities are still a concern and require further efforts to optimize the effectiveness of FMD vaccination policies. Holistic and sustainable solutions are needed to ensure that the provision of resources can meet the needs and achieve optimal success in efforts to combat FMD in livestock.

Trained Workforce

The availability of trained workers, especially vaccinators, is an obstacle that needs to be overcome. The number of vaccination workers is considered insufficient to meet the needs in the field. This obstacle can result in a slower vaccination process, especially when there are mass vaccination activities or when the coverage area is wider. The presence of trained and experienced vaccinators is needed to ensure that the implementation of FMD vaccination is carried out effectively and efficiently. To overcome this problem, efforts that can be made are to collaborate with private parties, educational institutions, or training institutions to ensure the

availability of adequate manpower. Increasing the number of vaccinators and strengthening their capacity are important steps to increase vaccination coverage in Bogor Regency.

Supporting Facilities

Supporting facilities for vaccination activities such as vaccine storage facilities (cool boxes), and transportation facilities are obstacles that need to be overcome. The lack of vaccine storage facilities can threaten the quality of vaccines and pose risks to the sustainability of the vaccination program.

Farmer Awareness and Understanding

The awareness and understanding of breeders is also in the spotlight. There are varying levels of awareness and understanding among farmers about the importance of FMD vaccination. There are still farmers who do not understand the importance of vaccination. This condition can be an obstacle to active participation of farmers in vaccination programs, especially in remote areas that may be less reached by extension / socialization activities. Creative and intensive strategies are needed in raising awareness of farmers.

Budget Constraints

Budget constraints were also identified as constraints in the provision of resources. It is important to note that the FMD outbreak management budget is not contained in the APBD. This is because FMD outbreaks are extraordinary events that have not been accommodated in the budget. The government realizes the importance of adequate budget allocation and continues to strive to increase the budget to support the implementation of the vaccination program through coordination with the Bogor Regency DPRD to be able to allocate some other shopping items in addition to utilizing unexpected shopping posts.

Conclusion

Based on the results and discussion described in the previous chapter, the following conclusions can be drawn: (1) The implementation of FMD vaccination policy in Bogor Regency has been going well and successfully in tackling Mouth and Hoof Disease (FMD) in livestock. This fact is reinforced by data released by the Indonesian Ministry of Agriculture which shows a significant decrease in FMD cases both nationally and regionally; (2) The dimensions of communication, disposition, and bureaucratic structure are factors supporting the success of FMD vaccination policy implementation. In the communication dimension, internal and external coordination has been carried out well, IEC (Information Communication and Education) is socialized clearly and consistently. In the disposition dimension, there is a strong commitment from the government, vaccination officers, and farmers to support FMD vaccination policies. Meanwhile, in the dimension of bureaucratic structure, the clarity of the main tasks and functions of vaccination implementers and the availability of *Standard Operating Procedures* / SOPs are important points in the implementation of FMD vaccination; (3) The dimension that is less supportive in the implementation of FMD vaccination policy is the resource dimension. In this dimension, it can be seen that the availability of vaccinators is still lacking, vaccine storage places (*cool boxes*) are inadequate, and lack of budget

Suggestion

Based on the conclusions above, the suggestions/recommendations of this study are as follows: (1) Collaboration with third parties (non-governmental organizations, private sector, universities) in terms of providing supporting facilities to ensure vaccine storage facilities meet the required standards and meet the availability of trained human resources; (2) Conducting

intensive and sustainable counseling involving community leaders and private parties to increase public / farmer awareness of the importance of hygiene and livestock health as a preventive measure. Strong collaboration will help overcome obstacles such as lack of accessibility to remote areas and changes in community behavior.

Developing adaptive and innovative strategies by updating livestock data in realtime, mapping, segmenting areas through technological innovation facilities in the form of livestock information systems. This strategy is to facilitate livestock supervision so that vaccination policies in Bogor Regency can remain effective and responsive to disease dynamics and the surrounding environment.

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