RESEARCH ARTICLE **Open Access**

Gema Lingkungan Kesehatan
Vol. 23, No. 2 (2025), pp 203-210
e-ISSN 2407-8948 p-ISSN 16933761
Doi: https://doi.org/10.36568/gelinkes.v23i2.234 *Journal Hompage: https://gelinkes.poltekkesdepkes-sby.ac.id/*

The Evaluation of Dengue Surveillance System Depok City, 2023

Khairiah[1]*, Helda[1], Hidayat Nuh Ghazali[2]

[1] Departement of Epidemiology, Faculty of Public Health, University of Indonesia, Depok, Indonesia
[2] Disease Prevention and Control Division, Depok City Health Office, Depok, Indonesia

*Correspondence: khairiah2785@gmail.com

ABSTRACT

Dengue remains a global and national public health issue. In Depok City, the incidence rate (IR) is 53.53 per 100,000 population, higher than West Java's IR of 38 and the national target of 10 per 100,000. This study uses a descriptive method that assesses structure, core functions, supporting functions, and system attributes to evaluate the dengue surveillance system based on its attributes. Primary data were collected through interviews with the Depok City Health Office, five public health offices, two hospitals, two clinics, two independent midwives, and one private laboratory. Secondary data were obtained from dengue report documents. The study examines surveillance structure, legal components, coordination, and strategies, which remain suboptimal. Core functions, including case detection, recording, confirmation, and reporting, are optimal, but data analysis, interpretation, and information dissemination are lacking. A feedback reporting mechanism is absent. Supporting functions like guidelines, supervision, monitoring, and evaluation are in place, but resource limitations persist. Surveillance attributes such as simplicity, completeness, timeliness, and flexibility are optimal. However, reporting representation remains incomplete despite good reporting acceptance, and its usefulness is not maximised. Overall, dengue surveillance has yet to fully achieve its goal of monitoring disease trends and enabling early outbreak detection. Resource and capacity constraints hinder effectiveness. Strengthening surveillance officers and healthcare providers, improving coordination, allocating funds, and implementing regular monitoring, evaluation, and weekly feedback bulletins are essential steps.

Keywords : Dengue, Evaluation, Surveillance, System

INTRODUCTION

Dengue is a mosquito-borne viral disease considered a global public health problem by the World Health Organization (WHO.) In early 2020, WHO included dengue fever as one of the ten global health threats. If left untreated, dengue fever can lead to outbreaks, severe dengue, and even death (Samad I, et al., 2022). Dengue infection can manifest with various clinical symptoms, ranging from dengue fever to severe dengue and, in critical cases, dengue shock syndrome. Without proper management, this disease can cause outbreaks that trigger significant public anxiety and lead to fatalities. This situation places a considerable burden on society, healthcare systems, and the economy in most tropical countries (WHO, 2024).

Dengue fever remains a global health issue, particularly in tropical and subtropical regions, including Indonesia, one of the endemic countries for dengue. Over the past decade, dengue fever has no longer followed the predictable ten- or five-year cycles, as the number of cases and dengue-related deaths can occur annually, influenced by climate change. Outbreaks can occur suddenly, significantly disrupting communities and depleting economic resources (Kementerian Kesehatan, 2023). By the end of 2022, the number of dengue cases in Indonesia reached 143,000, with the provinces of West Java, East Java and Central Java reporting the highest numbers. Nationally, the number of dengue cases remained below the estimated incidence rate of dengue in Indonesia (Kementerian Kesehatan, 2023).

West Java province recorded the highest number of dengue cases in Indonesia. In 2023, there were 19,328 dengue cases in West Java, with an incidence rate (IR) of 38 per 100,000 population. The number of deaths reached 134, with a case fatality rate (CFR) of 0.69% (Dinas Kesehatan Provinsi Jawa Barat, 2024). Depok City, located in Jawa Barat, has a population of 1,927,867. In 2023, Depok City reported 1,032 dengue cases, comprising 603 cases in males and 429 cases in females, with an incidence rate (IR) of 53.53 per 100,000 population and six deaths (CFR 0.58%). Pancoran Mas District recorded the highest number of cases (174), while Cinere District reported the lowest (21) (Depok City Health Office, 2024).

The Kementerian Kesehatan estimates that only 30% of dengue cases seek healthcare services, with most cases being misdiagnosed. If patients opt for private primary healthcare services, their cases may go unreported. A study analysis conducted in 2023 showed

that dengue fever ranked second among priority infectious disease issues in Depok City. Evaluating the surveillance system is crucial to assess its current quality and identify challenges in implementing dengue surveillance. To date, no evaluation of the dengue surveillance system has been conducted at the Depok City Health Office. Dengue case reporting has only been carried out by some hospitals and community health centers, while clinics and independent medical practitioners have not reported cases. Furthermore, the dengue reports from the Depok City Health Office to the West Java Provincial Health Office only include cases classified as dengue hemorrhagic fever (DHF), while other dengue classifications remain unreported.

Therefore, researchers are interested in evaluating the dengue surveillance system in Depok City based on surveillance system components and attributes, aiming to provide appropriate recommendations and suggestions for improvement.

METHODS

This study is a descriptive research using both qualitative and quantitative approaches. The evaluation illustrates the implementation of the dengue surveillance system based on structural aspects, core functions, supporting functions, and system attributes. The quantitative approach was conducted by reviewing dengue surveillance reports from healthcare facilities in Depok City, West Java Province, in 2023. The qualitative approach was carried out through interviews using a questionnaire, involving the Depok City Health Office, five public health centers, two hospitals, two clinics, two independent midwife practices, and one private laboratory, in Pancoran Mas District, which had the highest number of dengue cases, and Cinere District, which had the lowest. The questionnaire contained questions based on the attributes of the surveillance system. This study was conducted from March to May 2024. Data analysis is presented in the form of tables, graphs, and narratives using an epidemiological approach.

RESULTS AND DISCUSSION

Depok City, located in West Java Province, is geographically situated at coordinates 6°18'30" - 6°28'00" South Latitude and 106°42'30" - 106°55'30" East Longitude, with a population of 1,927,867 people. In 2023, the highest number of dengue cases was recorded in January, with 126 cases. The total number of cases throughout the year reached 1,032 cases.

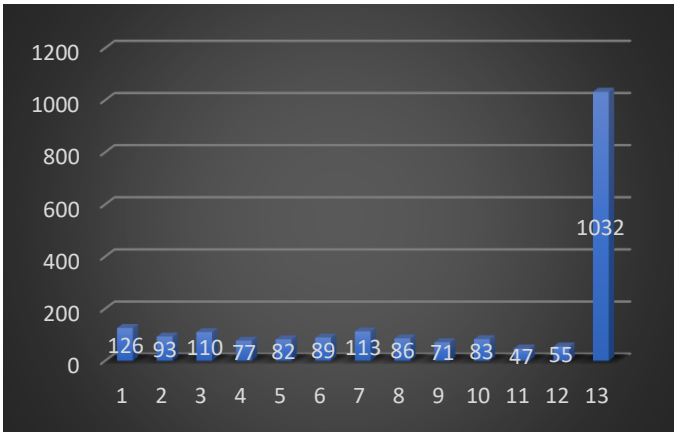


Figure 1. Distribution of Dengue Cases in Depok City, 2023
Source: Secondary Data, Depok City Health Office, 2023

The distribution of dengue cases by district in Depok City shows the highest number of cases in Pancoran Mas District, with 174 cases, while the lowest number is in Cinere District, with 21 cases.

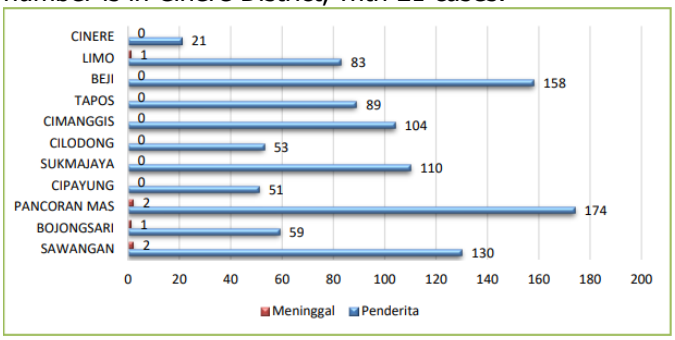
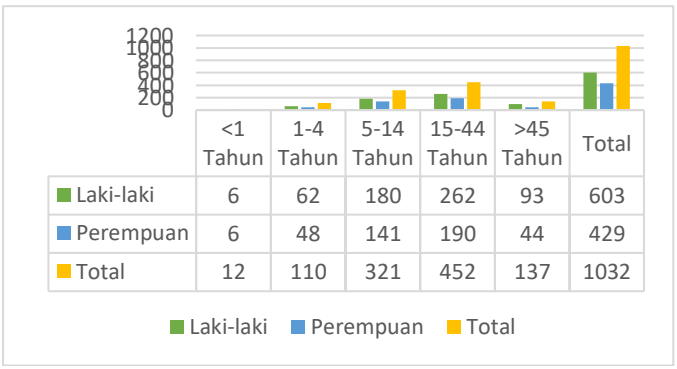


Figure 2. Distribution of Dengue Cases by District in Depok City, 2023
Source: Secondary Data, Depok City Helath Office, 2023.

The distribution of dengue cases by age group is dominated by individuals aged 15 to 44 years, who account for the highest number of positive cases. Additionally, the data indicates that males are the most affected group in terms of sex.



	<1 Tahun	1-4 Tahun	5-14 Tahun	15-44 Tahun	>45 Tahun	Total
Laki-laki	6	62	180	262	93	603
Perempuan	6	48	141	190	44	429
Total	12	110	321	452	137	1032

Figure 3. Distribution of Dengue Cases by Age and Sex in Depok City, 2023
Source: Secondary Data, Depok City Health Office, 2023.

Evaluation of Surveillance System Structure.

The measurement of the surveillance system structure is divided into three assessment aspects: legal aspects, networking and partnerships, and surveillance strategies. The results of this evaluation are as follows.

Table 1
Structure Component Matrix

Component	Results
Legal Aspects	The legality of dengue disease surveillance in Depok City refers to the Regulation of the Minister of Health of the Republic of Indonesia Number 45 of 2014 concerning Health Surveillance Implementation. Currently, there is no specific regulation that details the implementation of dengue surveillance. Technically, dengue surveillance is governed by the Guidelines for Dengue Hemorrhagic Fever Control in Indonesia 2017, published by the Directorate General of Disease Control and Environmental Health (now the Directorate General of Prevention and Control of Disease) of the Indonesian Ministry of Health. Out of 13 respondents, only 8, or 62%, are aware of these dengue surveillance guidelines.
Coordination, Networking, and Partnerships	Coordination, networking, and partnerships in dengue surveillance have only reached 62% because clinics, independent midwife practices, and laboratories have not contributed to coordination, networking, and partnerships within the dengue surveillance system in Depok City.
Surveillance Strategies	Based on interviews with respondents, it was found that the surveillance strategies implemented at public health centers and the Health Office involve conducting epidemiological investigations for every confirmed dengue case in collaboration with health cadres, as well as performing fogging when criteria for fogging are met, and providing community education about dengue. Only 46% of dengue surveillance units have a dengue surveillance strategy, while 54% do not have a dengue surveillance strategy.

Source: Primary Data, 2024

Evaluation of the Core Functions of the Surveillance System.

The core components include activities such as case detection, recording, case confirmation, reporting, data analysis and interpretation, dissemination, and feedback. The evaluation results indicate that the data processing is only carried out in the form of simple tables and graphs. Case mapping, analysis, and data interpretation have not yet been conducted. Case detection is performed actively through epidemiological investigations and laboratory confirmation, using RDT NS1, IgM, and IgG tests.

Table 2
Core Functions Component Matrix

Component	Results
Case Detection	Interviews with the dengue program managers at the Depok City Health Office revealed that 100% of the 38 public health centers in Depok have mechanisms to capture cases from non-routine sources (besides health service units). These non-routine sources are primarily reported by the community through health cadres and neighborhood units (RT/RW). For health service units, public health center receive information from hospitals via reports sent to a WhatsApp group. However, only 85% of healthcare facilities perform early detection of dengue cases, while 15% do not.
Recording	Based on interviews and observations at Public health centers and hospitals, reports are entered through Excel or Google Forms. Dengue cases are recorded according to the doctor's diagnosis, although sometimes they do not align with the dengue criteria specified in the Dengue Hemorrhagic Fever Control Guidelines. Only 85% of surveillance units record dengue cases, while 15% including clinics and independent medical practices have not yet done so.
Case Confirmation	Interviews with surveillance officers and dengue program managers at selected public health centers indicated that all public health centers (100%) have the capability to confirm cases through referral systems, networks, and partnerships. Patients diagnosed clinically as suspected dengue at public health centers and deemed in need of intensive care will be referred to hospitals, both public and private, in Depok City. A challenge encountered is that case confirmations from hospitals are sometimes unreported and only come to light after reports from the

	community, indicating that the timeliness of confirmation is still lacking. Surveillance units have confirmed 62% of cases, while 38% remain unconfirmed, particularly from clinics and independent midwife practices. The main reason for this is the absence of collaboration for submitting reports to the local Public health centers.
Reporting	The mechanism for reporting dengue cases from public health centers to the health office is conducted electronically using Google Drive, with reports submitted monthly. Public health centers can access data from hospitals but must search the dengue case list to find cases from their operational area based on addresses in hospital reports. Among the respondents interviewed, only the Health Office, hospitals, and Public health centers report cases, while clinics, independent midwife practices, and private laboratories have not reported. Reporting from the Depok City Health Office to the West Java Provincial Health Office includes only dengue hemorrhagic fever cases; cases of dengue with warning signs and severe dengue are not reported. Only 62% of health facilities report cases, while 38%, consisting of clinics, midwife practices, and laboratories, do not report.
Data Analysis and Interpretation	Descriptive data analysis based on the variables of person, time, and place is only performed at the Depok City Health Office (8% of respondents), as evidenced by the data on the number of dengue cases per public health centers operational area and the number of cases based on sex and age groups each month. However, mapping of dengue case distribution and further analysis have not been conducted.
Dissemination and Information	Information dissemination is carried out using accessible information technology. Interviews with the dengue program managers at public health centers indicated that all public health centers have conducted information dissemination at least every three months or four times a year through community meetings (Musrembang) and monthly mini-workshops at public health centers. Meanwhile, the Health Office only disseminates information to public health centers via Zoom meetings. Among all respondents, only 45% conduct information dissemination, specifically from the Health Office and public health centers, while hospitals, clinics, midwife practices, and laboratories have not done so.
Feedback	Based on interviews with dengue program managers, it was noted that there is no written feedback from the health office regarding dengue program reports.

Source: Primary Data, 2024

Table 3
Evaluation of Surveillance Support Components.

Component	Result
Guidelines	The surveillance guidelines, management guidelines, and dengue control guidelines are integrated into the "Dengue Control Guidelines in Indonesia" book published by the Directorate General of Disease Control and Environmental Health (now the Directorate General of Disease Prevention and Control) in 2017, which has been updated based on the dengue control module in Indonesia from 2015. Interviews and observations indicate that all health centers have surveillance guidelines, management guidelines, and control guidelines in the form of soft files shared via WhatsApp groups. Respondents possessing the dengue surveillance guideline book accounted for 62%, while those without it accounted for 38%.
Supervision, Monitoring, and Evaluation	Supervision, monitoring, and evaluation are not conducted across all healthcare facilities due to budget constraints. Additionally, supervision carried out by the Provincial Health Office towards the Depok City Health Office is not done annually.
Resources	1. The number of dengue surveillance personnel is two: one program manager for dengue and another for PD3i surveillance. The majority of dengue surveillance officers manage more than one program. 2. Facilities and Infrastructure: - Computers and internet access are available at each surveillance unit. - RDT NS1 supplies are insufficient for testing all dengue suspects.

3. At the health center level, the budget for dengue surveillance activities generally covers epidemiological investigation costs for dengue cases and fogging activities. Funding for these activities comes from non-physical DAK or Operational Assistance, while the budget for supervision, monitoring, and evaluation is sourced from the Depok City Regional Budget (APBD). However, the available budget at both the health center and the Health Office is still inadequate to support all dengue surveillance activities.

Source: Primary Data, 2024

Evaluation by Surveillance Attributes.

The quality of a surveillance system is determined by surveillance attributes as prerequisites for achieving an effective surveillance system (CDC, 2004). Since only the Health Office, Public Health Centers, and Hospitals are actively involved in the dengue surveillance system, the surveillance attributes are concluded solely from respondents originating from the Health Office, Hospitals, and public health centers (eight surveillance units).

Table 4
Surveillance Attribute Matrix

Component	Result
Simplicity	Simplicity is one of the indicators that describes the ease for personnel at Public Health Centers, Hospitals, and the Health Office to conduct dengue surveillance activities. Based on interviews conducted at the Public Health Centers, Hospitals, and the Health Office, it was reported that the dengue surveillance system is not simple. Several aspects of the dengue surveillance system considered complex include case definitions, data collection methods, recording and reporting, and data analysiswhich can affect the completeness and timeliness of dengue case reporting.
Completeness	The reports submitted by Hospitals are KD/RS-DBD reports, while the reports from Public Health Centers and the Health Office are K-DBD forms. Observations of the monthly reports submitted to the Health Office indicate that the completeness of the reports is rated as good (reaching 100%). However, the monthly reports submitted from the Depok City Health Office only reached 85.8% due to some fields being left unfilled, including epidemiological investigations, fogging, larviciding, mosquito-free rate, and case fatality rate.
Timeliness	The deadline for submitting monthly dengue surveillance reports in Depok City is agreed upon as no later than the fifth of the following month. Based on interviews with respondents, it was found that they submitted monthly reports with a timeliness rate of ≤80%.
Representativeness	From the interviews with Public Health Center staff, all indicated that the detected dengue cases do not adequately represent the cases present in the population. According to the staff, this is due to the community's low awareness of reporting to health cadres, patients seeking treatment at healthcare facilities outside the area, the surveillance network currently only collaborating among Public Health Centers, Hospitals, and the Health Office, and some residents refusing to undergo epidemiological investigations.
Flexibility	According to interviews with respondents at both the Public Health Centers and the Depok City Health Office, all respondents (100%) stated that the dengue surveillance system in Depok City is considered flexible as it can adjust to changes in reporting without significant additions in personnel, time, or costs.
Acceptability	Based on interviews and observations of the monthly dengue reports submitted by Public Health Centers to the Depok City Health Office, it shows that all respondents (100%) submit reports regularly.
Usefulness	The usefulness percentage of dengue data in the surveillance

Component	Result
	system is as follows: for control and prevention at 75%, early detection at 75%, disease trend analysis at 13%, program plan ing at 25%, and research data at 37%.

DISCUSSION

The research was conducted with 13 respondents working at the Depok City Health Office, five Public Health Centers, two hospitals, two clinics, two independent midwifery practices, and one private laboratory. Respondents were selected from sub-districts with the highest and lowest dengue cases. In terms of the current surveillance system structure, dengue surveillance in Depok City is considered good because there are legal aspects, including regulations and decrees that serve as legal frameworks for implementing dengue surveillance. Coordination, networking, and collaboration have been established, albeit only with hospitals, Public Health Centers, and health cadres, and there is already a surveillance strategy for the prevention and control of dengue disease. Coordination in health surveillance implementation is carried out by all health surveillance units, both within the agency and between agencies, as well as with parties that have relevant roles in surveillance activities. Based on the core functions of the surveillance system, several performances are already running well, including case detection, recording, case confirmation, reporting, and information dissemination. However, the performance that has not been functioning well is data analysis and interpretation, as this is only carried out by the Health Office, along with feedback from the surveillance network that receives dengue case reports. Not all dengue cases are investigated epidemiologically by Public Health Center staff due to limitations in personnel and time. This aligns with Rubianti's (2023) research, which states that direct surveillance cannot be conducted in all villages due to insufficient personnel and supporting facilities. Feedback should be provided by the Depok City Health Office regarding dengue reports from the network. Surveillance officers in several Public Health Centers do not perform mapping analyses, consistent with Waode et al. (2023), which indicates that mapping and stratification of vulnerable work areas have not been conducted by health personnel, relying only on patient discovery calculations.

Information dissemination regarding dengue can be carried out in the form of bulletins, circular letters, periodic reports, meetings, and scientific publications (Ridwan et al., 2020). Delayed information dissemination leads to delays in the control and management of cases, making it impossible to prevent the spread and increase of cases (Susanto et al., 2020). Timeliness in surveillance reporting must be evaluated regularly for each specific surveillance step in the prevention and control of dengue (Hakim et al., 2020; Sribudaya et al., 2022).

From the perspective of the supporting functions of dengue surveillance, the system is good, although it is not yet optimal. Among the 13 respondents, only those from the Health Office, Hospitals, and Public Health Centers have dengue surveillance guidelines and have received training. Supervision, monitoring, and evaluation are considered good, although only a few healthcare facilities were visited due to budget constraints. Dengue surveillance personnel at the Health Office, Hospitals, and Public Health Centers still have dual responsibilities. This dual role leads to suboptimal surveillance activities due to the fragmentation of concentration and time for program managers (Masturoh et al., 2021). The lack of human resources causes dengue surveillance personnel to have a high workload, which decreases their focus on work, resulting in reduced data quality and delays in the epidemiological investigation process, impacting the availability of information regarding the cases occurring (Rimadona, 2024; Yahya et al., 2017; Noor,2023). Facilities and infrastructure to support dengue surveillance activities are adequate, including computers and internet access; however, logistics for NS1 tests are insufficient for conducting dengue examinations in all healthcare facilities.

Based on the attributes of the surveillance system, health personnel currently believe that the system is still not simple and does not adequately represent the number of cases in the community because many cases remain unreported, especially from healthcare facilities outside the region, clinics, and laboratories. Flexibility, completeness, and acceptability are considered good. The usefulness of dengue data is not yet optimal for program planning or policy-making (Nisa et all, 2021). The data presented need to undergo processing and analysis first to be easily understood by the community (Surtiyawan et all, 2022); however, the dissemination of the results from processing and analysis must be conducted by skilled health personnel, as the processing and analysis of data heavily depend on the capabilities of the health unit and the skills of the personnel (Sari, 2020). As a result, the data produced may not be consistent, and the validity and accuracy of the data are still questionable. Furthermore, delays in data submission to the Health Office and the Ministry of Health cause decision-makers to make health policies that are not based on accurate data (Heni Mardini et al., 2020). Quick and accurate reporting significantly impacts the analysis of dengue disease for an early warning system for potential outbreaks (Siyam, 2013).

He achievement of dengue surveillance objectives is a variable that illustrates whether dengue surveillance can provide epidemiological data and information as a basis for health management in decision-making regarding planning, implementation, monitoring, evaluation of health programs, and enhancing vigilance as well as a rapid and appropriate response to

outbreaks. Surveillance is a key strategy in monitoring dengue disease (Salim et al., 2021). An effective early warning system for outbreaks can prevent outbreak occurrences and can be used as a precautionary measure against the rising cases of dengue through targeted control activities and the reduction of risk factors. From the evaluation of the dengue surveillance system in Depok City, it was found that the dengue surveillance capability was considered inadequate in monitoring the trends of dengue disease and predicting the occurrence of outbreaks. All reported dengue cases are followed up with epidemiological investigations, but there are instances where delays in reporting or confirmation of cases from hospitals occur, resulting in no epidemiological investigation being conducted, and some residents refuse to undergo the investigation. This situation also weakens the ability to detect outbreaks. The lack of public understanding regarding dengue fever can affect efforts to prevent and control the disease (Rimadona et al., 2024).

CONCLUSION

The evaluation results indicate that the performance of Dengue terms of surveillance structure, core surveillance functions, supporting surveillance functions, and surveillance attributes has not been optimal, particularly in aspects of simplicity, representativeness, reporting, and the usefulness of dengue data. Additionally, the absence of routine supervision and inadequate capacity of surveillance officers have also impacted the effectiveness of the surveillance system.

These conditions may hinder the achievement of dengue surveillance objectives, such as the ability to monitor disease trends and predict the occurrence of outbreaks, thereby reducing the effectiveness of dengue prevention and control efforts. The implementation of recommendations can be measured through several indicators reflecting improvements in the surveillance system, such as: Improving data representativeness by targeting a minimum coverage of 80% of total healthcare facilities within two years to ensure that the collected data accurately reflects the actual population conditions. Enhancing the completeness and timeliness of reporting, measured by increasing the percentage of on-time reports to 90% within one year after the intervention. Increasing the frequency of routine supervision, targeted at least once a year, with an evaluation of improvements in the understanding and compliance of surveillance officers. Furthermore, the evaluation results of this surveillance system have regional and national relevance, particularly in the context of strengthening the infectious disease surveillance system in Indonesia. The gaps in data representativeness and officer capacity found at the local level also pose common challenges in various regions, especially in areas with limited resources. Therefore, these evaluation findings can serve as a basis for developing a more integrated national policy, such as strengthening the digital reporting system, establishing national supervision standards, or increasing budget allocation for training surveillance officers in different regions. The evaluation results of the dengue surveillance system in Depok City can be tested through comparative studies with regions that have similar conditions, such as areas with high endemicity, limited healthcare infrastructure, or an unintegrated surveillance system.

If similar findings emerge across multiple regions, the resulting recommendations can be adapted into a broader national strategy, ensuring the effectiveness of the dengue surveillance system throughout Indonesia.

SUGGESTIONS

We recommend that the Depok City Health Office instruct health service units, particularly treatment centers/clinics and private laboratories, to engage and actively participate in the implementation of dengue surveillance. Efforts should be made to enhance the capacity of surveillance personnel and doctors in healthcare services, ensure coordination among surveillance units, allocate budgets for the program, and conduct routine monitoring and evaluation, as well as provide weekly bulletins as feedback to healthcare facilities. This will help improve the performance of dengue surveillance in Depok City.

REFERENCES

Bidang P2P Dinas Kesehatan Kota Depok. (2024) *Laporan Tahunan P2P Dinas Kesehatan Kota Depok*. Depok.

Bidang P2P Dinas Kesehatan Provinsi Jawa Barat. (2024) *Laporan Tahunan P2P Dinas Kesehatan Provinsi Jawa Barat*. Bandung.

Centers for Disease Control and Prevention (CDC), German, R.R., Horan, J.M., Lee, L.M., Milstein, B. and Pertowski, C.A. (2001) 'Updated guidelines for evaluating public health surveillance systems: recommendations from the Guidelines Working Group', *Centers for Disease Control and Prevention*. [Publisher]

Hakim, L., Astuti, E.P. and Prasetyowati, H. (2020) 'Pemberdayaan keluarga sebagai upaya menurunkan kepadatan larva Aedes spp. dalam pencegahan penularan Demam Berdarah Dengue', *ASPIRATOR-Journal of Vector-Borne Disease Studies*, 12(2). [Crossref], [Publisher]

Mardini, H., Anwary, A.Z. and Anggraeni, S. (2020) *Analisis kelengkapan dan ketepatan waktu sistem pencatatan dan pelaporan terpadu Puskesmas (SP2TP) di Puskesmas Tampa Kabupaten Barito Timur* [Disertasi doktoral]. Universitas Islam Kalimantan MAB. [Publisher]

Masturoh, I., Sugiarti, I. and Riandi, M.U. (2021) 'Evaluasi Sistem Surveilans Demam Berdarah Dengue di Kota Tasikmalaya', *Balaba: Jurnal Litbang Pengendalian Penyakit Bersumber*

Binatang Banjarnegara, June, pp. 57–72. [Crossref], [Publisher]

Nisa, H., Syadidurahmah, F. and Hermawan, M. (2021) 'Implementation of Hypertension Surveillance at Majalengka District Health Office in 2021', *JPK: Jurnal Proteksi Kesehatan*, 10(1), pp. 26–34. [Crossref], [Publisher]

Noor, N.S. (2023) 'Evaluasi Sistem Surveilans Hipertensi dengan Pendekatan Atribut di Kota Semarang', pp. 891–897.

Rubianti, I. (2023) 'Evaluasi surveilans kasus penyebaran demam berdarah dengue di Kota Bima', *Jukej*, 2(1), pp. 138–142. [Crossref], [Publisher]

Rimadona, R., Saputra, F.F., Paradhiba, M. and Artika, A. (2024) 'Gambaran Pelaksanaan Surveilans Demam Berdarah Dengue (DBD) di Puskesmas Meurebo Berbasis Pendekatan Sistem dan Atribut', *Jurnal Ilmiah Kesehatan Rustida*. [Crossref], [Publisher]

Salim, M.F., Syairaji, M., Wahyuli, K.T. and Muslim, N.N.A. (2021) 'Pengembangan Sistem Informasi Surveilans Demam Berdarah Dengue Berbasis Mobile sebagai Sistem Peringatan Dini Outbreak di Kota Yogyakarta', *Jurnal Kesehatan Vokasional*. [Crossref], [Publisher]

Samad, I., Handito, A., Sugiarto, A., Setiani, E., Gunawan, D. and Silalahi, F.S.M. (2022) *Membuka lembaran baru. Laporan Tahunan 2022 Demam Berdarah Dengue*, pp. 17–19.

Siyam, N. (2013) 'Fasilitasi pelaporan KD-RS dan W2 DBD untuk meningkatkan pelaporan surveilans DBD', *Kemas*, 8(2). [Crossref], [Publisher]

Sribudaya, I., Hargono, A. and Sugianto, G. (2022) 'Evaluasi Surveilans Demam Berdarah Dengue (DBD) di Dinas Kesehatan Kota Tasikmalaya Tahun 2020', *IAKMI Jurnal Kesehatan Masyarakat Indonesia*, 3(2), pp. 73–84.

Susanto, N., Pascawati, N.A. and Rusdewi, N.N. (2020) 'Perbedaan indikator registrasi pada sistem surveilans demam berdarah dengue di Dinas Kesehatan Provinsi di Yogyakarta', *Prosiding Seminar Nasional Multidisiplin Ilmu*, 2(1), pp. 230–237. [Publisher]

Sutriyawan, A., Yusuff, A.A., Fardhoni, F. and Cakranegara, P.A. (2022) 'Analisis Sistem Surveilans Epidemiologi Demam Berdarah Dengue (DBD): Studi Mixed Method', *Jurnal Manajemen Kesehatan Yayasan RS. Dr. Soetomo*, 8(1), p. 137. [Crossref], [Publisher]

Wadoe, C.M., Manurung, I.F.E. and Limbu, R. (2023) 'Gambaran pelaksanaan surveilans demam berdarah dengue (DBD) di Kabupaten Sabu Raijua', *Malahayati Nurs J*, 5(11), pp. 3856–3868. [Crossref], [Publisher]

World Health Organization (WHO). (2006) *Communicable disease surveillance and response systems: guide to monitoring and evaluating*. Vol. 2. Department of Communicable Disease Surveillance and Response. [Publisher]

World Health Organization (WHO). (2024) *Dengue and severe dengue*. [Publisher]

Yahya, E., Lapau, B. and Dewi, O. (2017) 'Fungsi manajemen untuk sistem surveilans demam berdarah dengue (DBD) di Puskesmas Bangkinang Kota Kabupaten Kampar tahun 2017', *J Doppler*, 1(2), pp. 1–9. [Publisher]

Yanuar, F., Ridwan, W., Ruliansyah, A. and Jajang, A. (2020) 'Pengembangan sistem informasi kesehatan demam berdarah dengue dengan deteksi dini di Kabupaten Bandung', *Spirakel*, 12(1), pp. 1–14. [Crossref], [Publisher]