

Analysis of the Dengue Fever Surveillance System at the Sei Mencirim Community Health Center

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ABSTRACT

Dengue Hemorrhagic Fever (DHF) is a contagious mosquito-borne disease that remains a major public health problem worldwide, particularly in developing countries. It is estimated that approximately 390 million dengue infections occur annually, including both symptomatic and asymptomatic cases. This study aimed to evaluate the implementation of the DHF surveillance system at Sei Mencirim Community Health Center, Sunggal District, Deli Serdang Regency, based on the input, process, and output components of the surveillance system.

This observational study employed a descriptive approach and was conducted on December 12, 2025. Data were collected through in-depth interviews and structured questionnaires administered to the officer responsible for the DHF surveillance program.

The findings indicated that the DHF surveillance system has been implemented; however, its performance has not yet reached an optimal level. Limitations were identified in human resources due to multiple job responsibilities and the lack of continuous surveillance training. Recording and reporting activities were conducted routinely; however, data processing, analysis, and interpretation remained limited. In addition, surveillance information had not been fully utilized to support evidence-based decision-making and DHF control program planning. Strengthening human resources, improving data analysis capacity, and optimizing the utilization of surveillance findings are essential to enhance the effectiveness of the DHF surveillance system as an early warning system at the primary healthcare level.

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1. INTRODUCTION

Fever Dengue Hemorrhagic Fever (DHF) is still is one of the major public health problem in Indonesia (1). Along with with increasing mobility and density population, number sufferers and area its distribution the more increased (2). Dengue fever is disease infectious disease caused by a virus from Arbovirus groups A and B originating from from vector bites (2). Dengue fever is a disease infections caused and transmitted through *Aedes aegypti* and *Aedes albopictus* mosquitoes were found in the area tropical and subtropical including in Indonesia to the northern part of

Australia (3). In many area tropical and subtropical , dengue fever is a disease emerging endemic throughout years, especially at the moment season Rain when optimal conditions for mosquito develop breed. Usually a number of big people will infected in a short time (epidemic) (3). Disease This No only often causing external events Common (KLB) but also causes negative social and economic impacts. Losses social events that occur among other things because cause panic in family, death member family, and the reduction age hope resident.

WHO epidemiological data shows that Fever Dengue Hemorrhagic Fever (DHF) now Become disease the most widespread infection its spread and the fastest increasing in the world, of the 3.5 billion people who live in dengue endemic areas and are at risk infected, Around 1.3 billion living in 10 countries in the Southeast Asia region. According to WHO data in 2020, dengue fever was one of the disease with the highest incidence rate in tropical and subtropical countries, with an increase significant cases globally. It is estimated that around 390 million dengue infection occurs Every year, with 50 million case lead to infection serious, including 500 thousand Sufferers who experience severe dengue fever, causes high morbidity and mortality rates in various countries. It is estimated that about 50% of Global population in 128 countries at risk caught fever bloody. Meanwhile based on data from the Central Statistics Agency In 2020, North Sumatra Province had 7,548 dengue fever cases, including 1,068 cases in Medan City. (3-5)

Community Health Center is organization functional that organizes health efforts with emphasis to service for public use reach optimal health status. Surveillance system observation done at the level community health center due to community health center is health facility level first where health data is required as taker policies at the community level. Epidemiological surveillance carried out at the health center and used in take policy for public health. Surveillance is something business in control diseases, such as disease fever bleeding. Surveillance system provide information systematically to distribution disease as well as factor affecting so that can done countermeasures for take effective action. Good surveillance system can provide quantity data case, place and time can well monitored so that provide adequate information in the prevention and control program disease as well as monitor diseases that have the potential to cause outbreaks such as dengue fever. (4,6)

Diseases that are carried out observation namely DHF because Still be one of Health problems faced at the Sei Mencirim Community Health Center, Sunggal District, Deli Serdang Regency . The high dengue fever cases from year to year become Problems that must be completed. From the year to Year Sei Mencirim Community Health Center identify the more number of sub-district areas endemic dengue fever.

2. METHOD

This research This is an observational study. The study was conducted at the Sei Mencirim Community Health Center on December 12, 2025. Evaluate implementation of monitoring system Fever Dengue Hemorrhagic Fever (DHF). Information collected through interview deep and filling questionnaire structured by one respondents, namely the officers who are responsible answer on the dengue fever surveillance program. The tools used in this study covers evaluation to Input components (availability power experts, training, guidelines, and facilities supporting); rocess components (recording, reporting, processing, presentation, analysis and interpretation of data, dissemination of information, and bait back); and output components (identification constraint in processing, analysis, and distribution of information). Data analysis was carried out descriptively for identify problems and assess the overall implementation of the DHF monitoring system at the Sei Mencirim Community Health Center.

3. RESULTS AND DISCUSSION

Surveillance system epidemiology is one of the component important in implementation of the Fever Program Dengue Hemorrhagic Fever (DHF), because in it covers series activity start from data collection, data processing, to analysis of information related to disease events. Implementation surveillance epidemiology Dengue Fever at the Sei Mencirim Community Health Center implemented by the DBD program holder who is also operate task as officer surveillance.

Activities surveillance the aim for produce information that describes implementation and achievements of the DHF program in the work area Community health center. Overview of the surveillance system flow Dengue fever disease at the Sei Mencirim Community Health Center, is presented in Figure 1.

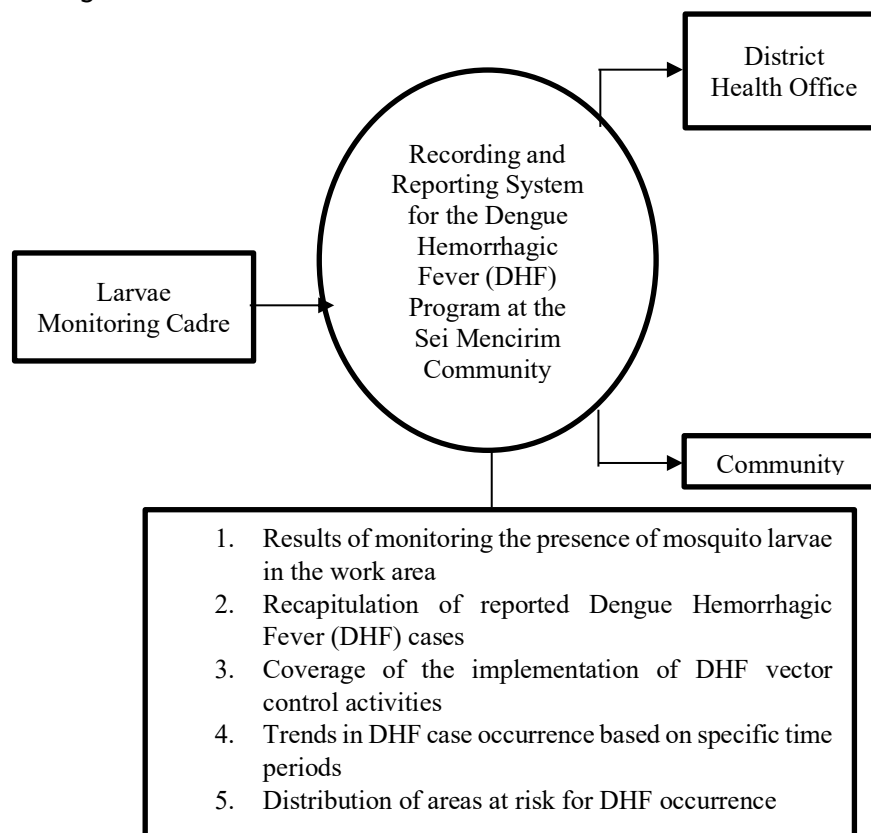


Figure 1. Disease Surveillance System at the Sei Mencirim Community Health Center

Based on Figure 1, implementation surveillance disease Fever Dengue Hemorrhagic Fever (DHF) at the Sei Mencirim Community Health Center involving officer monitor larvae as source beginning related data collection factor risk dengue fever transmission in the environment place stay community. Monitoring data the furthermore delivered to party community health center for done recording and processing. Officer surveillance at the Sei Mencirim Community Health Center Then recapitulate the data that has been collected and arranged in form report surveillance for furthermore reported to the Medan City Health Office. Overview of the implementation of the surveillance system Dengue Fever at the Sei Mencirim Community Health Center served as follows:

3.1 Input Components

Based on the results of the interview and filling out questionnaire by respondents, it is known that implementation of surveillance systems disease Fever Dengue Hemorrhagic Fever (DHF) at the Sei Mencirim Community Health Center has supported by the existence of the person handling it activity surveillance. However thus until moment this not yet available officers who specifically only assigned in the field surveillance epidemiology. Implementation activity full dengue fever surveillance carried out by one officer, namely the DHF program holder who is also concurrent as surveillance officers. Conditions the show that function surveillance still not yet stand as a work unit alone, but rather be part of task addition program officer, so that potential influence optimization implementation surveillance (7).



Figure 2. Atmosphere interview and filling questionnaire with officers Dengue Fever surveillance at the Sei Mencirim Community Health Center



Figure 3. Atmosphere service with officers administration at the Sei Mencirim Community Health Center

Trapping tasks experienced by officers surveillance cause existence burden work double (7). Besides responsible answer to activity surveillance, officers must also carry out task other health services as well as activity administration health center. Workload double This potential reduce focus officer in carry out activity surveillance, especially at the stage processing, analysis, and interpretation of data (7). This in line with findings in the field that implementation surveillance more focused on activities recording and reporting routine, while activity data analysis not yet carried out optimally. (8)

From the aspect improvement capacity source power human, respondent state that during operate task as officer surveillance, he once follow training or upgrading surveillance conducted by the District Health Office. Training final followed in 2022 with material covering recording, reporting, and control disease contagious, including dengue fever. Training the considered helpful to officers in understand channel reporting and surveillance systems in place (9). However thus, training surveillance not yet carried out routinely and continuously, so that improvement ability officers, especially in processing and analysis of surveillance data, still felt not optimal.

Reviewed from the length of service, respondents has on duty as officer surveillance during not enough more eight years of experience enough work long the give good understanding to channel implementation dengue fever surveillance and Characteristics of the work area of the Sei Mencirim Community Health Center. Experience field the become important capital in implementation surveillance, especially in recognize case incidence patterns and areas at risk. However, thus, experience long work without balanced with training sustainable and support source adequate power still become challenge in improve the quality of surveillance.

In support implementation Dengue Fever Surveillance, Sei Mencirim Community Health Center has had various guidelines written, including books guidelines surveillance, books instruction technical vigilance early warning and response to external events Ordinary (KLB), as well as guidelines surveillance epidemiology disease infectious (9). In addition, the health center

also provides blank reporting and books recapitulation report as means surveillance data recording. The existence of guidelines and tools recording the show that administratively community health center has Ready in support implementation dengue fever surveillance. (9)

Other supporting facilities available is one computer unit is used for activity recording, processing, and storage of surveillance data (9). However. the use of computer the Still limited to simple data processing and not yet supported by the use of device surveillance software special. Condition this cause stability, security, and integration of surveillance data still relies heavily on manual saving and local files, so potential cause risk data loss as well limitations in more data processing complex.

3.2 Process Components

Implementation Dengue Fever surveillance at the Sei Mencirim Community Health Center covering a number of stages Activities include recording, reporting, processing, analyzing, and presenting data. Types of reports surveillance available at the community health center covers report weekly and reports monthly DHF cases. Based on the questionnaire results, respondents state that filling report surveillance Not yet always carried out completely and on time, especially during certain periods when burden Work officer increase consequence task duplicate that must be executed.

Community Health Center has do archiving report surveillance Good in form document print or computer files. However thus, until moment this not yet attendance system available or recording special related punctuality and completeness report surveillance. Absence mechanism monitoring the lead to quality reporting surveillance not yet can evaluated systematically. As a result the potential delays and incompleteness report not yet can followed up optimally.

Processing of dengue fever surveillance data at the Sei Mencirim Community Health Center has done, even though Still nature simple. Collected data grouped based on the area of location stay, type gender and group age, and based on the time of the incident, either weekly and monthly. Processing of the data aim for give description general about distribution DHF cases in the work area health center. However, the results of the data processing Not yet fully utilized as base analysis more epidemiological deep.

Presentation of surveillance data generally done in form tables and graphs simple. Although presentation of the data can give visual depiction of the incidence of dengue fever cases, but not yet accompanied by interpretation comprehensive narrative. Limitations this causes the information produced from surveillance Not yet fully can utilized as material taking program decisions , both at the level community health center as well as at the level public health Office.

Surveillance data that has been processed and served furthermore delivered to the District Health Office through report written as well as communication informal , such as via WhatsApp media. The dissemination of information is usually done after report monthly finished compiled . Related bait back , respondent state that the District Health Office give response to the report submitted , however bait come back the Not yet carried out routinely and on schedule , so that utilization of surveillance results as base program evaluation is still ongoing limited .

Epidemiological data analysis is an important step in surveillance especially to variables (people, place , time) [8] . Data analysis based on variables of person, place , and time have been carried out on a limited basis . Analysis based on the person used For see distribution case according to group age and type gender , analysis based on place For knowing the areas with DHF cases , as well as analysis based on time for monitor trend improvement or decline case . However , the results of the analysis the Not yet interpreted in depth Because limited time, energy , and ability analysis surveillance officers .

3.3 Output Components

Based on the output components , implementation surveillance disease Fever Dengue Hemorrhagic Fever (DHF) at the Sei Mencirim Community Health Center Still face various barriers that affect the quality of the information produced . The surveillance information produced generally Still limited to the presentation of descriptive data simple , like amount cases , distribution case by region, as well as event trends based on certain period of time. Limitations This causes the information produced Not yet fully capable describe condition comprehensive and in-depth epidemiology of dengue fever in the work area community health center .

Obstacle main in produce quality surveillance output is limitations source Power humans , especially officer in charge Dengue Fever surveillance . Officers concurrent surveillance tasks in other areas take up time and attention to activity analysis as well as interpretation of data becomes limited . In addition , the ability officer in process and analyze surveillance data more effectively continue also still need improved through continuous training . Conditions This impact on not yet optimally utilization of surveillance data as material evaluation and planning of dengue fever control programs .

In matter presentation and utilization of information, surveillance results that have been arranged generally used as material reporting routine to the District Health Office . However , this information Not yet fully utilized as base in compilation policy or planning activity prevention and control of dengue fever at the level health center . Limitations in easy presentation of information understood and applicable is also one of the inhibiting factors utilization of surveillance results by decision makers decision .

In addition , the process of disseminating information from surveillance results to party related Still nature limited . Delivery of general information only done in form report written and communication informal , so that range utilization of surveillance information Still Not yet wide . Bait return received from the District Health Office to report the surveillance that was delivered has not been carried out routinely and in a structured manner . This is causing the evaluation process implementation surveillance and improvement of the quality of surveillance output Not yet running optimally.

Overall, the output of the DHF surveillance system at the Sei Mencirim Community Health Center not yet fully utilized as tool vigilance early in detect improvement case and as base taking program decision . Required strengthening of aspects source Power human , improvement capacity data analysis , as well as repair mechanism dissemination and utilization of information so that the surveillance output produced can give more optimal contribution in effort control dengue fever in the work area community health center .

4. CONCLUSION

Based on the results of observations of the surveillance system and the discussions that have been done , can concluded that implementation of surveillance systems Fever Dengue Hemorrhagic Fever (DHF) at the Sei Mencirim Community Health Center, Sunggal District , Deli Serdang Regency has walking , but Not yet implemented optimally. This is shown by still found various problems in some surveillance system components , both input , process and output components .

In the input component , the implementation DHF surveillance is still face limitations source Power human , where officer surveillance concurrent as DBD program holders at the same time operate task service and administration other . Conditions This cause burden Work double and impact on time constraints in processing as well as surveillance data analysis . In addition , training surveillance that is followed Not yet carried out routinely and continuously , so that improvement capacity officer in analysis epidemiology not optimal.

In the process component , activities recording and reporting DHF surveillance has not yet fully running completely and on time. Health Center does not have an attendance system yet or indicator special For monitor accuracy and completeness report surveillance , so that the quality of reporting Not yet can evaluated systematically . Data processing and analysis are still nature simple , limited to grouping based on people, place and time, as well as Not yet accompanied by interpretation in -depth epidemiological .

In the output component , the surveillance results produced Not yet fully utilized as base planning and decision making dengue control program decisions . Obstacles main thing found covering limitations ability data analysis , presentation of information that is still simple , and bait come back from the District Health Office which has not yet carried out routinely and in a structured manner .

Thus , it is necessary effort repair to implementation of the DHF surveillance system at the Sei Mencirim Community Health Center, including through strengthening source Power human

, improvement capacity officer surveillance , compilation indicator accuracy and completeness reports , as well as optimization utilization of surveillance data in order to function effectively as a warning system early and basic control dengue fever disease .

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