Implementation of Epidemiology Surveillance Based on Attribute of Sultan Iskandar Muda Airport, Banda Aceh

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Abstract

Epidemiological surveillance in the era of globalization, especially in the very rapid progress in the field of transportation, with only a few hours can cause an epidemiological shift in the disease, representative. Timeliness, data quality and stability. This study uses an evaluative descriptive approach to the surveillance system at the Port Health Office Class III of the Banda Aceh Work Area at the Sultan Iskandar Muda Airport. The subject of this study was a surveillance system in the area of Banda Aceh's Class III Airport. The technique of data collection was done through questionnaires, in-depth interviews, and documentation studies. The results of the study there are several indicators The attributes of simplicity, flexibility, acceptability, sensitivity and stability and high timelines. While the assessment of data quality and positive predictive value is still low. The conclusion of this study is the activity of epidemiological surveillance attributes at the Class III Banda Aceh Health Office in the Work Area of the Sultan Iskandar Muda Airport, but there are problems in the surveillance system due to limited equipment, although there is a shortage of positive predictions but the timeline remains.
Keywords: attribute, surveillance, evaluation, airport.

INTRODUCTION

In the era of globalization, especially related to the very rapid progress in the field of transportation, with an era that is very easy to be able to travel across continents from one country to another with only a few hours, causing a shift in the epidemiology of the disease [1]. This is indicated by the transmission of diseases from one continent to another. The existence of diseases that have never existed before and arises in a region because the Globalization era will launch a course of disease between countries made possible by the number of population movements from one country to another [2]. Precautions, prevention and supervision activities are very necessary to overcome the possibility of transmission of the disease to other regions. The threat of global diseases and public health can be prevented [3].

Based on the above definition, it can be seen that surveillance is a disease observation activity carried out continuously and systematically on the occurrence and distribution of diseases and the factors that affect them to the community so that mitigation can be carried out to be able to take effective action, policy making

[4], Epidemiological surveillance is going well, it will have an impact on the decrease in CFR and IR cases of disease [5].

Health services in Indonesia, especially at the entrance to the Indonesian territory which includes ports, airports and cross-country land borders [6]. The leading health care facilities in Indonesia, the Port Health Office has the duty to prevent and discharge diseases from and to Indonesia, especially potential infectious diseases which can cause public health emergencies that are of concern to the world [7].

Epidemiological Surveillance at the Port Health Office Class III of Banda Aceh Working Area of Sultan Iskandar Muda Airport is the timeliness and completeness of the report not yet achieving a good performance indicator that is 80% because of the facilities and infrastructure that are still simple and limited, so the results of inspection and reporting coverage affect lack of information produced as a basis for controlling policy makers. So that it is necessary to evaluate the surveillance system based on Surveillance Attributes, namely simplicity, flexibility, data quality,

acceptance of sensitivity, positive predictive value, representativeness, timeliness and stability [8].

METHODOLOGY

This study uses a qualitative approach to get in-depth information from informants / data sources about the activities that have been carried out, so that this research is able to describe the actual conditions in the field. The results of the study will be compared with the theory of surveillance [9]. The research subjects were the epidemiological surveillance system activities at the Class III Health Office of the Banda Aceh Working Area at the Sultan Iskandar Muda Airport. The informants in this study amounted to 4 people consisting of 1 official head of the epidemiological surveillance section and 3 surveillance officers, 2 medical officers and 5 environmental health workers who were directly involved in epidemiological surveillance activities at the Class III Health Office of Banda Aceh Airport Work Area Sultan Iskandar Muda. The technique of collecting data for surveillance activities was obtained through in-depth interviews using an interview guide and document observation instruments to see the implementation of surveillance activities [10].

RESULTS AND DISCUSSION

The research location is the work area of Sultan Iskandar Muda Airport which is the working area of the Class III Banda Aceh Health Office, based on the Regulation of the Minister of Health of the Republic of Indonesia Number 2348 / MENKES / PER / XI / 2011 concerning Amendments to the Minister of Health Regulation Number 356 / MENKES / PER / IV / 2008 Regarding the Organization and Work Procedure of the Port Health Office, the Port Health Office, hereinafter referred to as the Class III KKP, is a technical implementation unit within the Ministry of Health under and responsible to the Directorate General of Disease Prevention and Control. The Class III Port Health Office of Banda Aceh has 9 Work Areas namely Sultan Iskandar Muda Airport, Malahayati Sea Port, Ulee Lheue Sea Port, Lhoknga Sea Port, Meulaboh Sea Port, Sinabang Sea Port, Tapaktuan Sea Port, Labuhan Haji Sea Port, and Sea Harbor Singkil [11], Based on the arrival / departure of the aircraft at the Class III Airport in Banda Aceh in 2016, it is recorded as follows:

Table-1: Arrival / Distribution Ship Departure in 2016

The plane came from	Σ plane	%	The plane left for	Σ plane	%
Overseas	906	18,35	Overseas	843	17,34
Domestic	4031	81,65	Domestic	4019	82,66
Total	4937	100	Total	4862	100

This data shows the number and percentage of flight passenger arrivals in 2017. The arrival of aircraft passengers from abroad is far less than the arrival / departure of domestic aircraft. This is due to the fact that few foreign airlines enter and depart from and to the airport. Based on the characteristics of the Survailans officer at Class III Banda Aceh Airport the following results were obtained:

Table-2: Distribution of Epidemiological Surveillance Officers based on the level of education in the KKP Banda Aceh Airport Area

No.	Educational background	Total	
		N	%
1	Doctor	2	11,7
2	S2 Public health	1	5,88
3	S1 Public health	5	11,7
4	Nurse Academy	5	29,4
5	AKL	2	23,5
6	Laboratory	2	11,7
Total number		17	100 %

Based on the characteristics of the respondents the number of epidemiological surveillance staff in the Sultan Iskandar Airport Working Area is in accordance with the existing guidelines. Based on the results of the study it was found that the surveillance was carried out by surveillance staff totaling 6 people. Of the 6 people, 1 person has a master's degree in Public Health (Epidemiology) and 5 other people with S2 education background. An evaluation of the epidemiological surveillance system based on surveillance attributes includes:

Simplicity

Epidemiological surveillance uses the existing surveillance and preparedness guidelines, the operational standard of the procedure is the SOP for surveillance based on the P2P Ministry of Health. Completion of the surveillance form in Airport is

declared easy to fill, filling in the bundle prevention form only provides a checklist (√) in each column and the confirmation sheet also has content that is not much different from the bundle prevention form. The surveillance officer has been able to carry out recording and recording activities every day on every inspection, recording and recording activities are carried out manually and reported annually on SIMKESPEL electronically Data collection is carried out by surveillance officers. The flow of data collection by filling in the form of arrival of infected and non-infected areas and supervision of people and monitoring of transportation equipment, supervision of goods, Inspection of passengers to detect from affected countries who have fever by using Thermal scanner in Arrival Terminal and confirmation of events if detected, with referral to the doctor. The incident is documented through a confirmation sheet of the incidence of infection. Every month, the recapitulation carried out by the surveillance officer will be collected and an analysis will be carried out, the interpretation of the data carried out every month will be evaluated. Data reports will be disseminated as an effort to disseminate information related to the results of observations [12].

Epidemiological surveillance reporting flow in Class III Airport Banda Aceh can be seen in the Figure-1:
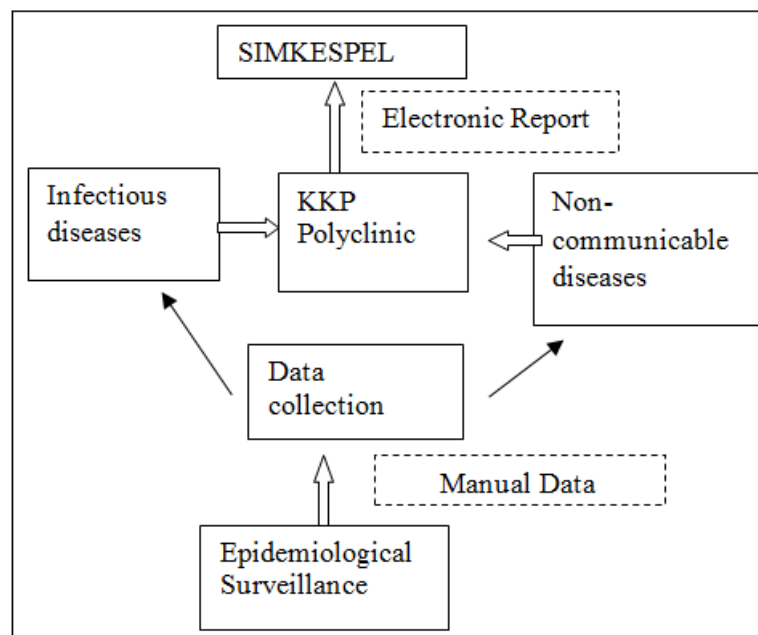

Fig-1: Epidemiological reporting flow of the disease

Flexibility

Flexibility in surveillance systems is a system that can adjust to changes in information needed with limited time, personnel, and budget. Flexibility is the best estimate retrospectively by observing how the system faces new needs. The surveillance system implemented in the Class III Airport area can adapt / adjust to changes in information needed or changes in implementation without having to change the entire flow of the existing system. Based on the results of the informants stated that epidemiological information produced by the surveillance system in the form of reports on observations is recorded manually in a format that has been available and edited and processed into an electronic system. Final supervision and reporting is reported to the supervisor or Director General of the P2P Ministry of Health of the Republic of Indonesia.

Reports in the form of SIMKESPEL applications that have been provided by the Ministry of Health are sent via email and there will be feedback from the center if there are deficiencies or problems in sending the report. In addition to vertical reports to superiors, the results of information dissemination surveillance are also conducted horizontally for cross-sectoral agencies so that the data from surveillance activities can be utilized by other sector or agency programs. Information dissemination can be done in the form of bulletins, circulars, periodic reports, meeting forums and scientific publications [13].

Acceptability

Surveillance results are also needed for various purposes by various parties. Acceptability in epidemiological surveillance systems is the desire of individuals / organizations to participate in the system. The desire to use the system is by people outside the surveillance organization and those who are surveillance officers in the organization / agency. The level of reception of surveillance can be seen from the following indicators: the level of participation of subjects and implementers of surveillance, how quickly it reaches the higher level of participation, the level of

completeness of interviews and the amount of refusal to answer questions, completeness of report forms, report completeness, timely reporting [14].

The results of the interview indicated that there had been dissemination of epidemiological information generated from the surveillance system. Information dissemination is carried out across sectors with relevant agencies involved in law enforcement in port / airport areas such as pelindo, Angkasa Pura, port authorities, hospitals, including customs or immigration. This information is disseminated in the form of annual reports and bulletins.

Sensitivity

The sensitivity of the surveillance system is meant by the level of capability of the surveillance system to be able to capture accurate data / information. The sensitivity of the surveillance system can be influenced by various possibilities such as: people with certain diseases / health problems that need medical help, other diseases / health problems to be diagnosed and the skills of health workers, as well as cases that

will be reported to the system and the diagnosis. Surveillance systems with a low level of sensitivity can still be used in monitoring trends, as long as the sensitivity level is still rational and constant. Examination support tools are very important for diagnosis sensitivity [13].

Health checks are carried out to ensure that the disease is detected from within or from abroad. If someone is sick, treatment will be carried out in the clinic. If someone is detected by MERS virus from abroad, it will be referred to the hospital [15]. Based on the data obtained a tool that is used to detect the presence of a disease or virus is damaged so that the inspection is only obtained based on complaints felt by passengers.

Predictive Value Positive

From the results of epidemiological surveillance in the area of the Class III Airport in Banda Aceh in 2017, the results obtained regarding the flight worthy Patient record, such as found in Figure-2.
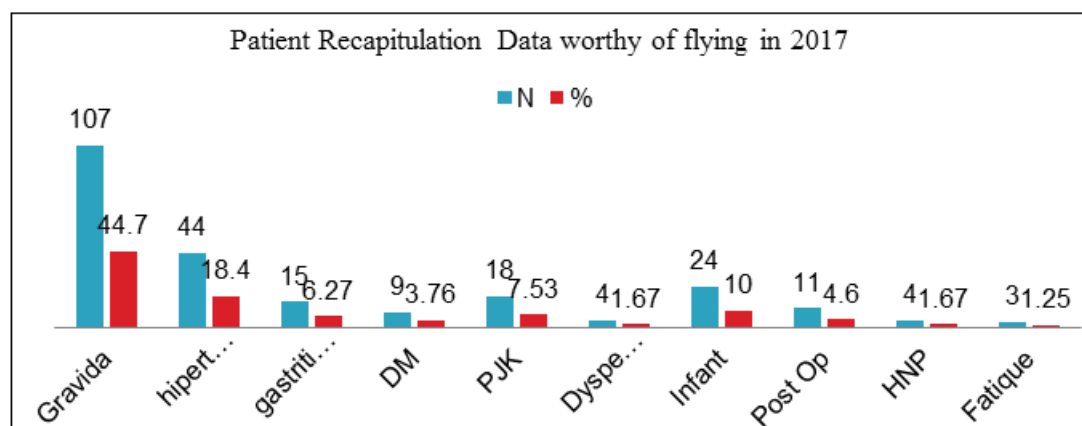

Fig-2: Distribution of year-worthy patients, 2017
Source: KKP, 2017

From the data per 2017 based on the dominating patients, it was found that most of the passengers who were declared to be the most suitable were Gravida patients with 180 (44.7%), and the most diseases were hypertension 44 people (18.4%) where the disease was found almost every month. Which then followed Chronic Heart Disease 18 people (7.53%).

Representative

Representativeness is seen based on the results of analysis and interpretation of data delivered from monitoring activities over a period of time and distributed according to people, time and place. Based on the documentation study conducted, the surveillance officer on the presentation of the data has been based on people (passenger name, gender, examination results, and data on the area affected and not infected, the presence of infectious diseases and infections), time (quarter, year), and place (Ward). Information about

population is important to determine the risk of disease in the population and to complement the epidemiological picture of the disease [16].

Timeliness

Based on the source of the informant stated that if the results of the health examination using the Thermal Scanner were obtained ≥ 380 C, the examination would be carried out in the clinic and if the symptoms of an infectious disease were referred to the hospital.) While the timeliness is assessed based on the length of time for conducting epidemiological surveillance at the Port Health Office Class III of the Banda Aceh Working Area of the Sultan Iskandar Muda Airport, reviewed from the time of data collection to information dissemination and prevention. Surveillance on the collection of reports is given a deadline for each month, namely before the 5th. On the timeliness of data collection, have an absentee sheet to

record the time of collection of surveillance reports to the head of the Class III Port Quarantine Control and Epidemiology Surveillance Banda Aceh. Documentation studies have been carried out, it was found that the surveillance officer did not experience delays in collecting reports from a predetermined date, delays can occur if the surveillance officer is absent because the reason is that there is an outside or sick assignment, which is not timely if the shipment passes from a predetermined limit with a target of 80%.

Data Quality

The utilization of surveillance results will result in better and very important understanding of information, especially regarding health issues. Monitoring on data quality is very important to do, this activity is an activity in validating the data collected so that it is meaningful so that it can meet the objectives of the surveillance system. These activities can also help in improving data analysis and interpretation in surveillance reports. The quality of the data can be known through the completeness of the data, the validity of the data, and the existence of empty answers or do not know in the surveillance form. The vacuum of reporting answers that occurred at the head of the Quarantine Control and Epidemiological Surveillance Section of the Class III Port Health Office in Banda Aceh on the surveillance form was estimated to be almost 50% still empty and not yet filled.

The Surveillance System at the KKP Airport Class III Work Area in Banda Aceh updates every month to monitor the completeness and accuracy of the data and then recapitulates the data annually. This is useful for maintaining the accuracy of the data and maintaining the quality of data generated from the surveillance results that have been collected. Reporting of surveillance results can be used for prevention and prevention of any disease or epidemic found so that preparedness with early detection can be prevented [17].

Stability

The surveillance system in terms of collecting data is well managed on a computer so that if something unwanted happens the data can still be safely stored and tracked again. Stability can refer to the ability of an epidemiological surveillance system to collect, process and analyze data correctly without failure. Recording the results of measurements is done manually with the Register book that is in the Airport and stored in electronic reporting using the SIMKESPEL web portal. Even so, the implementation of physical health checks has experienced problems with damaged measuring instruments such as Thermos scanners which caused the implementation to be delayed but can be overcome by using an existing thermometer in the clinic so that the implementation can still be done with manual reporting and waiting for the server to return to normal if there is an error.

Based on interviews with, Class III Banda Aceh Airport epidemiology personnel, the stability of the surveillance system shows that it has high reliability and high accessibility which means it has high stability. High stability shown from the supporting facilities (computers) used can be used optimally and optimally in conducting surveillance. In addition, the surveillance team also did back-up to avoid unwanted events, so that in the implementation there were no obstacles, the available resources were also able to carry out the surveillance system.

The results of the evaluation of the epidemiological surveillance system at the Class III Banda Aceh Health Office in the Work Area of Sultan Iskandar Muda Airport based on surveillance attributes indicate that the system is simple and capable of providing data without disability and is always available when needed. Evaluation is a process or activity comparing between the results achieved with a predetermined plan. According to KMK No. 1116 / menkes / SK / VIII / 2003 concerning guidelines for administering epidemiological surveillance systems based on health surveillance attributes measured by simplicity indicators, flexibility, Acceptability, sensitivity, Predictive, Positive Value, Representative and time lines .. The seven indicators are one entity, where indicator weaknesses can affect the performance of other indicators so that the surveillance system based on surveillance attributes does not run efficiently and effectively. Data is an important variable in conducting epidemiological surveillance activities, so the type of data collected by surveillance officers can be accurate and valid. The type of data in conducting epidemiological surveillance carried out by officers is data from the origin of foreign arrivals, endemic areas and data on the health of foreign flight crew related to infectious and non-infectious diseases [18].

The data source of epidemiological surveillance activities at the airport came from examining passengers, flight crew and observing documents on the health of passengers entering Indonesian territory through Sultan Iskandar Muda Airport, medical examinations conducted by medical personnel together with surveillance officers.

The simplicity of surveillance means that the structure is simple and easy to operate. A surveillance system must be as simple as possible, but still meet the requirements of achieving the goal. The following measures can be considered in assessing the simplicity of the epidemiological surveillance system, namely the number of types of information sources, the number and type of data, how data / information is presented in the number of organizations involved in receiving case reports, the level of staff training needed, data analysis, time spent in activities and ways of disseminating information to data users. Simplicity has meaning

related to timeliness and will affect the amount of operational costs [19].

Based on interviews with surveillance officers that the surveillance reporting system at the Class III Banda Aceh Port Health Office in the Work Area of the existing Sultan Iskandar Muda Airport, is reviewed from the reporting flow Simplicity, concerning the structure and ease of operation with assessment indicators in the form of understanding collection, recording and reporting of manual and electronic data. Based on these indicators, it is stated that the information and communication is still simple, namely the recording and reporting of electronic data, as a whole, the epidemiological surveillance system at the airport has met the simplicity attribute.

Efforts to further facilitate the dissemination process can be done by utilizing easily accessible information technology facilities. Dissemination can also be carried out in monitoring and evaluation activities by delivering the results of the analysis. Based on the results of the report survey can be run based on observations the system can adjust to changes in information needed with limited time, personnel, and budget. Flexibility is the best estimate retrospectively by observing how the system faces new needs.

Acceptability, is a reflection of individuals or individuals and organizations or units to participate in the surveillance system. The surveillance system carried out at Class III Airports in Banda Aceh has high acceptability because there are agency participation outside the health sector and utilization of surveillance results. This is in accordance with CDC (2001) which states that acceptability is influenced by the willingness of individuals or organizations to participate in the implementation of epidemiological surveillance [20].

The use of surveillance results is also an indicator in acceptability assessment. Information generated from surveillance at Sultan Iskandar Muda Airport can be used for referrals in clinics, health centers and hospitals. In addition, it can also be used for the purposes of research conducted by other parties. It is undeniable that the services of the Banda Aceh KKP Class III are directed to the greatest extent possible to protect and improve public health through efforts to prevent disease according to their main tasks and functions. Thus partnerships with local governments are always woven and enhanced to strengthen synergy in public health services. In many ways, the role and support of local government is very necessary for the existence of the task. For example logistical support in disaster management and health problems, support in health service assignments for hajj embarkation, epidemiological surveillance networks and infrastructure support such as land and buildings for building construction and examination rooms.

Sensitivity of the PCD in the Class III Banda Aceh Airport surveillance system with a low level of sensitivity is usually the tool used to monitor the tendency to contract the disease, using a thermo scanner detection device, but because the device is damaged and the data reported is based on complaints and symptoms felt by passengers. This shows that the sensitivity level is still low. International trade and travel and animals and organisms, facilitate the transmission of infectious diseases across countries. Consequently, the problems faced by developing countries and developed countries in the world are increasingly similar and shifting. The emergence of a global epidemic (pandemic) in particular demands the development of integrated networks throughout the world [21].

Positive predictive value is the proportion of the population that can be identified as a case, which can be assessed by the surveillance system which actually has health problems. And how can the truth value be generated by the surveillance system. The positive predictive value (NPP) is the proportion of people identified as real cases, who are in a condition that is undergoing surveillance. In NPP assessments, the emphasis is primarily directed at confirming case reports from the system. A surveillance system whose NPP is low will capture and report cases with false positives so that it becomes a waste of resources. Based on the results of surveillance every day which has become mandatory data collection work by the Class III surveillance section of the Airport area of Banda Aceh. Then the data obtained is the accumulation of each month reported and recapitulated annually. According to the CDC (2001) Positive Predictive Values were found based on the results of Expert and Laboratory confirmation to detect the presence of an illness. Based on the NPP in the KKP the Airport area cannot be measured because the Lab inspection is not carried out, only if it is found to experience symptoms or there are reports from the initial observation of the departure terminal and information from the airline / airport officer usually only observed body temperature and education or suggested to be referred to a community health centers clinical examination.

In order to prevent the entry and discharge of quarantine diseases and infectious diseases with the potential for outbreaks through air traffic, the implementation of effective epidemiological surveillance needs to be carried out. The implementation of an effective epidemiological surveillance system will be very useful in implementing the early warning system and efforts to prevent deterrence from quarantine diseases and potential infectious diseases [19]. This is possible if done by personnel who are skilled in their fields and supported by adequate facilities. The steps to be taken in streamlining epidemiological surveillance activities are by observing and monitoring, collecting data continuously and analyzing the data collected.

Furthermore, the results of the analysis of the data are used as recommendation material in taking a policy and follow-up actions that will be carried out on objects that have the potential as a medium for transmitting disease. The system is said to be representative if it can correctly describe the occurrence of health problems over time and the distribution of the problem according to place and person.

Presentation of data on periodic reports is displayed in a table diagram to see trends in a certain time period and bar chart to compare the number of cases. So that it can be seen that the surveillance officer is representative in terms of the distribution of cases based on people, time and place. Timeliness in the surveillance system is the level of speed and delay between the steps that must be taken in surveillance. The other side of timeliness is the time needed to determine trends, the time needed for an explosion of disease or the time needed to overcome it. In diseases with a short shoot period, timeliness determines the success of prevention. Whereas in diseases that have latent shoots, timeliness can provide sufficient time to stop the attack and prevent the spread of the disease. Timeliness can be assessed in terms of the availability of information for disease prevention.

Based on the Decree of the Minister of Health of Republic of Indonesia Number 1116 of 2003, it is stated that the accuracy of the reporting unit report is 80%, but for surveillance officers at the Port Health Office Class III of the Banda Aceh Working Area at Sultan Iskandar Muda Airport, the reporting time is 75%. So that it can be seen that the timeliness in 2017 is still not on time because the reason servers often experience interference and surveillance support tools are damaged and require inspection of other tools and affect the effectiveness of data delays.

Based on the Indonesian Ministry of Health's epidemiological surveillance guidelines for 2010, analysis and interpretation is carried out by surveillance officers every 3 months, 6 months and yearly, which will be reported to the head of the Class III Port Quarantine Control and Epidemiological Surveillance Banda Aceh every 6 months. once, this is in accordance with the guidelines for epidemiological surveillance, which is to deliver results or dissemination of information and evaluations conducted once a month to all surveillance officers involved. Timeliness can be assessed from the time needed to follow the flow of the system or accuracy. time in providing information that requires immediate action.

Surveillance is also assessed on the quality of the data based on the completeness of the data and the validity of the data recorded in the surveillance system. The quality of the data is seen from the report of all blank answer activities contained in the surveillance form, especially on the confirmation sheet of the incident. The results of the documentation study found that the confirmation sheet was not filled in completely or the percentage of blank answers was 0.5% especially in the section, medical history, Lab examination, and in the event analysis (symptomatic or asymptomatic diagnosis). So it can be concluded that the quality of data at Class III Airports is still classified as low data quality.

The airport surveillance system updates data through the SIMKESPEL monthly report for monitoring data completeness and accuracy. Monitoring the completeness and accuracy of data is carried out at the end of each month to produce quality data that will support analysis and interpretation of surveillance data. This is very useful to do to support the quality of the data produced.

Stability refers to reliability (the ability to collect data, manage, and provide data without disability) and availability (ability to operate if needed) in the public health surveillance system. Stability can be low if there is a lack of resources. Assessment of stability based on the objectives of the system approach will be more useful, because the surveillance system varies in methods, scope, goals, and objectives. Based on the simplicity attribute, flexibility, acceptability has high acceptability, high sensitivity, while the positive predictive value is still low due to the absence of specific data on reports of complete infectious diseases as evidenced by laboratory results or sample results and only data on PTM (distributed non-communicable diseases) based on person, place and time. The quality of the data collected is still included in the low quality data, indicated by the percentage gain filling in the blank answer form by 70% [22]. Reporting at the end of each month data entry is carried out to report on surveillance results and it is reported in computer systems for data stored properly with SIMKESPEL annually.

CONCLUSION
Based on the simplicity attribute, flexibility, acceptability has high acceptability, high sensitivity, while the positive predictive value is still low due to the absence of specific data on reports of complete infectious diseases. Overall the activities of epidemiological surveillance attributes at the Class III Banda Aceh Health Office in the Work Area of Sultan Iskandar Muda Airport are quite good but there are problems in the surveillance system due to limited equipment, although there is a shortage of positive predictive but the timeline is still implemented.

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