Dama International Journal of Researchers (DIJR), ISSN: 2343-6743, ISI Impact Factor: 1.018
Vol 2, Issue 9, September, 2017, Pages 61 - 69, Available @ www.damaacademia.com

Evaluation of HIV/AIDS Surveillance Implementation Based on Attributes in Health Office of Pasuruan District

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Abtract
Background: *Human Immunodeficiency Virus (HIV) is a crucial problem to be solved. Pasuruan District Health Service data in 2015 showed increasing in the number of cases of HIV/AIDS over the years since the first reported case. The cumulative number of HIV/AIDS from 1993 to 2015 was 1,074 cases. This study aimed to evaluate the implementation of HIV/AIDS surveillance based on attributes in Health Office of Pasuruan District.*

Method: *This study used descriptive survey design. Subjects were surveillance officers HIV/AIDS Health Office and Community Health Center. Data were collected by interview and document study. Data analysis techniques obtained from interviews and observations were analyzed descriptively.* ***Result:*** *The results showed 94.11% attributes of simplicity, flexibility for 83.21%, the acceptability for 100%, the sensitivity for 47.05%, and PPV 100%. The data was analyzed according to the epidemiological variables (representative), punctuality reporting cases for 47.06%, data quality as much as 82.35%, and the stability of the data for 76.47%.* ***Conclusion:*** *Evaluation of HIV/AIDS surveillance in Health Office of Pasuruan District based on the attributes already simple, acceptable, high flexibility, low sensitivity, high PPV, representative, not timely, high data quality, and high stability.*

Suggestion: *Necessary to improve the professionalism of officers through training of HIV/AIDS surveillance, intensifying the dissemination of information to enhance the understanding of the larger community about HIV/AIDS to increase awareness of the threat of HIV/AIDS.*

Keywords: *Surveillance system, HIV/AIDS, Evaluation, Surveillance attributes*

I. INTRODUCTION

Human Immunodeficiency Virus (HIV) is a crucial problem to be solved due to its epidemic impact. HIV is a virus reducing immunes. The development of HIV infection in the body is in duration on five until ten years effecting on *Acquired Immunodeficiency Syndrome* (AIDS), a syndrome or a symptoms collection of diseases. Various impacts of HIV/AIDS epidemic can infect in positive patients or family such as emotional, economic, social and physical impacts caused by the illness and the death of AIDS patients. Economic impacts can be formed in financial demands relating to health care costs and social supports from the environment[10]. The case of HIV/AIDS is like an "*iceberg phenomenon*" due to the number of cases found to be less than the actual number in population or in fact, the official report does not reflect the real problem happened[5].

One of the diseases becoming target implementation of health epidemiology surveillance system in Indonesia is HIV/AIDS disease. HIV is a retrovirus included to the lentivirus family. It infects the body with long incubation periods causing some damages to immune system then destroys it. A symptoms collection of this immune deficiency disease is known as AIDS (Acquired Immune Deficiency Syndrome). Almost 100% of people with HIV show symptoms of AIDS after 13 years[9].

By the end of 2014, the World Health Organization (WHO)[11] recorded about 36.9 million people in the world are infected HIV wherein 2 million of them are new infection cases. In Indonesia, HIV/AIDS was first discovered in 1987 in Bali. The Health Ministry's 2014 report showed an increasing the number of HIV cases year by year since the case was first reported. The cumulative number of HIV from 1987 to September 2014 was 150,296, while the cumulative AIDS cases were 55,799.

Based on the provincial report, the number of HIV/AIDS infection cases reported is in DKI Jakarta with most cases are 32,782 and East Java province in the second most cases with 19,249 cases. Surabaya is the region of the highest number of AIDS cases in East Java for 2,028 cases[7]. HIV infection is one of the major health problems and one of the infectious diseases affecting maternal and child mortality in Indonesia[7].

The Pasuruan District Health Office 2015 report shows increasing the number of HIV/AIDS cases from year to year since the case was first reported. The cumulative number of HIV/AIDS from 1993 to 2015 was 1,074[6]. Therefore, to reduce the incidence of HIV/AIDS disease, it needs a good implementation of HIV/AIDS

surveillance system. The surveillance attribute evaluation is useful to know the implementation of surveillance system in Health Office of Pasuruan District, in the hope that the problem of HIV/AIDS can be reduced.

Therefore, this study aims to evaluate the surveillance of HIV/AIDS cases in Health Office of Pasuruan District based on the surveillance attributes. Surveillance attribute is an indicator that describes the characteristics of surveillance systems[2]. By knowing the characteristics of the surveillance system, a program can be assessed.

II. METHOD

The subjects of the study were HIV/AIDS surveillance officer of Health Office and 16 Community Health Center surveillance officers in Pasuruan District. This research was conducted in the Health Office of Pasuruan District working area, East Java Province in May to June 2016. Implementation of epidemiological surveillance included surveillance attributes consisted of simplicity, flexibility, acceptability, sensitivity, positive predictive value, representation, timeliness, data quality and stability. The data collected was formed in primary and secondary data. Primary data was obtained by interviewing HIV/AIDS surveillance officers. While the secondary data was obtained by documentary study obtained from the Health Office and Community Health Centers in Pasuruan District. Interviews were provided to surveillance officers to know the implementation of HIV/AIDS case surveillance while document studies are applied to find out the various forms used to conduct case surveillance. The instruments used for collecting data in this study were interview guides, document study sheets and tape recorder. Data was analyzed descriptively by describing a real situation of the research then evaluated by using attribute of surveillance.

III. RESULTS

A. Respondent Characteristics

In this study, characteristic of respondents is the underlying thing in the research process in order to facilitate the next data processing. The characteristics of the respondents were classified into several criteria such as the age group, sex, education, duration of work, and workload that outlined in table 1 as follows:

Table.1 Characteristics of Surveillance Officer Respondents in Health Office of Pasuruan District 2016

Variables	n	**%**
Age		
20–30 years old	6	35.29
31–40 years old	10	58.82
41–50 years old	1	5.89
Sex		
Men	8	47.05
Women	9	52.95
Education		
High School	0	0
D3 (Diploma)	6	35.29
Bachelor Degree (S1)	11	64.71
Working Duration		
< 1 year	2	11.75
1–2 years	5	29.41
2–5 years	9	52.95
> 5 years	1	5.89
Workload		
1 Program	2	11.74
>1 Program	15	88.26

Table 1 outlines the age criteria, a number of 10 respondents (58.82%) were aged 31-40 years becoming the most respondents, and 1 respondent (5.89%) was aged 41-50 years. In sex criteria, most respondents were women that consist of 9 respondents (2.95%) and men that consist of 8 respondents (47.05%). In education level, the most respondents came from Bachelor Degree for 11 respondents (64,71), then D3 (Diploma) for 6 respondents (35.29%) and no respondents for high school educated. Then criteria based on a long period of work as an HIV/AIDS surveillance worker, the respondents with the longest working duration were 2-5 years consist of 9 respondents (52.95%), the duration of employment was less than 5 years is 1 respondent (5.89%). The last, based on workload, respondents with the most workload were 15 respondents (52.95%) having more than 1 program and 2 respondents (5.89%) with 1 program workload.

B. Simplicity

In performing the diagnosis of HIV and AIDS, all respondents (100%) stated that diagnosis was easy to perform. Diagnosis is committed by laboratory examination in Health Service that has service Provider Initiated Testing and Counseling (PITC) and Voluntary Counseling and Testing (VCT) either in Community Health Center or in Hospital.

For the case reporting forms, all respondents stated that the form was simple. Community Health Centers and hospitals have had their own forms based on the type of HIV/AIDS testing services they have. Based on the interview results, researchers obtained that 17 respondents (100%) informed that there was no difficulty in using the existing forms.

Based on interviews, all respondents stated that HIV/AIDS data reporting was easy to do. Data reporting had been supported by SIHA (HIV and AIDS Information System) program that has been connected with the District/City Service up to the Center Service. Hence the respondent only inputs the data then sends it by using the software. Therefore reporting data was relatively easier and faster.

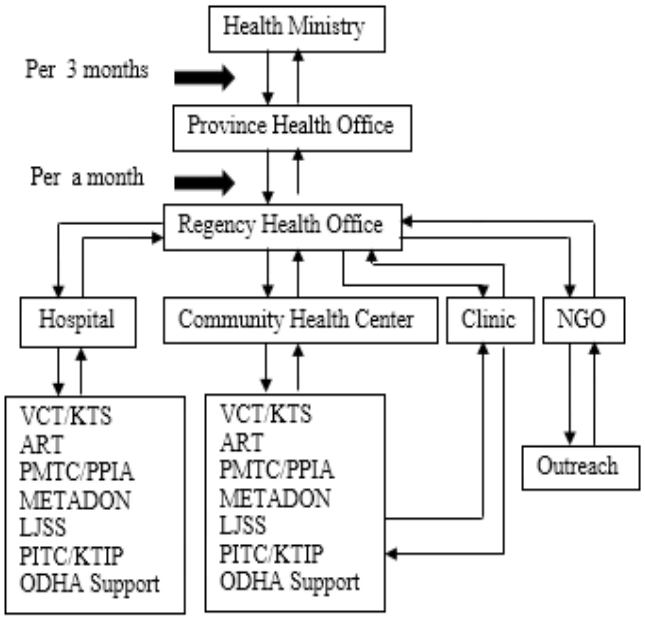

Figure 1. HIV/AIDS Reporting Flow

The implementation of cases surveillance in Pasuruan District conducted by collecting data in active and passive. Data collection was committed actively through outreach to the community means the officers visit the society to check while passively is formed reports from doctors or health officers by using HIV/AIDS forms. Based on the results of interviews, 13 respondents (76.47%) told that the form was easy to use.

C. Flexibility

Based on interviews conducted to HIV/AIDS surveillance officers found that 14 respondents (83.21%) stated that the cases surveillance of HIV/AIDS had changed every year. HIV/AIDS surveillance system had been changed into computer-based system with SIHA application which takes little time in reporting and it was easy to operate.

D. Acceptability

Data of HIV/AIDS cases surveillance implementation in Health Office of Pasuruan District had been utilized by Community Health Center and AIDS Commission to monitor case situation in Pasuruan District. Based on interviews of all respondents, the agencies such as the Health Service and AIDS Commission used the HIV/AIDS case data from Community Health Center and hospital to make the HIV/AIDS prevention planning policy in Pasuruan District.

E. Sensitivity

Based on interviews, 8 respondents (47,05%) stated that surveillance system being operated can monitor the HIV/AIDS cases number changes in every time to provide early vigilance action.

D. Positive Predictive Value (PPV)

Based on interviews, all respondents (100%) stated that the confirmation of cases reported through the surveillance system only relies on the results of the laboratory hence the cases reported is the real cases. Laboratory tests are committed at health-care facilities with special services such as PITC or VCT that is sure to be true.

E. Representativeness

Based on document studies conducted in Health Office of Pasuruan District, the representativeness of data/reports produced by the HIV/AIDS surveillance system in Health Office of Pasuruan District was known that data had been processed based on epidemiological variables (time, place and person) therefore it can illustrate the distribution of cases according to epidemiological variables.

It was known that the prevalence rate of HIV/AIDS cases in Pasuruan were increasing every year and the highest HIV/AIDS cases was found in Prigen District. Build on data of Health Office in Pasuruan District, most of patients were in 20-29 years.

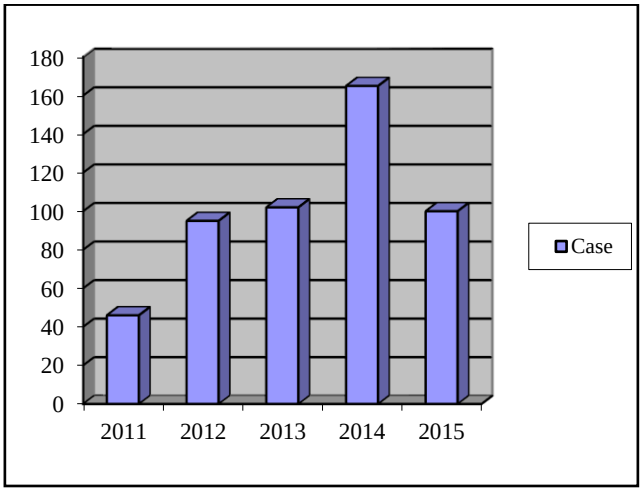

Figure 2. HIV/AIDS Case Prevalence Graphic 2010-2015 in Pasuruan District

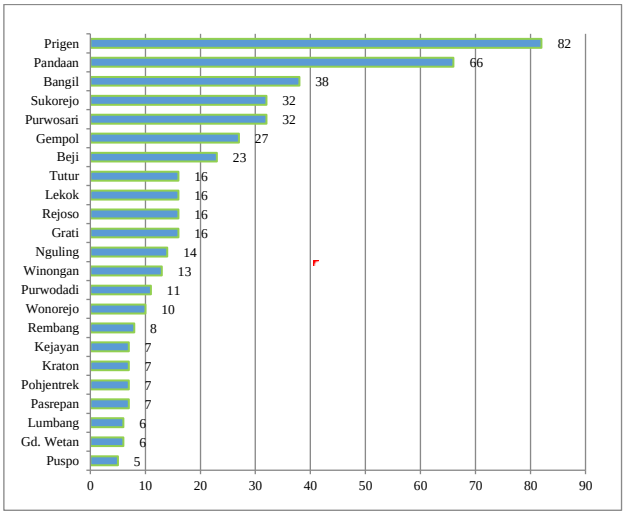

Figure 3. HIV/AIDS Case Distribution Based Place

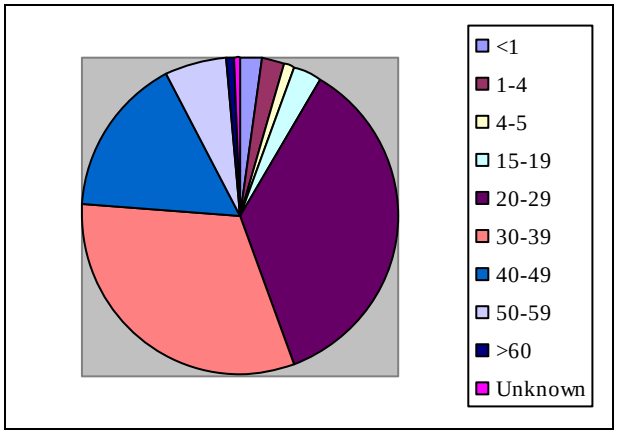

Figure 4. HIV/AIDS Case Graphic Based Age Group

Regarding sex of HIV/AIDS patients in Pasuruan District on 2015, the percentage of men and women patients was not quite different. The percentage of man was 58% whereas woman was 40%.

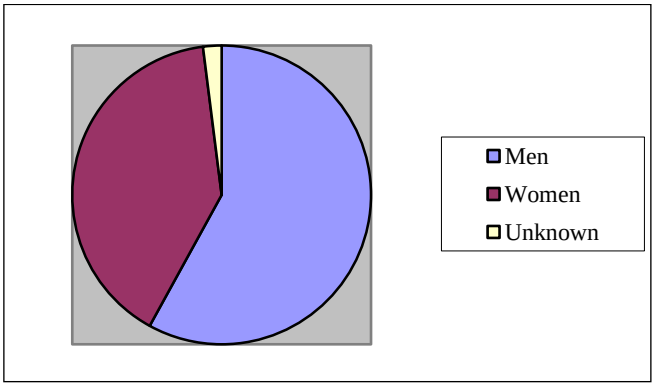

Figure 5. HIV/AIDS Case Distribution Graphic Based on Sex

This thing outlines that the risk of HIV/AIDS is regardless of gender either men or women.

F. Timeliness

Timeliness of HIV/AIDS surveillance implementation could be measured by the accuracy of reports from health service units, the reports of data processing and analysis, and timeliness in disseminating information. Build on interviews with surveillance officers, 15 respondents (88.23%) were not on time in holding report every month. 12 respondents (70,58%) were not on time in analyzing and processing. Nevertheless, 17 respondents (100%) were on time in dissemination of information.

E. Data Quality

The quality of data was measured by the completeness and validity of collected data viewed from the percentage of empty and unknown answers on the HIV/AIDS registration form at Community Health Center. Based on the interviews, 14 respondents (82.35%) wrote the complete patient identity on HIV/AIDS forms provided.

G. Stability

Based on interviews with HIV/AIDS surveillance program holders, 13 respondents (76.47%) stated that data kept in the last 5 years. Data storage was committed manually by saving the files into the laptop. To record the case, data was written manually in daily notes, then recorded and processed every month in SIHA application for monthly reports to the Health Office of Pasuruan District. In addition, researchers obtained information that SIHA application was rarely damaged, or loss of data.

IV. DISCUSSION

A. Simplicity

Simplicity in a surveillance system can be seen in structure, flow of reporting, and ease of operation[2]. The implementation of case surveillance activities is simple if there is no difficulty in performing its tasks which include: facilities and infrastructure are easy to use, ways/methods in collecting data, management of resources owned, data processing, data analysis, and information dissemination.

Based on the results of this research, it can be concluded that the implementation of HIV/AIDS surveillance in Health Office of Pasuruan District was simple to implement. This can be seen in the implementation of HIV/AIDS surveillance method used in collecting data that had been using *HIV/AIDS Information System* (SIHA). In reporting cases, Hospital and Community Health Center Reporting Units report data to the Health Department well. This is due to SIHA system had been connected to the Health Department and Indonesia Health Ministry hence officers worked only to input data entry into system.

Meanwhile, regarding the case reporting format in HIV/AIDS surveillance, informant stated that the report case formats are easy to be delivered even though there were found many manual forms that must be filled and submitted to Health Office of Pasuruan District then sent to the Provincial Health Office. The informant added that the manual form sheet was only a formality and the data used for analysis was data that had been inputted in SIHA. Besides, the process of analysis and interpretation of HIV/AIDS data was not quite difficult because it was outlined in descriptive form.

B. Flexibility

A flexible surveillance system can adapt to changes towards required information or implementation situation without a significant increasing in the need for cost, labor, and time[2]. Based on interviews in the Health Office of Pasuruan District found that the HIV/AIDS surveillance system has a high flexibility. This is due to changes in the surveillance system based computer with SIHA application that gives impact towards the timing of case reporting to be shorter and its operation is not too complicated.

C. Acceptability

Acceptability describes the willingness of a person or organization, either in health department or the outside of health department to participate in committing and utilizing the monitoring results of case surveillance activities[2].

Acceptability of HIV/AIDS surveillance activities in Health Office of Pasuruan District can be counted in high acceptability. The acceptability of this system is due to several parties participating in the implementation of case surveillance such as Hospital and Community Health Center reporting units. While the outcome of case surveillance in Health Office has been utilized by Health Problem Control as an executor then used to monitor the situation of HIV/AIDS in Pasuruan.

D. Sensitivity

Based on interviews with HIV/AIDS surveillance officers in Health Office of Pasuruan District, it was known that the current surveillance system which was operated has been able to illustrate the great problems of HIV/AIDS even though had not been able to monitor the rapid change of cases to provide early vigilance. Implementation of a second generation surveillance system is intended to provide early vigilance towards the potential infection of HIV regarding on behavioral surveillance results. Because it was still working passively, the current surveillance system had not functioned optimally.

According to the Center for Disease Control and Prevention (2001)[2], the sensitivity of the surveillance system can be seen at two levels: the case proportion of a disease/health problem detected by the surveillance system at the level of data collection and the ability to detect of outbreak. The sensitivity measurement of this system can only be seen from the proportion of detectable cases.

Sensitivity is influenced by people with certain disease/health problems who want to be healthy. This matter cannot be solved because people with HIV have not realized that they get HIV, they will look for treatment if the health conditions turn bad as the effect of AIDS.

Based on the results of research in the Health Office of Pasuruan District, researcher found that the surveillance system being operated had low sensitivity. This was due to the current surveillance system still passive and the proportion of detected cases was not the proportion of cases in society but only the high-risk population.

E. Positive Predicate Value (PPV)

The Positive Predictive Value of the case is a proportion of the identified population by a surveillance system as a case and proved to be case. Based on interviews, found that Positive Predicate Value of HIV/AIDS surveillance system in Health Office of Pasuruan District cannot be calculated and determined because Health Office never rechecked on HIV and other laboratory examination. The Health Office relied on laboratory inspection reports from health service facilities that had PITC or VCT trusted services to diagnose HIV/AIDS in hospitals and community health centers. This was due to HIV test and other laboratory tests were not a major requirement in HIV/AIDS surveillance and the limitation of cost and officers' ability.

The Positive Predicate Value, *Center for Disease Control and Prevention* (2001)[2]. is the proportion of the population identified as the case by a system, and proved to be case. Measurement is emphasized on the case study confirmation based on its gold standard. In case surveillance activities, PPV can be measured through the diagnosis coverage of HIV/AIDS cases examined in laboratory. PPV case surveillance activities in Health Office of Pasuruan District had a high PPV. It showed in the results that all HIV/AIDS patients had laboratory examination (100%). Likewise with the number of cases handled, found that 100% of people with HIV/AIDS handled properly. This is due to Health Office efforts to overcome the focus. Handling focus was held to limit HIV/AIDS infection and prevents the infection in patients' environment.

F. Representativeness

A representative surveillance system will describe the occurrence of a health event accurately in certain period and outbreak the event depends on person, place and time in society[2]. Based on the result of the research, it was known that case surveillance data in Health Office of Pasuruan District was representative because the case data of HIV/AIDS having been analyzed build on epidemiology variable of time was HIV/AIDS case per year. The outbreak of diseases based-time was to know the speed of disease and duration of infecting the disease.

HIV/AIDS case data based on place variable (sub-district) were also processed and analyzed then graphed. Afterwards a stratified map was created in every sub-district to know wherein the high potential areas of HIV/AIDS. Hence this data is useful for a reference to assist or facilitate the prevention of an illness and monitor the area. After conducting interviews at several community health centers in research area, researchers obtained the information that the area was near to the localization. Likewise cases of HIV/AIDS concerned on people variable, researcher also performed data processing. Data processing was performed by grouping HIV/AIDS patients by gender, age, and occupation. From data processing, researcher found the most infected groups were in 20-29 years as productive age.

Case distribution is important in monitoring the people health problems. Distribution by person, place, and time variables is useful for identifying high-risk groups and areas[4].

G. Timeliness

Based on the results of the interviews, it was known that the timeliness of the HIV/AIDS surveillance system in Health Office of Pasuruan District can be measured based on time standard that had been established on the next months at 25th, the report must be received by the Health Office from the Reporting Units of Hospital and Community Health Center. Yet the implementation was not on time. This was due to network connectivity in SIHA applications and multitasks.

Timeliness describes the speed and lag in steps of surveillance system consisting of identification of health problems, reporting to responsible units and the action to feedback[2]. Timeliness in surveillance systems should be assessed as information on disease prevention efforts, both in the event of early mitigation and long-term plans.

Based on information from interviews and documentation studies conducted, it can be concluded that the implementation of case surveillance in Health Office of Pasuruan District was not timely. Timely and complete data are very helpful in data accuracy to help the analysis and interpretation of data, especially early detection of a disease[8]. Research conducted by Barr, *et al*. (2011)[1] showed that timeliness both in reporting, case-handling, and system dissemination should be considered. Timely data reporting allows utilizing data appropriately for internal decision control. Regarding timeliness, states that by using data in a timely manner and high quality information, identification in overcoming the population health problems become more effective and efficient[12].

H. Data Quality

The quality of the data is assessed through the assessment of the completeness of the filling in data/report forms. Based on interviews with informants, researcher concluded that data quality from HIV/AIDS surveillance system rarely occurred an empty filling in data/report forms. This was due to the form used by officer had been provided in SIHA system in every PITC or VCT service in Community Health Center and Hospital. Even though in some reporting units, some patients still refuse to give personal information.

The quality of data concerned on the quality of the completeness of quantity, data and source of data[2], and its processing can be measured by knowing the percentage of empty and unclear data on the form (completeness filling the components in the form). Based on the results of the research, regarding completeness of the data, researchers found that the forms used by the Health Services Facility in conducting case surveillance were clear and already filled (100%) which means no single column was unfilled. So the surveillance of HIV/AIDS conducted by Health Office in Pasuruan District had high data quality. Timely and complete data are very helpful in data accuracy, so it will also help in the analysis and interpretation of data, especially for early detection of a disease[8].

I. Stability

Data processing of the HIV/AIDS surveillance system has been used computer. The system used is the HIV/AIDS Information System (SIHA) for processing data, although there were some parties still used *google docs* as an alternative. However SIHA program is more desirable because it is easy to operate. In addition, most HIV/AIDS program managers are trained officers to applicate the program.

Because it is easy to operate, the SIHA program is widely used by surveillance officers to collect, organize, manage and save data/reports. The time required to operate completely and perfectly depends on the workload. But the operation does not require a long time when using the program. If the workload is small, the required time is less than 1 day. If the load is large, the required time is approximately 3 days.

The process of collecting/receiving data only takes less than 1 hour. Yet it also depends on the sample size. Settings (move, insert, edit / modify, save, and back up) data is done in about 1 hour, while to produce a data only takes 1 hour.

Based on the results of the interview, there was no system damage. In addition, informants stated that what often happens were a connectivity disruption (Internet network) when accessing SIHA, but it only usually happened approximately for 1 hour hence it did not disrupt the running of HIV/AIDS surveillance system.

Health data with good stability are essential to improve the timeliness of monitoring of health outcomes[3]. Based on the research results, researchers can conclude that Health Office of Pasuruan District had high data stability. It was shown by recording and processing data already used SIHA computerized system. Although connectivity problems sometimes occurred but it did not inhibit the system work because disruption occurred at least 1 hour and it was not difficult to overcome. Besides, there was also no computer damage and data loss due to data reported from the reporting unit directly had been put in the SIHA's entry connected to the server in the Health Service and Center.

Improvement of system stability can be committed through computerized data management process, namely the process of recording, processing, and reporting data. Electronic reporting system enables reporting to be done easily and effectively besides it has great potential to improve monitoring in this case not only timeliness, but also data quality. Nevertheless, it is also supported by accurate and qualified data input[11].

V. CONCLUSION

Evaluation of HIV/AIDS surveillance in Health Office of Pasuruan District concerns on surveillance attribute consist of the implementation of HIV/AIDS surveillance which is easy and simple, surveillance system having high flexibility, party utilizing data (high acceptability), low sensitivity, reported case as in real situation (High PPV), reported cases include epidemiological variables (representative), reporting delays (not timely), high data quality, and collecting and managing data performed easily and no damaging (high stability).

VI. RECOMMENDATION

1. Necessary to improve the professionalism of surveillance personnel through HIV/AIDS surveillance training.
2. Necessary for engaging other institutions partaking HIV/AIDS to participate in collecting and processing data.

3. Need to increase role of cross-sector and cross-program participation in supporting the implementation of case surveillance activities in order that the implementation can be more optimal.
4. Need to increase the intensity of information dissemination to increase public understanding about HIV/AIDS in order that people and their family can defend and protect their selves from HIV/AIDS.

ACKNOWLEDGMENTS
The Authors sincerely say thanks to the chief of Health Office and All HIV/AIDS officers of Community Health Center in Pasuruan District who have taken part in this research.

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