



Trial Recording and Reporting of Manual Early Warning Alert and Response System (EWARS) at the Public Health Office P2KB Lumajang Regency

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Abstract. The Spreadsheet for Recording and Reporting the Manual (SKDR) is a system established as a back-up for SKDR data owned by the Public Health Office, Population Control and Family Planning Office of Lumajang Regency. This program aims to assist the verification process carried out by regency level surveillance officers when a warning signal appears on the National SKDR. Implementation of the program was carried out through a pilot phase before being implemented by 25 Public health center in Lumajang Regency. Innovative products in the form of filling guides and introductory videos were also created to support the successful implementation of the program. The results of the trial during May-June 2022 in the form of data on total cases of disease reported in SKDR and detailed patient information for each case. There is a need for technology development for design of spreadsheets in the future.

Keywords: surveillance · early warning alert and response system (EWARS) · spreadsheet

1 Introduction

Efforts to prevent and control health problems can be carried out through health surveillance activities. Health surveillance is an observation activity that is carried out continuously on information data about the incidence of disease and conditions that affect the increase and transmission of disease [1]. The existence of surveillance will carry out early awareness of possible Extraordinary Events or outbreaks. A health problem is declared an Extraordinary Event if there is an increase in the number of morbidity and mortality that is epidemiologically significant in an area and a certain period of time. The implementation of health surveillance must be able to provide an epidemiological picture with components of the host, disease agent and environment based on the dimensions of person, time, and place [1].

In Indonesia, surveillance system that uses information technology is the Early Warning Alert and Response System (EWARS or SKDR). A system that was pioneered and developed by the Ministry of Health of the Republic of Indonesia since 2007 which was adopted from the World Health Organization (WHO). Early Warning Alert and Response System is used in an effort to form a quick action or response to the potential or emergence of an extraordinary event of a disease. This system can monitor the trend development of an infectious disease that has the potential for outbreaks or outbreaks with a weekly period and provide a warning signal (alert) to program managers if there are cases that exceed the threshold value so as to encourage officers to respond quickly. All epidemiological surveillance officers at the village, regency/city, and provincial levels have their respective duties that are continuous in carrying out the SKDR. The regency/city surveillance unit is tasked with conducting inspections of disease reports that have been reported to the system every week. If a case is found that exceeds the threshold and an alert or warning signal appears, the regency/city surveillance officer must verify it by contacting the public health center officer to clarify the existing signal. According to Siswoyo in Rekha, the Early Warning Alert and Response System requires the support of other information technology in supporting proper recording and reporting [2].

Public Health Office, Population Control and Family Planning Office of Lumajang Regency plays a role in monitoring and providing verification if there are alerts or warnings from cases that exceed the threshold value. However, in the implementation of this SKDR, Lumajang Regency is still a priority Regency/City that must be considered in the implementation of SKDR verification. The achievement value between alerts and responses in Lumajang in 2021 is 43% with the alert information being verified but for a long time (>1 month). In 2022, the total alert and response achievement is 53%, while this year's provincial target is 70%. This statement shows that in Lumajang Regency the achievement of SKDR verification is still low and the absence of back up SKDR data at each Public health center can affect the SKDR verification process. Therefore, it is very necessary to create an SKDR database that contains the number of cases and additional information for each patient. The creation of the SKDR database in question is in the form of a manual recording and reporting spreadsheet that will be filled out by each public health center. Spreadsheet that is made to solve the problem of low SKDR verification and which is used as a backup of SKDR data is called the Manual SKDR Recording and Reporting spreadsheet (P2 SKDR Manual) which consists of two spreadsheets. The first spreadsheet contains the number of cases of each disease reported with a weekly period and the second spreadsheet contains additional patient information on the number of reported cases.

2 Method

Problem data collection techniques are carried out by means of documentation and interviews. Documentation was carried out through identification of the results of the evaluation meeting with the East Java Provincial Health Office. Meanwhile, interviews were conducted with the Public Health Office, Population Control and Family Planning of Lumajang Regency to discuss problems and appropriate problem solving.

BULAN	Kode SMS	Penyakit	Minggu epid Ke-1	Minggu epid Ke-2	Minggu epid Ke-3	Minggu epid Ke-4	Minggu epid Ke-5	DETAIL	Total Kasus Januari
A	A	Diare akut						KLIK DISINI	0
	B	Malaria konfirmasi						KLIK DISINI	0
	C	Tersangka Demam Dengue						KLIK DISINI	0
	D	Presumta						KLIK DISINI	0
	E	Diare Berdarah atau Disentri						KLIK DISINI	0
	F	Tersangka Demam Tifoid						KLIK DISINI	0
	G	Sindrom Jaundis Akut						KLIK DISINI	0
	H	Tersangka Chikungunya						KLIK DISINI	0
	J	Tersangka Flu Burung pada Manusia						KLIK DISINI	0
A	K	Tersangka Campak						KLIK DISINI	0
N	L	Tersangka Difteri						KLIK DISINI	0
U	M	Tersangka Pertusis						KLIK DISINI	0
A	N	AFP (Lumpuh Layu Mendadak)						KLIK DISINI	0
R	P	Kasus Gigitan Hewan Penular Rabies						KLIK DISINI	0
	Q	Tersangka Antraks						KLIK DISINI	0
	R	Tersangka Leptospirosis						KLIK DISINI	0

Fig. 1. Trial first spreadsheet

The tool for the verification process and backing up data in the form of a spreadsheet. Manual SKDR Recording and Reporting was implemented during a two-month trial period. In May-June 2022 in three Public Health Center, namely Public Health Center Sukodono, Labruk and Kunir, which carried out a trial of the P2 SKDR Manual spreadsheet accompanied by the problem-solving program manager. In the first spreadsheet the public health center surveillance officer will fill in the number of cases in 23 diseases by adjusting the epidemiological week and the filling public health center sheet. After filling in the amount, it is followed by filling in additional patient information in the second spreadsheet via the hyperlink in the first spreadsheet. Tools that need to be filled in in the second spreadsheet include name, gender, age, address, symptoms, date of symptoms, lab results, and other information such as patient treatment information (Figs. 1 and 2).

P2 SKDR Manual program is supported by the existence of innovative products in the form of filling guides and introductory videos. Filling guide contains an explanation of the usefulness of the tools or features contained in the spreadsheet. This filling guide is in pdf form with explanations accompanied by pictures of spreadsheet tools. Equipped with a video that explains the background of making the program and how to fill out the spreadsheet. It is hoped that the filling guide and introductory video can make it easier for officers in the filling process so that the program created can solve the problems that exist in the Public Health Office, Population Control and Family Planning of Lumajang Regency. Innovation products are shared via Google Drive which can be accessed by everyone who has a link to make it easier for officers to access supporters.

P2 SKDR Manual was distributed to selected Public Health Center through a circular letter from the Public Health Office, Population Control and Family Planning of Lumajang Regency accompanied by a hard file of the guide for filling out. The spreadsheet that is used as a backup of the SKDR data contains confidential data. Therefore, as a safeguard to avoid manual SKDR data leakage, the spreadsheet settings are limited to

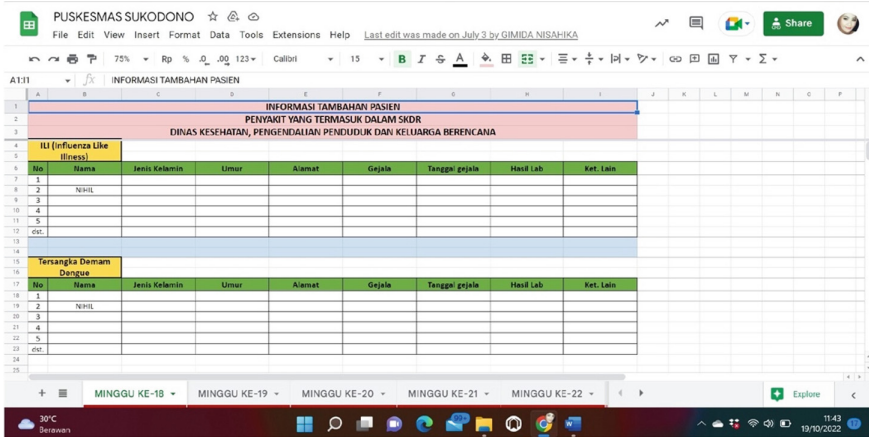


Fig. 2. Trial second spreadsheet

the email of the invited public health center. So each filling clerk’s email will be entered in the share settings in the spreadsheet. Monitoring of this problem solving program is also carried out by the author to observe and control whether the filling is appropriate and on time. In addition, at the final stage, an evaluation will be carried out in assessing the trials that have been carried out for two months. An evaluation questionnaire was created by the author tailored to the program’s objectives and shared via a google forms link.

3 Results

The spreadsheet trial which was conducted for two months resulted in data derived from recording and reporting by the public health center. The three selected health centers have filled out the spreadsheet provided. The trial period for the detailed patient information spreadsheet was only carried out on 2 diseases, namely Dengue Fever Suspect and ILI (Influenza like Illness). A recap of the number of cases from the results of completing the P2 SKDR Manual trial for two months in three public health center can be seen in the Table 1.

Table 1. Recap number of cases (first spreadsheet)

Public Health Center	Dengue Fever		ILI		Total
	May	June	May	June	
Sukodono	2	0	56	20	78
Labruk	2	6	0	0	8
Kunir	0	0	17	0	17
Total	4	6	73	20	

Table 2. Second spreadsheet amount recap

Public Health Center	Dengue Fever		ILI	
	Case	Patient Details	Case	Patient Details
Sukodono	5	2	76	2
Labruk	8	5	0	0
Kunir	0	0	17	0
Total	13	7	93	2

Based on the table above, it can be seen that the total suspected cases of dengue fever and ILI (Influenza like Illness) in May-June 2022 at the Sukodono Public Health Center were 78 cases, Labruk 8 cases, and Kunir 17 cases. It can also be seen that dengue fever suspects had a lower number of cases than ILI in the trial period. Between the two months of the spreadsheet trial, more dengue fever suspects were found in June, namely 6 cases. Meanwhile, ILI cases decreased from May to June, from 73 cases to 20 cases.

The results from the Table 2 second spreadsheet containing additional patient information are partially filled out correctly in the patient's name, gender, age, address, symptoms in the patient, date of appearance of symptoms, lab results, and other information containing inpatient or outpatient care. In the second spreadsheet there is a deficiency, namely the number of patients in the additional patient information does not match the number previously reported.

4 Discussion

The Manual SKDR Recording and Reporting Spreadsheet is a spreadsheet related to the National SKDR. Implementation of the National SKDR is carried out every week on a computer-based basis, which can show a warning signal in the event of an increase in cases that exceeds the threshold [3]. Existence of the P2 SKDR Manual spreadsheet can generate data to assist and support the process of verifying the SKDR report by the Public Health Office, Population Control and Family Planning Office of Lumajang Regency as the regency/city surveillance unit. The technique used is to view and observe detailed patient reports in the second spreadsheet and the number of cases in the first spreadsheet, so it can help the verification process if the number of cases and the number of patients in the additional information have the same number.

Judging from the results of filling out spreadsheets during the trial period, the first spreadsheet resulted in 10 cases of suspected dengue fever cases and 93 cases of ILI in the three public health center. The dengue fever suspect reported from the public health center to the National website and this manual is a case of Dengue Hemorrhagic Fever (DHF). Dengue hemorrhagic fever is one of the main health problems in Indonesia. This infectious disease is caused by the dengue virus which is transmitted through 30 mosquito bites. DHF cases increase faster in the rainy season, so it is necessary to watch out for mosquito larvae in the living environment [4]. Six of the seven DHF patients reported in the second spreadsheet were under 14 years of age and more were male. This

is in line with previous studies showing that the majority of DHF incidences occur in the 5–14 year age group, where at that age the immune system is still low so that age is one of the risk factors for the incidence of DHF [5]. According to Kasman in Tomia et al., gender can affect the incidence of DHF due to mobility factors which basically men spend more time outside the house so they have a high risk of being bitten by mosquitoes [5].

In the case of ILI reported in the second spreadsheet only 2 patients out of 93 patients. The patients were male and female from Sukodono sub-regency. ILI was defined as an acute respiratory illness with fever above 38 °C and cough in the last 10 days. Another study that has been carried out reported that 12% of the ILI cases studied had close contact with another person with symptoms of ILI within 14 days before presenting themselves with symptoms [6]. It also causes ILI cases to be higher than DHF cases during the spreadsheet trial period in three health centers in Lumajang Regency.

This Manual SKDR Recording and Reporting Program is supported by the Filling Guide and Introductory Videos to filling out tutorials. The existence of the digital era makes it easy for everyone to obtain information easily and quickly, therefore the P2 SKDR Manual innovation product is made in the form of soft files that utilize information technology. Innovation products are shared via Google Drive which can be accessed by everyone who has a link to make it easier for officers to access supporters. The filling guide consists of six sheets that explain the tools and their functions as well as the steps for filling out the spreadsheet and an introductory video accompanied by a spreadsheet image that has a duration of five minutes.

Case data obtained from the P2 SKDR Manual spreadsheet can be used to monitor disease progression, which can be seen and accessed by all public health center in Lumajang Regency. In addition, the spreadsheet that has been created is useful as a backup of data owned by the Public Health Office, Population Control and Family Planning Office of Lumajang Regency. The evaluation results show that the overall appearance of this spreadsheet is good and simple so that it is easily understood by officers. Product innovations have also succeeded in supporting officers in understanding this problem-solving program. However, in the implementation of the program there are still obstacles in data collection, such as data provided from village midwives or sub-health centers that are inappropriate and late.

5 Conclusion

The Public Health Office, Population Control and Family Planning Office of Lumajang Regency as the Regency/City Surveillance officer in implementing the SKDR has the task of verifying if there is an alert signal in cases that exceed the threshold. As a tool to support and support the verification process, a database in the form of a spreadsheet of Manual SKDR Recording and Reporting (P2 SKDR Manual) was created. Equipped with innovative products in the form of a filling guide and introductory video, a P2 SKDR Manual trial was carried out during May–June 2022 at 3 selected Public health center, namely Sukodono, Labruk and Kunir Health Centers. The trial results show the number of suspected cases of Dengue Fever and ILI accompanied by detailed patient information. The program that has been tested can be continued for program implementation

throughout the Lumajang Regency Health Center. Technically, the P2 SKDR Manual spreadsheet still needs to be redeveloped to get a fast way and can be developed in the form of a website to avoid mistakes in filling out each public health center.

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