



## Early Warning Alert And Response System Of Dengue Hemorrhagic Fever Analysis Based On Modified Malcolm Balridge In Trenggalek Regency

**Abdul Hakim Zakkiy Fasya<sup>1</sup>**  
Nahdlatul Ulama University of Surabaya

**Abstract.** Early warning alert and response system (EWARS) of DHF cases was implemented as an effort to prevent and control DHF cases in Trenggalek Regency. However, the dengue fever case still high in Trenggalek Regency. This research was aimed to analyze the implementation of DHF EWARS based on Malcolm Balridge modification. This research was an evaluatif method through qualitative approach. The study design was cross sectional. The research was conducted in Kabupaten Trenggalek, involved 12 respondents taken by purposive sampling. The result showed that there were obstacles in each component that need improvement. The delay of reporting DHF case, the Eradication of Mosquito Nests behavior still not good, the lack leader's attention to the giving of incentive/ reward especially those in relatively difficult areas, the need for DHF EWARS officers at the *Puskesmas*, technological barriers in reporting system, and budget management constraints *BOK* to support the implementation of DHF EWARS. The conclusion is results of the implementation were still obstacles in the timeliness of reporting, especially in areas with relatively difficult geographical conditions (mountains) due to constraints on telecommunication networks and budget limitations because they only depend on the *BOK* budget.

**Keywords :** EWARS, DHF, Malcolm Balridge

### 1. Introduction

Dengue hemorrhagic fever (DHF) is found in tropical and sub-tropical regions. Data from all over the world shows Asia ranks first in the number of dengue sufferers each year. Meanwhile, from 1968 to 2009, the World Health Organization (WHO) recorded Indonesia as the country with the highest DHF cases in Southeast Asia. DHF is still one of the main public health problems in Indonesia. The number of patients and the area of their spread is increasing along with the increase in mobility and population density (1).

DHF cases in Indonesia in 2016 occurred as many as 204,171 cases with a total death of 1,598 people. The number of dengue cases in 2016 increased compared to the number of cases in 2015 (129,650 cases). The number of deaths due to DHF in 2016 also increased from 2015 (1,071 deaths). The IR or DHF morbidity rate in 2016 also increased from 2015, which was 50.75 to 78.85 per 100,000 population. This shows that dengue cases in Indonesia are still a serious threat that requires special attention in prevention (2).

The Case Fatality Rate (CFR) of death due to DHF is more than 1% categorized as high. In 2016 there were 11 provinces that had high CFR where East Java was included, with a CFR of 1.40%. The government gave instructions that in provinces with high CFR, is very necessary to improve the quality of health services and increase public knowledge to immediately go to health facilities if there are symptoms of DHF (2).

DHF in East Java tends to increase related to population density, population mobility, urbanization, economic growth, community behavior, climate change, environmental sanitation conditions and the availability of clean water. The high rate of dengue morbidity and mortality showed that still needed to improve the early diagnosis and adequate management of DHF cases (3).

In 2016 there was an explosion of dengue cases in East Java Province, where several regencies had a number of cases of more than 1000 cases, including one of them Trenggalek Regency which occupied the top 5 regencies in East Java with the most cases of dengue, which was 1159 cases. The number of

these cases increased almost twice from the previous year with the number of cases as many as 677 cases of dengue (3).

The implementation of EWARS in Trenggalek Regency has met the target for completing its reporting, which amounted to 98.5% in 2016, which the target for complete reporting was 90% of reports. But there were still obstacles in the accuracy of reporting so that it still reaches 79% and has not met the target, where the target of accuracy of reporting is 80% (4).

Malcolm Balridge is a kind of annual award given by the government of the United States to every organization in the United States of America both profit and non-profit which is considered to achieve superior and excellent performance. Malcolm Balridge measures performance excellence. The criteria used are also known as 7 categories of Malcolm Balridge, which are very instrumental in seeing the development or absence of a business organization or public organization (5). Therefore, to analyze the development of the implementation of DHF EWARS in Trenggalek Regency, along with finding obstacles to implementation, Malcolm Balridge is the right tool. The analysis based on 7 categories could trace all aspects so that it could be clearly known what components need to be improved, and in the end, the prevention and control of dengue cases in Trenggalek Regency through DHF EWARS could run well.

## 2. Method

This study was an observational study with an evaluative method through a qualitative approach. A qualitative approach is used to gather information on the implementation of EWARS within the *Dinas Kesehatan* and *Puskesmas*, based on the categories of leadership, strategic management, knowledge management, management of human resources, systems and work processes and results. The research design used was cross sectional.

The study was conducted in Trenggalek Regency, there were at the *Dinas Kesehatan*, *Puskesmas* Suruh, *Puskesmas* Kampak, *Puskesmas* Trenggalek, *Puskesmas* Ngulankulon and *Puskesmas* Munjungan which were selected based on the number of dengue cases in 2017. Each *Puskesmas* represents an area divided into 3 geographical conditions, there were mountains (highland), urban (lowland) and coastal areas, with the highest and lowest DHF cases. The time of data collection is carried out for 1 month, in April 2018. The research subjects were taken by purposive sampling. The number of respondents was 12 people consisting of the Head of the Communicable Disease Section of the *Dinas Kesehatan*, EWARS Staff of the *Dinas Kesehatan*, and Officer of Prevention and Management of Dengue Hemorrhagic Fever at the *Puskesmas*.

## 3. Result And Discussion

### Leadership Factors for EWARS DHF Implementation in Trenggalek Regency

The leader did not evaluate the reporting of cases and Periodic larval examinations as a risk factor for DHF that occurred at the *Puskesmas* Suruh. Early warning mechanisms require monitoring and evaluation of the conditions of DHF risk factors in the community. The evaluation results will be used to determine planning and follow-up on efforts to prevent and control DHF (6).

Obstacles to implementation budget planning that occur at Suruh *Puskesmas* and Ngulankulon *Puskesmas*. The implementation of DHF EWARS depends on health operational costs (*BOK*) as a source of budget for implementing disease prevention. The *BOK* bureaucratic mechanism makes it difficult for leaders to pay attention to incentives / rewards to SKDR DBD field implementing officers. Such conditions of the bureaucracy hamper the implementation of a program or system (7).

The leadership did not support the training of officers that occurred at *Puskesmas* Ngulankulon. The success of a program or system is determined by the leadership factors and the following policies. If the leadership factor supports the implementation of a program or system, of course the work processes that follow will run better. Similarly, policies that support training. Policies that focus on optimal results will support the implementation of programs and systems. The success of a program will depend on leadership factors and established policies, where the bureaucratic structure which is one component in a policy is determined by the work culture exemplified by the leadership(7).

### **Strategic Management of EWARS DHF Implementation in Trenggalek Regency.**

The process of strategic policy making has never been carried out an analysis of strengths and weaknesses as well as analysis of opportunities and threats. The considerations carried out are only based on estimates and not directly examined, which results in giving inappropriate responses. Based on these conditions it is necessary to analyze the knowledge of diagnosing DHF. Determination of the diagnosis will provide the same perceptions and verdicts for the same conditions in all regions in Trenggalek Regency. So that it can avoid differences in perceptions between health service facilities, and can minimize errors in the plan for follow-up on handling cases. Because follow-up certainly won't work when the diagnosis produces different perceptions (8).

Based on research conducted by Afriyanty, the limited number of officers has an impact on various obstacles that occur, such as the accuracy of reporting and speed in carrying out tasks. The limited number of officers makes each officer have multiple positions, so that the duties and responsibilities are also duplicated. So that at one time must be able to complete several tasks that are charged. Such conditions will cause the tasks carried out to be difficult to resolve properly and on time. Likewise with the implementation of DHF EWARS which requires *Puskesmas* officers to quickly and responsibly carry out early vigilance and response to critical conditions. Even though at the same time the officer must carry out other duties which are his responsibility(9).

### **Knowledge Management Implementation of EWARS DHF in Trenggalek Regency.**

There is no use of technology that is easy to use for the mechanism of reporting EWARS DHF in Trenggalek Regency. Reporting cases still use the SMS gateway module, where reporting is directly addressed to the system in the Ministry. Whereas for the reporting needs at the *Puskesmas* and the *Dinas Kesehatan* itself, it is still done manually using paper based. Analysis of technology requirements will be able to answer system requirements that are appropriate to be applied based on conditions in the Regency, both in terms of geography, availability and function of communication tools, and various other aspects that support the implementation of early vigilance and response to dengue (10).

In an emergency, EWARS cannot provide alerts for dengue cases in the community. The weakness of the system run by the Ministry is that in addition to requiring a long time, the system cannot show the location of the area where the response to DHF cases needs to be done. As a result, the implementing officer will have difficulty and work twice to trace the target area of the response. Therefore it is necessary to do a review from the Ministry on the implementation of EWARS with the system database in the Ministry (11).

### **Focus on Human Resources EWARS DBD implementation in Trenggalek Regency.**

The limited number of officers has an impact on various obstacles that occur, for example the accuracy of reporting and speed in providing responses to dengue cases in the community. The limited number of officers makes each officer have multiple positions, so that the duties and responsibilities are also duplicated. Such conditions will cause the tasks carried out to be difficult to resolve properly and on time. Likewise with the implementation of EWARS DHF which requires *Puskesmas* officers to quickly and responsibly carry out early vigilance and response to critical conditions in the form of planning and evaluation in the environment of DHF sufferers (9).

For EWARS DHF officers within the *Puskesmas* scope, an appreciation should be given when achieving achievement in prevention and response to dengue cases. Given that the working area of the *Puskesmas* in Trenggalek Regency is quite extensive, moreover every *Puskesmas* has only one officer, so it needs to get motivation to improve performance, in the form of appreciation and incentives (12).

### **Management of EWARS DHF Implementation Process in Trenggalek Regency.**

Input reports that use a pure system only through the SMS<sup>TM</sup> gateway and go directly into the central system/ Ministry. So that the *Puskesmas* and the *Dinas Kesehatan* do not have reports. Therefore for the needs of the *Puskesmas* and the *Dinas Kesehatan* itself, EWARS DBD report is submitted in paper form, which can only be done manually. Based on these conditions, it is better to analyze information

technology needs that can accommodate information needs, which can answer system requirements that are appropriate to be applied based on conditions in each Regency, so as to provide reporting inputs to the system used by the Ministry and data needs of the Regency *Dinas Kesehatan* (10).

#### **Results of EWARS DBD Implementation in Trenggalek Regency.**

The implementation of early warning and response to dengue cases in Trenggalek Regency is inline with the guidelines provided by the Ministry in the Dengue Hemorrhagic Fever Control Handbook for *Puskesmas* DBD Program Managers issued by the Directorate General of PP Control and Environmental Health, Ministry of Health Republic of Indonesia. Points of early vigilance in the form of monitoring case data and Periodic larval monitoring data have been carried out properly in accordance with the procedure, along with Planning Evaluation in response to dengue cases in the community. Although in its implementation there are still several obstacles experienced such as the accuracy of reporting, the geographical conditions faced and the obstacles in the management of the EWARS DBD implementation budget.

#### **4. Conclusion**

Reporting of dengue cases in Trenggalek Regency was reported too late because public knowledge is still lack about the symptoms of DHF. The Behavior of Eradicating Nest Mosquitoes was still not good, which causing the risk of vector development. Support from the Village Government regarding Eradication of Mosquito Nests was still not good. Leadership factors were still obstacles in the attention of the leader in giving rewards to EWARS DBD officers. Strategic management still lacks in analyzing needs, strengths and weaknesses as well as opportunities and threats in making policy and management of resources. Knowledge management still lacks information technology facilities to support the implementation of EWARS DBD, so that cannot provide alerts for dengue cases in critical circumstances. The focus of Human Resources has not yet been assessed on the needs of the number of EWARS DHF officers. Consideration of compensation, rewards and incentives has also not been carried out as the motivation of officers to implement EWARS DBD. Process management is still hampered in the integration of systems that use information technology on various lines, especially at the *Dinas Kesehatan* and *Puskesmas*, and not only depends on Ministry. The results of the implementation are still obstacles in the timeliness of reporting, especially in areas with relatively difficult geographical conditions (mountains) due to constraints on telecommunication networks and budget limitations because they only depend on the *BOK* budget.

#### **5. Suggestion**

The Trenggalek Regency *Dinas Kesehatan* should conduct a needs analysis regarding the quantity of EWARS DHF officers, and carry out an analysis of strengths and weaknesses as well as opportunities and threats of EWARS DHF implementation in the field. EWARS DBD implementation should be supported by information technology that is safe and easy to use, so that the work process can be carried out effectively. Information technology functions as a means of reporting, analysis and providing alerts in EWARS DHF. The *Dinas Kesehatan* should conduct a needs analysis of the number of EWARS DHF officers at the *Puskesmas* scope, especially in mountainous areas, so that it is in accordance with the conditions of the region that requires extra Human Resources. It is necessary to consider compensation, rewards and giving incentives as motivation for officers in the implementation of DHF EWARS.

#### **References**

1. Kementerian Kesehatan RI. Buletin Jendela Epidemiologi. Pus Data dan Surveilans Epidemiologi. Kementerian Kesehatan RI Vol 2 ISSN-2087. 2010;1546.
2. Indonesia KKR. Data dan informasi profil kesehatan Indonesia 2016. Jakarta Pus Data dan Inf Kesehatan RI. 2017;
3. Jatim D. Profil kesehatan Jawa Timur tahun 2016. Dinas Kesehatan Provinsi Jawa Timur Surabaya. 2017;

4. Anggraini MP. Gambaran Early Warning Alert Response System (EWARS) di *Dinas Kesehatan Kabupaten Trenggalek Tahun 2016*. UNIVERSITAS ARILANGGA; 2017.
5. Gasperz V. All-in-one 150 Key Performance Indicators and Balanced Scorecard, Malcolm Baldrige, Lean Six Sigma Supply Chain Management. Bogor Penerbit Tri-Al-Bros Publ. 2013;
6. Anita A, Khoiri A, Indriaswati DK. Evaluasi Program Pengendalian Penyakit Demam berdarah Dengue Tahun 2015 (Perbandingan Antara *Puskesmas Patrang* dan *Puskesmas Rambipuji Kabupaten Jember*). IKESMA. 2017;12(2).
7. Massi R. Implementasi Kebijakan Pengendalian Penyakit Demam Berdarah Dengue di Pusat Kesehatan Talise Kota Palu. *Katalogis*. 2016;4(4).
8. Azam M, Azinar M, Fibriana AI. Analisis Kebutuhan dan Perancangan “Ronda Jentik” sebagai Model Pemberdayaan Masyarakat dalam Pemberantasan Sarang Nyamuk. *Unnes J Public Heal*. 2016;5(4):294–305.
9. Afriyanty AY, Arso SP, Wigati PA. Analisis Kinerja Pelaksanaan Penyelidikan Epidemiologi Kasus Demam Berdarah Dengue Di *Puskesmas Rowosari Kota Semarang Tahun 2017*. *J Kesehat Masy*. 2017;5(4):15–22.
10. Masrochah S, Susanto E, Irmawati I. Sistem Informasi Pemantauan Kejadian Luar Biasa (Klb) Demam Berdarah Berbasis Geographic Information System (Gis) Di Kota Semarang. *J Ris Kesehat*. 2018;5(2):53.
11. Kristiani SYM, Kusnanto H, Probandari A. Evaluasi Pemanfaatan Early Warning Alert and Response System di Kabupaten Boyolali. *J Inf Syst Public Heal*. 2016;1(1):55–63.
12. Yunita DS. Hubungan Antara Pelatihan, Motivasi Dan Ketersediaan Fasilitas Dengan Partisipasi Jumantik Di Kota Blitar. *Indones J Public Heal*. 2018;11(1):40.