

The Pre-Hospital Development Plan in Muhammadiyah Hospital of Lamongan becomes the International Standard Emergency Center

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Abstract. Emergency was a sudden, unpredictable and unexpected event but requires quick, precise and directed treatment. Muhammadiyah hospital of Lamongan gradually developed to become a health service facility that handles emergency patients comprehensively. The purpose of this study was to analyze pre-hospital readiness becomes international standard emergency center. The method of this study was the development of standards and measurements based on predefined standards. There are several standards used in pre-hospital development. Pre-hospital standards were divided, such as service, human resources, equipment, facilities and infrastructure and administrative and management. The achievement of pre-hospital service standards is 33.3%, pre-hospital 40%, pre-hospital equipment 77.59%, pre-hospital facilities 33.3% and pre-hospital administration 40%. The total attainment of pre-hospital is 67.09%. At pre-hospital service, in the district of Lamongan have not have public safety center nor call center which is easy to be memorized by society. Pre-hospital human resources for ambulance drivers have met the standard, but ambulance drivers are still concurrent with operational drivers. Equipment in BLS and ALS ambulance needs to be equipped according to standard and required maintenance and monitoring of equipment and drugs on a regular basis. The facilities and infrastructure of the pre-hospital should be adjusted to the ambulance adequacy of the parking lot as well as the number of ALS ambulance so as to guarantee the emergency ambulance service 24 hours 7 days a week. Administration and pre-hospital management is still lack of monitoring and evaluation of response time Ambulance Emergency 118 to location of victim, MOU referral with other hospital related emergency care, and documentation of pre-hospital service.

Keywords: Pre-hospital, Center for Emergency, Hospital

1. INTRODUCTION

Emergency is a sudden, unpredictable and unexpected event, but requires immediate, precise and targeted immediate treatment. Muhammadiyah hospital of Lamongan was gradually developed to become a health service facility that handles emergency patients comprehensively. The third mission of Muhammadiyah hospital of Lamongan is to build a central hospital of emergency standard with international standard, so it is important to conduct the study of Muhammadiyah hospital of Lamongan readiness to become an international standard emergency center.

Emergency events can happen anytime, anywhere and happen to anyone. Emergency events usually take place quickly and suddenly so it is difficult to predict the incident. The best step for this situation is to be vigilant and make concrete efforts to anticipate it. One form of assistance mechanism should be provided to the victim from the beginning of the scene, during the trip to the health facility, assistance at the health facility until after the event of injury.

Emergency center is a service center that specializes in emergency services, either in-person or ambulance with life-threatening conditions that require fast services such as heart attack, stroke, malignant hypertension, severe dehydration, and life-threatening conditions due to an accident or disaster (1).

Emergency service systems include emergency handling at the scene, during transportation and at health-care facilities. The above systems are interrelated, help done at the scene will affect the results of the handling performed in health care facilities. Emergency handling is divided into 3 parts, such as pre-hospital, intra hospital and post hospital.

The purpose of pre-hospital services is to minimize systemic damage and manage life-threatening conditions. Most fatal injuries can be prevented or reduced severity by performing adequate pre-hospital services. Pre-hospital services can not function on their own, but are integrated among stakeholders. The pre-hospital system is designed to provide safe emergency services and effective access to health care systems.

The key elements in prehospital emergency service system are 1) Institution, ie the presence of a national agency or institution designated to set up a pre-hospital service system. This agency is responsible for planning (including rules or laws), implementation and oversight, as well as in financing; 2) Support from local government and community involvement. Local governments participate in implementation and supervision, including preparing resources, especially in preparing communities as first responder; 3) Medical director, role in the coordination of pre-hospital care, training and education of the community and institutions that play a role in pre-hospital care and 4) Needed political support so that there are clear rules about the implementation of pre-hospital care including financial support (2).

The general purpose of this study is to analyze the readiness of Muhammadiyah hospital of Lamongan pre-hospital to the international standard emergency center. Specific objectives consist of 1) Preparing the development of pre-hospital standards that include service standards, human resources, equipment, infrastructure and administration and management; 2) Analyze the measurement results based on established standards; 3) Identify pre-hospital problems in Muhammadiyah hospital of Lamongan; and 4) Prepare recommendations for pre-hospital development in Muhammadiyah hospital of Lamongan.

2. METHOD

This study method consists of developing standards and measurements based on established standards.

Development of standards. The development of pre-hospital standard in Muhammadiyah hospital of Lamongan consist of 5 standard that is service standard, human resource, equipment, infrastructure and also administration and management. The standard development is done by brainstorming with the board of directors of Muhammadiyah hospital of Lamongan, the head of the room, the head of the installation and the chairman of the committee in the middle management meeting/3M.

Measurement based on predefined standards. In standard pre-hospital measurements the team involved the Muhammadiyah hospital of Lamongan and the researchers as a third party. This measurement method is done by using standard checklist form by self assessment and assessment in the field. How to measure the standard achievement as follows:

$$\text{Standard achievement} = \frac{\text{Number of real conditions in hospital}}{\text{Number of parameters}}$$

3. RESULTS AND DISCUSSION

In conducting the development plan of hospital pre-hospital Muhammadiyah hospital of Lamongan to the center of international standard emergency, standard is required as a parameter. To become an emergency hospital, Muhammadiyah hospital of Lamongan must continue to meet national standards. Thus, the development of standards is structured according to national and international standards.

There are several standards that are used in the development of pre-hospital standards consisting of 5 standards: service standards, human resources, equipment, infrastructure and administration and management.

Standard of pre-hospital service (Decree of Health Minister number 19). 24-hour ambulance service 7 days a week; hospital call center services; and public safety center in district of Lamongan.

Standard of human resources pre-hospital. Human resources call center that has been given knowledge about the call center (Decree of health ministry number 19). Community as first responder who has been trained BLS; Ambulance drivers who have attended emergency ambulance training; Nurses with basic life support (BLS) certification, advanced cardiac life support (ATLS), advanced trauma life support (PALS), advanced pediatric life support (APLS) and pre-emergency training; and emergency doctors, surgeons, anesthetic doctors who have undergone pre-emergency training.

Standard of equipment pre-hospital equipment, BLS ambulance, consists of 34 parameters. Ambulance consists of 24 parameters. **Standard of facilities and infrastructure pre-hospital.** Special area of ambulance parking that can accommodate more than 2 ambulance from BLS and ALS (3).

Standards of administration and management pre-hospital. Decrease of green triage; Decreased death on arrival (DoA); Increased referrals to Muhammadiyah hospital of Lamongan that can be done definitive action; Monitoring and evaluation of response time ambulance emergency 118 to the location of the victim; A special team responsible for the overall management of pre-hospital care; Government support and community engagement; MOU with other agencies related to emergency care; MOU referral with other hospitals related to emergency care; referral procedures related to emergency care; and Documentation of pre-hospital services.

After developing standards based on national and international standards, further measurements are made based on established standards with self assessment and assessment in the field. The results of standard pre-hospital measurements in Muhammadiyah hospital of Lamongan in 2017 can be seen in the following table.

Table 1 Achievement of pre-hospital

Standard	Parameter	Real Condition	%
Services	3	1	33,33
Human resources	5	2	40,00
Equipment	58	45	77,59
Infrastructure	3	1	33,33
Administration and management	10	4	40,00
Total of pre-hospital	79	53	67,09

The achievement of pre-hospital service standard is 33,33%. Muhammadiyah hospital of Lamongan only has 1 ALS ambulance. Call center owned by Muhammadiyah hospital of Lamongan has a long number making it difficult to remember. Keep in mind to make the numbers short and easy to remember. While public safety center, not yet exist for district of Lamongan. Muhammadiyah hospital of Lamongan already has AGD 118 service (Ambulance Emergency 118) with call center (0322) 311-777. This number has functioned as a call center and in development to become an application that can be accessed via android based mobile phone. Call center number is hard to memorize, especially when in a state of panic. Although the socialization of the call center has been done in the form of AGD leaflets, installation of billboards on the highway, talk shows and PPGD training on the general public. In the district of Lamongan, there is no integrated call center for pre-hospital services.

The achievement of the pre-hospital's human resources standard is 40%. Muhammadiyah hospital of Lamongan has no human resources call center. Call center operations are still one with emergency unit services. For doctors and nurses, there is a requirement to attend pre-emergency pre-emergency training in Indonesia. Need for maintenance of training programs and socialization to the community and cross-sectoral. Emergency ambulance service training (EASH) followed by ambulance driver needs refreshing and retraining before the validity period expires. An ambulance driver of 8 is sufficient, but is still given additional tasks as an operational driver. So that needs to be changed, the ambulance driver only served for service AGD 118. In the human resources department, Muhammadiyah hospital of Lamongan has 8 ambulance drivers, 7 of whom have followed EAST training. There has been no separation between ambulance drivers and operational drivers. The community as first responder has been given training on PPGD. Monitoring and evaluation of training outcomes needs to be done.

Pre-hospital is a service performed by ambulance nurses outside the hospital in emergency situations both trauma and non trauma. Hospital-based pre-hospitalized service with hospital based

system. Pre-hospital service will be provided after the information received by the operators in the hospital. This communication center is located in the emergency room. The ambulance service can not be separated from ambulance officers. The ambulance officer is an ambulance nurse who provides treatment outside the hospital.

The achievement of pre-hospital equipment standard is 77,59%. There are still some equipment that does not yet exist, but scheduling monitoring and maintenance of equipment and medicines as BLS and ALS ambulance kits is required. Do not get when the tool is needed can not be used or drugs have expired.

The standard achievement of pre-hospital facilities and infrastructure is 33,33%. Ambulance parking is inadequate to accommodate ambulances. So ambulance is sometimes parked in the decontamination area and parking visitors. An adequate ambulance parking area and guidance should be made that the decontamination area should not be used for ambulance parking. Muhammadiyah hospital of Lamongan already has BLS and ALS ambulance. However the number of ALS ambulances is only 1 so it does not guarantee an ALS 24-hour ambulance service. Facilities and infrastructure and equipment are closely linked to the ambulance and equipment available in it. Muhammadiyah hospital of Lamongan has 7 ambulances consisting of 3 ambulance emergency units, 2 ambulance transport units and 2 ambulance bodies. The equipment used as AGD 118 service is still minimal.

Standard administration and pre-hospital management achievement is 40%. There should be a dedicated team that manages pre-hospital services. Muhammadiyah hospital of Lamongan has KKB, duties and authority are made according to pre-hospital service so as to make the planning until the supervision and evaluation of pre-hospital service as a whole. AGD's existing response time is the time required to start calling AGD requirement from medical radio or call center is <15 minutes. The result of this response time has been reached. It should be added again the quality indicator that shows the quality of pre-hospital service one of them is the time required AGD 118 reached the victim. This needs to be measured, because the emergency is very close to time and golden period. A review of quality indicators that have been monitored is green triage and DoA figures.

There should be documentation of pre-hospital services by completing various information about the condition of the victim, who provided first aid and what has been done. What is the condition of the victim during the transfer to the health care facility and when it arrives at the health care facility and how the outcome of the patient's condition. This

documentation will be useful as information about the events or conditions that often cause emergency in the community, how much, the degree of emergency so that it can be done from planning services, human resources to facilities and infrastructure.

Muhammadiyah hospital of Lamongan has trauma accident control (TAC) and committee of health and disaster. TAC is a cooperation that involves cross-sectoral cooperation with *bina marga*, *jasa raharja*, department of transportation, traffic security unit, disaster medical committee of Muhammadiyah hospital of Lamongan with command from police in the district of Lamongan. This cooperation includes the assistance of accident victims, cooperation programs for the administration of raharja services and education programs for traffic security unit on the handling of victims in the field. This accident victim assistance program is facilitated by medical radio which provides report on traffic accidents in Lamongan area. The traffic accident victim pickup program is free.

Another cross-sectoral cooperation is with the Lamongan traffic security unit in the field of PPGD (emergency first aid) training and traffic accident victims health services. Training PPGD to members of traffic security unit Lamongan and PPGD socialization program to the community conducted by committee of health and disaster in Muhammadiyah hospital of Lamongan. In addition, cooperation with hospitals, public health center and clinics in Muhammadiyah hospital of Lamongan services as referral hospitals is also conducted. The cooperation among others are Abdurrahman Syamsuri hospital, Intan Medika hospital, Medika Mulia hospital, Aisyiyah Bojonegoro hospital, Lamongan Medical clinic and public health center in the district of Lamongan 63% from 33 public health center.

Recommendations for the preparation of Muhammadiyah hospital of Lamongan to the central hospitals of international standard emergency are:

Service. Muhammadiyah hospital of Lamongan has initiated to make call center (0322) 311777 and local government does not have public service center. From these findings it is necessary to: 1) Initiation and advocacy to Local Government in forming public service center, 2) Call center needs to be pursued by using a number that is easy to remember, for example by using 3 digits in coordination with the Telkom. **Human Resources.** 1) Establishment of health cadres and conduct disaster and emergency training for 472 villages in 27 sub districts in Lamongan; 2) PPGD training across sectors (police, transportation department, education office); 3) Additional number of emergency specialist doctors and emergency nurses according to needs analysis; 4) Procurement of call

center human resources; 5) PIC for equipment and drug maintenance in ambulance.

Equipment. 1) Procurement of equipment in the BLS and ALS Ambulance as per standard; 2) Maintenance and monitoring of equipment and medicines. **Facilities and infrastructure.** 1) Maintenance ambulance on a regular basis; 2) Provision of ambulance parking area as needed. **Administration and management.** 1) Establish networking by increasing the number of MOUs with First Faskes (clinics and public health center) as many as 33 public health center; 2) Proposed prehospital services (ambulance, TAC, call center) under one IGD control; 3) Making MOU of emergency referral service with hospital having complete facility; 4) Creation of AGD service documentation; 5) Monitoring AGD service response time to the scene; 6) Monitoring and evaluation of green triage data, number of DOA cases, number of referral cases of incoming patients from reference agencies; 7) Standard operating procedure of maintenance and monitoring of emergency equipment.

4. CONCLUSION

The results of identification, situation analysis and pre-hospital gaps in Muhammadiyah hospital of Lamongan in preparation for the international standard emergency obstetric hospital can be summarized as follows: standard pre-hospital service achievement of 33,3%, pre-hospital 40%, pre-hospital equipment 77,59%, pre-hospital facility 33,3% and pre-hospital administration 40%. The total attainment of Pre-hospital in Muhammadiyah hospital of Lamongan was 67.09%. At Pre-hospital service, in the district of Lamongan have not have public safety center nor call center which is easy to be memorized by society. Call centers owned by hospitals need to be socialized. Standard pre-hospital human resources for ambulance drivers have met the standard, but ambulance drivers are still concurrent with operational drivers. International standards, there are prehospital emergency training that does not exist in Indonesia. Muhammadiyah hospital of Lamongan can be a pioneer in this field.

Equipment in ambulance BLS and ALS are equipped according to standard and require regular maintenance and monitoring of equipment and drugs. The facilities and infrastructure of the pre-hospital should be adjusted to the ambulance adequacy of the parking lot as well as the number of ALS ambulance so as to guarantee the emergency ambulance service 24 hours 7 days a week. Administration and pre-hospital management is still lack of monitoring and evaluation of response time Ambulance Emergency 118 to location of victim, MOU referral with other hospital related emergency care, and documentation of pre-hospital service.

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