

Rational Efforts to Reduce Death Case from Dengue Hemorrhagic Fever

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Abstract

Dengue hemorrhagic fever is still a public health problem in the world including in Indonesia. This condition requires strategic handling for cases and deaths due to dengue hemorrhagic cases can be reduced. Referring to the World Health Organization there are ten components in order to reduce dengue case of dengue fever: human resources, special area, laboratory resources, consumables, drugs, communication, blood bank, vector management, dengue surveillance, developing a dengue vaccine and dengue antivirals.

Keywords: *Dengue hemorrhagic fever, Death case.*

I. INTRODUCTION

The case of dengue hemorrhagic fever (DHF) has developed worldwide. There are more than 100 countries with dengue hemorrhagic endemic, especially in Africa, America, Eastern Mediterranean, Southeast Asia and the Western Pacific. In the Americas, Southeast Asia and the Western Pacific, there are more than 1,2 cases of dengue hemorrhagic fever in 2008 and increased to more than 3 million in 2013. In Japan there have also been dengue hemorrhagic cases after more than 70 years have never been found case. By 2015 there has been an increase in the number of dengue hemorrhagic cases in Brazil.

Dengue hemorrhagic fever is still one of the important public health problems in Indonesia. In Indonesia, the disease was first discovered in 1968 in Surabaya with 58 cases in children, and 24 patients eventually died (CFR = 41.3%). This case often leads to 'extraordinary events' and death. In 2012, there has been an increase of dengue hemorrhagic cases to 90,245 cases with Incidence Rate (IR) = 37 / 100.000 population and Case Fatality Rate (CFR) = 0.9%. In 2013, the case continued to increase to 112,511, with 871 deaths (CFR = 0.7%). In 2014, in 34 provinces in Indonesia there are 71,668 patients with dengue hemorrhagic fever, with 641 cases of death (CFR = 0.9%). All areas of Indonesia are at risk of dengue hemorrhagic fever, except for areas with elevations greater than 1000 meters above sea level.

II. RATIONAL EFFORTS TO REDUCE DEATH CASE FROM DHF

An important key to reducing DHF death cases is the presence of an organization that can ensure early recognition of disease, disease management and referral if necessary, vector management and surveillance. Understanding of the uniqueness of DHF and factors influencing the incidence of DHF associated with community behavior. The variation of spatial pattern of population accessibility causes the distribution of DHF cases to be varied following the movement of human activities. DHF cases are also affected by climate change, population density and altitude. To ensure early recognition of disease, 'disease management' and referral, vector management and surveillance, a thorough and rational framework of thought is required (WHO, 2009), as shown in Figure 1. To make early recognition of disease, disease management, vector management and surveillance, resources are required to provide high quality services, both clinics and field at all levels of health services, as stated by WHO (2009) as follows:

1. Human resources

In this regard, it is necessary for trained doctors and nurses to be placed in the first level service up to the referral center level service. The personal service at the referral center level should be able to identify "triage" and manage emergency services for DHF, receive case referrals, especially during outbreaks and outbreaks. This personal needs to be improved thinking ability about DHF.

2. Special area

The special area is a place equipped with sophisticated equipment, as well as personal with adequate skill, which is set to provide immediate medical action in transit services for patients with intravenous fluids until the patient can be transferred to the DHF treatment room or referred to a health facility.

3. Laboratory resources

Most important is the laboratory for hematocrit and blood checks. The results of the examination are expected to be known at the latest within 2 hours in severe cases of DHF. If laboratory services are not obtained, the minimum standard is "the point-of-care testing" of haematocrit by capillary (finger prick) blood sample with the use of a

microcentrifuge. To reduce the case of death due to DHF also required a laboratory capable to investigate DHF for the purposes of diagnosis and management of DHF disease as well as necessary referrals.

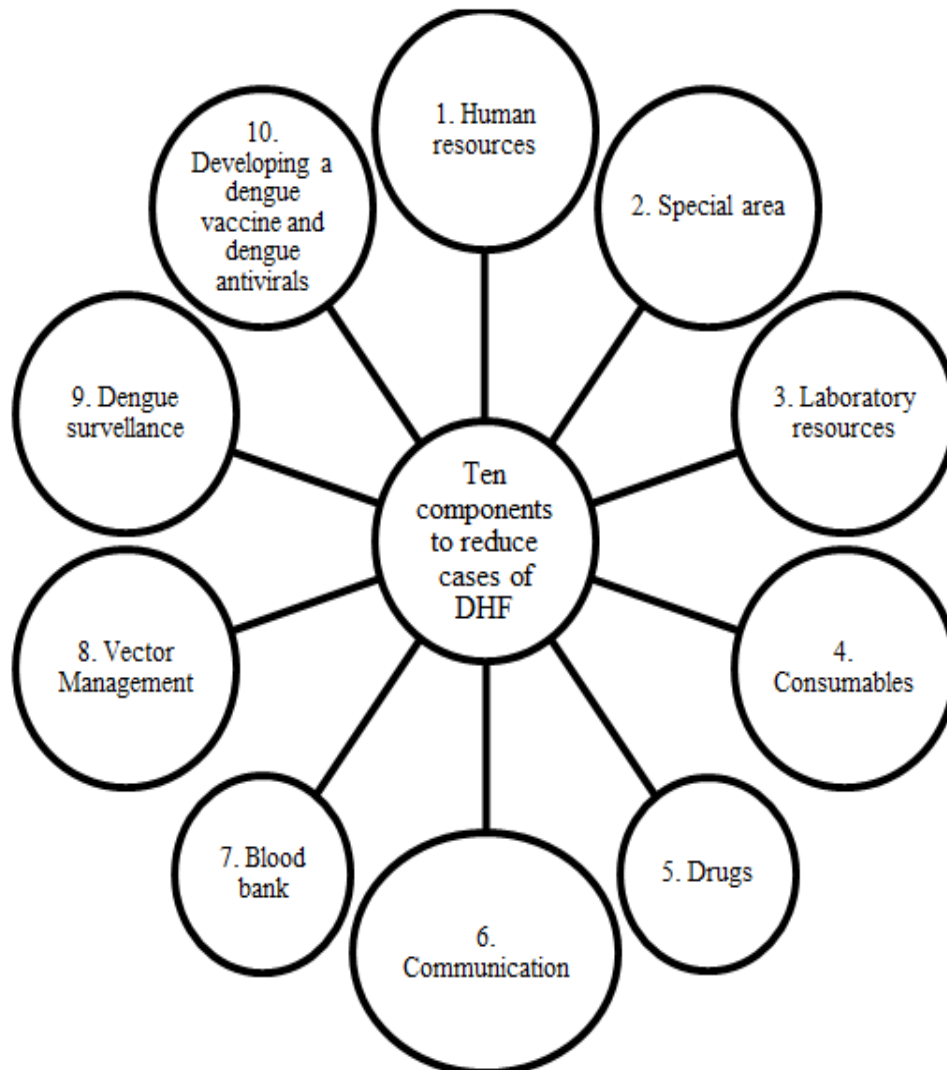


Figure 1. Ten Components to Reduce Cases of DHF

4. **Consumables:** These are the ingredients needed in the management of DHF diseases such as intravenous fluids such as crystalloids, colloids and intravenous giving sets.
5. **Drugs:** For light cases is prepared antipyretics and oral rehydration salts. For severe cases, can be added include (Ca gluconate, vitamin K1, furosemide, NaHCO₃, glucose, KCl solution, vasopressor, and inotropes).
6. **Communication:** Facilities should be provided for easy communication, especially between secondary and tertiary levels of care and laboratories, including consultation by telephone.
7. **Blood bank:** Blood and blood products will be required by only a small percentage of patients but should be made readily available to those who need them.
8. **Vector Management:** Integrated vector management is “a rational decision-making process for the optimal use of resources for vector control” with five key elements, namely:

- **advocacy, social mobilization and legislation** – the promotion of these principles in development policies of all relevant agencies, organizations and civil society; the establishment or strengthening of regulatory and legislative controls for public health; and the empowerment of communities;
 - **collaboration within the health sector and with other sectors** – the consideration of all options for collaboration within and between public and private sectors; planning and decision-making delegated to the lowest possible administrative level; and strengthening communication among policy-makers, managers of programmes for the control of vector-borne diseases, and other key partners;
 - **integrated approach to disease control** – ensuring the rational use of available resources through the application of a multi-disease control approach; integration of non-chemical and chemical vector control methods; and integration with other disease control measures;
 - **evidence-based decision-making** – adaptation of strategies and interventions to local vector ecology, epidemiology and resources, guided by operational research and subject to routine monitoring and evaluation;
 - **capacity-building** – the development of essential infrastructure, financial resources and adequate human resources at any levels to manage IVM programmes.
9. **Dengue surveillance:** Surveillance is needed in order to suppress DHF mortality cases, with 3 minimal activities: 1) epidemiological surveillance for dengue as an agent, 2) surveillance vector, 3) monitoring of environmental and social risks.

10. Developing a dengue vaccine and dengue antivirals:

- **Dengue vaccine:** Ideally reducing cases of death due to DHF should also be accompanied by prevention efforts by administering vaccine to provide humoral immunity in a population at risk. As we know that DHF is caused by four serologies associated with the virus. The main problem in developing DHF vaccine is how vaccine can provide immunity to fight all four virus attacks simultaneously. Therefore, the vaccine should be tetravalent.
- **Dengue anti viral:** Due to the general biological structure of dengue virus, in the future the anti viral drug development strategy is developed following appropriate efforts for HIV and HCV cases, to be adopted by dengue virus characteristics during HCV and dengue is still a member of the Flaviviridae family. The drug should be active against all four serotypes, reduce severity of the disease and reduce symptoms.

III. INTRODUCTION

Efforts to reduce the case of death due to DHF should be implemented holistically, involving the components that affect the incidence of cases, prevention and follow-up of DHF management including the behavior and mobility of the population. In general there are appropriate human, environmental, disease-related, methods or technological factors, facilities, and policies that are all interrelated to reduce cases of death from DHF rationally.

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