

## **Time is muscle : How to timely save critical injury due coronary plug obstruction ? Lesson from Harapan Kita referral center**

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### **ABSTRACT**

Despite advances in understanding the pathophysiology and treatment of acute coronary syndrome (ACS) specifically ST segment elevation ACS (STE\_ACS), the number of undertreated patient remain unacceptably high. Due to its time limitation for effective reperfusion, STE-ACS treatment begin at prehospital setting. Ischemic time, as we have learned from numerous study and initiatives, can only be improved with organized STE-ACS network. There several barriers exist that need to be acknowledged and addressed. Most importantly, developing a STE-ACS network is a stepwise and evolutionary process that involve monitoring key performance index and innovation to improve STE-ACS services. The effective service not only concentrate on hospital performance but also the prehospital emergency system performance. Despite the insufficient ambulances service, we are able through innovation and collaboration with PERKI and local authority, improvement critical time can be demonstrated First phase is to established reperfusion protocol and measurement of STE-ACS key performance index in the reperfusion receiving center. The second phase is to establish a call center and develop a STE-ACS referral center. Third phase iSTEMI inisiatif to improve STE-ACS service in other region.

**Keywords:** STEMI, pharmaco invasive strategy, fibrinolysis, primary PCI

## **Coping with the Delay in Acute Coronary Syndrome: Innovative Achievement from District Hospital (Dr. Iskak District Hospital)**

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### **ABSTRACT**

The fact has noted that acute coronary syndrome is still considered to be the leading cause of death in the past 15 years. The data records 15.2 million in 2016 (WHO). This condition is encouraged Dr. Iskak Tulungagung Hospital establishing an Integrated Acute Coronary Syndrome Service Innovation. This unit is an innovation to accelerate the response time of emergency cardiac handling done with an integrated and complete manner. This innovation prioritizes the ease of access, speed and accuracy in handling heart attack patients by forming a pre-hospital team, intra-hospital team, and overcoming the limitation of space and time by utilizing the advancement of information technology systems. To support this program, the public is also educated to recognize the signs and symptoms of heart attacks early, do first aid in patients with cardiac arrest (basic life assistance) and procedure for utilizing the existing service system. If there is a cardiac emergency, the community simply calls Tulungagung Public Safety Center (PSC) 119/0355-320119 or pushes the emergency button that has been loaded into their Phone. The Call Center clerk will guide the first handling techniques and also guide the nearest health facilities connected to the emergency cardiology equipment and cardiac recording devices to immediately reach the scene. The standard protocols are provided for Call Center Officers. The officer will ask the identity of the caller to make sure of the location, the incident and condition of the victim. The data from callers will be selected by Commander (guard doctor). If the patient's condition is indeed suspected of having a heart attack than the Call Center PSC officer will be directed to the nearest health service facility that is able to serve or the officer will send a quick reaction team on duty in the field. If the patient's condition is cardiac arrest, trained callers will be guided to provide initial help (Basic Life Support). For patients who are assessed by the commander need an ambulance, the dispatch officer through maps will search and assign an ambulance located in the nearest victim location that is ready to provide services. The closest ambulance will be assigned by dispatchers through an application on Android. The Pre-Hospital Care (PHC) team will head to the scene with data guides and locations that have been sent via Android. After the patient arrives at the network health facility or the PHC team arrives at the location, ECG records will be sent to the WhatsApp (WA) PSC. If the ECG result from heart attack, the PSC team will activate the reperfusion team via WhatsApp group. The WA reperfusion team consists of cardiac specialists, emergency medical specialists, emergency medicine physicians, and cardiac catheterisation nurses. Next, the patient will get reperfusion by the intra hospital team (Intrahospital Acute Coronary Syndrome Team). The entire process is regulated in the regent's regulations. By this team the expected response time will be shorter.

**Keywords:** coping with delay; acute coronary syndrome; high technology information; team work; Dr. Iskak Tulungagung Hospital; the regent's regulation

## **Coronary Intervention as Primary Modality of Acute Coronary Syndrome: Are All Patients Done?**

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### **ABSTRACT**

Coronary Intervention as Primary Modality of Acute Coronary Syndrome: For All Patients?

Emergency coronary intervention in the STEMI setting has been established as the standard therapy for many cardiac society guidelines. All around the world, primary PCI is the first choice therapy for STEMI patients in cardiac units with available PCI facilities.

However, the indication for emergency PCI for ACS other than STEMI has been less established. The current guidelines support risk stratification using clinical, biomarkers and specific algorithm to help determine the management of patients, either urgent invasive or otherwise. Patients are further divided into risk criteria: very high risk, high risk, intermediate risk or low risk. Examples of very high risk includes cardiogenic shock, acute heart failure and mechanical or electrical complications of MI.

Invasive coronary intervention allows clinicians to confirm the diagnosis of ACS (or rule out coronary origin of chest pain), identify the culprit lesion, decide the suitability for PCI or CABG and stratify patient's short and long term risk. For hospitals without PCI facilities, the guidelines allow transfer of patients and other options for management of ACS. Special considerations should be given for patients with anemia, CKD, arrhythmias as well as those already on anticoagulation.

## Short Term and Long Term Outcome of Acute Coronary Syndrome: Do We Need Our Own Risk Stratification?

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### ABSTRACT

The duration of hospital stay for acute coronary syndrome (ACS) patients still varies greatly. Guidelines have issued recommendations for hospital length of stay (LOS). Not all hospitals have the prosperity to put those recommendations into clinical practice, especially in developing countries which have limited facilities and budgets. The longer LOS, the less cost effective, the higher hospital burden.

Optimal LOS at intensive cardiovascular care unit (ICCU) is determined on an individual basis i.e. cardiac risks, comorbidities, functional status, and social support. Some studies demonstrated that low risk patients who have done successful primary percutaneous coronary intervention (PPCI) and complete revascularization proven to be safely discharged from hospital on day 2 - 3 after PPCI. After the era of PPCI, duration of hospital stay patient with ST elevation myocardial infarction (STEMI) in United States was reduced significantly. Successful coronary reperfusion of STEMI patients decrease LOS and 30-day mortality. Earlier discharge is not associated with late mortality.

Risk scoring systems for mortality or complication of STEMI have been established, such as Global Registry of Acute Cardiac Events (GRACE), Thrombolysis in Myocardial Infarction (TIMI), Primary Angioplasty in Myocardial Infarction (PAMI), and Controlled Abciximab and Device Investigation to Lower Late Angioplasty Complications (CADILLAC) risk score. Those scores are dedicated to predict 6-month all-caused mortality for the entire spectrum of ACS, 30-day mortality for STEMI treated by PPCI, 6-month mortality, and 1-year mortality, respectively. There were other risk scoring models i.e. Zwolle, PAMI II, and dynamic TIMI which aim to identify low risk patients who suitable for an early discharge from hospital. Some centers conducted a research to assess the best risk score scheme which appropriate with their patient population. Sardjito Hospital is tertiary referral hospital in Jogjakarta Province and south Central Java, includes for cardiovascular services. We developed a registry of ACS and non ACS patients in ICCU, namely Sardjito Cardiovascular Intensive Care (SCIENCE) registry. A total of 860 subjects admitted to ICCU during February – December 2017 which were predominantly with STEMI patients. The median LOS of ACS group (6 days) was shorter than non ACS group (11 days). Our research indicate the highest inhospital mortality were STEMI patients, followed by non-ACS group, NSTEMI, and UAP at rate 40 (4.65%), 33 (3.84%), 11 (1.28%), and 3 (0.35%). We found that reperfusion therapy, hemoglobin, blood glucose level, and several comorbidities (pneumonia, arrhythmia, and heart failure) proved to be an independent predictor of ICCU LOS for STEMI patients. Whereas in NSTEMI group, the independent predictor for longer ICCU stay were very high and high risk patients.

Some sub studies demonstrated that there was no significant correlation between GRACE risk score with in-hospital mortality and major adverse cardiac event (MACE) in our population. In subjects with reduced left ventricular ejection fraction (LVEF) experienced in higher risk of in-hospital mortality, but statistically not significant. Myocardial infarction without or non-obstructive coronary arteries (MINOCA) was associated with higher mortality than MI with obstructive coronary artery disease (MI-CAD) because in this study the patients with MINOCA have more comorbidities than MI-CAD. Hypertension was the most prevalent traditional cardiovascular risk factors (TCRF) in high risk NSTEMI group and diabetes proven to be the only TCRF which associated significantly with multiple vessels coronary artery disease (CAD).

**Keywords:** acute coronary syndrome; risk scoring; predictor; LOS