Title: Incidence and Predictors of Early Mortality in the Emergency Department Following STEMI Thrombolysis an a Non-PCI-Capable Tertiary Hospital

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| **Introduction**  Ischemic heart disease remains the principal cause of mortality despite the advancement of coronary reperfusion in the past 40 years. In ST-elevation myocardial infarction (STEMI), pharmacological thrombolysis remains the primary reperfusion strategy in many Asian countries due to the lack of percutaneous coronary intervention (PCI)-capable facilities. However, data on early mortality in the Emergency Department (ED) following STEMI thrombolysis in non-PCI-capable hospitals is unknown.  **Objectives**  This study aimed to assess the incidence and identify the predictors of early mortality in the ED following STEMI thrombolysis.  **Method**  This single-center retrospective study involved STEMI patients given thrombolytic therapy from 2016 to 2020 in a tertiary hospital. Early mortality in the ED was defined as mortality that occurred in the ED after thrombolysis. Total population sampling was used in this study. Logistic regression analyses were used to assess independent predictors of early mortality in the ED.  **Results**  Data from 941 patients was analysed. Their mean age was 53.0±12.2 years and predominantly male (n=846, 89.9%). The in-hospital mortality was 10.3% (n=97), with almost half (n=47, 48.5%) occurred in ED. The final multi-model found seven predictors for early mortality in ED: age ≥75 (aOR 4.474, 95% CI 1.794–11.158, p=0.001), female gender (aOR 3.059, 95% CI 1.462–6.400, p=0.003), pre-existing hypertension (aOR 2.105, 95% CI 1.074–4.126, p=0.030), ischemic heart disease (aOR 0.316, 95% CI 0.104–0.963, p=0.043), Killip class ≥2 (aOR 2.252, 95% CI 1.070–4.470) p=0.033), systolic blood pressure <100 mmHg at presentation (aOR 3.365, 1.515–7.743, p=0.003), and presentation during COVID-19 pandemic (aOR 2.404, 95% CI 1.199–4.822, p=0.014). Following thrombolytic therapy, two predictors found to affect early mortality were failed fibrinolysis (aOR 3.147, p=0.004) and ventricular fibrillation/tachycardia (aOR 10.312, p<0.001).  **Conclusion**  Early mortality in ED following STEMI thrombolysis was high. STEMI patients should be warded to cardiac care unit early as the provision of comprehensive cardiac care can be challenging due to ED’s busy nature. The above-identified predictors of early STEMI mortality in ED allow clinicians to identify and manage high-risk STEMI patients better.  **Keywords:**  STEMI thrombolysis; Emergency Department; thrombolytic agent  Word counts = 334 words  Word count: 290 |

**Reply to reviewer’s comments:**

We thank reviews for the critical review and comments.

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| The result for adjusted OR need to display together with the CI. | 95% CI values have been added. |
| How to correctly explain the ischaemic heart disease aOR as the protective factor for early mortality following MI in ED? | The investigators have explanations for this with some references. However, the explanation should not be part of the abstract.  It will be included under discussion in the poster. |
| What is the definition of early mortality in this study? | Early mortality in the ED was defined as mortality that occurred in the ED after thrombolysis. We have added the definition under “Method”. |
| What do you mean COVID-19 pandemic in the result? is it COVID-19 positive? | We apologise for the confusion. It refers to the patient presentation to ED during the COVID-19 pandemic. We have amended it to “presentation during the COVID-19 pandemic”. |