

CODE MI: Reducing Door-In to Door-Out (DIDO) time for MySTEMI Network in the Emergency and Trauma Department, Hospital Tengku Permaisuri Norashikin, Kajang

NS Zainol Abidin, N Poovandran, K Selvarajah, NA Yunos, MS Husin, KL Mokhtar, AF Che Azmi, SG Ng, H Ismail
Emergency and Trauma Department, Hospital Tengku Permaisuri Norashikin, Kajang

INTRODUCTION

Delayed door-in to door-out (DIDO) time for STEMI patients requiring primary percutaneous intervention (PCI) is a global issue, including in Malaysia. The Malaysian Clinical Practice Guideline (CPG) recommended in-hospital mortality risk by 56% (Yamaguchi et al., 2022). The aim of this study is to reduce the DIDO time for STEMI patients transferred to PCI centre in MySTEMI network.

METHODOLOGY

This prospective interventional study involved STEMI patients eligible for primary PCI within the MySTEMI network, presenting to the Emergency and Trauma Department (ETD) at HTPN from April 2024 to March 2025. Patients undergoing rescue PCI were excluded. The study implemented the Code MI workflow to expedite assessment, referral, and transport to PCI-capable centers. Verbal consent was obtained from patients prior to transfer. DIDO from January 2023 to March 2024 (pre-intervention) was compared with those from April 2024 to March 2025 (post-intervention).

RESULTS

A total of 74 STEMI patients who underwent primary PCI between January 2023 and March 2025 were analyzed. Of these, 31 patients were in the pre-intervention period, while 43 were in the post-intervention period. The median DIDO time was significantly reduced after the implementation of Code MI (53 minutes vs. 29 minutes, $p=0.021$).

Table 1: DIDO pre and post-Code MI intervention

DIDO	CODE MI		p value
	PRE-INTERVENTION (Jan 2023 - March 2024)	POST-INTERVENTION (Apr 2024 - March 2025)	
Median (min)	53 (IQR 29-80)	29 (IQR 20 - 53)	0.021
Min (min)	15	13	
Max (min)	300	317	

Moreover, the percentage of patients achieving a DIDO time of ≤ 30 minutes from initial presentation at ETD to transfer to a PCI-capable center also significantly increased after the intervention (26% vs. 56%, $p=0.01$).

CONCLUSION

Code MI implementation significantly improved the timeliness of STEMI care by reducing DIDO times and increasing the proportion of patients transferred to PCI-capable centers within the recommended 30-minute window.

CODE MI PROCESS WORKFLOW

Monday to Friday 8:00am - 5:00pm

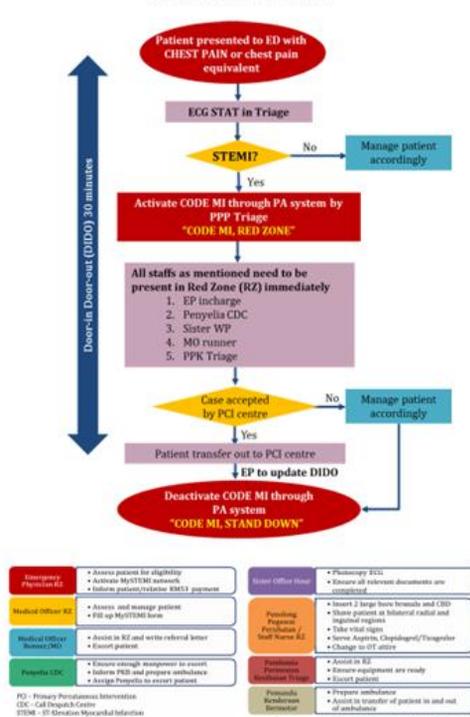


Figure 1: Code MI process workflow

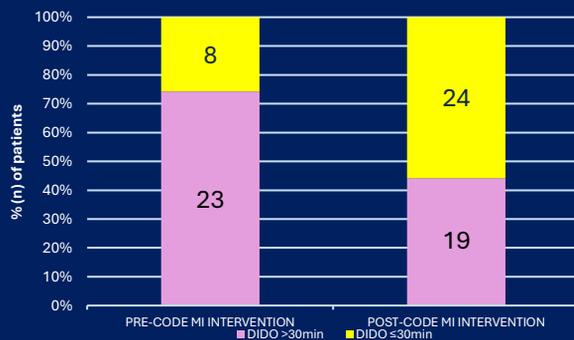


Figure 2: Percentage (%) and number of patients vs DIDO

Logistic regression analysis showed that the intervention was significantly associated with increased odds of achieving DIDO ≤ 30 minutes (OR = 3.63, 95% CI: 1.33–10.10, $p=0.012$), adjusting for age and sex.

DISCUSSION

Code MI introduced a clear, yet comprehensive process workflow, from patients' initial triage at the ETD to their transfer to the ambulance and onwards to a PCI-capable center, all aimed at achieving a DIDO time of ≤ 30 minutes. The results from this pilot study can provide a foundation for developing a national CPG aimed at achieving DIDO times of ≤ 30 minutes across all spoke and hub hospitals.

REFERENCES:

1. Yamaguchi J, Matoba T, Kikuchi M, Minami Y, Kojima S, Hanada H, Mano T, Nakashima T, Hashiba K, Yamamoto T, Tanaka A, Matsuo K, Nakayama N, Nomura O, Tahara Y, Nonogi H, Effects of Door-In to Door-Out Time on Mortality among ST-Segment Elevation Myocardial Infarction Patients Transferred for Primary Percutaneous Coronary Intervention – A Systematic Review and Meta-analyses. Circulation Reports, 25 Feb 2022; 25 4(3): 109-115.
2. Clinical Practice Guideline: Management of Acute ST Elevation Myocardial Infarction. 4th Edition. 2019