

**中文題目：**評估 CHA<sub>2</sub>DS<sub>2</sub>-VASC 評分系統在預測有或無新發生房顫之急性心肌梗塞生還者其心血管預後

**英文題目：**Assessment of the CHA<sub>2</sub>DS<sub>2</sub>-VASC Score in Predicting Cardiovascular Outcomes in Survived Acute Myocardial Infarction Patients With and Without New-onset Atrial Fibrillation

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**Background:** Acute myocardial infarction (AMI) is a leading cause of death worldwide. Risk stratification using readily available clinical variables may help identify subgroups at low and high risk of major adverse cardiocerebral events (MACCEs) following the episode of AMI and may guide clinical management differently in patients of variety of risks. Indeed, several clinical risk scores, including GRACE risk score and TMI risk score, are now used frequently to assess the risk of AMI patients during hospitalization. Atrial fibrillation (AF) is a frequent and severe complication of AMI. Although AF associates with worse in-hospital outcomes, whether new onset-AF may affect the long-term outcomes in survived AMI patients is rarely discussed, and the predictor for new-onset AF after AMI is unknown. CHA<sub>2</sub>DS<sub>2</sub>-VASC score which consists of congestive heart failure, hypertension, age, diabetes, stroke/transient ischemic attack/thromboembolism, vascular disease, and gender is currently recommended in established guidelines to evaluate the embolic risk in patients with AF. Furthermore, recent studies demonstrate that a higher CHADS<sub>2</sub> score, the simplified version of CHA<sub>2</sub>DS<sub>2</sub>-VASC, associates with poor prognosis in AMI patients. Nevertheless, there is paucity of large scale studies investigating the role of the CHA<sub>2</sub>DS<sub>2</sub>-VASC score in the prediction of cardiovascular outcomes in patient with non-fatal MI. Therefore, this study aimed to explore the predictors and impact of new-onset-AF and to determine whether the CHA<sub>2</sub>DS<sub>2</sub>-VASC score could predict the MACCE in survived AMI patients with or without new-onset AF.

**Methods:** National Health Insurance Research Database (NHIRD) between Jan. 01 2008 and Dec. 31 2012 was used. The study population was identified as patients aged 18 years or older who were admitted through emergency department and discharged with a primary diagnosis of AMI (ICD-9 code: 410) from regional hospital or medical center. Patients with existing thyroid disease and AF (ICD-9 code: 427.31) before admission were excluded. Chi-square test and Student's t-test were used to compare the outcomes between AF group and non-AF group in survived post AMI patients. Cox proportion hazard models were used to estimate the hazard ratio of risk factors associated with MACCE. Logistic regression model was used to identify the significant predictors of new onset AF post AMI.

**Results:** After excluding 1,919 patients (5.6%) who died during hospitalization, the study population comprised 27,785 patients with non-fatal AMI aged 18 years or older, and their data from NHIRD was explored till one year after discharge. Among those, 1,165 patients (3.6%) had a

diagnosis of AF at discharge and were considered cases of new-onset AF after index event. As compared to non-AF group, patients in AF group had significantly older age, and higher incidences of chronic obstructive pulmonary disease, prior stroke, heart failure (HF), and peripheral arterial obstructive disease. Furthermore, patients with AF also were more frequently prescribed with warfarin, non-dihydrodipine calcium channel blockers, diuretics, anti-arrhythmia medications, such as amiodarone or propafenone, and less frequently with statin, and aspirin. Although univariate analysis showed that prescription of statin before the index event was associated with lower risk for new-onset AF (OR =0.6858; 95% CI = 0.6093 – 0.7718; P <0.0001), multivariate analysis did not confirm statin an independent factor (OR =0.984; CI = 0.854 – 1.134; P =0.8237). Female gender, older age, prior stroke, and HF were significantly associated with new-onset of AF after the index event while patients with DM, dyslipidemia and prior PCI were less likely to have AF during hospitalization, suggesting patients with new-onset AF after AMI usually have CHA<sub>2</sub>DS<sub>2</sub>-VASC score  $\geq$  2. Indeed, patients with new-onset AF during hospitalization were more prone to suffer stroke (5.4% vs. 3.0%; p <0.0001) and HF (24.6% vs. 16.0%; p <0.0001) than those without AF during hospitalization. Kaplan-Meier survival estimates showed that MACCE, including recurrent MI, admission for HF, stroke, and all-cause death, was significantly higher in new-onset AF group (27.6% vs. 18.7%; p<0.0001) in one year. Except recurrent MI, admission for HF, stroke, and all-cause death were all significantly higher inpatient with new-onset AF as compared to those without AF. Mean (standard deviation) CHA<sub>2</sub>DS<sub>2</sub>-VASC score in patients with and without AF were 3.57 $\pm$ 2.00 and 2.83 $\pm$ 2.02, respectively (p < 0.0001). Patients with new-onset AF had lower MACCE-free survival rate in one year than those without AF. Additionally, CHA<sub>2</sub>DS<sub>2</sub>-VASC score was correlated with MACCE in one year in both groups, and all of the survived AMI patients with CHA<sub>2</sub>DS<sub>2</sub>-VASC score  $\geq$  7 had an MACCE in one year.

**Conclusions:** New-onset AF predicts both worse in-hospital and long-term cardiovascular outcomes in patients with non-fatal AMI, including the increase risks of stroke, HF and death. CHA<sub>2</sub>DS<sub>2</sub>-VASC score can be a useful predictor of MACCE in one year among survived AMI patients, and CHA<sub>2</sub>DS<sub>2</sub>-VASC score  $\geq$  7 predicts 100% of probability of MACCE within 1 year after the occurrence of AMI.