Real-world assessment of antiplatelet treatment therapies for acute coronary syndrome (ACS) patients in the United States in a nationwide Electronic Health Record in 2018-2020

A. Kang¹, J. Jiang¹, X. Li¹, J. Horrow¹, R. Garcia Sanchez¹, E. O-Brien², A. Abdul Sultan³, S.P. Krishnamurthy⁴, C.P. Cannon⁵

¹Bristol Myers Squibb, Lawrenceville, United States of America
²Janssen Global Services, Horsham, United States of America
³Janssen Pharmaceuticals, Raritan, United States of America
⁴Mu Sigma, Bengaluru, India
⁵Brigham and Women’s Hospital, Boston, United States of America

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Background: Acute coronary syndrome (ACS) is one of the leading causes of cardiovascular related deaths for adults in US. The clinical presentation of ACS is broad, which includes ST-segment elevation myocardial infarction (STEMI), non-ST-segment elevation MI (NSTEMI), and unstable angina (UA). There are limited data around contemporary real-world treatment landscape, therefore it is critical to understand the treatment pattern of the US ACS patients in the real-world setting.

Purpose: This study evaluated antiplatelet therapy (APT) treatment patterns among US patients without atrial fibrillation or oral anticoagulants (OACs) who experienced their first hospitalized ACS event during observation period.

Methods: The Optum® de-identified Electronic Health Record dataset from January 2018 through December 2020 was used for this study. Adult patients with an inpatient primary diagnosis of ACS during the index period were identified by ICD10 codes. The date of admission for the first ACS hospitalization was the index date. Patients with atrial fibrillation diagnosis or a record for OAC use before index date and during hospitalization were excluded. ACS subgroups and percutaneous coronary intervention (PCI) status were assessed during index hospitalization; patient characteristics and in-hospital antiplatelet treatment type were also evaluated.

Results: Among 63,767 patients included in this study, the mean age was 64.1 and 40.5% were female; 89.2% were treated with APT. For those patients not treated with APT, majority were treated with parental anticoagulants. Among 89.2% APT treated patients, 52.7% were initiated on dual antiplatelet therapy (DAPT), 27.4% were initiated on single antiplatelet therapy (SAPT), and 9.1% switched between different DAPT regimens. The top three used DAPT were aspirin+clopidogrel (30.5%), aspirin+ticagrelor (18.9%) and aspirin+prasugrel (2.6%); the most used SAPT were aspirin (22.6%), clopidogrel (2.6%), and ticagrelor (2.0%). For ACS subtypes, 26.3% were diagnosed as STEMI, 62.9% were NSTEMI, and 10.8% were UA; of them, 45.0% had PCI procedure within 30-days before or after the index date. ACS patients with PCI procedure had the highest APT treatment rate (95.2%) and highest DAPT treatment rate (70.6%). Across ACS subtypes, patients hospitalized for STEMI had the highest usage of aspirin+ticagrelor (34.5%), whereas patients hospitalized for NSTEMI had the highest usage of aspirin+clopidogrel (34.7%).

Conclusion: We observed wide variability in APT treatment across STEMI vs. NSTEMI and +/-PCI. Only 38.1% of non-PCI treated ACS patients received DAPT despite current guidelines. Further analyses are planned to explore the varying APT (and/or anticoagulant) regimens.

Figure 1
Figure 2

Common SAPT and DAPT usage on Index Hospitalization by Subtypes in all APT patients

- **ACS**: 22.6% AS, 2.6% Clopidogrel, 0.0% Ticagrelor, 18.9% AS + Clopidogrel, 30.5% AS + Ticagrelor, 3.1% Other APTs
- **STEMI**: 10.2% AS, 1.3% Clopidogrel, 19.9% Ticagrelor, 34.5% AS + Clopidogrel, 30.8% AS + Ticagrelor
- **NSTEMI**: 26.1% AS, 3.1% Clopidogrel, 1.6% Ticagrelor, 34.7% AS + Clopidogrel, 13.6% AS + Ticagrelor
- **UA**: 32.5% AS, 2.2% Clopidogrel, 0.7% Ticagrelor, 31.9% AS + Clopidogrel, 11.5% AS + Ticagrelor
- **PCI**: 31.8% AS, 3.1% Clopidogrel, 1.1% Ticagrelor, 33.5% AS + Clopidogrel, 27.4% AS + Ticagrelor
- **Non-PCI**: 39.0% AS, 3.7% Clopidogrel, 1.1% Ticagrelor, 29.3% AS + Clopidogrel, 6.9% AS + Ticagrelor