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Comparative effectiveness and costs of enoxaparin versus unfractionated heparin in treating acute coronary syndrome

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Background/Introduction: Enoxaparin and unfractionated heparin (UFH) are guideline-recommended anticoagulants for patients with acute coronary syndrome (ACS) including unstable angina (UA) and myocardial infarction with (STEMI) or without ST-elevation (NSTEMI). Prior efficacy and safety evidence are mainly from clinical trials. Economic data is lacking.

Purpose: To examine differences in utilization, effectiveness, safety, and costs in treating ACS between enoxaparin and UFH using real-world data.

Methods: Using Premier Healthcare Database from 859 U.S. hospitals, inpatients 18 years or older with a diagnosis of initial episode of ACS between 2010–2016 were analyzed. Outcomes included 30-day risk of non-fatal myocardial infarction (MI), recurrent angina, in-hospital mortality, composite ischemic complication (having MI/recurrent angina/death), major bleeding, and costs. Multivariable regression was used to compare outcomes between enoxaparin and UFH monotherapy.

Results: Among 1,048,053 eligible patients (UA: 219,259; NSTEMI: 582,134; STEMI: 246,660), prevalence of enoxaparin monotherapy was 12.0%, 13.9%, and 5.1% and of UFH monotherapy was 45.1%, 43.1% and 59.8% for UA, NSTEMI, and STEMI patients, respectively. Compared to

UFH, enoxaparin was associated with lower odds of MI (Adjusted Odds Ratio [OR]=0.95; 95% Confidence Interval (CI): 0.92, 0.99), recurrent angina (OR=0.88; 95% CI: 0.78, 0.98), in-hospital mortality (OR=0.88; 95% CI: 0.81, 0.95) and composite ischemic complications (OR=0.95; 95% CI: 0.92, 0.98) among NSTEMI patients but not in UA or STEMI patients. Enoxaparin was associated with lower odds of major bleeding in all three patients cohorts (UA: OR=0.77, 95% CI: 0.66, 0.91; NSTEMI: OR=0.68; 95% CI: 0.64, 0.72; STEMI: OR=0.72, 95% CI: 0.63, 0.83). Cost savings per patient during index admission and 30-day follow-up for enoxaparin over UFH was \$2,813 for UA, \$2,332 for NSTEMI and \$2,928 for STEMI patients.

Conclusions: Enoxaparin was associated with lower odds of ischemic complications including death, lower costs and better safety than UFH among NSTEMI patients. Its relative effectiveness varied between patients with different ACS presentations. Improving upstream selection of appropriate anticoagulants in different type of ACS patients has the potential to optimize clinical outcomes and costs.