

Abstract 1

**Venous Thromboembolism after Total Hip and Knee Replacement in Older Adults with Single and Co-Occurring Comorbidities**

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**Background:** The presence of comorbidities in older adults has been associated with poor quality of life, disability, and high healthcare utilization. Eighty percent of older adults have one or more comorbidities, and 50% have two or more. Despite this, most clinical practice guidelines do not modify or discuss the applicability of their recommendations to individuals with single comorbidities and co-occurring comorbidities.

Venous thromboembolism (VTE) is a common, fatal, and costly injury which complicates major surgery in older adults. The American College of Chest Physicians recommends high-potency prophylaxis regimens such as fondaparinux and low-molecular-weight heparin at twice-daily dosing for all individuals undergoing total hip or knee replacement (THR or TKR). Surgeons are reluctant to prescribe them, however, due to fear of excess bleeding. Identifying high-risk patients, such as older adults with specific comorbidities and co-occurring comorbidities, would optimize provision of high-potency prophylaxis. Coronary artery disease, congestive heart failure (CHF), chronic obstructive pulmonary disease (COPD), and cerebrovascular disease are postulated to increase VTE through venous stasis, immobility, and hypercoagulability mechanisms, but epidemiologic studies have not confirmed these effects. The combined effect of comorbidities, ie, co-occurring comorbidities, has been incompletely evaluated but could potentially cause a synergistic increase in VTE.

**Methods:** Using the Nationwide Inpatient Sample, we identified older adults who underwent THR or TKR in the U.S. between 2003 and 2006. Our outcome was VTE, including pulmonary embolus or deep vein thrombosis. We performed multivariate logistic regression analyses to assess the effects of comorbidities on VTE. Exposures analyzed included the above comorbidities and prevalent combinations.

**Results:** Older adults underwent 93,071 THR and 223,600 TKR surgeries in our sample. VTE occurred 0.8% and 1.2% of the time during the hospitalization period for the respective surgery types. CHF increased the odds of VTE in both the THR (OR = 3.08; 95% CI, 2.05–4.65) and TKR cohorts (OR = 2.47; 95% CI, 1.95–3.14). COPD increased the odds in the TKR cohort only (OR = 1.49; 95% CI, 1.31–1.70). The data did not support a synergistic effect of co-occurring comorbidities with respect to VTE occurrence.

**Conclusions:** Older adults with CHF undergoing THR or TKR, and those with COPD undergoing TKR, are at increased risk of VTE. If these findings are confirmed in other data sets, these older adults may benefit from higher-potency prophylaxis.