

## Association of Age, Sex, and Race with Prescription of Bone Protective Medications Following Low-Energy Hip Fracture

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**Purpose:** Patients who suffer a low-energy hip fracture are at an imminent increased risk for future fragility fractures. Initiation of bone protective medications after hip fracture has been reported to lower the risk of subsequent fragility fractures, thereby decreasing morbidity and mortality. Despite current clinical practice guidelines, historical biases of targeting fracture prevention toward certain groups may result in persistent disparities in prescribing of bone protective medication. Our objective was to identify the association of patient age, sex, and race with prescription of bone protective medication following low-energy hip fractures.

**Methods:** A registry-based cohort of patients  $\geq 50$  years with a low-energy hip fracture requiring surgical fixation between 2016 and 2018 was assembled from the American College of Surgeons National Surgical Quality Improvement Program registry. Patients on bone protective medications prior to admission were excluded. Multivariable logistic regression was used to determine adjusted associations between patient age, sex, and race and their interactions with prescription of bone protective medications within 30 days of surgery, after accounting for relevant covariates (comorbidity, injury factors, and treatment factors).

**Results:** In total, 17,006 patients with a hip fracture who were not previously taking bone protective medications were identified. Their median age was 82 years (interquartile range [IQR]: 73-87), and 66% were female ( $n = 11,250$ ). Thirty days after surgery, 32% ( $n = 5409$ ) of patients had been prescribed bone protective medication. Following adjustment for covariates, a significant interaction between age and sex with bone protective medication prescription was observed ( $P = 0.03$ ). Male sex among patients in their 50s (odds ratio [OR]: 0.73, 95% confidence interval [CI]: 0.61-0.87), 60s (OR: 0.78, 95% CI: 0.69-0.88), 70s (OR: 0.85, 95% CI: 0.78-0.91), and 80s (OR: 0.91, 95% CI: 0.84-0.99) was associated with a lower odds of bone protective medication prescription compared to female patients of the same age. Medication prescription did not differ among patients of different racial backgrounds or those over 90 years.

**Conclusion:** Only 32% of patients were prescribed bone protective medications within 30 days of surgery for low-energy hip fracture, despite consensus guidelines urging early initiation of secondary prevention treatments in this population. Given that men under 90 years were less likely to receive appropriate therapy, strategies need to be implemented to prevent sex- and age-based disparities in secondary fracture prevention.