

**Title:** The Incidence and Impact of Bisphosphonates on Multiple Myeloma

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## ABSTRACT

**Introduction:** Multiple myeloma (MM) causes many deleterious effects on the body including bone damage. The use of osteoporosis pharmacotherapy and other interventions have been shown to improve survival in patients with MM. Their impact on reducing fragility fractures is not well studied. The purpose of this study is to determine if either pharmacotherapy or DEXA scans influences fragility fracture rates in patients with MM when compared to patients with multiple myeloma that receive no intervention.

**Methods:** A retrospective review was conducted to 1) quantify the trends in use of pharmacological treatments for patients with MM and 2) quantify the incidence of fragility fractures in patients with MM with and without management. Of these patients with MM included, 1.78% of patients (1,425 of 79,861) received pharmacotherapy. Of those included with MM, 1.97% of patients (15,016 of 79,861) received a DEXA scan following diagnosis of MM.

**Results:** Those who received no pharmacotherapy had statistically higher risk of experiencing a fragility fracture within 2 years of the diagnosis of MM than those who received only pharmacotherapy after the diagnosis (OR: 3.49; 95% CI: 1.40-11.67). Those who received neither pharmacotherapy nor a DEXA scan had statistically higher risk of experiencing a fragility fracture within 2 years of the diagnosis than those who received both pharmacotherapy and DEXA within 2 years of the diagnosis of multiple myeloma (OR: 5.89; 95% CI: 1.78-36.44).

**Conclusion:** This study suggests the use of pharmacotherapy significantly reduces the risk of fragility fracture in patients with MM. Additionally, this study demonstrates that these medications are underutilized in the management of MM. It may be beneficial to include earlier pharmacological interventions to reduce fragility fracture risk these patients.