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Inpatient administration of IV bisphosphonate therapy for treatment of osteoporosis in elderly hip fracture patients – a quality improvement initiative

Naomi M. Turner, M.D., Marisa Song Mayeda, M.P.H., M.P.P., Yee-Cheen Doung, M.D., Darin M. Friess, M.D., Kathleen Drago, M.D.

Oregon Health & Science University

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Abstract

Purpose

Our quality improvement (QI) initiative aimed to increase our institution's rate of initiating osteoporosis therapy by developing and implementing an inpatient protocol facilitating appropriate osteoporosis diagnosis and administration of a one-time intravenous zoledronate infusion for elderly patients admitted for hip fracture surgery.

Methods

We used an iterative Plan-Do-Study-Act (PDSA) model to develop our QI initiative. Patients ≥ 50 who presented with a low-energy hip fracture and received surgery were considered potential candidates for inpatient IV bisphosphonate therapy. For our preliminary cycle, we created a protocol prompting admitting services to order IV zoledronate on post-operative day two. An iterative cycle involved the orthopaedic department placing osteoporosis diagnosis and treatment recommendations in consult notes. We identified patients for chart review using billing codes and assessed IV zoledronate administration and osteoporosis diagnosis during admission.

Results

In the five months prior to initiation of our protocol, 29 of the 37 patients admitted for hip fracture were eligible for bisphosphonates. Only 10% were confirmed to have been appropriately treated for osteoporosis after hip fracture in an inpatient or outpatient setting, and no patients received inpatient IV zoledronate. Only 38.8% were diagnosed with osteoporosis during their hospital admission.

Since implementation of our protocol, the rate of inpatient bisphosphonate prescription has steadily improved. In the most recent quarter, 23 patients were admitted to our institution with a hip fracture. Eleven of 13 (85%) eligible patients received inpatient IV zoledronate. Ninety-one percent of hip fracture patients were diagnosed with osteoporosis during admission.

Conclusions

Despite AAOS guidelines, osteoporosis continues to be under-diagnosed and inadequately treated. After implementation of our protocol, we increased the rate of inpatient osteoporosis treatment with IV zoledronate for elderly hip fracture patients from 0 to 85%. Our protocol design could be considered by other institutions to improve appropriate osteoporosis diagnosis and treatment in inpatient settings.