

Osteoporosis Therapy Initiation Post Minimal Trauma Fracture

Mary G. ETTY-LEAL¹, Van T. NGUYEN¹

Vincent CHAN², Lara M. KUSMANOFF², Danielle L. PEARCE², Angelica E. POLITIS²,

Lorenna G. REYNOLDS², Daniela E. SEPE²

¹ Pharmacy Department, Royal Melbourne Hospital, Melbourne VIC

² School of Health and Biomedical Sciences, RMIT University, Bundoora, VIC

Introduction

Osteoporosis is defined as a disease characterised by low bone mass and micro-architectural deterioration of bone tissue, leading to enhanced bone fragility and a consequent increase in fracture risk.^[1] Any bone can be affected by osteoporosis but the most common are in the spine, hip and wrist.^[2] A presumptive clinical diagnosis can also be made following a minimal trauma fracture (a fracture resulting from trauma equal to or less than a fall from standing height) in middle aged or elderly patients.^[2]

Following a low trauma fracture at any site there is a two to four fold increase in the risk of subsequent fracture. Despite this, only 20% of patients who come to medical attention with an osteoporotic fracture are investigated and treated for osteoporosis.^[2]

In patients at high risk of fracture, especially those who have already had fractures, specific anti-osteoporosis therapy (currently bisphosphonates, denosumab, raloxifene, strontium or teriparatide) is required. Calcium intake and optimal vitamin D levels are also important in optimising bone health, and supplementation may be required.

Aim

To determine the proportion of patients admitted to hospital, aged 50 years and older with a confirmed neck of femur or vertebral minimal trauma fracture, who were commenced on anti-osteoporosis therapy by discharge, and to describe the agents prescribed.

Methods

This study was a retrospective inpatient medical record audit performed at The Royal Melbourne Hospital (RMH), Victoria, Australia. Data was collected by two auditors examining patients' scanned medical records. A third auditor then verified the data.

Patients over the age of 50 years, who were discharged from RMH between 1st January 2016 to 30th June 2016 and diagnosed with a vertebral or hip fracture were considered for inclusion in the study.

Exclusion criteria – one or more of the following:

- Non-minimal trauma fracture
- Pre-admission specific anti-osteoporosis therapy
- Palliative or for non-burdensome treatment (defined as Goals of Care category C or D)
- Deceased during the admission.

Primary outcome measures:

- The proportion of patients commenced on specific anti-osteoporosis therapy on or before discharge
- Describe the agents selected for those starting on specific anti-osteoporosis therapy on or before discharge.

Secondary outcome measures:

- The proportion of patients not commenced on specific anti-osteoporosis therapy on or before discharge but had a plan to start therapy in the discharge summary
- The proportion of patients not commenced on specific anti-osteoporosis therapy on or before discharge AND did not have a documented plan to start treatment in the discharge summary
- The proportion of patients commenced on calcium and/or colecalciferol supplementation on or before discharge.

A three-tiered hierarchy structure of possible outcomes enabled the allocation of patients to one outcome only. A patient being started on specific anti-osteoporosis therapy took preference over being referred to a general practitioner for further investigations or follow up, and receiving nil instructions was at the bottom of the hierarchy.

Results

A total of 407 patients were screened and 64 patients were included in the study. Patient characteristics and pre-admission supplementation are detailed in table 1.

Patient Characteristics (n = 64)

Age	Median	80 (range 53-94 years)
Gender	Male	21 (33%)
	Female	43 (67%)
Fracture Type	Hip	37 (58%)
	Vertebral	27 (42%)
Calcium and colecalciferol supplementation prior to admission	Calcium alone	0
	Colecalciferol alone	18 (28%)
	Both	6 (9%)

Table 1 Baseline patient characteristics

PRIMARY OUTCOMES

A total of 14 (21.9%) of the 64 patients were commenced on specific anti-osteoporosis therapy at RMH. Denosumab was the most commonly initiated treatment, with it being commenced in 10 of the 14 patients (71.4%). Risedronate was commenced in 3 of the 14 patients (21.4%) initiated on specific anti-osteoporosis therapy, and only 1 of the 14 patients (7.1%) was commenced on alendronate prior to discharge (see figure 1).

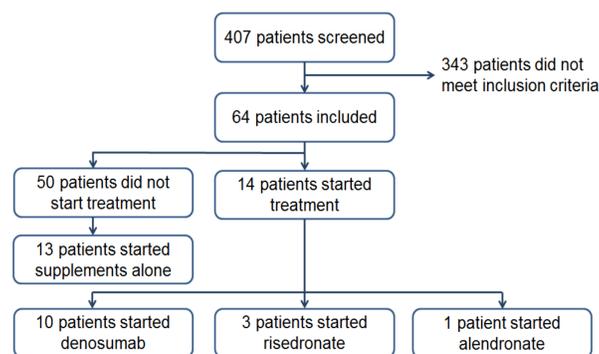
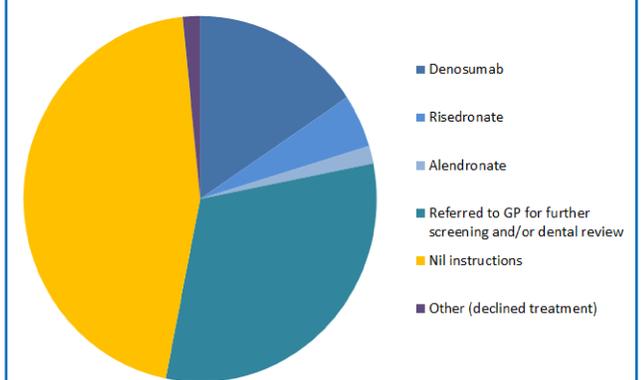


Figure 1 Patient screening and treatment initiation flowchart

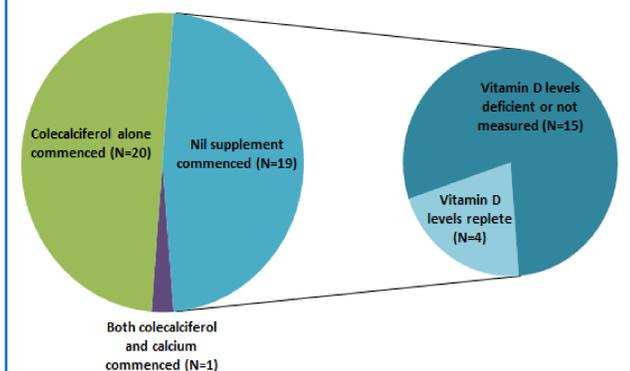
SECONDARY OUTCOMES

Fifty of the 64 patients were not commenced on any specific anti-osteoporosis therapy during their admission. Of these 50 patients, 20 (40%) had a documented plan on their discharge summary for their general practitioner to review and/or commence therapy, 29 (58%) received no instruction and one patient declined specific therapy (see graph 1).



Graph 1 Specific anti-osteoporosis therapy initiation results

Within the 64 included patients, 40 were on neither calcium or colecalciferol at admission. Of those 40 patients, colecalciferol was commenced in 20 patients (50%), both calcium and colecalciferol was commenced in 1 patient (2.5%) and 19 patients (47.5%) were not commenced on either supplement. Of the 19 patients not commenced on colecalciferol 4 patients (21%) had replete Vitamin D levels (see graph 2). Calcium and/or colecalciferol supplementation was sole therapy for 13 patients (see figure 1).



Graph 2 Calcium and colecalciferol supplementation therapy initiation results and related vitamin D levels

Conclusion

The majority of patients presenting to hospital with a minimal trauma fracture were not commenced on anti-osteoporosis therapy in hospital.

This is a missed opportunity for intervention that places patients at a higher risk of subsequent fracture; therefore effective strategies should be implemented to address this treatment gap in the future.

References

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