

# An Audit of the Appropriate Prescribing of Bisphosphonates

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## Introduction

Bisphosphonates treat osteoporosis (OP) and reduce fracture risk in patients with low bone mineral density (BMD) or previous fracture. The National Osteoporosis Guideline Group (NOGG) state long-term therapy should be reviewed, and treatment breaks taken to minimise safety risks to patients. The fracture risk assessment tool (FRAX) and dual energy x-ray absorptiometry (DEXA) scans are used to estimate BMD and 10-year fracture risk.

Patients should have renal function, vitamin D and calcium levels checked before treatment initiation for safe and effective bisphosphonate treatment. Without recommended monitoring and reviews, bisphosphonates can be inappropriately prescribed and continued in patients. This can lead to complications including atypical fractures.

## Audit Aims

According to guidance, all patients prescribed bisphosphonates should have fracture risk assessments to confirm clinical need for treatment. Data was collected for the following standards.

- **Standard 1:** 100% of patients have had either a FRAX or DEXA scan prior to starting bisphosphonate treatment or have been reviewed within the appropriate time as per NICE guidance.
- **Standard 2:** 100% of patients had the recommended pre-treatment checks before being prescribed a bisphosphonate.
- **Standard 3:** 100% of bisphosphonates are prescribed appropriately according to national and local guidelines.

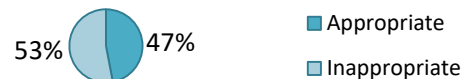
## Method

Over a 6-week period from October – December 2020 38 patients taking bisphosphonates and admitted to hospital were identified.

A data collection tool was used to gather relevant information about each patient using their medical records available via Meditech. The data recorded included previous fracture, FRAX, DEXA, pre-treatment checks; vitamin D, calcium, and estimated glomerular filtration rate (eGFR).

## Results

Percentage of Bisphosphonates Prescribed Appropriately and Inappropriately



Reasons for Inappropriate Prescribing of Bisphosphonates



## Discussion

**No FRAX or DEXA:** most patients prescribed bisphosphonates inappropriately did not have the required assessments to measure BMD. The NOGG guidelines recommend DEXA scans before treatment, but it may be more beneficial to some patients to start treatment without an assessment.

**No Review:** 4 patients who had continued bisphosphonates longer than stated by NOGG (5 years until review for alendronic acid).

**Missing pre-treatment checks:** 5 patients did not have all vitamin D, calcium, and estimated glomerular filtration rate (eGFR). All patients must have adequate calcium and vitamin D levels before and during treatment to minimise the risk of developing hypocalcaemia.

**Other:** 2 patients remained on treatment longer than 10 years which is not supported by current evidence. To measure the efficacy of alendronic acid use after 5 years, Black et al (2005) collected data for treatment over 10 years and advised drug holidays are taken after this time due to lack of evidence and safety data.

## Conclusion

The prescribing of bisphosphonates in osteoporosis patients did not meet all of the required standards: the main factor being a lack of fracture risk assessment.

Overall, osteoporosis patients admitted to hospital do not appear to have the regular reviews of their bisphosphonate treatment as recommended by national guidelines. A review of trust guidance could benefit patients both in primary and secondary care settings.

## References

- [1] Compston J et al. (2017). *NOGG 2017: Clinical guideline for the prevention and treatment of osteoporosis*. Updated July 2019. (Online). <https://www.sheffield.ac.uk/NOGG/NOGG%20Guideline%202017%20July%202019%20Final%20Update%20290719.pdf>
- [2] Black DM, Schwartz AV, Ensrud KE, Cauley JA, Levis S, Quandt SA, Satterfield S, Wallace RB, Bauer DC, Palermo L, Wehren LE. (2006). Effects of continuing or stopping alendronate after 5 years of treatment: the Fracture Intervention Trial Long-term Extension (FLEX): a randomized trial. *Jama*. 2006 Dec 27;296(24):2927-38. <https://jamanetwork.com/journals/jama/article-abstract/204789>