IMPROVING BONE HEALTH: A QUALITY IMPROVEMENT JOURNEY IMPLEMENTING SCOTTISH HIP FRACTURE AUDIT STANDARDS

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Introduction

Hip fractures are a significant health concern, particularly among the older adult population. In Scotland, the prevalence of hip fractures is notably high, with a considerable impact on morbidity, mortality, and healthcare resources.

The Scottish Hip Fracture Audit (SHFA) outlines standards which can improve clinical outcomes for this cohort of patients. Two such interventions are the timely administration of high dose vitamin D, followed by IV bisphosphonate therapy; namely zoledronic acid.

This Quality Improvement Project (QIP) aimed to **improve adherence to SHFA standards** in hip fracture patients admitted to Forth Valley Royal Hospital (FVRH), with specific aims to **improve rates of vitamin D and bisphosphonate administration** within recommended timeframes. There was a further aim to develop a standardised process for the administration of these.

Methods

An interventional prospective cohort study was conducted in order to evaluate adherence to SHFA standards for the management of frail patients admitted with hip fractures. A number of sequential changes were introduced and we analysed the impact on prescribing.

QIP primary focus: Timely administration of a loading dose of vitamin D (within 24 hours of admission) and IV Zoledronic Acid (within 30 days of admission) to eligible patients reviewed by the Orthogeriatric Team.

Data was collected between November 2023 and March 2024 for all frail patients (Clinical Frailty Score ≥ 5) with a confirmed hip fracture. It was sourced from electronic prescribing and patient management software.

Interventions

Date	SHFA Standards and Local Interventions
January 2023	2023 SHFA Standard Published: *Every patient with a hip fracture should be given a loading dose of Vitamin D (100,000 units) within 24 hours of admission. In addition, within 30 days, they should receive Zoledronic acid treatment and be referred to the local bone health pathway.*
March-June 2023	Local Multidisciplinary meetings, creation of local resources, information leaflets and protocols. Submission to acute drug and therapeutics committee (ADTC)
November 2023	NHS Forth Valley Osteoporosis guidelines published
November 2023	ADTC approval granted for use of IV Zoledronic Acid with acute hip fracture (15/11/23). Implementation delayed due to staffing issues.
January 2024	Routine use of IV Zoledronate commenced. Routine use of IV Zoledronate commenced using agreed flow chart, sticker, and patient information leaflets. Adhoc teaching and discussion sessions held. Whiteboard used in ward to keep track of patients appropriate for IV zoledronate
March 2024	Multidisciplinary decision made not to follow up patients who have received IV Zoledronic Acid as inpatient if not appropriate for subsequent follow up in 18 months.
March 2024	2024 SHFA Standard Published: *Given 150,000 to 250,000iu of oral vitamin D within the first seven days of admission. This can be given as a single or divided doses. Given zoledronic acid therapy unless contraindicated within 30 days of admission. If suitable for zoledronic acid therapy or on existing osteoporosis treatment, patients are referred to the local bone health pathway for follow up within 30 days.*
April 2024	Introduction of whiteboard sticker for Zoledronate administration
May 2024	Dental referral process agreed between orthogeriatric, osteoporosis team and dental team.
August 2024	Updated HEPMA Bundle to include loading and maintenance doses of Vitamin D. Updated sticker and flow chart to meet updated standard

Results

Chart 1: Percentage of Eligible Patients Loaded With 100,000 units of Vitamin D within 7 days

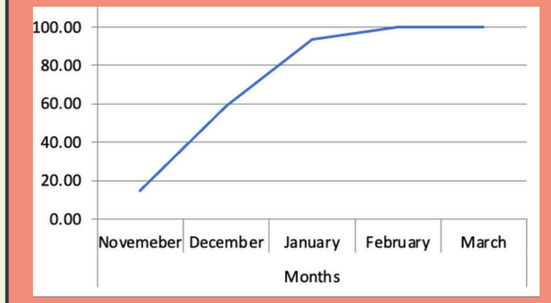
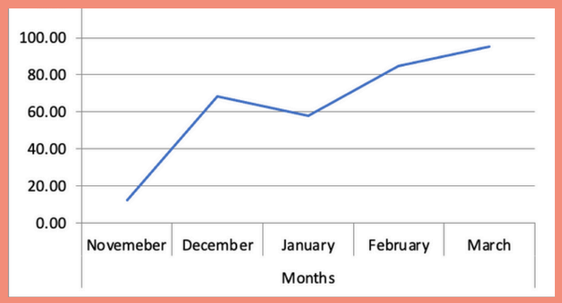


Chart 2: Percentage of eligible patients received IV Zolendronate within 30 days



Between November 2023 to March 2024, 165 patients were eligible with 72% (n=119) eligible for IV Zoledronate. Of those eligible of IV Zoledronate, 59% (n=71) received the treatment within 30 days. The data revealed a marked and steady improvement in the bone health assessment of patients admitted with hip fractures. Notably, the **administration rates for Vitamin D improved from 14.71% in November to 100% by February.** Similarly, the **administration rates for IV Zoledronic Acid increased from 12.12% in November to 95.45% by March.**

Analysis

These improvements were achieved through systematic tracking, enhanced clinician education, and standardized care processes.

As observed in Chart 2, rates of IV Zolendronic Acid prescription and administration were initially low . This was attributed to **clinician unfamiliarity with patient eligibility and the process of counselling patients.** Ongoing education and process standardisation addressed these issues, although further efforts are needed to achieve 100% adherence.

In addition, preliminary data collected in November and December showed low administration rates of IV Zoledronic Acid and Vitamin D. This was primarily due to the Acute Drug and Therapeutic Committee authorising the use of IV Zoledronic Acid only on November 15, 2023, and delays in implementing the SHFA Bone Health Pathway caused by staffing issues and a lack of clinician confidence.

Conclusions

The project demonstrates that **targeted interventions and standardised care pathways improve prescribing rates for hip fracture patients**. Sustained efforts in education, process refinement, and collaboration with the Hip Fracture Audit Team are essential for maintaining these improvements. Future steps include integrating Vitamin D and Adcal-D3 doses into an electronic prescribing protocol and conducting detailed statistical analyses to identify further areas for enhancement

1. NHS National Services Scotland. Scottish Hip Fracture Audit (SHFA) 2023 Guidelines. Available from: www.shfa.scot.nhs.uk. [Accessed 12/11/24].
2. National Osteoporosis Guideline Group. Clinical Guideline for the Prevention and Treatment of Osteoporosis. Available from: https://www.nogg.org.uk/full-guideline. [Accessed 12/11/24].
3. NICE. Fractures (non-complex): assessment and management. Available from: https://www.nice.org.uk/guidance/ng38. [Accessed 12/11/24].
4. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. The Lancet. 2003; 362(9391): 1125-30.
5. Public Health Scotland. Scottish standards of care for hip fracture patients. Available from: https://publichealthscotland.scot/publications/scottish-standards-of-care-for-hip-fracture-patients/ [Accessed 12/11/24].
6. Johansen A et al. Call to action: a five nations consensus on the use of intravenous zoledronate after hip fracture. Age Ageing. 2023;52(9).