



## Case study

# Improving KPI 7,9,10 and 11 – Introduction of a rapid vitamin D loading regime and the impact on bisphosphonate prescription in patients with fractured neck of femur

Kings Mill Hospital

Sherwood Forest Hospitals NHS Foundation Trust

Dr Laura Pugh

### Background

In my trust the guidelines for Vitamin D loading advised a 7-week course of weekly vitamin D. For those patients presenting with a fracture, if they had low vitamin D they were not able to have IV Zoledronate as an inpatient, as the loading regime took too long and they had been discharged by the time this was complete. This was a missed opportunity to initiate first line therapy in #NOF patients over 75, and those with non-hip fracture for whom IV zoledronate was appropriate.

### Aim

I wanted to enable the vast majority of patients who presented with #NOF to receive their first dose of IV Zoledronate during their inpatient stay. I wanted the same for patients with non-hip fractures who were suitable for IV Zoledronate as first line therapy (due to severity of risk or inability to take PO bisphosphonates). This was particularly important for patients unable to attend reliably for follow up in clinic.

### Process

I presented the newly proposed guideline at my departmental governance, and the osteoporosis lead did the same. This project involves me, osteoporosis clinical lead, lead pharmacist and local trusted in order to find out their practices.

- 1 Identified the impact of the problem - I took a baseline audit of Vitamin D levels of those admitted with #NOF to find out how often this was  $<50\text{nmol/L}$ , indicating replacement would be needed before IV Zoledronate could be given. This confirmed the hypothesis that low vitamin D was a common barrier to inpatient administration of IV Zoledronate. Low vitamin D was found in 54% of audited patients. Of those patients who were otherwise suitable for inpatient IV Zoledronate (had Vitamin D barrier been eliminated) only 13% were commenced on treatment as an inpatient.

- 2 Liaised with local trusts - I communicated with three local trusts to find out their vitamin D loading guidelines and practice. All 3 were using rapid loading regimes for patients planned for inpatient IV Zoledronate.
- 3 Draft guideline produced - I drafted a trust guideline to recommend a 5-day loading regime rather than the 7-week regime we had in place. I presented this at local departmental meetings and liaised with pharmacy teams. My local osteoporosis lead also presented it at their departmental governance meeting.
- 4 After taking through governance and getting consensus, we piloted the guideline within the orthopaedic wards for an 8-week period.
- 5 Re-audit followed which demonstrated despite similar rate of low vitamin D levels on admission (56%), following implementation of rapid loading guideline, 82% of suitable patients were commenced on treatment before discharge.

## Outcomes

After piloting the guideline, we repeated the audit. Despite similar rates of low vitamin D levels on admission (56%), after implementation of the rapid Vitamin D loading guideline, this time 82% of suitable patients received their first dose of treatment before discharge (compared to 13% at baseline).

## What did you learn?

As above, that change which leads to a significant increase in the prescription of a medication which many prescribers are unfamiliar with can lead to problems. My advice would be to introduce extra training for those most likely to prescribe IV bisphosphonates, and to consider extra safeguards to minimise prescribing errors. We now have an IV Zoledronate Prescribing Checklist, and a Zoledronate 'tag' on our electronic prescribing platform (NerveCentre).

## Key Learning points for other units

- > If Vitamin D loading is a common barrier to inpatient administration of IV Zoledronate, liaise with other local trusts and see what they are doing - consider rapid loading guideline.
- > Involve pharmacy for the outset in any improvement that is likely to alter prescribing.
- > Do a case review of 50 #NOF patients - those that did not receive IV Zoledronate before discharge, what were the barriers?