Improving bone health through proactive case finding and optimisation of care

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BACKGROUND

Characterised by low bone mass and structural deterioration of bone tissue, osteoporosis results in increased bone fragility and susceptibility to fracture. Osteoporosis leads to nearly 9 million fractures annually worldwide,[1] with over 500,000 people attending UK hospitals with fragility fractures each year.[2] It is estimated that 50% of patients suffering a hip fracture can no longer live independently.[3]

NICE recommend adults categorised as at high or intermediate risk of fragility fracture and diagnosed with osteoporosis should be offered bone-sparing treatment.[4] Effective treatments can reduce hip fractures by 33% and vertebral fractures by 55%.[5]

In addition, patients receiving bone sparing therapies should be asked about adherence to therapy and adverse effects at each medication review to ensure that treatments can be as effective as possible.[4]

AIMS

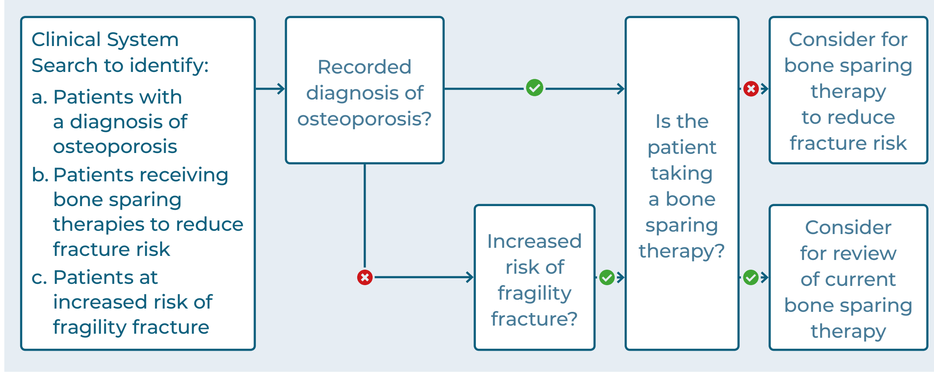
The North East region of England has a significantly higher incidence of hip fracture than the average across England (679 per 100,000 vs 589 per 100,000).[6]

To address this deficit, Lindisfarne Health Ltd partnered with the Academic Health Science Network for the North East and North Cumbria and Interface Clinical Services Ltd to support local practices with a combined population of 65,290 patients. The overarching aim was to support the prevention of fragility fractures and improve the management of osteoporosis by assisting in the implementation of key recommendations and standards. This included proactive assessment of fracture risk,[4,7] appropriate treatment with bone sparing therapies in patients at high risk of fracture[4] and review of patients currently receiving bone sparing therapies.[4]

METHODOLOGY

The programme was delivered by Clinical Pharmacists from Interface Clinical Services throughout 2017. The review was completed in 3 phases:

PHASE 1 ANALYSIS & STRATIFICATION



PHASE 2 COHORT DISCUSSION & INDIVIDUAL PATIENT ASSESSMENT

Individual review taking into account:

- Previous treatment with ≥ 1 bone sparing therapies including duration and reason for discontinuation
- Presence of independent clinical risk factors (CRF) for fracture
- 10 year risk of major osteoporotic fracture based on fracture risk assessment
- Relevant comorbidities, contraindications, clinical markers (e.g. GFR) and other medication
- Duration of current bone sparing therapy
- Adherence to current bone sparing therapy
- Clinical issues with current bone sparing therapy
- Presence of risk factors supporting continuation of current bone sparing therapies (age ≥ 75, H/O hip or vertebral fracture, ≥ 1 low trauma fracture during treatment, current treatment with glucocorticoids)

PHASE 3 PATIENT CONSULTATION WITH PRACTICE NOMINATED CLINICIAN

Ongoing practice workstreams to improve the management of at risk patients with a range of interventions including:

- Initiation of bone sparing therapies in line with best practice guidance
- Referral to bone health clinic for initiation of non-oral bone sparing therapies
- Bone health assessment and referral for DXA scan
- Discontinuation of bone sparing therapies in line with guidance

KEY FINDINGS

A total of 2,165 patients were identified meeting one or more of the inclusion criteria as defined within phase 1 of the methodology. 1,381 (64%) with a recorded diagnosis of osteoporosis, 1,103 (51%) currently receiving bone sparing therapies and 808 (37%) with a 'high' risk of fragility fracture.

In patients with a recorded diagnosis of osteoporosis, 774 (56%) were not currently receiving treatment with a bone sparing therapy (Fig 1). 520 (38%) were previously treated with a bone sparing therapy, although 298 (50%) had received less than 5 years treatment and 132 (25%) received less than 1 years treatment (Fig 2). 254 (18%) had no history of treatment with bone sparing therapies.

In other key groups at risk of fragility fracture, 114 (38%) patients with a history of hip fracture, 86 (49%) patients with a history of vertebral fracture and 230 (59%) patients with a history of fragility fracture were not receiving bone sparing therapies (Fig 1). Of 577 fractures sustained in patients over the age of 50 since April 2012 (age 50-74) or April 2014 (over 75 years), only 240 (42%) patients were recorded with a fragility fracture in line with the national QOF framework, despite 392 (68%) having a diagnosis of osteoporosis and 307 (53%) being treated with a bone sparing therapy.

Of 1103 patients currently taking bone sparing therapies 87% were taking alendronate. 461 (42%) patients taking a bone sparing therapy were identified as being treated for greater than 5 years (3 years with zoledronate).

Fig 1. Bone sparing therapy (BSA) uptake in patients identified at risk of fragility fracture

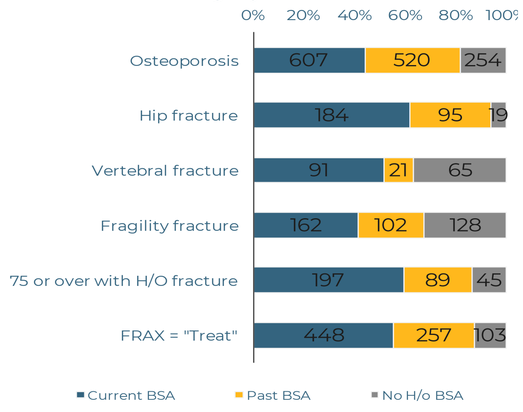


Fig 2. Duration of BSA treatment in patients with a diagnosis of osteoporosis not currently receiving a BSA (n=520)

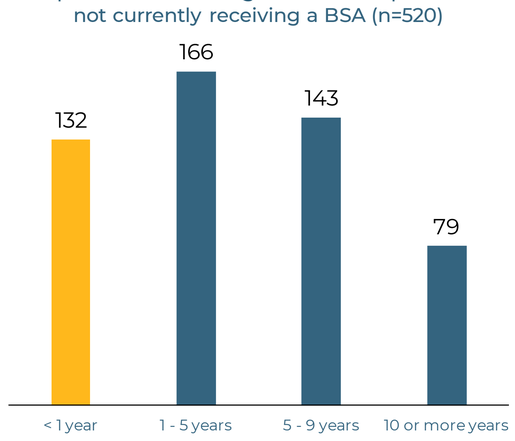


Fig 3. Risk factors supporting continuation of BSA in patients identified for a review of treatment duration

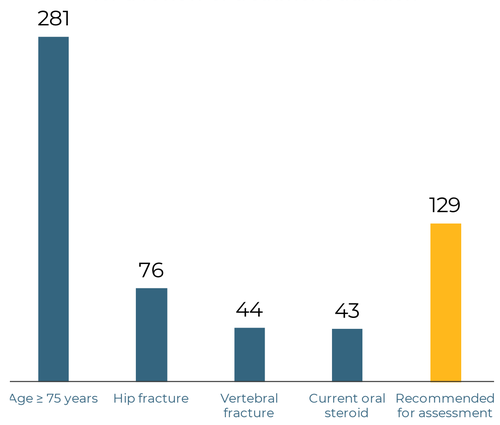
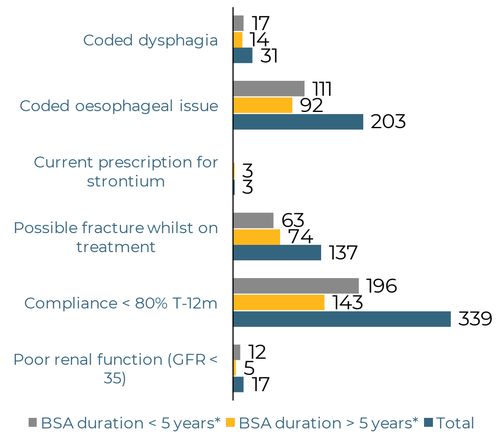


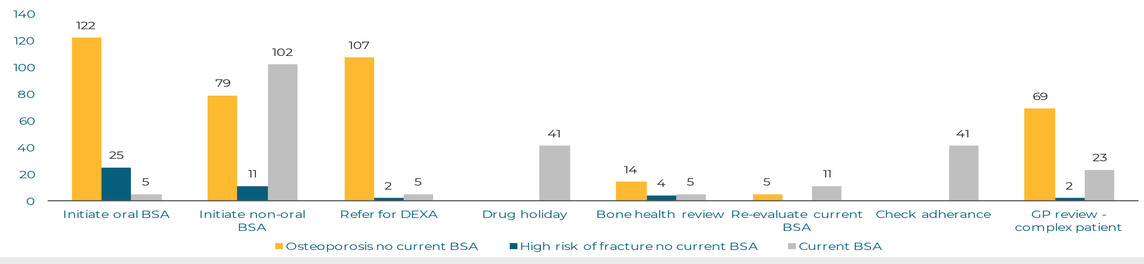
Fig 4. Potential risk factors for patients on current BSA



RESULTS

1,703 patients (79% of 2,165 identified patients) received individual assessment & recommendation, following cohort discussion as outlined in the above methodology. Individual patient assessment resulted in 581 individual interventions (Fig 5), including 344 patients recommended for initiation on bone sparing therapies, 114 patients recommended for DXA scan, and 41 patients being recommended for a bone sparing therapy 'drug holiday'.

Fig 5. Analysis of recommended actions following pharmacist led notes review



DISCUSSION & LEARNINGS

The average QOF prevalence of osteoporosis was 0.5% in patients aged over 50, however the true recorded prevalence of osteoporosis in this group was 10 times greater at 4.9%. Although 85% of the patients within the QOF register were managed appropriately only 46% of patients with recorded osteoporosis and 41% of patients with a recorded fragility fracture were receiving bone sparing therapies.

The average 10-year fracture risk (FRAX) across 958 patients not receiving bone sparing therapies was 18%. Using a data model developed from the recent NICE guidance on bisphosphonates, we would anticipate 53 fragility fractures over the next 3 years in this at-risk untreated group: 12 hip fractures, 13 vertebral fractures, 20 wrist fractures and 8 humeral fractures.[5] The direct cost impact of this would be £195,222 with an additional cost of £47,124 in nursing or residential care home costs.[5] Greater than one third of the untreated patient cohort were recommended for initiation of bone sparing therapy. The 344 Patients recommended for initiation had an average 10-year fracture risk of 27% reflecting the prioritisation of higher risk patients.

Across the cohort of patients recommended for a review of treatment duration, 72% had a guideline indication to continue therapy beyond 5 years. In addition, of 1,684 patients identified with a current or past history of bone sparing therapies, only 2 incidence of atypical fractures (0.1%) and 2 incidence of osteonecrosis (0.1%) were identified, supporting the reported low incidence of these adverse effects. Of greater concern, were the high levels of non-adherence with bone sparing therapies, which further add to the burden of patients not receiving effective bone protection.

This review programme demonstrates that clinical audit can identify significant opportunities to support improvements in bone health. More specifically, opportunities to improve treatment rates in patients at high risk of fracture (primary or secondary) were sizeable. Identification of patients with the highest risk and prioritisation of patients for review and intervention is essential in order to focus resources to those with greatest need.

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3. National Osteoporosis Guideline Group (NOGG, 2017). NOGG 2017: Clinical guideline for the prevention and treatment of osteoporosis
4. National Institute for Health and Care Excellence (NICE, 2017). Osteoporosis [NICE Quality standard QS49]
5. NICE (2017). Bisphosphonates for preventing osteoporotic fragility fractures (including a partial update of NICE technology appraisal guidance 160 and 161). Committee Papers [NICE Technology appraisal guidance TA464]
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