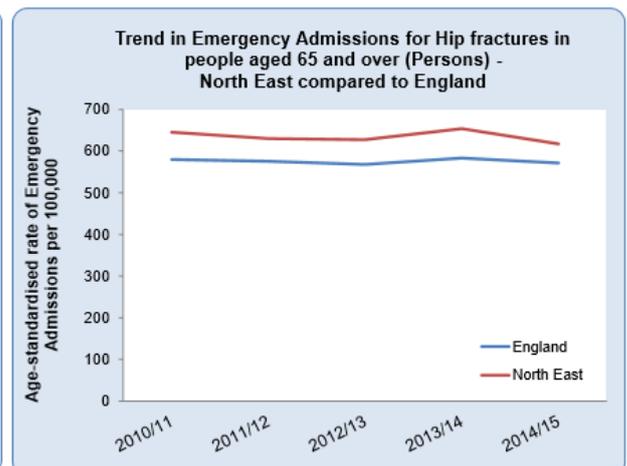
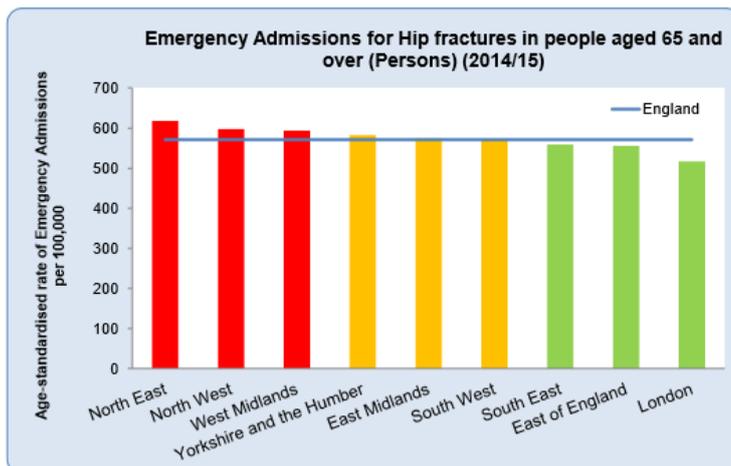




## Project Background

Approximately 65,000 hip fractures occur in the UK each year; with an annual cost of about £2 billion (this includes medical and social care). Osteoporotic fragility fractures can cause substantial pain and severe disability, often leading to a reduced quality of life along with significant morbidity and mortality. Hip fractures are the most severe fragility fracture, with potentially serious complications<sup>1</sup>. In those that survive a hip fracture, there is a significant reduction in function and independence with < 40% gaining pre-fracture walking ability and 46% unable to walk unaided after one year<sup>2</sup>. NICE Projections suggest that, in the UK, hip fracture incidence could rise to 101,000 per year in 2020<sup>3</sup> with an associated cost of £2.2billion.

The North East has the highest rate of emergency admissions for hip fracture of all Regions in England and is significantly above the national average (617.6 compared to 571.3 per 100,000 patients). Over the last five years the rate has remained relatively stable, both in the North East and for England as a whole<sup>4</sup>.



In 2012, the National Institute for Health and Care Excellence (NICE) issued guidelines on the assessment of risk of fragility fracture (NICE CG146<sup>5</sup>) recommending “opportunistic case finding”, and the Quality and Outcomes Framework (QoF) for primary care in England and Wales to support the identification and treatment of fragility fracture. Despite the guidance, there has been limited implementation of NICE CG146 and SIGN guideline 142<sup>6</sup> in general practice, largely due to the difficulties in applying a whole-system risk stratification tool (FRAX<sup>7</sup> or QFracture<sup>8</sup>). Currently, practices can only implement a risk stratification tool on individual patient entry which is time consuming and impractical. Furthermore, practices often struggle to implement a systematic review process linked to the outputs of risk stratification tools.

## Project Outline

During 2016 South Durham CIC partnered with the North East and Cumbria Academic Health Science Network, Interface Clinical Services and Kyowa Kirin to undertake a CaD3 therapy review and proactive fracture risk assessment utilising the Attend2 Fracture Risk tool underpinned by FRAX. 20 GP practices from South Durham representing a combined population of 158,260 patients undertook the programme of work. The aim of the project was in 2 parts, to support therapy intervention where appropriate as directed by the practice and to identify those patients at risk of Calcium and Vitamin D deficiency who may benefit from the addition of a Calcium and Vitamin D supplement.

## Method

The ICS pharmacist worked with the authorising clinician(s) to determine the criteria for inclusion and exclusion within the review. By choosing the criteria to be included, the GP determined the patient cohorts to be clinically assessed. The pharmacist then used the GP electronic patient records to collate data for presentation. Collation involved using the clinical system search functionality to create searches that extract data in order to give current baseline at "risk populations" and opportunities to improve their treatment. This process was augmented through utilisation of the 'Attend2 Fracture Prevention' toolkit. Upon receiving authorisation to review patient cohorts the pharmacist then carried out a detailed medical record review for individual patients. Interventions were then implemented by the pharmacist in accordance with the authorising clinicians' specification. All interventions were then communicated to patients.

Within the cohorts, patients identified as meeting the criteria of the QOF clinical indicator target groups for Osteoporosis, were highlighted to the practice authority along with any appropriate intervention recommendation as necessary to meet the current QOF target.

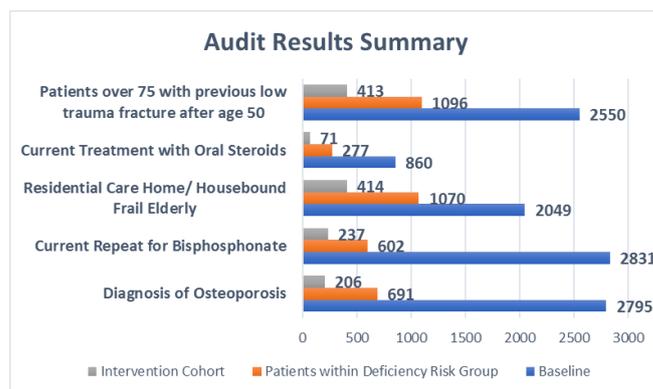
## Results

Patients were identified for review from the following baseline cohorts

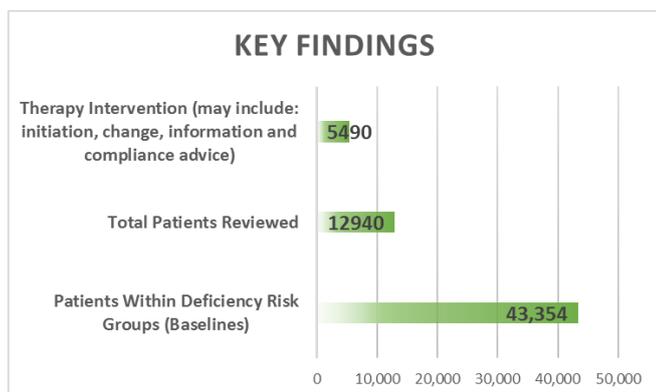
- Patients with a diagnosis of osteoporosis
- Patients with existing bone sparing therapy prescription
- Residential care home/housebound frail elderly
- Patients currently receiving oral steroids
- Patients over 75 with a previous low trauma fracture after age 50

Additionally, patients were assessed from the Attend2 Fracture Risk tool utilizing the criteria specified within NICE CG146 i.e.

1. All women aged 65 years and over and all men aged 75 years and over
2. Women aged under 65 years and men aged under 75 years in the presence of clinical risk factors
3. People aged under 50 years if they have major risk factors

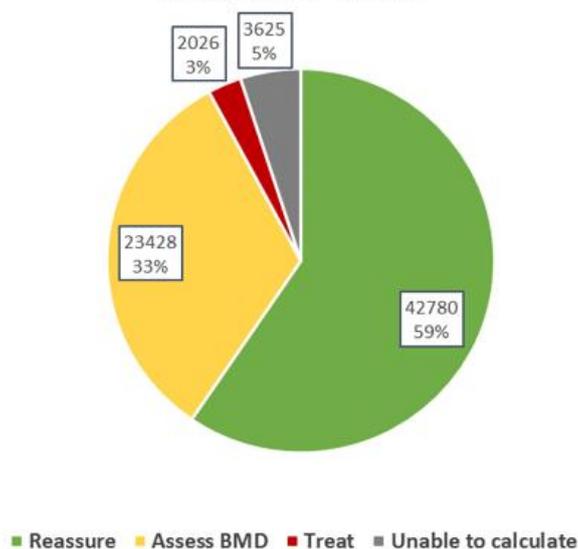


A total of 71,859 met the NICE CG146 criteria for assessment using the Attend2 Fracture Risk tool.



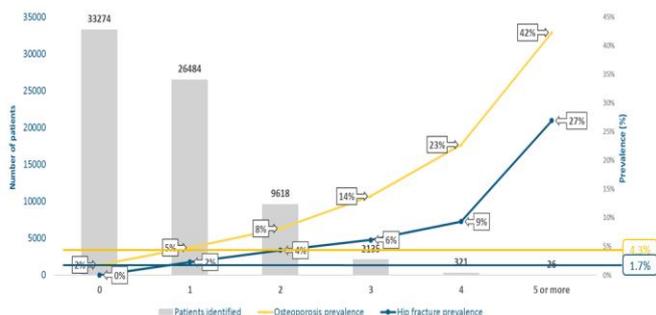
An additional 1397 patients were identified from their prescription ordering patterns as being 'non-compliant' with their prescribed CaD3 therapy. 885 of these patients received educational materials and/or other intervention.

All patients identified for fracture risk assessment (n = 71859)



Based on risk assessment (NOGG recommendation):

- **2,026 (3%) pts required treatment**
  - 737 already coded with DXA scan (36%)
  - 468 already on bone sparing therapy (23%)
- **23,428 (33%) pts for consideration of DXA scan:**
  - 3,290 (14%) already coded with DXA scan



The above graph illustrates that there were 26 patients identified within the population that had 5 or more clinical risk factors for fracture. Within this population, 27% of patients had already had a hip fracture and 42% a diagnosis of osteoporosis. Of the 321 patients with 4 risk factors, 9% had a documented previous hip fracture and 23% had an existing diagnosis of osteoporosis.

On clinical review, a total of 2734 (23% of the patients from high risk cohorts) required priority management defined as having **no** previous history of osteoporosis, previous DEXA assessment or current bone sparing therapy. These patients were offered educational materials and/or recalled for review and subsequent intervention/referral for DEXA as per practice direction.

The existing baseline prevalence of osteoporosis within the cohorts reviewed was 22% against a prevalence of 4.2% for all patients assessed through the toolkit and a background CCG prevalence of 0.1%.

### Impact and Outcomes

#### Projected financial benefit of the CaD3 Therapy review: £973,697.25

Projection estimates based on evidence data on the cost of hospitalisation and follow up care associated with a hip fracture<sup>9</sup> and assumptions based on NNT data and the cost of prescribing over 3.5 years<sup>10</sup>.

A total of 2026 patients were identified through the NOGG tool as requiring bone sparing therapy. Within this cohort a total 999 patients had no documented DEXA scan or current bone sparing therapy prescribed.

Using the FRAX 10 year probability of hip fracture we would expect **98** hip fractures in this cohort of patients over a 10 year period

The cost of a hip fracture is estimated to be £16,302 excluding social care costs. The above fractures could therefore cost the local health economy an estimated £1.6million

**Relative reduction in hip fracture incidence following 4 years bone sparing therapy is estimated to be 40%<sup>11</sup>**

**39**  
Hip fractures avoided

**£635,778**  
Direct saving in acute hip fracture costs based on 39 prevented hip fractures @ £16,302

Bone sparing therapy treatment costs is at present £0.78 per month (Alendronic Acid 70mg weekly). Within this cohort of 999 patients, the annual treatment costs would be less than £10,000.

### Key Learnings

- There has been limited adoption of national guidelines and the QOF parameters relating to Osteoporosis have not been fully understood or wholly implemented within primary care
- Adoption of national guidelines around bone health can be achieved at scale; however the rate of adoption needs to be commensurate with clinical capacity in both primary and secondary care – this would ideally involve consultation with all stakeholders ahead of implementation
- Adoption of NICE CG146 guidelines requires collaborative working between stakeholders to deliver optimal outcomes
- Screening of large populations utilising ‘risk’ tools depends largely upon the quality of the source data. Whilst tools can be immensely powerful where data is accurate, it is important to ensure the validity of this data before making a treatment / intervention decision
- Improvements in bone health can be achieved through a range of non-medical and medical interventions. These might include bone sparing therapy, calcium and vitamin D supplementation, diet and lifestyle modifications, exercise and mobilisation etc. Clinical decisions should be shaped around and with individual patient requirements

## References:

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- 3 Department of Health. *Hospital episode statistics (England) 2006*
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