Preventing falls and fractures by proactive Osteoporosis Case finding in Primary Care

A Population intervention study
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THE PROBLEM
THE CARE GAP
THE NEED
THE PILOT
THE East Lancashire CCG Quality Improvement Programme
The Long View
The number of people aged 65 and older is projected to rise by over 40% in the next 17 years to more than 16 million.

Thirty percent of people aged 65 and over will fall at least once a year.

For those aged 80 and over it is 50%.

Effective, planned, evidence-based approaches to falls and fracture risk reduction are of key importance to the health and wellbeing of people living in our communities.

Professor Martin Vernon, National Clinical Director for Older People, NHS England 2017
The ageing process should not necessarily be perceived as a burden on society; on the contrary, people over the age of 60 should be given any and every opportunity to continue making valuable and important contributions to our communities and our economy, with their expectation of a sound quality of life realised.

World Health Organisation. Active Ageing
THE PROBLEM OF FALLS

255,000 falls-related emergency hospital admissions in England among patients aged 65 and older

Falls are estimated to cost the NHS more than £2.3bn a year

The annual total cost of fragility fractures to the UK has been estimated at £4.4bn

500,000 new fragility fractures arise each year

**One every minute**

79,000 hip fractures,
66,000 vertebral fractures
69,000 forearm fractures
322,000 other fractures
The problem of Osteoporosis

Osteoporosis related fractures are the second highest cause of hospital admissions in the UK\(^5\).

They are also one of the commonest reasons for GP appointments in primary care\(^5\).
Consequences Post Fracture

**Hip fracture** (data taken from 2015 National Report of Hip Fracture Database)

- Around 65,000 hip fractures occur annually in the UK
- Care costs – EXCLUDING social care costs – exceed £2billion per year
- Loss of independence – 46% of patients return home within 30 days
- Loss of mobility – 50% of patients suffer permanent disability
- Commonest Cause of injury related death
  - 30 day mortality rate 8.2%
- Account for ~4000 in patient beds DAILY

06/12/2018
The Ground Realities

64,426 patients registered on the 2015/2016 Quality and Outcomes Framework (QOF)

656,090 (monthly average) patients that have had medicines dispensed in primary care for osteoporosis

Only 1 in 10 of the patients who should be registered on the QoF register are on it

7,8
The Local Context
# The Pennine-Lancashire Burden

<table>
<thead>
<tr>
<th>Year</th>
<th>Hip fracture (inpatient)</th>
<th>Other fracture site (inpatient)</th>
<th>Other fracture site (outpatient)</th>
<th>Clinical vertebral</th>
<th>All</th>
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<td>2016</td>
<td>404</td>
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<td>2017</td>
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<tr>
<td>2018</td>
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<td></td>
<td></td>
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<tr>
<td>2019</td>
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<td></td>
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<tr>
<td>2020</td>
<td>1826</td>
<td></td>
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</table>

Pennine Lancashire Data
CARE GAP
Systematic approach: primary care is well placed to manage the bone health of patients

1. Improve hip fracture care
2. Secondary prevention after a fragility fracture
3. Maintain independence through falls care pathways
4. Prevent frailty, promote bone health and reduce accidents

Management options include: GP systematic case-finding can help to identify these patients
### Benefits of Secondary Prevention

<table>
<thead>
<tr>
<th>Year</th>
<th>Hip fracture (inpatient)</th>
<th>Other fracture site (inpatient)</th>
<th>Other fracture site (outpatient)</th>
<th>Clinical vertebral</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>12.4</td>
<td>8.0</td>
<td>8.0</td>
<td>4.1</td>
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<tr>
<td>2017</td>
<td>8.8</td>
<td>3.9</td>
<td>3.9</td>
<td>3.4</td>
</tr>
<tr>
<td>2018</td>
<td>9.1</td>
<td>3.4</td>
<td>3.4</td>
<td>2.9</td>
</tr>
<tr>
<td>2019</td>
<td>5.7</td>
<td>2.8</td>
<td>2.8</td>
<td>1.8</td>
</tr>
<tr>
<td>2020</td>
<td>3.6</td>
<td>1.7</td>
<td>1.7</td>
<td>1.0</td>
</tr>
<tr>
<td>All years</td>
<td>39.6</td>
<td>19.8</td>
<td>19.8</td>
<td>13.1</td>
</tr>
</tbody>
</table>
Implementation benefits of QIPP and DoH guidelines for fracture prevention

Aim

- Primary care based fracture liaison service
- Proactive case finding of unassessed fragility fracture patients and other high risk patients\(^{17}\)

Potential outcome

- By implementing the DoH recommended range of measures a reduction of up to 50% of fractures may be achievable\(^{52}\)

Potential Cost Savings

- Direct saving for a 320,000 population of approximately £258K over 5yrs\(^{17}\)
- Based on averting a hip fracture that costs approx. £12,700 over two years on average\(^{17}\)
<table>
<thead>
<tr>
<th>Benefits per fracture</th>
<th>Hip fracture (inpatient)</th>
<th>Other fracture site (inpatient)</th>
<th>Other fracture site (outpatient)</th>
<th>Clinical vertebral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute care</td>
<td>£8,478</td>
<td>£1,911</td>
<td>£396</td>
<td>£2,079</td>
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<tr>
<td>Community and primary care</td>
<td>£448</td>
<td>£57</td>
<td>£57</td>
<td>£59</td>
</tr>
<tr>
<td>Social care</td>
<td>£8,237</td>
<td>£150</td>
<td>£150</td>
<td>£2,908</td>
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<tr>
<td>All</td>
<td>£17,163</td>
<td>£2,118</td>
<td>£603</td>
<td>£5,046</td>
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</tbody>
</table>
THE NEED
CVD

7 million living with CVD

£ 9 billion annual spend on CVD

OSTEOPOROSIS

500,000 with fragility fractures

3 million with osteoporosis

Projected to rise three fold in 10 years

£ 2 billion annual spend on HIP fractures alone

£4.4 billion on Fragility Fractures

NO emphasis on primary prevention
Systematic management of Osteoporosis (DOH, RCP, QIPP)

Stepwise implementation - based on size of impact

- Hip fracture patients
- Non-hip fragility fracture patients
- Individuals at high risk of 1st fragility fracture or other injurious falls
- Older people

Objective 1: Improve outcomes and improve efficiency of care after hip fractures – by following the 6 “Blue Book” standards

Objective 2: Respond to the first fracture, prevent the second – through Fracture Liaison Services in acute and primary care

Objective 3: Early intervention to restore independence – through falls care pathway linking acute and urgent care services to secondary falls prevention

Objective 4: Prevent frailty, preserve bone health, reduce accidents – through preserving physical activity, healthy lifestyles and reducing environmental hazards

06/12/2018
What is the prevalence of osteoporosis?
Are we underdiagnosing osteoporosis?
Are we undertreating osteoporosis?
Are we following the recommended standards of care?
Is it feasible to have a primary prevention approach to osteoporosis?
THE PILOT

THE UNDER-DIAGNOSIS AND UNDER-TREATMENT OF OSTEOPOROSIS DUE TO INACCURATE CODING PRACTICES IN PRIMARY CARE IN UK

Dr SK Nedungayil, Dr R Azzam, Dr S Cooper, Dr S Davis, Dr M Ninan
East Lancashire and Blackburn with Darwen CCG, United Kingdom

POULATION SCREENING TO RISK STRATIFY AND TARGET PRIMARY PREVENTION MEASURES FOR OSTEOPOROSIS IN PRIMARY CARE IN UK- A FEASIBILITY STUDY

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**FIGURE 4 - UNDER-DIAGNOSIS AND UNDER-TREATMENT**

- Adults with osteoporosis 736
- Osteoporosis on treatment 331 (43.38%)
- Osteoporosis not on treatment 432 (58.69%)
- Osteoporosis on treatment but no diagnosis code 307 (47.87%)

**FRAGILITY FRACTURES IN PATIENTS OVER 50**
N=941

- Coded as fragility fracture 36%
- Not coded as fragility fracture 64%
POPULATION SCREENING TO RISK STRATIFY AND TARGET PRIMARY PREVENTION MEASURES FOR OSTEOPOROSIS IN PRIMARY CARE IN UK-A FEASIBILITY STUDY

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4 primary care sites with a total registered population of 48,000
15,201 patients met NICE CG146 Criteria for stratification

22% History of Wrist, Hip or Vertebral Fracture
2% History of coded fragility fracture
4.3% of Patients Receiving BSA
5.1% Existing Osteoporosis

977 (6.4%) patients were identified as high risk (FRAX recommends “treat”)
56% without evidence of bone health assessment
56% of patients from high risk cohorts: previous history of osteoporosis, previous DXA assessment or current bone sparing therapy

545 Patients for review (average 133 per GP practice)

Analysis of 977 patients recommended for treatment:
• 432 patients (44%) showed evidence of previous assessment
• 204 (47%) of previously assessed patients had a diagnosis of osteoporosis
• Of 308 patients with evidence of BMD/DXA, 136 (44%) were diagnosed with osteoporosis and 234 (75%) showed reduced BMD (T-score <-1)

From our modelling, we can estimate that at least 44% or 240 of the 545 high priority patients will have undiagnosed osteoporosis

Interventions
Interventions are being managed through practice multi-disciplinary teams [Interface to follow up outcomes and assess QI]
If we look at projected hip fractures within the cohort recommended for treatment with a bone sparing therapy (NOGG):

977 Patients

- The cost of a hip fracture in the first 2 years is estimated to be £16,302
- This does not include all of the social care costs for the 50% of patients who do NOT return to independent living

545 patients identified as having no documented DEXA scan or current bone sparing therapy

Using the FRAX 10 year probability of hip fracture we would expect 77 hip fractures in this cohort of patients over a 10 year period

56%

£1,255,254

Direct 2 year hospital costs for hip fractured sustained in the group recommended for treatment (NOGG recommendation)

Relative reduction in hip fracture incidence following 4 years bone sparing therapy (Cochrane 2008)*

40%

31 Hip fractures avoided

£505,362

Direct saving in acute hip fracture costs based on 22 prevented hip fractures over 4 years @ £16,302 / fracture

£22,105

£5,526 Cost per year of treatment with alendronic acid (£10.14/year) in 545 patients

*Projection based on Cochrane database review but extended to both males and females
The East Lancashire Osteoporosis Quality Initiative Framework
Systematic management of Osteoporosis (DOH, RCP, QIPP)

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The 4R Approach

PHASE 1 - IMPROVE DETECTION AND TREATMENT

‘REVIEWING’ existing Osteoporosis Registers
‘RECODING’ existing registers
‘RECORDING’ new diagnosis of fragility fractures

PHASE 2 - PRIMARY PREVENTION APPROACH

‘RECOGNISING’ At-Risk Patients
Preliminary Results

Increase in the Osteoporosis register- 21% increase in 3 months
Increase in detection of new osteoporosis cases- 240
Identification of new fragility fractures- 123
Reduction if ‘untreated’ patients
The future of the QI

Continue Phase 1

Phase 2- April 2019

Pro-active risk assessment programme

Training and education programme for Health Care professionals

Education and support for Patients (rehabilitation, nutrition, exercise)

‘Bone Health Well Being’ programme in the community
Future Partnerships

Qualitative and quantitative analysis
Quality standards for Osteoporosis and Prevention of Fragility Fractures
Workforce training and development (bone-health)
Population based falls prevention, nutrition and exercise programme
THANK YOU


7. Fracture Liaison Service Database (FLS-DB) facilities audit FLS breakpoint: opportunities for improving patient care following a fragility fracture. May, 2016. Royal College of Physicians
