**Paper F**

# Prevention of secondary fragility fractures in East Leicestershire and Rutland CCG

# Business Case

## Contact details

|  |  |
| --- | --- |
| Organisation | East Leicestershire and Rutland GP Federation |
| Name of contact | Dr G Chidlow |
| Address for correspondence |  |
| Telephone |  |
| Email of lead contact |  |
| Email mailing list for circulation |  |

## Executive summary

A Fracture Liaison Service (FLS) aims to systematically identify, investigate, initiate treatment and integrate care for all eligible patients, over the age of 50 within a local population who have suffered a fragility fracture; with the aim of reducing their risk of subsequent (or secondary) fractures.

This paper proposes the commissioning of a FLS delivered in a primary care setting for the population registered with practices in the East Leicestershire and Rutland GP Federation which serves the population of East Leicestershire and Rutland CCG.

Once cost of service provision has been considered, the estimated financial benefits to the health and social care economies over the next 5 years are **[benefits-costs=insert figure here]**.

**Why commission a FLS?**

* The guidance from NHS England suggests that CCGs commission FLSs in all acute trusts to carry out bone assessments and design patient management plans following their first falls
* Public Health England has issued a consensus statement that recommends that commissioners should establish FS in line with published clinical standards as part of a coordinate approach[[1]](#endnote-1)
* Current national guidance provides evidence that effective case finding and use of appropriate drug therapies reduces the risk of future clinical fractures by up to 50%[[2]](#endnote-2).
* The FLS model has demonstrated that it is effective in preventing secondary fractures by delivering assessments to 95-97% of at risk patients within the local population as opposed to 25% of patients in health economies with other service configurations[[3]](#endnote-3).
* Organisations with a FLS were found to have a 40% reduction in the 3-year risk of secondary fragility fractures to major bones and a 30% reduction of re-fracture to any bonecompared with organisations without a FLS[[4]](#endnote-4).
* Current projections suggest that the number of hip fractures will increase by 65% in the next 20 years if secondary fracture prevention care does not improve[[5]](#endnote-5).
* Effective secondary fracture prevention throughout the NHS would prevent over 46,000 avoidable fragility fractures (including nearly 20,000 hip fractures) over 5 years in the UK[[6]](#endnote-6).

**Why commission an FLS at** **xxxxxxxxxxxxxxxxxx?**

* The total estimated gross benefits of implementing a FLS for 5 years in ELR CCG is £2.7m in health and social care costs
* It has been estimated that over 5 years a FLS in this area could prevent around 135 hip fractures, which equates to 1890 acute beds days (average length of stay for LRI is 14.0 days[[7]](#endnote-7)). Prevention of other inpatient fractures is estimated to save around 1,100 additional days
* Modelling, using estimates of benefits provided by the National Osteoporosis Society (NOS), indicates that implementing an FLS in East Leicestershire and Rutland will prevent approximately 325 fractures over 5 years of which 135 will be hip fractures.
* As well as being costly for the Trust, each of these fractures can have a serious impact on an individual’s quality of life, including their ability to care for themselves and their risk of further morbidity. Hip fractures lead to a significant loss of healthy life years. In one study, as many as 27 disability adjusted life-years (DALY) per 1,000 people (over the age of 50) were lost due to hip fractures[[8]](#endnote-8).

## Rationale for change

An estimated 3 million people in the UK have osteoporosis[[9]](#endnote-9). The clinical manifestation of this disease is a fragility fracture. It is estimated that in the UK, 500,000 new fragility fractures arise each year, that is one every minute; comprising of approximately 79,000 hip fractures, 66,000 vertebral fractures, 69,000 forearm fractures and 322,000 other fractures[[10]](#endnote-10). Half of all hip fractures are secondary fractures and approximately half of these can be prevented if the patient is identified and treated following an initial non-hip fracture[[11]](#endnote-11).One in five women who have broken a bone, go on to break three bones before they are diagnosed with osteoporosis[[12]](#endnote-12). The prevalence of osteoporosis increases sharply with age: from approximately 2% at 50 years to more than 25% at 80 years[[13]](#endnote-13),[[14]](#endnote-14) and as Britain’s population ages, osteoporosis will become increasingly prevalent[[15]](#endnote-15).

ELR CCG has a population aged 50 years and over of 138,543 (GP registered population, NHS Digital), around 42.4% of the population compared to the national figure of 36.7%. The population aged 50 and over is estimated to increase at the rate shown int eh table below:

|  |  |
| --- | --- |
| **Year** | **Estimated increase in population aged 50 and over** |
| 2020 | 1.38% |
| 2021 | 1.70% |
| 2022 | 1.34% |
| 2023 | 1.13% |

https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/clinicalcommissioninggroupsinenglandtable3

In 2011, it was estimated that the cost of hip fractures had the potential to increase to over £6 billion by 2036[[16]](#endnote-16). The National Hip Fracture Database Commissioners Report (2015)[[17]](#endnote-17) reported that in 2014, mobility following a hip fracture returned to baseline for only 34% of patients at 30 days and for 58% at 120 days’ post fracture; this not only has a massive impact on patients’ quality of life but also the health and social care economy.

Fragility fractures are broken bones that result from mechanical forces that would not ordinarily cause a fracture, known as low-level (or 'low energy') trauma. The World Health Organization has quantified this as a force equivalent to a fall from a standing height or less[[18]](#endnote-18). Reduced bone density is a major risk factor for fragility fracture. Other factors that may affect the risk of fragility fracture include the use of oral or systemic glucocorticoids, age, sex, previous fractures and family history of osteoporosis[[19]](#endnote-19).

Sustaining a fragility fracture at least doubles the risk of a future fracture[[20]](#endnote-20). Many patients who experience a fragility fracture may go on to have a hip fracture if their falls and osteoporosis risk factors are not assessed or manage[[21]](#endnote-21). There is a need for a systematic approach to identifying patients presenting with fragility fractures and managing their risk factors to prevent subsequent fractures.

The FLS model, as recommended by Public Health England (2016), as an evidence-based, cost effective, preventative intervention that can help to improve the health of the population and reduce health and care service demand[[22]](#endnote-22). The current provision of fragility fracture care is not consistent throughout the UK. The proportion of the at risk population coverd by an FLS has grown from 43% in 2014 to 55% in 2017.[[23]](#endnote-23), [[24]](#endnote-24).

Based on data from the primary care 2012/2013 Quality and Outcomes Framework (QOF) indicators for secondary fracture prevention, fewer than one in five patients in England who had a fragility fracture requiring therapy were prescribed therapy in the first year[[25]](#endnote-25), [[26]](#endnote-26). Since April 2013 the number of patients on a prescribed treatment for osteoporosis in England has declined by 11.5%[[27]](#endnote-27).

In May 2011, a formal cost-effectiveness analysis of the Glasgow FLS was published. This study concluded that 18 fractures were prevented, including 11 hip fractures and £21,000 was saved per 1,000 patients that were managed though the FLS in the UK[[28]](#endnote-28). Between 1998-2008 the Glasgow FLS saw hip fracture numbers in Glasgow reduced by 7.3% versus an almost 17% increase in England (1.8% per year)[[29]](#endnote-29). This effect has been replicated at other sites in the UK, Netherlands, Australia and other developed economies.

The Department of Health’s strategy paper Falls and Fractures: Effective Interventions in Health and Social Care[[30]](#endnote-30) outlines four objectives, in order of priority, that have been empirically shown to significantly improve the treatment of osteoporosis and the subsequent management of falls risk factors. An FLS provides a systematic way to locally achieve these objectives.

There is now good evidence that these services are cost-effective and can result in a reduction in the incidence of fragility fractures in the local population[[31]](#endnote-31).

## Local strategy

**Sustainability and transformation plan**

The document, Next steps to better care in Leicester, Leicestershire and Rutland (August 2018) states the clear priority to ‘keep people out of hospital through better public health and prevention of illness, early detection and management of disease’. Prevention of secondary fragility fractures will contribute materially to this ambition.

Development of an FLS would dovetail with the newly deployed LLR falls prevention and treatment service.

**NHS Right Care: Commissioning for Value**

The value pack for ELR CCG shows that:

There is significant opportunity to improve bed days in MSK and trauma and injuries

Numbers of patients treated with bone sparing agents following fracture is significantly below that of peers[[32]](#endnote-32)

Commissioning a FLS will address the opportunities highlighted above.

## Local case for change

**Area to be covered by the service**

**Population size including, if possible, details of the population to be covered by the service e.g. over 50s**

**Population and demographic trends**

**Incidence of fragility fractures**

**Outline key issues and reasons for change. This might include:**

* **No FLS in place**
* **High or above average number of falls in over 50s**
* **Increasing number of fractures occurring in over 50s**
* **Lack of coordinated follow up of patients who have experienced a fall and subsequent fracture**
* **High number of recurring fractures**
* **High proportion of patients unable to live independently following a fall or previous fracture]**
* **Current services and pathways and associated costs**

## Aims and Outcomes of the FLS

The overall aim of the service is to respond to the first fracture to prevent the second.

## The outcomes of the FLS:

* Increase cost-effectiveness by reducing variation and delivering best practice through locally agreed standardised pathways for bone health interventions for secondary fracture prevention
* Reduce costs to the local health economy through effective secondary fracture prevention
* Reduce the incidence of fragility fractures
* Increase equity of service, with equal access to services for the whole population.
* Improve the quality of the experience for the individual and their family by developing high-quality education around the opportunities for intervention

**[Edit this list and/or insert local aims and objectives]**

## Outline of the proposed service

The establishment of aFLS, for patients aged over 50, who sustain a low impact (fragility) fracture, acquired following a fall, slip or trip from a standing height; with the primary aim of preventing subsequent fracture.

The service will promote coordination between acute, community and primary care to ensure that care is seamless and consistent. This integrated approach will include:

* Case finding using a validated query to be used in all participating practices
* Triage and assessment of identified patients by appointed nurse coordinators. Approximately, 50% of people over the age of 50 with a fragility fracture will be appropriate for an assessment each year.
* Diagnosis of osteoporosis using existing DEXA service at UHL. Approximately 50% of the fragility fracture cohort will undergo DEXA bone density measurements at the spine and hip (NICE TA161[[33]](#endnote-33)).
* Assessment of fracture risk using validated tools (e.g. FRAX)
* Initiation of pharmacological treatment for fracture risk reduction in line with agreed guidelines. Osteoporosis treatment is typically recommended in about 66% of cases.
* Identification of the modifiable faller and referral to a falls prevention service.
* Provision of appropriate diet and lifestyle advice, in line with local guidelines.
* Liaison with the patient’s general practitioner with the aim of optimising long-term treatment.
* Telephone follow-up of patients to maximise compliance and adherence and provide education/support in primary care.
* Modification of treatment as required
* A database of patients assessed through the service to support follow-up and quality reporting.
* Engagement with secondary care services to optimise the treatment pathway, particularly ortho-geriatric consultants, rheumatology, radiography and orthopaedics

**Case finding in primary care**

FLS services provided elsewhere in the UK and internationally are delivered in acute hospitals to patients with new, incident fractures only. Case finding is done on patients that are attending as inpatients or outpatients through a combination of electronic searches, notes review, clinic list review and radiography protocols.

Case finding in primary care is done using a comprehensive search query drawn up and validated in collaboration with the National Osteoporosis Society. This method allows more cost-effective identification of patients in other risk categories including:

* Patients previously on treatment but no longer compliant – this means that their risk of fracture is very high
* Patients will historical fragility fractures that would benefit from treatment
* Patients with vertebral fractures, potentially the costliest group

The evidence presented in this business case, including all financial benefits is based on the identification and effective treatment of new, incident fractures only. **Benefits of finding patients in these other risk groups and initiating effective treatment are not included.**

Using the NOS Pathway Costing Tool, an estimation of the number patients requiring treatment and DEXA scans for this patient population is shown below:

The Federation has worked with the National Osteoporosis Society.

The NOS will continue to support us through the implementation phase right up to the point of realising benefits of this proposed service.

## Financial assessment

**Estimated benefits**

The National Osteoporosis Society has estimated the benefits for the ELR CCG health and social care system, based on the local population and using estimates of tariff cost for UHL. These are shown below:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Acute care** |  |  |  |  |  |  |  |  |
| **Year** | **Hip fracture (inpatient)** | **Other fracture site (inpatient)** | **Other fracture site (outpatient)** | **Clinical vertebral** |  | **Total** |  | **Average benefit per year** |
| **Year 1** | £98,196 | £14,760 | £3,056 | £8,024 |  | £124,036 |  |  |
| **Year 2** | £163,660 | £20,295 | £4,202 | £14,042 |  | £202,199 |  |  |
| **Year 3** | £237,307 | £27,675 | £5,730 | £20,060 |  | £290,772 |  |  |
| **Year 4** | £286,405 | £33,210 | £6,876 | £24,072 |  | £350,563 |  |  |
| **Year 5** | £319,137 | £36,900 | £7,640 | £26,078 |  | £389,755 |  |  |
|  |  |  |  |  |  |  |  |  |
| **All years** | **£1,104,705** | **£132,840** | **£27,504** | **£92,276** |  | **£1,357,325** |  | **£271,465** |
| **Community and primary care** | | |  |  |  |  |  |  |
| **Year** | **Hip fracture (inpatient)** | **Other fracture site (inpatient)** | **Other fracture site (outpatient)** | **Clinical vertebral** |  | **Total** |  | **Average benefit per year** |
| **Year 1** | £5,376 | £456 | £456 | £236 |  | £6,524 |  |  |
| **Year 2** | £8,960 | £627 | £627 | £413 |  | £10,627 |  |  |
| **Year 3** | £12,992 | £855 | £855 | £590 |  | £15,292 |  |  |
| **Year 4** | £15,680 | £1,026 | £1,026 | £708 |  | £18,440 |  |  |
| **Year 5** | £17,472 | £1,140 | £1,140 | £767 |  | £20,519 |  |  |
|  |  |  |  |  |  |  |  |  |
| **All years** | **£60,480** | **£4,104** | **£4,104** | **£2,714** |  | **£71,402** |  | **£14,280** |
| **Social care** |  |  |  |  |  |  |  |  |
| **Year** | **Hip fracture (inpatient)** | **Other fracture site (inpatient)** | **Other fracture site (outpatient)** | **Clinical vertebral** |  | **Total** |  | **Average benefit per year** |
| **Year 1** | £98,844 | £1,200 | £1,200 | £11,632 |  | £112,876 |  |  |
| **Year 2** | £164,740 | £1,650 | £1,650 | £20,356 |  | £188,396 |  |  |
| **Year 3** | £238,873 | £2,250 | £2,250 | £29,080 |  | £272,453 |  |  |
| **Year 4** | £288,295 | £2,700 | £2,700 | £34,896 |  | £328,591 |  |  |
| **Year 5** | £321,243 | £3,000 | £3,000 | £37,804 |  | £365,047 |  |  |
|  |  |  |  |  |  |  |  |  |
| **All years** | **£1,111,995** | **£10,800** | **£10,800** | **£133,768** |  | **£1,267,363** |  | **£253,473** |
| **All benefits** |  |  |  |  |  |  |  |  |
| **Year** | **Hip fracture (inpatient)** | **Other fracture site (inpatient)** | **Other fracture site (outpatient)** | **Clinical vertebral** |  | **Total** |  | **Average benefit per year** |
| **Year 1** | £202,416 | £16,416 | £4,712 | £19,892 |  | £243,436 |  |  |
| **Year 2** | £337,360 | £22,572 | £6,479 | £34,811 |  | £401,222 |  |  |
| **Year 3** | £489,172 | £30,780 | £8,835 | £49,730 |  | £578,517 |  |  |
| **Year 4** | £590,380 | £36,936 | £10,602 | £59,676 |  | £697,594 |  |  |
| **Year 5** | £657,852 | £41,040 | £11,780 | £64,649 |  | £775,321 |  |  |
|  |  |  |  |  |  |  |  |  |
| **All years** | **£2,277,180** | **£147,744** | **£42,408** | **£228,758** |  | **£2,696,090** |  | **£539,218** |

**Service costs**

Some discussion needed here. NOS can provide estimates of number of appointments but need local input on skill mix, travel, etc

**Other costs**

This service will identify patients that are not currently being assessed or treated for osteoporosis. Staffing costs are included above but additional cost will be incurred as a result of prescribing for newly identified patients and for DXA scans conducted on patients in the 50-75 age cohort. The precise impact will vary according to current activity and prescribing levels. The estimates below have been provided by the National Osteoporosis Society and are based on the numbers of additional cases that the service will find multiplied by local cost data.

**Prescribing costs in East Leicestershire CCG**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2014/15 | 2015/16 | 2016/17 | 2017/18 |
| Average prescribing cost per patient year | £45.95 | £45.46 | £47.40 | £48.72 |

Source: www.openprescribing.net

**Estimated impact on prescribing costs**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Expected additional cases on treatment** | **Cumulative cases on treatment** | **Cost of cumulative cases** |
| **Year 1** | 542 | 542 | £26,384 |
| **Year 2** | 549 | 1036 | £50,495 |
| **Year 3** | 558 | 1491 | £72,650 |
| **Year 4** | 566 | 1908 | £92,954 |
| **Year 5** | 572 | 2289 | £111,537 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Estimated additional cost of scans at tariff for each year** | | |  |
|  |  | A  Expected additional scans | B Cost of additional scans |
|  | **Year 1** | 383 | £27,574 |
|  | **Year 2** | 388 | £27,956 |
|  | **Year 3** | 395 | £28,432 |
|  | **Year 4** | 400 | £28,812 |
|  | **Year 5** | 405 | £29,136 |

Note that these costs apply only where scans are provided at tariff. The true cost to commissioners will be lower where block contracts or marginal prices are in place.

**Cost v benefit summary**

Staff costs not included – discussion needed with Federation

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Costs** | **Benefits  (NHS only)** | **Difference** |
| **Year 1** | £53,958 | £130,560 | £76,602 |
| **Year 2** | £78,450 | £212,826 | £134,376 |
| **Year 3** | £101,082 | £306,064 | £204,982 |
| **Year 4** | £121,766 | £369,003 | £247,237 |
| **Year 5** | £140,674 | £410,274 | £269,600 |
| **All years** | **£495,929** | **£1,428,727** | **£932,798** |
|  |  |  |  |
|  |  |  |  |
|  | **Costs** | **Benefits  (NHS + social care)** | **Difference** |
| **Year 1** | £53,958 | £243,436 | £189,478 |
| **Year 2** | £78,450 | £401,222 | £322,772 |
| **Year 3** | £101,082 | £578,517 | £477,435 |
| **Year 4** | £121,766 | £697,594 | £575,828 |
| **Year 5** | £140,674 | £775,321 | £634,647 |
| **All years** | **£495,929** | **£2,696,090** | **£2,200,161** |

## Implementation

Recruitment - ???

Development of a query – The Federation is working with the National Osteoporosis Society to develop a suitable query for use in this service.

Liaison with secondary care services affected by the new service –

Revision of activity plans –

## Risk and issues management

**[Examples of possible risks are given below. These should be edited to fit local circumstances and mitigation actions added.]**

**Risks to successful mobilisation of the FLS**

|  |  |
| --- | --- |
| **Risk** | **Mitigation** |
| Suitably qualified nursing staff is not available through recruitment | Consider secondment opportunities  Research best options for advertisement |
| Current facilities not suitable | Review alternative service locations |
| DEXA capacity may not be adequate to cope with additional demand | Consult with local radiography services to check capacity  Explore non-NHS capacity |
| **[Other risk here]** | **[Mitigation action here]** |

**Risks following commencement of the service**

|  |  |
| --- | --- |
| **Risk** | **Mitigation** |
| Patient numbers do not reach the expected levels | Additional communications activities e.g.   * Secure ‘slot’ at practice learning event * Arrange meeting with senior fracture clinical nurse and consultant |
| Patient numbers exceed the expected levels | Review model estimates  Consider change to referral criteria  Consider making request for additional staff |
| Reduction in expected fracture numbers does not materialise | Check data collection is complete  Review statistical measures |
| **[Other risk here]** | **[Mitigation action here]** |

## Recommendations

The CCG is asked to consider the following recommendations:

Funding –

Support –

**References**

Additional detail and references is available for all figures supplied by the National Osteoporosis Society. Note that for any information supplied by the National Osteoporosis Society there is no guarantee as to the accuracy of the or reliability of any information contained in this report and use of the information contained is at the user’s risk and no liability whatsoever is accepted by the National Osteoporosis Society.

1. Public Health England, Falls and fracture consensus statement: Supporting commissioning for prevention, January 2017 [↑](#endnote-ref-1)
2. National Institute for Health and Care Excellence (2012). NICE Clinical Guideline 146. Osteoporosis: Assessing the Risk of Fragility Fracture. <https://www.nice.org.uk/guidance/cg146?unlid> (accessed September 2014). [↑](#endnote-ref-2)
3. McLellan AR, Reid DM, Forbes K et al (2004). NHS Quality Improvement Scotland. Effectiveness of Strategies for the Secondary Prevention of Osteoporotic Fractures in Scotland. <http://www.healthcareimprovementscotland.org/previous_resources/audit_report/osteoporotic_fractures_audit.aspx> (accessed September 2014). [↑](#endnote-ref-3)
4. A. Nakayama, A., Major, G., Holliday, E., Attia, J. and Bogduk, N. (2015) Evidence of effectiveness of a fracture liaison service to reduce the re-fracture rate. Osteoporosis International. This article is published with open access at Springerlink.com [↑](#endnote-ref-4)
5. National Osteoporosis Society. Effective secondary prevention of fragility fractures: clinical standards for fracture liaison services. Bath: NOS, 2015. [↑](#endnote-ref-5)
6. National Osteoporosis Society FLS Benefits Calculator available at: <https://www.nos.org.uk/health-professionals/fracture-liaison-service/implementation-toolkit> [↑](#endnote-ref-6)
7. National Hip Fracture database for Leicester Royal Infirmary, 2017 https://www.nhfd.co.uk/20/nhfdcharts.nsf/fmdashboard?readform&year=2017&org=LER [↑](#endnote-ref-7)
8. Papadimitriou et al (2017). Burden of hip fracture using disability-adjusted life-years: a pooled analysis of prospective cohorts in the CHANCES consortium. Available at: <http://www.thelancet.com/pdfs/journals/lanpub/PIIS2468-2667(17)30046-4.pdf> Accessed July, 2017. [↑](#endnote-ref-8)
9. Calculated using mid 2013 population datai and osteoporosis incidence fromii. i Office of National Statistics (2014). Annual Mid-year Population Estimates, 2013. Available at: <<http://www.ons.gov.uk/ons/rel/pop-estimate/population-estimates-for-uk--england-and-wales--scotland-and-northern-ireland/2013/stb---mid-2013-uk-population-estimates.html>>. [↑](#endnote-ref-9)
10. Svedbom A, Hernlund E, Ivergård M, Compston J, Cooper C, Stenmark J, McCloskey EV, Jönsson B, Kanis JA, EU Review Panel of IOF. (2013). Osteoporosis in the European Union: a compendium of country-specific reports. Arch Osteoporosis. 8(1-2):137. [↑](#endnote-ref-10)
11. Mitchell PJ, (2011). Fracture Liaison Services. Osteoporosis Int 22 (Suppl 3): S487–S494. [↑](#endnote-ref-11)
12. National Osteoporosis Society. Stop at One Survey. (2013). National Osteoporosis Society. [↑](#endnote-ref-12)
13. The British Menopause Society (2010). Osteoporosis in the UK at……Breaking Point. <http://www.ilcuk.org.uk/index.php/publications/publication_details/osteoporosis_in_the_uk_at_breaking_point> (accessed October 2014). [↑](#endnote-ref-13)
14. Strom O et al. (2011). Osteoporosis: burden, health care provision and opportunities in the EU: a report prepared in collaboration with the International Osteoporosis Foundation (IOF) and the European Federation of Pharmaceutical Industry Associations (EFPIA) Arch Osteoporos 6: 59–155. [↑](#endnote-ref-14)
15. National Institute for Health and Care Excellence (2012). Scope of Osteoporosis: Assessing the Risk of Fragility Fracture. <http://www.nice.org.uk/guidance/cg146/resources/osteoporosis-final-scope2> (accessed September 2014). [↑](#endnote-ref-15)
16. National Osteoporosis Society (2011). National Osteoporosis Society 25th Anniversary Report – A Fragile Future. <http://www.nos.org.uk/document.doc?id=904> (accessed November 2014). [↑](#endnote-ref-16)
17. National Hip Fracture Database (NHFD) Commissioners’ report 2015. Available at: <http://www.nhfd.co.uk/20/hipfractureR.nsf/NHFD2015CCGreport.pdf> Accessed August, 2016. [↑](#endnote-ref-17)
18. National Institute for Health and Care Excellence (2012). NICE Clinical Guideline 146. Osteoporosis: Assessing the Risk of Fragility Fracture. <https://www.nice.org.uk/guidance/cg146?unlid> (accessed September 2014). [↑](#endnote-ref-18)
19. National Hip Fracture Database (NHFD) Commissioners’ report 2015. Available at: <http://www.nhfd.co.uk/20/hipfractureR.nsf/NHFD2015CCGreport.pdf> Accessed August, 2016. [↑](#endnote-ref-19)
20. British Orthopaedic Association (2007). The Care of Patients with Fragility Fracture. <http://www.bgs.org.uk/index.php?option=com_content&view=article&id=338:bluebookfragilityfracture&catid=47:fallsandbones&Itemid=307> (accessed September 2014). [↑](#endnote-ref-20)
21. Public Health England with the National Falls Prevention Coordination Group member organisations. Falls and fracture consensus statement: Supporting commissioning for prevention. January 2017. [↑](#endnote-ref-21)
22. Public Health England with the National Falls Prevention Coordination Group member organisations. Falls and fracture consensus statement: Supporting commissioning for prevention. January 2017. [↑](#endnote-ref-22)
23. Royal College of Physicians (2011). Falling Standards, Broken Promises: Report of the National Audit of Falls and Bone Health in Older People 2010. London: Royal College of Physicians.  [↑](#endnote-ref-23)
24. Scottish Government (2012). Up and About or Falling Short: A Report of the Findings of a Mapping of Services for Falls Prevention and Management and Fracture Prevention in Older People in Scotland. Edinburgh: Scottish Government. [↑](#endnote-ref-24)
25. 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. [↑](#endnote-ref-25)
26. Quality and Outcomes Framework. Achievement, prevalence and exceptions data, 2012/13. [www.hscic.gov.uk/catalogue/PUB12262](http://www.hscic.gov.uk/catalogue/PUB12262) Accessed August, 2016. [↑](#endnote-ref-26)
27. Open Prescribing. Available on line: <https://openprescribing.net/> [↑](#endnote-ref-27)
28. National Osteoporosis Society FLS Benefits Calculator available at: <https://www.nos.org.uk/health-professionals/fracture-liaison-service/implementation-toolkit> [↑](#endnote-ref-28)
29. Skelton D and Neil F. (2009). NHS Greater Glasgow and Clyde Strategy for Osteoporosis and Falls Prevention 2006-2010: An evaluation 2007-2009. [↑](#endnote-ref-29)
30. Department of Health (2009). Falls and Fractures: Effective Interventions in Health and Social Care. Prevention Package for Older People. <http://www.thehealthwell.info/search-results/falls-and-fractures-effective-interventions-health-and-social-care?&content=resource&member=572160&catalogue=Interventions&collection=Health%20Economics%20(Draft)&tokens_complete=true> (accessed September 2014). [↑](#endnote-ref-30)
31. British Orthopaedic Association (BOA) Standards for Trauma (BOAST); August 2014. [↑](#endnote-ref-31)
32. Commissioning for Value Where to Look pack. East Leicestershire and Rutland CCG, January 2017 [↑](#endnote-ref-32)
33. National Institute for Health and Care Excellence (2008). NICE Technology Appraisals TA161. Alendronate, Etidronate, Risedronate, Raloxifene, Strontium Ranelate and Teriparatide for the Secondary Prevention of Osteoporotic Fragility Fractures in Postmenopausal Women (amended). <https://www.nice.org.uk/guidance/TA161> (accessed September 2014). [↑](#endnote-ref-33)