Royal College of Physicians

Falls and Fragility Fracture Audit Programme (FFFAP)

Fracture Liaison Service Database

Leading FLS improvement: secondary fracture prevention in the NHS

Annual report October 2017

Data from January to December 2016

In association with:

British Geriatrics Society
Improving healthcare for older people

British Orthopaedic Association
Caring for Patients; Supporting Surgeons

National Osteoporosis Society

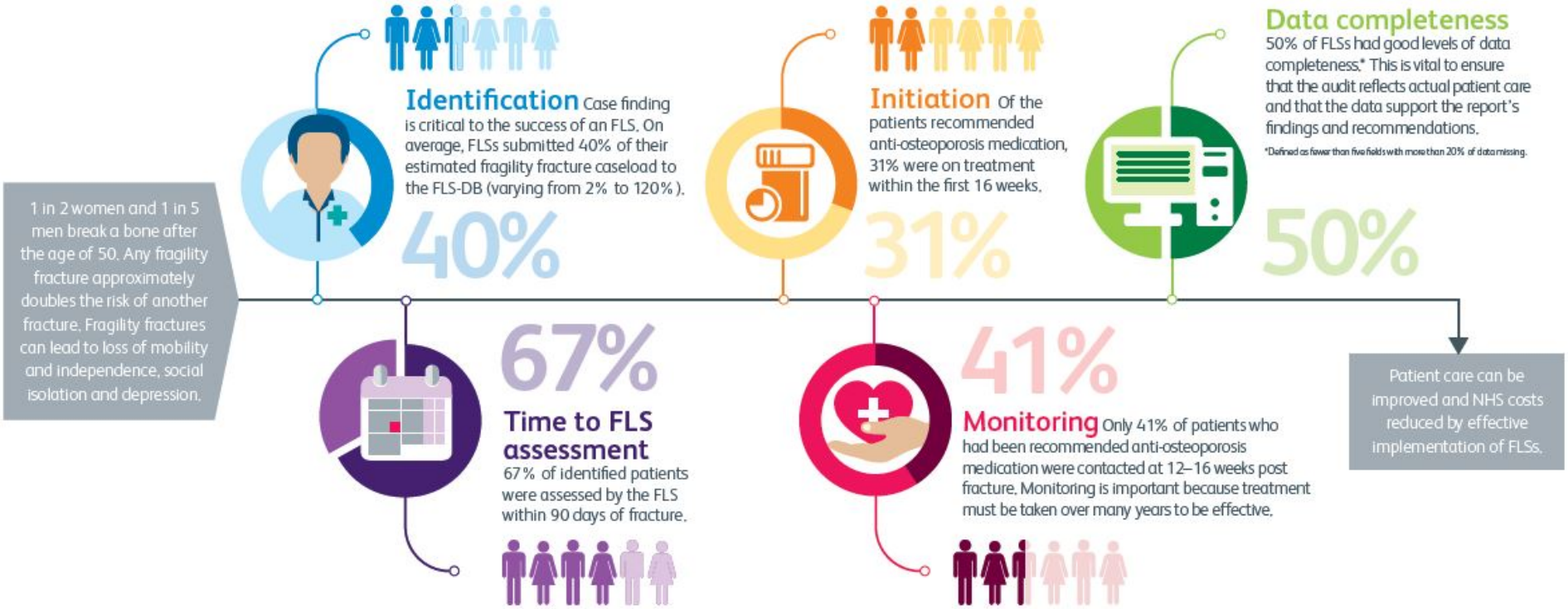
Commissioned by:

Public Health England

HQIP
Healthcare Quality Improvement Partnership

Fracture liaison services and secondary fracture prevention

There are an estimated half a million fragility fractures every year in the UK. The direct cost of these is estimated to be £4.3 billion. Fracture liaison services (FLSs) improve secondary fracture prevention by systematically identifying all eligible patients aged 50 and over who have suffered a fragility fracture, treating them and referring them to appropriate services. Five core key performance indicators for FLSs have been identified, and improvements could be made in all these areas.



Leading FLS improvement: secondary fracture prevention in the NHS

This report was prepared by the members of the Fracture Liaison Service Database (FLS-DB) project team.

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Falls and Fragility Fracture Audit Programme
The FLS-DB is commissioned by the Healthcare Quality Improvement Partnership (HQIP) and managed by the Royal College of Physicians (RCP) as part of the Falls and Fragility Fracture Audit Programme (FFFAP), alongside the National Audit of Inpatient Falls (NAIF) and the National Hip Fracture Database (NHFD). FFFAP aims to improve the delivery of care for patients who have falls or sustain fractures through effective measurement against standards and feedback to providers.

Healthcare Quality Improvement Partnership
The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. Its aim is to promote quality improvement, and in particular to increase the impact that clinical audit has on healthcare quality in England and Wales. HQIP hosts the contract to manage and develop the National Clinical Audit and Patient Outcomes Programme (NCAPOP). Its purpose is to engage clinicians across England and Wales in systematic evaluation of their clinical practice against standards and to support and encourage improvement in the quality of treatment and care. The programme comprises more than 30 clinical audits that cover care provided to people with a wide range of medical, surgical and mental health conditions.

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Contents

Document purpose	To disseminate results on the quality of service provision for secondary fracture prevention in England and Wales and highlight areas for improvement.
Title	*Fracture Liaison Service Database (FLS-DB) annual report. Leading FLS improvement: Secondary fracture prevention in the NHS*
Author	Royal College of Physicians
Publication date	October 2017
Target audience	NHS staff in fracture care multidisciplinary teams, hospital managers, chief executives, commissioners and fragility fracture researchers
Description	This report provides the second benchmark for the performance of FLSs at the patient level and demonstrates the step change in engagement and quality improvement in England and Wales.
Related publications	• *Fracture Liaison Service Database (FLS-DB) clinical audit. FLS forward: identifying high-quality care in the NHS for secondary fracture prevention*. London: RCP, 2017. • *Fracture Liaison Service Database (FLS-DB) facilities audit. FLS breakpoint: opportunities for improving patient care following a fragility fracture*. London: RCP, 2016. • *Secondary fracture prevention: first steps to a national audit. Fracture Liaison Service Database (FLS-DB): feasibility study summary report*. London: RCP, 2015. • *Effective secondary prevention of fragility fractures: clinical standards for fracture liaison services*. National Osteoporosis Society, 2014. • *Falling standards, broken promises: report of the national audit of falls and bone health in older people 2010*. London: RCP, 2011.
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Foreword by the National Osteoporosis Society

The National Osteoporosis Society hears far too often from people with osteoporosis about the devastating effects that fractures have on their lives and their families.

As the chief executive of the only UK-wide charity that supports people living with osteoporosis and the health professionals who care for them, I am delighted to be supporting this second report from the Fracture Liaison Service Database (FLS-DB).

With people living longer and often living with multiple long-term illnesses, it is vital that we make the prevention of fragility fractures an absolute priority for all health services.

It is heartening to see that, 6 months on from the first report, the NHS has engaged with the fragility fracture health agenda: as more services get involved in the audit, there is improved data collection and improved standards of care. This is due to the dedication of the NHS staff who work tirelessly to provide support and care for people who are living with osteoporosis.

These audits and reports are vital for providing information and evidence of the effectiveness of the services. This is incredibly important for supporting the charity's work to help prevent further fractures and support people to live well with osteoporosis.

The charity is encouraged by these results and it hopes they will inspire others to become involved and to use the results to help influence change both locally and nationally. The FLS-DB is a critical component for our work to continually improve the standards of osteoporosis services and raise awareness of the condition among the public and health professionals.

There is much more work to do, but this is a very promising start.

Thank you to everyone who has contributed to the audit and to the team at the Falls and Fragility Fracture Audit Programme (FFFAP) for their work to compile the report.

Claire Severgnini
Chief executive, National Osteoporosis Society

Patient perspectives

Thoughts from a patient

At 80 years old, my mother was diagnosed with osteoporosis. Spinal fractures were identified as the cause of the persistent back pain that she had been experiencing. Over the next 8 years she suffered a fractured foot and a broken hip from which she never fully recovered, as she died 8 months later.

I have seen how devastating osteoporosis and in particular hip fractures can be. The loss of mobility and independence leads to frustration and depression; these are aspects of the condition that are perhaps forgotten when only the financial costs to the overstretched health and social care services are considered.

I have come to realise how little awareness of osteoporosis there is among the general public. A common misconception appears to be that osteoporosis is something that just happens to some old ladies. There seems to be a lack of knowledge regarding how lifestyle choices can help maintain good bone health, the significance of family history and how nagging back pains could be the result of undiagnosed spinal fractures. There appears to be a need for a major awareness campaign to inform the public. Greater awareness would perhaps lead to a demand for earlier identification of those who are at risk.

I recently asked my GP whether, with my medical history and in light of my mother's osteoporosis, I should consider over-the-counter supplements. She was astonished that I had not already been investigated because it seems that, on paper, I should immediately be on medication. I'm not sure who should have been carrying out any investigations, but I suspect that if I hadn't raised the subject I may at some point have been presenting with a fracture at A&E. Instead I am now scheduled for a dual-energy X-ray absorptiometry (DXA) scan.

Thanks to the excellent work carried out by the National Osteoporosis Society, we know that one in two women and one in five men over the age of 50 will break a bone as the result of osteoporosis. With early diagnosis, it is possible to start treatment that will help to reduce future fractures. Yet despite our ageing population and the potential related costs of osteoporosis to the health service, we have no screening programme for this potentially life-changing condition. Currently, if you are lucky, your osteoporosis will be picked up when you suffer your first fracture but, surprisingly, this timely intervention can be something of a postcode lottery, as not every area has a fracture liaison service (FLS). If the FLS provision is to be the first defence of the health services against escalating costs that result from fractures caused by osteoporosis, these services must be staffed and funded to run effectively.

The work of the FLS-DB audit team must be applauded and supported, as they strive to ensure that every FLS delivers the same recognised high-quality care everywhere in the country.

Iona Price
Patient and carer representative

Introduction

This report considers the quality of service provision for secondary fracture prevention. It is a modern-day tragedy that, after sustaining a fragility fracture, most people are unaware that they may have osteoporosis or that the NHS should provide effective assessment and management to reduce their risk of suffering other further fractures. As a result of the ageing demographic, secondary fracture prevention is a priority for health services at both the local and national levels. Providing effective secondary fracture prevention to all eligible patients would prevent almost 54,000 fractures within the first 5 years.[1] This is a substantial risk reduction at the population level.

In 2010, the Royal College of Physicians (RCP) audited the quality of the clinical care delivered to patients who had fallen and fractured a bone and had been seen in a hospital emergency department (A&E).[2] Only 32% of patients with a non-hip fracture received an adequate fracture risk assessment and just 28% were established on anti-osteoporosis medications within 12 weeks. Of these, the percentages were much lower for those who were not admitted to hospital. The Department of Health (DH) subsequently incentivised primary care services to initiate these treatments for relevant patients, but by the end of the first year of this scheme, fewer than one in five patients were receiving the treatments.[3] These results are consistent with others that suggest that good clinical practice for these patients requires a systematic approach that encompasses case finding, assessment, initiation and monitoring of treatment – in other words, an FLS.

In January 2016, the FLS-DB started to collect web-based continuous data on patients aged 50 and over who were diagnosed with a fragility fracture. In April 2017, the first FLS-DB report was published. It examined data from the first 6 months of the FLS-DB (patients who suffered a fracture between January and June 2016). The key finding from that report was that high-quality service delivery is achievable by FLSs but that the quality varied nationally.

This second report contains data on the first 12 months of the FLS-DB (patients diagnosed with a fragility fracture between January and December 2016). This report examines how, in a short time frame, the FLSs in the NHS have engaged with the audit and improved the quality of data collection and case finding.

We are grateful for the hard work of the many NHS professionals in England and Wales who have contributed to the FLS-DB, and we recognise that the findings of this report will be challenging for many FLSs. The aim of this audit is to guide FLSs to prioritise quality improvement within their service in order to ensure that each FLS in the NHS is effective and delivers its service efficiently.

Executive summary

Any fragility fracture approximately doubles the risk of another fracture (ie a secondary fracture). An FLS aims to reduce the risk of the next secondary fractures by systematically identifying those who are at high risk of another fracture and providing treatment to reduce the risk of this happening. Therefore, FLSs improve secondary fracture prevention by systematically identifying to an appropriate service, and treating, all eligible patients aged 50 and over who have suffered a fragility fracture.

Since the first FLS-DB report, an additional 11 FLSs are participating in this audit and 42,589 patient records are included in this report. However, over 100 trusts and local health boards (LHBs) and centres did not participate in the audit, so we are unable to demonstrate the quality of secondary fracture prevention for their patients even if an FLS was present. The vast majority of trusts and LHBs that did not provide data do not have an active FLS.

There is growing confidence in the value of using the audit to improve the quality of secondary fracture prevention. A growing number of FLSs are achieving quality in a number of key performance indicators (KPIs). This is an opportunity to share learning and good practice.

Key findings

1 Although participation in the FLS-DB has improved, national coverage of secondary fracture prevention by FLSs remains inadequate.
2 There have been substantial improvements in data quality. No audit question has more than 50% of data missing.
3 There has been an improvement in the number of patients who receive a falls assessment (40% compared with 32% in the first report).
4 Of the estimated number of fragility fracture patients, 40% were submitted to the FLS-DB with six FLSs now submitting at least 80% of their expected case load.
5 Overall, 67% of patients were assessed by an FLS within 90 days of their fracture.
6 In total, 43% of patients were assessed with a DXA scan within 90 days of their fracture.
7 Monitoring remains a concern. Although there has been an improvement, only 41% of patients who were prescribed anti-osteoporosis medication had monitoring contact documented within the audit.

Key recommendations

All FLSs should submit data to the FLS-DB. NHS foundation trusts are required to participate in National Clinical Audit and Patient Outcomes Programme (NCAPOP) audits that are relevant to the services that they provide as part of their NHS contract. Those services that are not currently participating should implement an urgent action plan to address this.

FLSs that participated in the report should:

- prioritise reviewing their methods of identifying patients and their monitoring pathway as part of their service improvement programme develop a service improvement plan to address other key areas where they failed to meet adequate standards of performance

- review their performance using their own live run charts, which are available on the FLS-DB webtool (**http://fffap.org/fls/flsweb.nsf**) and share their data with their trust board / LHB and clinical commissioning group (CCG).

Chief executives and hospital trust boards that have an FLS should:

- review their local findings and ask FLSs to provide evidence of how they are participating in this mandatory national audit, prioritising service improvement, and support their delivery of this.

Chief executives and hospital trust boards that do not have an FLS should:

- recognise that secondary fracture prevention provides an opportunity to reduce activity in A&E and trauma units, and to reduce non-elective admissions and length of stay

- use the opportunity of sustainability and transformation partnership (STP) planning to consider the coverage of secondary fracture prevention across the region, to ensure that all relevant patients have access to an FLS.

Commissioners and LHBs should:

- review this report's findings: CCGs that do not have an FLS should actively support a project plan so that they can implement a service in 2017/18

- align the KPIs for their FLS(s) with the KPIs that are detailed in this report, to reduce duplication and improve transparency.

FLS performance summary

A set of 11 KPIs were chosen by our multidisciplinary advisory group (Appendix C), which includes patient representation. All the KPIs are based on National Institute for Health and Care Excellence (NICE) technology assessments and guidance on osteoporosis and the National Osteoporosis Society (NOS) clinical standards for FLSs. FLSs should aim to deliver these KPIs as part of their service. The following five KPIs are particularly indicative of good practice.

Five core KPIs

KPI 1 Data completeness
The number of non-mandatory fields with >20% non-mandatory missing data

KPI 2 Identification – all fragility fractures
The percentage of fragility fracture patient records that were submitted to the FLS-DB compared with the local expected case load

KPI 4 Time to FLS assessment
The percentage of patients who were assessed by the FLS within 90 days of their fracture

KPI 9 Monitoring contact 12–16 weeks post fracture
The percentage of patients who were followed up by 12–16 weeks post fracture

KPI 10 Commenced bone therapy by 16 weeks post fracture
The percentage of patients who had commenced (or were continuing) anti-osteoporosis medication by 16 weeks post fracture.

Six additional KPIs

KPI 3 Identification – spinal fractures
The percentage of patients with a spine fracture as the primary fracture site whose data were submitted to the FLS-DB

KPI 5 Time to DXA
The percentage of patients who received a DXA scan within 90 days of their fracture

KPI 6 Falls assessment
The percentage of patients who had been referred or recommended for, or had received, a falls assessment

KPI 7 Bone therapy recommended as inappropriate
The percentage of patients for whom a treatment recommendation was recorded as ‘clinical decision not to treat or inappropriate’

KPI 8 Strength and balance training
The percentage of patients who had attended a strength and balance class within 16 weeks of their fracture

KPI 11 Adherent to a prescribed anti-osteoporosis drug 12 months after their fracture
The percentage of patients who had confirmed adherence to a prescribed anti-osteoporosis drug at 12 months post fracture.

Some FLSs are meeting key aspects for secondary fracture prevention. Overall, 11 summary standards represent performance indicators across the secondary prevention pathway and two FLSs scored green on four or more fields. Unless otherwise indicated, we chose to use colour coding to demonstrate the specific proportions of FLSs that were achieving the specified standard: 0–49% (red), 50–79% (amber) and 80–100% (green).

*Indicates: Where any n<3, the numbers and percentages were suppressed. Where only one site-level figure has been suppressed, the second-lowest number (where n<5) has also been suppressed. This process was conducted for data protection reasons, to ensure anonymity of the patient data included in reporting.

Table 1 **FLS performance in selected key areas: all 11 key performance indicators**

FLS name	Number of fields with >20% missing data	Identification – all fractures	Identification – spine fractures	Time to FLS assessment within 90 days	Time to DXA within 90 days	Falls assessment done or referred	Bone therapy recommended as inappropriate	Strength and balance commenced (patients >75)	Recorded follow-up 12–16 weeks post index fracture	Patient commenced bone therapy at 16 weeks	Patient confirmed adherence to bone therapy at 12 months
Anglian Community Enterprise	0	3	*	11	9	89	50	*	*	*	0
Barking Havering and Redbridge University Hospitals NHS Trust	11	13	7	19	18	4	40	0	60	48	11
Barnet Hospital	1	18	5	88	68	95	36	*	84	69	40
Bradford Teaching Hospitals NHS Foundation Trust	0	4	25	82	77	*	42	0	0	0	
Bromley Healthcare	1	32	2	99	91	100	41	8	82	56	0
Broomfield Hospital	0	36	1	96	22	1	26	0	0	0	0
Buckinghamshire Healthcare NHS Trust	2	14	5	100	2	93	4	4	0	0	0
Croydon University Hospital	6	15	11	99	86	94	39	*	0	0	0
Diana Princess of Wales Hospital	5	12	0	88	76	84	30	0	74	72	
Dorset County Hospital	11	70	3	94	66	21	23	0	14	10	15
East Lancashire Hospitals NHS Trust	2	24	*	90	60	26	42	*	48	45	29
East Surrey Hospital	2	29	3	4	5	95	69	0	0	0	*
Guy's and St Thomas' NHS Foundation Trust	12	66	2	19	27	44		*	*	*	0
King's College Hospital – Denmark Hill Site	4	12	*	98	8	*		0	*	0	0
Medway NHS Foundation Trust	11	56	2	*	1	5		0	*	0	0
Milton Keynes University Hospital Foundation Trust	2	21	7	94	37	37	40	*	62	57	32

FLS name	Number of fields with >20% missing data	Identification – all fractures	Identification – spine fractures	Time to FLS assessment within 90 days	Time to DXA within 90 days	Falls assessment done or referred	Bone therapy recommended as inappropriate	Strength and balance commenced (patients >75)	Recorded follow-up 12–16 weeks post index fracture	Patient commenced bone therapy at 16 weeks	Patient confirmed adherence to bone therapy at 12 months
Morriston Hospital	2	27	5	100	65	39	28	0	49	31	0
Musgrove Park Hospital	0	80	4	79	54	75	28	0	60	46	38
North Bristol NHS Trust	7	84	4	69	38	53	28	0	55	29	1
North Tees and Hartlepool NHS Foundation Trust	5	63	3	100	79	66	37	3	0	0	4
North West Anglia NHS Foundation Trust-	2	30	1	91	61	96	59	0	*	*	0
Nottingham City Care Partnership	1	2	5	70	0	97	14	66	21	13	0
Nottingham University Hospitals	9	64	0	99	4	31	24	0	0	0	0
Oxfordshire Fracture Prevention Service	2	88	3	73	55	46	23	0	56	53	30
Poole Hospital NHS Foundation Trust	9	2	6	10	81	49		0	*	0	
Portsmouth and Southeast Hampshire FLS	13	48	1	92	55	*	2	0	*	0	0
Queen Elizabeth Hospital Lewisham	6	33	2	1	0	*	70	0	*	*	0
Royal Derby Hospital	6	10	7	81	91	*	40	0	5	3	0
Royal Surrey County Hospital	0	33	9	93	75	90	45	0	55	38	0
Royal United Hospital	16	8		0	40	42					
Royal Wolverhampton NHS Trust	10	21	5	98	0	1		0	0	0	0
Salford Royal NHS Foundation Trust	7	40	2	3	5	24	24	0	75	25	0
Salisbury NHS Foundation Trust	5	48	2	68	64	26	24	0	57	53	16
Sandwell and West Birmingham Hospitals NHS Trust	11	10	16	54	10	69		0	0	0	0
St George's Hospital	14	120	11	39	71	59	18	22	58	55	0
Sunderland Royal Hospital	0	65	5	99	69	68	43	9	55	41	0
The Haywood Hospital	0	41	15	77	78	40	59	*	66	47	22
The Hillingdon Hospitals NHS Foundation Trust	0	20	*	94	69	3	69	35	45	36	55
The Ipswich Hospital NHS Trust	11	75	2	42	39	51	24	1	24	21	13

FLS name	Number of fields with >20% missing data	Identification – all fractures	Identification – spine fractures	Time to FLS assessment within 90 days	Time to DXA within 90 days	Falls assessment done or referred	Bone therapy recommended as inappropriate	Strength and balance commenced (patients >75)	Recorded follow-up 12–16 weeks post index fracture	Patient commenced bone therapy at 16 weeks	Patient confirmed adherence to bone therapy at 12 months
The Rotherham NHS Foundation Trust	0	32	7	43	43	14	56	33	0	0	0
United Lincolnshire Hospitals NHS Trust	11	52	4	0	11	0					
University Hospital Lewisham	7	48	2	81	75	45	37	14	63	45	37
University Hospital Llandough	7	36	3	65	4	14	50	*	49	35	*
University Hospital of North Durham and Darlington Memorial Hospital	0	47	2	70	37	2	52	11	67	56	50
University Hospitals Birmingham NHS Foundation Trust	0	67	1	95	39	69	46	5	65	27	1
University Hospitals Bristol NHS Foundation Trust	9	91	7	18	74	1	33	0	35	26	3
West Berkshire FLS	2	36	4	96	82	17	37	7	64	54	46
West Suffolk NHS Foundation Trust	2	35	6	62	68	59	22	49	81	73	29
Wye Valley NHS Trust	10	56	1	99	0	66	1	0	*	0	0
Yeovil District Hospital	2	95	13	59	19	50	25	1	72	52	13
Overall (average)	**256**	**40**	**4**	**67**	**43**	**40**	**30**	**4**	**41**	**31**	**14**

National performance against KPIs: summary

KPI	Standard/rationale	Discussion	Recommendation
KPI 1 Data completeness	NOS clinical standards for FLSs: Core clinical data from patients identified by the FLS will be recorded on a database.[4]	This KPI is vital to ensure that the audit reflects actual patient care and supports the report's findings and recommendations. In total, 50% of FLSs had fewer than five fields with more than 20% of data missing.	All FLSs should aim to have no fields with more than 20% missing data
	National Osteoporosis Guideline Group (NOGG): FLSs should include embedded local audit systems supported by a clinical fracture database to enable monitoring of care provided to fracture patients.[5]		
KPI 2 – Identification (all fragility fractures) KPI 3 – Identification (spinal fractures)	NOS clinical standards for FLSs: All patients aged 50 years and over with a new fragility fracture or a newly reported vertebral fracture will be systematically and proactively identified.[3]	There was wide variability in the number of cases that were submitted successfully by the FLSs. Overall, 10% of FLSs were able to submit over 80% of their expected caseload for patients aged both 50–74 years and 75 years and older. The average number of spine fractures submitted was 35 (ranging from 0 to 222). The average proportion of spine fractures was 4% (ranging from 0 to 25%).	All FLSs should review how their submitted caseload compares with their estimated fragility fracture caseload. FLSs that submit less than 80% of their estimated caseload should review their data entry logs and ensure that all patients seen by the FLS are entered onto the FLS-DB. FLSs should ensure their local processes are identifying all patients aged 50 years and over who have a new fragility fracture, including hip fracture patients and those with newly reported / radiologically diagnosed vertebral fractures.
	NOGG: Coordinator-based FLSs should be used to systematically identify men and women who have a fragility fracture.[5]		

KPI	Standard/rationale	Discussion	Recommendation
KPI 4 – Time to FLS assessment	NOS clinical standards for FLSs: Patients will have a bone health assessment, and their need for a comprehensive falls risk assessment will be evaluated within 3 months of the incident fracture.[3]	Overall, 67% of patients were assessed by an FLS within 90 days of their fracture. Half of FLSs were able to assess over 80% of their patients within 90 days of the index fracture.	All FLSs should review their average time from fragility fracture diagnosis to FLS assessment. FLSs that are not able to assess at least 80% of their patients within 90 days of their fracture should consider reviewing their patient pathways and develop a local service improvement plan. FLSs should check that the date of contact is recorded in the local patient data record. In many cases, this will be the same as the date of assessment.
KPI 5 – Time to DXA	NOS clinical standards for FLSs: Patients will have a bone health assessment within 3 months of an incident fracture.[3]	Overall, 68% of patients aged 50–74 had a DXA ordered or recommended, or had undergone a DXA in the previous 2 years. Approximately 20% of patients aged 75 years and over were recommended to have a DXA (ranging from 0% to 99%).	All FLSs should review their average time from fragility fracture diagnosis to DXA. FLSs that are not able to provide DXA assessment within 90 days of the fragility fracture diagnosis for at least 80% of their patients should review their current patient pathways and develop a local service improvement plan. FLSs that are under-resourced for DXA assessment should work with their local commissioners to develop a business case for improved services, including reviewing the DXA requirement for those with a fragility fracture who are aged 75 years and over.

KPI	Standard/rationale	Discussion	Recommendation
			If time to DXA is a quality issue, prioritisation should be given to those who are aged 50–74.
KPI 6 – Falls assessment	NOS clinical standards for FLSs, NOGG, NICE CG161, NICE QS86, BOA *The care of patients with fragility fracture*: Older people who present for medical attention because of a fall or have reported recurrent falls in the past year should be offered a multifactorial falls risk assessment.[4–8]	Overall, 40% of patients received or were referred for a falls risk assessment.	FLSs that are not routinely performing or referring for falls risk assessments should review their current clinical pathway and liaise with other FLSs that are able to meet these criteria to develop a local service improvement plan.
KPI 7 – Bone therapy recommended as inappropriate	NOS clinical standards for FLSs, NOGG, NICE TA161 and NICE QS149: Patients who are at increased risk of further fracture will be offered appropriate bone-protection treatments.[4,5,9,10]	Despite there being a single set of NICE guideline documents, interpretation and implementation is variable. Anti-osteoporosis medication was considered to be inappropriate for 30% patients (ranging from 0% to 70%).	FLSs with a very low or very high proportion of recommendations that treatment is inappropriate should review their clinical pathways.
KPI 8 – Strength and balance training	NICE CG161, NICE QS86: Older people who report a fall should be considered for strength and balance training.[6,7] NOGG: Regular weight-bearing exercise should be advised, tailored according to the needs and abilities of the individual patient.[5]	Overall, 4% of fracture patients aged 75 and over (prescribed anti-osteoporosis medication or referred for further clinical opinion or to their GP) had started strength and balance training by 16 weeks post fracture.	Falls interventions should be funded and monitored with the same rigour as FLSs and better national performance indicators are needed to identify effective and efficient falls pathways as they relate to patients seen within an FLS. FLSs should engage with their strength and balance class groups to improve communication and uptake.

KPI	Standard/rationale	Discussion	Recommendation
KPI 9 – Monitoring contact 12–16 weeks post fracture	NOS clinical standards for FLSs: Treatments must be undertaken consistently and appropriately over many years to be effective. Patients who are recommended drug therapy to reduce risk of fracture will be reviewed within 4 months of fracture to ensure that appropriate treatment has been started.[4]	Despite accepting that there are low rates of adherence to osteoporosis medications in a primary care setting, FLSs are still not achieving sufficient reach into the community to ensure that the treatment recommendations are actioned. Overall, 41% of patients who were prescribed anti-osteoporosis medication or referred for further clinical opinion or to their GP had monitoring contact documented by 16 weeks post fracture and 31% had initiated treatment.	FLSs should prioritise reviewing their monitoring pathway as part of their service improvement plans.
KPI 10 Commenced bone therapy by 16 weeks post fracture			
KPI 11 Adherence to prescribed anti-osteoporosis medication at 12 months post fracture	NOS clinical standards for FLSs: Patients who are recommended drug therapy to reduce the risk of fracture will be reviewed every 12 months to monitor adherence with the treatment plan.[4,5]	Overall, 14% of fracture patients (prescribed anti-osteoporosis medication or referred for further clinical opinion or to their GP) confirmed adherence to the medication at 12 months after their fracture. However, two FLSs were able to confirm this in at least 50% of their patients.	FLSs should prioritise reviewing their monitoring pathway as part of their service improvement plans.

Results

KPI 1 Data completeness

Standards

Core clinical data from patients identified by the FLS will be recorded on a database (NOS clinical standards for FLSs).[4]

FLSs should include embedded local audit systems supported by a clinical fracture database to enable the monitoring of care provided to fracture patients (NOGG clinical guideline for the prevention and treatment of osteoporosis).[5]

Commentary

The audit showed varying levels of completeness for data items, both between FLSs and at a national level. However, in the short time since the first FLS-DB report was published, there have been substantial improvements in data quality. No audit question has more than 50% of data missing, and two fields now have over 80% data completeness.

Most FLSs have improved the quality of the data they submit, with 50% (25/50) of FLSs having fewer than five fields with more than 20% of data missing

Recommendations

All FLSs should aim to submit FLS-DB data with less than 20% of data items missing.

Table 2 **Data quality summary table – fields with >20% missing data (national level)**

Audit question	Missing first report %	Missing second report %
1.10 Date of FLS assessment	22.6	18.1
2.01. Current height (metres)	47.6	40.3
2.02 Current weight (kg)	47.6	39.1
2.03 Previous fragility fracture history in adulthood	36.7	27.8
2.04 Family history of hip fracture	36.5	28
2.05 Current smoker	35.2	26.8
2.06 At time of index fracture, patient on/taking bone-sparing therapy	33	22.1
3.03 Date of DXA* – based on 3.01=ordered	28.9	8.7
3.05 Was the patient's risk of fracture assessed using FRAX or QFracture?	44.3	28.3
4.01 Bone therapy recommended following index fracture	33.2	23.2
4.02 Calcium/vitamin D supplement recommended following index fracture	32.4	23.2
5.01 Was a falls risk assessment performed by an FLS?	28.5	23

*Includes both missing data and where patient did not attend DXA appointment

KPIs 2 and 3 Identification

Standards

All patients aged 50 years and over who have a new fragility fracture or a newly reported vertebral fracture will be systematically and proactively identified (NOS clinical standards for FLSs).[4]

Coordinator-based FLSs should be used to systematically identify men and women with a fragility fracture (NOGG clinical guideline for the prevention and treatment of osteoporosis).[5]

Commentary

The systematic case finding of patients who present with fragility fractures is the essential first step for an effective FLS. A low rate of case ascertainment reflects suboptimal case finding and/or a failure to submit all identified cases to the audit. The percentage identification is a KPI that will be publically available in close-to-real-time run charts by spring 2018.

The average number of patients that an FLS was estimated to see per annum was 2,155. The average number submitted was 852, with a wide variation from 64 to 2,989 (Table 4).

The average rate of identification was 40%. The proportion of FLSs that are identifying less than 30% of their estimated caseload has changed from 47% (18/38) to 38% (19/50). Overall, 12% (6/50) of FLSs submitted more than 80% of their estimated caseload, which comparable to the first report 13% (5).

Spine fractures

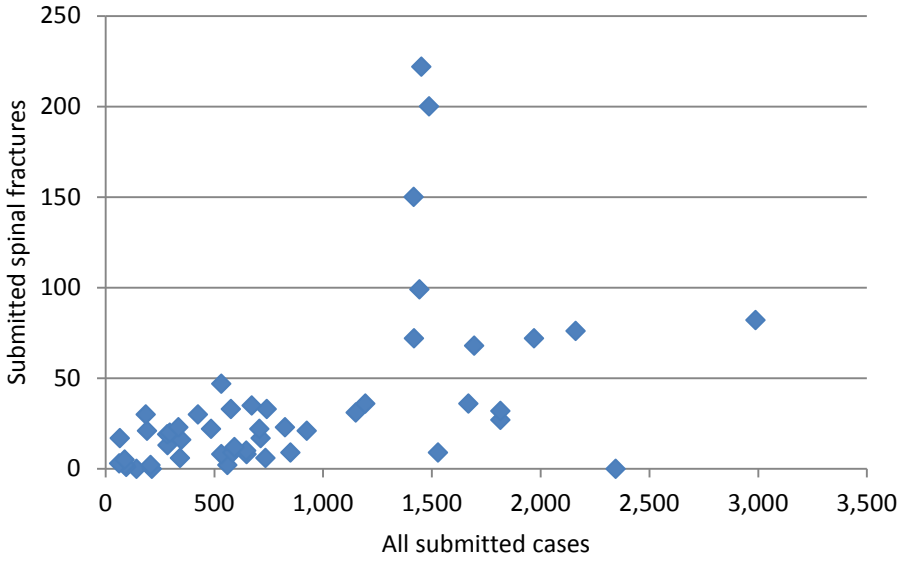
Most fracture types will be managed through trauma/orthopaedic pathways, but vertebral fractures often require different strategies for systematic and effective case findings.

Spine fractures are one of the most common fragility fractures; however there are significant challenges with case finding. In the facilities audit, 37% of FLSs in England reported that they did not routinely identified patients presenting with a clinical vertebral fracture.[11] The average number of spine fractures submitted was 35 (ranging from 0 to 222). The average proportion of spine fractures was 4% (ranging from 0 to 25%). Eighteen percent (9/50) of FLSs submitted at least 50 spine fractures. While FLSs that submitted more patients generally submitted spine fractures, there was wide variation even between FLSs that submitted similar numbers (Fig 1).

Recommendations

- All FLSs should review how their submitted caseload compares with their estimated fragility fracture caseload.
- FLSs that submitted less than 80% of their estimated caseload should review their data entry logs and ensure that all patients seen by the FLS are entered onto the FLS-DB.
- FLSs should ensure their local processes are identifying all patients aged 50 years and over with a new fragility fracture, including hip fracture patients and those with newly reported vertebral fractures.

Fig 1 **Proportion of patients submitted and those with a fragility spinal fracture**



Case study – North Tees and Hartlepool Hospitals NHS Foundation Trust

Our current service has been in place for 6 years. We currently identify possible fragility fractures in all patients aged over 50 years, working over hospital sites at Stockton on Tees and Hartlepool. We organise scans, if appropriate, and advise GPs on treatment.

Since taking part in the FLS-DB, we have also had assistance from the NOS to look at the current service and a possible business case to develop our service.

Inputting data on a national basis has given us benchmarks to work towards. It helps us, both in primary and secondary care, to look at what we are doing well and what improvements we need to work towards.

This has also been combined with data from the National Hip Fracture Database (NHFD). The trust is working with the Right Care programme in the region, which has highlighted our trust as an outlier for hip fractures compared with our peer group. The commissioners are hoping to host an event later this year to look at fragility fracture management.

With the first year's data due to be published, it will help us to bring data to the event on both a local and national level.

The FLS-DB has certainly helped to promote the service both within the trust and to the commissioning group. The extra time and effort needed to be part of a national database will be effective, as we will have precise goals to work towards.

KPI 4 Time to FLS assessment (investigation)

Standard

Patients will have a bone health assessment, and their need for a comprehensive falls risk assessment will be evaluated within 3 months of the incident fracture (NOS clinical standards for FLSs).[4]

Commentary

Rapid assessment after a fracture is important because it:

- permits earlier introduction of anti-osteoporosis therapy
- improves adherence to bone therapies (if initiated)
- reduces uncertainty from the patient's perspective.

Overall, despite more FLSs joining the FLS-DB since the first report was published, the number of patients who are being seen within 90 days after their fracture remains comparable (67% vs 68%). At the FLS level, 50% (25/50) of services were able to assess at least 80% of their patients within 90 days of their fracture. This compares with 52% (20/38) of FLSs in the first report.

Impressively, 24% (12/50) of FLSs are now able to assess over 95% of patients with 90 days.

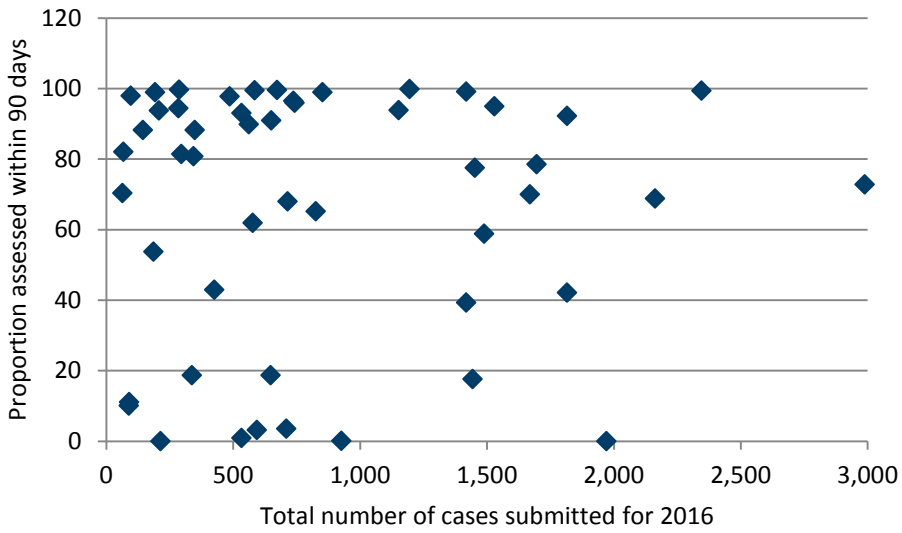
Overall, 28% (14/50) of FLSs saw less than 50% of patients within 90 days, which is comparable to the 26% (10/38) from the first report.

Again, there was no association between the size (in terms of caseload) of an FLS and the proportion of patients with fracture seen within 90 days (Fig 2), which suggests that both small and large services are able to perform well against this standard if appropriate systems are implemented.

Recommendations

- All FLSs should review their average time from fragility fracture diagnosis to FLS assessment. FLSs that are not able to assess at least 80% of their patients within 90 days should consider reviewing their funding for staff and patient pathways, and should liaise with an FLS that has a similar estimated fragility fracture caseload to develop local service improvement plans.
- FLSs should check that the date of contact is recorded in their local patient data record. In many cases, this will be the same as the date of assessment.

Fig 2 **Relationship between the number of patients submitted and the proportion assessed within 90 days**



Case study – Morriston Hospital

Morriston Hospital assessed 100% of patients within 90 days of their fracture.

The FLS at Morriston Hospital was set up in January 2016 alongside a dedicated DXA reporting service. These services were integrated under a single clinical lead and driven by a specialist fracture liaison nurse (FLN).

The coordination of fracture risk assessment for both inpatients and outpatients lies with the FLN and, in relation to outpatients, this is done directly via the fracture clinic on a daily basis. Patients usually receive a fracture clinic appointment for the working day following their injury and the FLN is able to target patients for risk assessment based on their demographics and nature of fracture. The FLN will conduct a face-to-face assessment (within the same clinic area) immediately after their fracture clinic appointment and commence treatment or refer the patient for DXA as required in accordance with national guidelines. Coordination with the DXA team ensures that these scans are generally performed, validated and clinically reported within 8 weeks, so specific treatment recommendations can be issued to primary care. Inpatients are managed in a similar way via direct ward review.

We have integrated and modified the FLS-DB's 4-month questionnaire to identify patients who have not commenced recommended therapy to the clinical team, so that they can be contacted for compliance advice.

Last year 1,297 patients were reviewed by our FLN, of which 563 were outpatients. We believe that the initial face-to-face contact with a dedicated bone-health practitioner so soon after fracture has a significant effect on patient confidence and compliance, in addition to ensuring that we commence treatment in a timely manner.

KPI 5 Time to DXA (investigation)

Standard

Patients will have a bone health assessment within 3 months of an incident fracture (NOS clinical standards for FLSs).[4]

Commentary

Given the importance of DXA for assessing fracture risk, timely assessment is usually needed to allow time-appropriate recommendations for the initiation of anti-osteoporosis medication.

Of those patients for whom a DXA scan was recommended or ordered, 43% were scanned within 90 days of their fracture: 10% (5/50) of FLSs were able to scan individuals with a DXA within 90 days in over 80% of cases. Fifty percent (25/50) of FLSs were unable to arrange a DXA scan within 90 days of the index fracture for at least 50% of patients.

Since the first FLS-DB report, there has been a 3% increase in the number of patients receiving a DXA scan within 90 days of their fracture.

Of patients aged 75 years and over, the number and proportion for whom a DXA was recommended varied widely by site (Fig 3). This is likely to reflect differences in the interpretation of NICE TA161, which states:

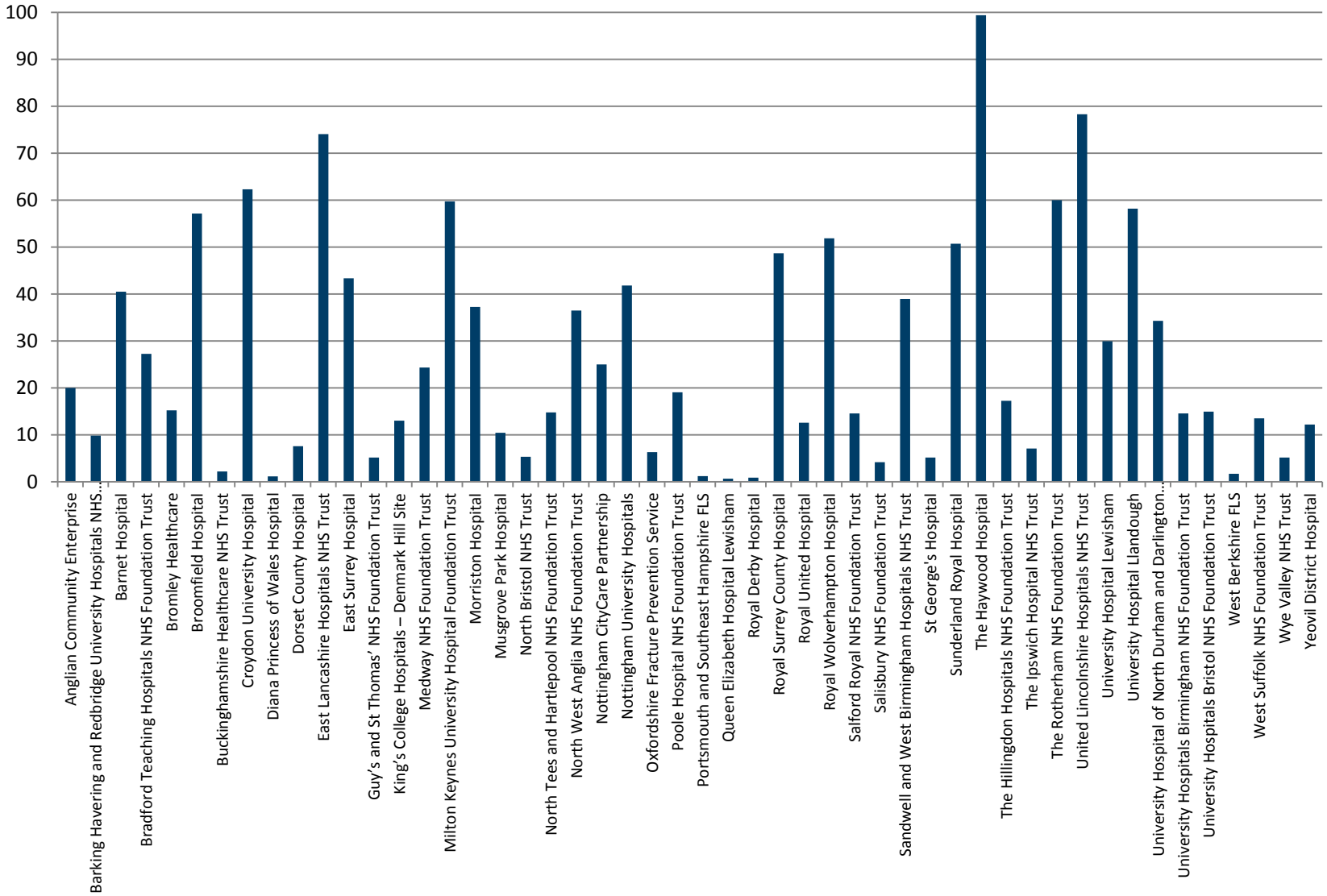
> *If a woman aged 75 years or older has not previously had her BMD measured, a DXA scan may not be required if the responsible clinician considers it to be clinically inappropriate or unfeasible.*[9]

It would appear that some FLSs interpret this as an 'opt in' for DXA, while for others it is an 'opt out'. Results may also depend on rules relating to local CCG commissioning.

Recommendations

- All FLSs should review their average time from fragility fracture diagnosis to DXA. FLSs that are not able to provide a DXA assessment within 90 days of the fragility fracture diagnosis for at least 80% of their patients should review their current patient pathways, and develop a local service improvement plan.
- FLSs that are under-resourced for DXA assessment should work with their local commissioners to develop a business case for improved services, including reviewing the DXA requirement for those with a fragility fracture aged 75 years and over.
- If time to DXA is a quality issue, prioritisation should be given to patients aged 50–74.

Fig 3 **Proportion of patients aged 75 years and over for whom a DXA scan was recommended or ordered, by FLS site**



KPI 6 Falls assessment and KPI 8 Strength and balance training

Standards

Older people who present for medical attention because of a fall or who report recurrent falls in the past year should be offered a multifactorial falls risk assessment (NOS clinical standards for FLSs; NOGG; NICE CG161; NICE QS86; BOA *The care of patients with fragility fracture*).[4–8]
Older people who report a fall should be considered for strength and balance training (NICE CG161, NICE QS86).[6,7]

Patients should be advised to undertake regular weight-bearing exercise, tailored according to the needs and abilities of the individual patient (NOGG).[5]

Commentary

Reviewing patients for falls risk after a fragility fracture is an integral part of their management to reduce their re-fracture risk.

Forty percent of patients received a falls assessment or were referred or recommended for a falls assessment. This compares with 32% in the first FLS-DB report.

Twenty percent (10/50) of FLSs were able to provide a falls assessment to over 80% of their patients. Overall, 18% (9/50) of FLSs returned missing data for over 50% of their patients, which is an improvement from 21% in the first report (8/38).

Of the 18 FLSs that were performing a falls assessment in fewer than 25% of their patients in the first report, six are assessing at least 30% of patients.

Therapeutic exercise is the best-evidenced intervention for falls prevention. For most patients, it is effective as a single intervention, as well as part of a multifactorial approach. In the first FLS-DB report, 87 patients had started a strength and balance class by the time of their first follow-up. This second report shows a dramatic improvement, with 520 patients having started a class by first follow-up. However, while this is an increase, it still only represents 4% of patients aged over 75 (3% of all patients) who were due to be monitored.

Falls interventions should be funded and monitored with the same rigour as FLSs, and better national performance indicators are needed to identify effective and efficient falls pathways as they relate to patients seen within an FLS.

Recommendations

- FLSs that are not routinely performing or referring patients for falls risk assessments should review their current clinical pathway and liaise with other FLSs that are able to meet these criteria to develop a local improvement plan.
- FLSs should engage with their strength and balance class groups to improve communication and uptake.

Case study – Peterborough City Hospital

Peterborough City Hospital assessed 96% of its patients for falls risk (compared with 40% across all FLSs).

We have had an osteoporosis service in Peterborough since 2002. For all patients who were aged over 50 years and went through the service, we adopted the policy of asking a number of questions with regard to falls. As this is a face-to-face consultation, it is easy to observe the way the patient walks into the consulting room and how steady they are on their feet and whether they use walking aids. We are also able to observe them getting into and out of chairs and whether they wear spectacles. This consultation is undertaken at their fracture clinic appointment.

As part of the assessment we also go through the list of medications that the patient is taking and we ask when this was last reviewed, particularly if they are taking a large number of medications. If this requires review, a letter is sent to the GP requesting that this is undertaken. We also have a symbol on our electronic patient fracture list (a red triangle with an F in the centre) that indicates that the patient has had a number of previous falls.

The fracture liaison nurse is able to refer the patient to the community physiotherapy team for further assessment and treatment. Hip fracture patients at Peterborough are recorded on the NHFD only; however they are all assessed by the ward physiotherapy teams prior to discharge. We have a falls and fracture prevention nurse and a hip fracture practitioner who regularly review ward patients. Patients and relatives can be given information on how they can obtain aids such as grab rails. Exercise and education classes are held in the local community for those with osteoporosis and osteopenia.

We have made the falls assessment a routine part of our osteoporosis assessment and we deal with the patients according to their individual needs.

Case study – Haywood Hospital

We have used the data from the FLS-DB to make a number of improvements to our service.

Firstly, before the first FLS-DB report came out, we could see clearly from the run charts that we were not doing well with regard to falls assessments. We worked with the falls team to introduce a new one-page assessment and adjust the criteria with which we could refer patients to their service. The run charts are fantastic for real-time feedback and we are delighted to be achieving 100% adherence to this standard now.

When the first FLS-DB report came out we were disappointed with our identification rate, which was markedly lower than we expected. As a team, we identified four possible issues.

The first, was a data collection issue – we had not been entering details of patients who were identified but not seen in the FLS, nor had we entered data on patients who were seen in the hip fracture pathway who did not have a DXA scan. Secondly, we felt that we could be identifying more inpatient fragility fractures, and we have recently employed a link nurse to increase identification of these patients. Finally, and perhaps most importantly, the catchment area for our FLS does not match the catchment area of the acute trust, which accepts hip fractures from a larger area. As the total number of expected fragility fractures is calculated from the number of recorded hip fractures, our FLS will never be able to identify 100% of those patients who are at risk in the wider area. However, we had already been working with colleagues in three neighbouring trusts and the CCG on a business case for an extended FLS to cover this area: FLS-DB data have been really helpful in progressing this case.

As a team, we thought we were doing really well with regard to the follow-up of patients. However, the run charts and report told a different story: 0% of our patients were on treatment at 4 months. As a result, we reviewed our timelines within the service, and found that we had been phoning patients 4 months after they had been seen in the FLS and not 4 months after the date of fracture. We wanted to call patients earlier, but we found this was impractical, as we were not leaving enough time for GPs to receive our reports. However, we then reviewed how long it was taking for our reports to be sent out. By reducing delays in reporting, we are slowly addressing this standard, and ensuring that our GPs and patients are receiving reports and treatment in a more timely manner.

Finally, the ability to benchmark our service against others has provided real insight. We have reviewed our local guidance around treatment thresholds since the first audit. We have also identified that we are scanning more patients aged over 75 than many other units. This has prompted us to review our exclusion criteria and consider local audit on did not attend (DNA) rates and adherence to treatment in this age group, for which we can easily use our exported data from the FLS-DB.

KPI 7 Bone therapy recommended as inappropriate

Standard

Patients who are at increased risk of further fracture will be offered appropriate bone-protection treatments (NOS clinical standards for FLSs, NOGG, NICE TA161 and NICE QS149).[4,5,9,10]

Commentary

Of the patients who have a recorded treatment outcome, 23% were recommended for bone therapy and 11% required further clinical input (either by a GP or another clinician).

There was marked variability in the proportion of patients who were determined to be 'inappropriate' for treatment (Table 8). The proportion was higher in patients under 75 years of age than those over 75 years of age (41% vs 16%). Twelve percent (6/50) of FLSs recommended that treatment was inappropriate in over 50% of submitted patients.

Despite NICE recommendations, the interpretation of the standard was variable, as evidenced in the types of bone therapy that were recommended by FLSs (Table 9). Oral bisphosphonates were the most commonly recommended agent overall (18%), although proportions varied between FLSs from 0% to 51%. The recommendation of parenteral bone therapy denosumab (3%) and/or zoledronate (2%) also showed marked variability, from 0% to 15% and 0% to 32% respectively.

Recommendation

FLSs that have a very low or very high proportion of recommendations that treatment is inappropriate should review their clinical pathways.

KPI 9 Monitoring contact 12–16 weeks post fracture
KPI 10 Commenced bone therapy by 16 weeks post fracture
KPI 11 Adherence to bone therapy at 12 months post fracture

Standard

Patients for whom drug therapy is recommended to reduce their risk of fracture will be reviewed within 4 months of their fracture, to ensure that appropriate treatment has been started (NOS clinical standards for FLSs and NOGG).[4,5]

Commentary

Given the higher rate of re-fracture in the first 24 months post fragility fracture, the priority is rapid initiation of therapy and good adherence during this period. Unless most patients adhere to bone therapy, secondary fracture prevention will remain inadequate. Therefore, monitoring may be the most critical determinant of an FLS's success, given the published poor adherence rates with oral bisphosphonates (up to 60% discontinued by 6 months after initiation).[12] Poor adherence to anti-osteoporosis medication significantly reduces clinical effectiveness. The approval of intermittent parenteral therapies for osteoporosis offers a unique opportunity to address non-adherence. The rate of non-adherence to falls interventions is not known, but is likely to be at least as high as that for oral bisphosphonates. However, monitoring is also likely to be the most challenging aspect for an FLS, as it requires actively engaging with patients and healthcare professionals in primary care and community settings.

Monitoring remains challenging for FLSs, although there has been an improvement, with 41% (compared with 36% in the first report) of patients who were prescribed anti-osteoporosis medication being followed up by 12–16 weeks post fracture, with three FLSs now able to complete a monitoring assessment in over 80% of eligible patients.

Of the patients for whom anti-osteoporosis medication was recommended by their FLS, 13% were on treatment within the first 4 months.

For the first time, we can report the 12-month monitoring data Overall, 14% were able to confirm adherence and two FLSs were able to confirm this in at least 50% of their patients.

Recommendation

FLSs should prioritise reviewing their patient monitoring pathway as part of their service improvement plans.

Case study – West Suffolk FLS

West Suffolk FLS monitored 60% of patients who were prescribed anti-osteoporosis medication by 16 weeks: 32% of these patients had started strength and balance training at this point (compared with 2% across all FLSs).

The West Suffolk FLS is a community-based service that proactively finds all patients aged over 50 who have sustained a fragility fracture by in reaching into the acute hospital.

We complete a falls and bone health assessment in the patient's own home after they complete their acute episode of care. This offers the opportunity to assess their home environment and discuss medication compliance issues, balance and strength opportunities, coping strategies to prevent further falls and other healthy living issues. We also suggest treatment options to the GP, including referral into secondary care for parenteral treatments. We make onward referrals to community physiotherapists, adult social services and occupational therapy (for home adaptations, assistive technology and voluntary services).

We follow up patients either face to face or on the telephone as often as necessary, to support them with starting and remaining compliant with bone strengthening treatments. Every patient receives a follow-up questionnaire 12 months after their fracture, to which we have had a good return rate. In 2016 we had a 72% return rate, which demonstrated that 71% of patients remained compliant with treatment. Again this questionnaire gives us the opportunity to be involved with the patient's care, and to make recommendations and onward referral as appropriate.

As a community-based service, we have developed strong links with primary care and other health, social care and voluntary community services, which:

- keeps us up to date on the availability of falls prevention interventions
- promotes awareness of falls prevention and bone health with our community colleagues
- ensures that all patients are referred for an intervention that is most appropriate to their need, eg balance and strength exercises, home hazard adaptations, voluntary sector day care and opticians.

FLS-level results

Presentation of results

FLS-level results are presented throughout this report. Unless otherwise indicated, we chose to use colour coding to demonstrate the specific proportions of FLSs that were achieving the specified standard: 0–49% (red), 50–79% (amber) and 80–100% (green).

Small numbers policy

Where any 'n' (number) was <3, the numbers and percentages were suppressed. Where only one 'n' was <3, and the second-lowest number was <5, the second-lowest number and percentage was also suppressed. Where only one 'n' was <3 and the second-lowest number was not <5, the second-lowest number was barnadised (+1/–1). This process was conducted for data protection reasons, to ensure anonymity of the patient data included in reporting.

Data quality

Where appropriate, sites with more than 50% missing data for a field were not colour coded.

Table 3 **Data quality summary table by each submitting FLS**

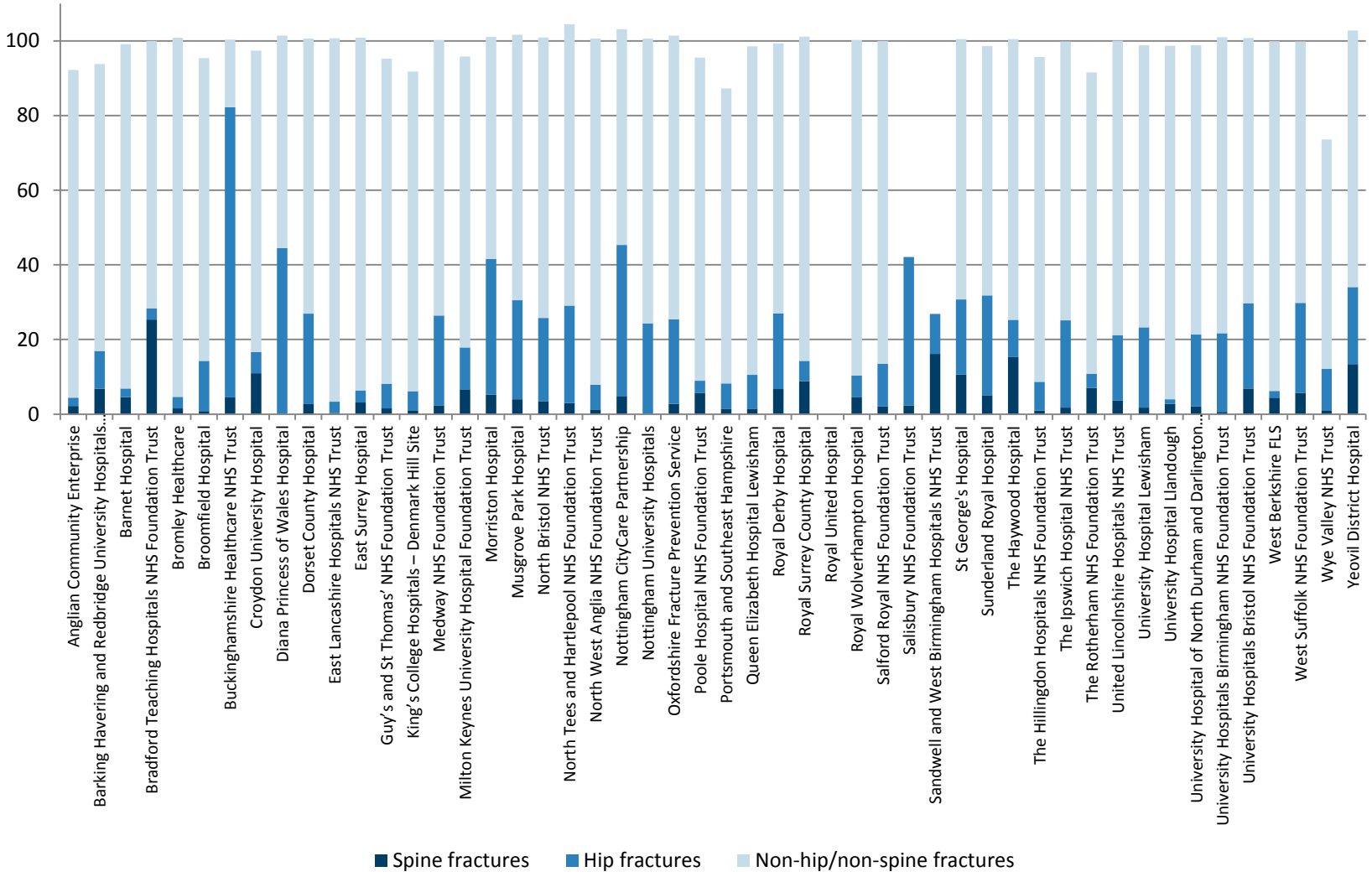
FLS name	Number of fields with 20% or more data	
	First report	Current report
Anglian Community Enterprise	n/a	0
Barking Havering and Redbridge University Hospitals NHS Trust	n/a	11
Barnet Hospital	3	1
Bradford Teaching Hospitals NHS Foundation Trust	n/a	0
Bromley Healthcare	2	1
Broomfield Hospital	0	0
Buckinghamshire Healthcare NHS Trust	n/a	2
Croydon University Hospital	n/a	6
Diana Princess of Wales Hospital	n/a	5
Dorset County Hospital	11	11
East Lancashire Hospitals NHS Trust	2	2
East Surrey Hospital	2	2
Guy's and St Thomas' NHS Foundation Trust	12	12
King's College Hospital – Denmark Hill Site	4	4
Medway NHS Foundation Trust	11	11
Milton Keynes University Hospital Foundation Trust	2	2
Morriston Hospital	n/a	2
Musgrove Park Hospital	0	0
North Bristol NHS Trust	7	7
North Tees and Hartlepool NHS Foundation Trust	5	5
North West Anglia NHS Foundation Trust	2	2
Nottingham City Care Partnership	n/a	1
Nottingham University Hospitals	8	9
Oxfordshire Fracture Prevention Service	4	2
Poole General Hospital	9	9
Portsmouth and Southeast Hampshire FLS	14	13
Queen Elizabeth Hospital Lewisham	6	6
Royal Derby Hospital	n/a	6
Royal Surrey County Hospital	0	0
Royal United Hospital	n/a	16
Royal Wolverhampton NHS Trust	9	10
Salford Royal NHS Foundation Trust	n/a	7
Salisbury NHS Foundation Trust	n/a	5
Sandwell and West Birmingham Hospitals NHS Trust	9	11
St George's Hospital	12	14

FLS name	Number of fields with 20% or more data	
	First report	Current report
Sunderland Royal Hospital	0	0
The Haywood Hospital	0	0
The Hillingdon Hospitals NHS Foundation Trust	0	0
The Ipswich Hospital NHS Trust	11	11
The Rotherham NHS Foundation Trust	0	0
United Lincolnshire Hospitals NHS Trust	12	11
University Hospital Lewisham	10	7
University Hospital Llandough	7	7
University Hospital of North Durham and Darlington Memorial Hospital	3	0
University Hospitals Birmingham NHS Foundation Trust	2	0
University Hospitals Bristol NHS Foundation Trust	11	9
West Berkshire FLS	2	2
West Suffolk NHS Foundation Trust	2	2
Wye Valley NHS Trust	2	10
Yeovil District Hospital	6	2
Total	**202**	**256**

The colours represent the number of non-mandatory fields with missing data: green (0–5), amber (6–10) and red (11–17).

For FLSs that were not included in the first report due to exclusion or non-participation, the result for column 1 (the first report) is ‘n/a’.

Fig 4 **Anatomical site of first fracture by FLS (number of patients per site)**



Note: Some bars do not total 100% due to 'site of fracture' being missing or multiple fracture sites being entered.

Table 4 **Percentage of estimated fragility fracture patients submitted to the FLS-DB**

FLS name	From the FLS-DB	From the NHFD	Estimated caseload	Percentage of estimated caseload submitted			Total number of non-hip, non-spine	Total cases (non-hip, non-spine) %	Total number of hip cases	Total cases (hip) %
				All	Aged <75	Aged >75				
Anglian Community Enterprise	90	526	2,630	3	6	0	79	88	*	*
Barking Havering and Redbridge University Hospitals NHS Trust	337	527	2,635	13	20	5	259	77	34	10
Barnet Hospital	349	391	1,955	18	23	13	322	92	8	2
Bradford Teaching Hospitals NHS Foundation Trust	67	315	1,575	4	6	3	48	72	*	*
Bromley Healthcare	585	368	1,840	32	32	31	563	96	18	3
Broomfield Hospital	737	412	2,060	36	63	9	598	81	99	13
Buckinghamshire Healthcare NHS Trust	287	403	2,015	14	6	23	52	18	223	78
Croydon University Hospital	192	259	1,295	15	19	11	155	81	11	6
Diana Princess of Wales Hospital	144	232	1,160	12	10	15	82	57	64	44
Dorset County Hospital	1,152	328	1,640	70	75	66	849	74	279	24
East Lancashire Hospitals NHS Trust	562	474	2,370	24	34	13	547	97	17	3
East Surrey Hospital	709	486	2,430	29	53	5	670	94	23	3
Guy's and St Thomas' NHS Foundation Trust	648	195	975	66	105	28	564	87	43	7
King's College Hospital – Denmark Hill Site	97	157	785	12	19	6	83	86	5	5
Medway NHS Foundation Trust	926	332	1,660	56	63	49	683	74	224	24

FLS name	From the FLS-DB	From the NHFD	Estimated caseload	Percentage of estimated caseload submitted			Total number of non-hip, non-spine	Total cases (non-hip, non-spine) %	Total number of hip cases	Total cases (hip) %
				All	Aged <75	Aged >75				
Milton Keynes University Hospital Foundation Trust	285	275	1,375	21	31	10	222	78	32	11
Morriston Hospital	673	499	2,495	27	23	31	400	59	245	36
Musgrove Park Hospital	1,696	425	2,125	80	73	86	1,205	71	450	27
North Bristol NHS Trust	2,162	512	2,560	84	85	84	1,624	75	481	22
North Tees and Hartlepool NHS Foundation Trust	1,195	379	1,895	63	63	64	900	75	312	26
North West Anglia NHS Foundation Trust	650	436	2,180	30	44	16	603	93	43	7
Nottingham City Care Partnership	64	734	3,670	2	1	2	37	58	26	41
Nottingham University Hospitals	2,346	734	3,670	64	65	62	1,790	76	571	24
Oxfordshire Fracture Prevention Service	2,989	681	3,405	88	92	84	2,272	76	677	23
Poole Hospital NHS Foundation Trust	89	968	4,840	2	3	1	77	87	3	3
Portsmouth and Southeast Hampshire FLS	1,816	749	3,745	48	54	43	1,435	79	123	7
Queen Elizabeth Hospital Lewisham	533	319	1,595	33	48	19	469	88	48	9
Royal Derby Hospital	296	584	2,920	10	13	8	214	72	60	20
Royal Surrey County Hospital	533	326	1,630	33	37	28	463	87	29	5
Royal United Hospitals Bath	214	524	2,620	8	8	8	0	0	0	0
Royal Wolverhampton NHS Trust	486	471	2,355	21	23	18	437	90	28	6

FLS name	From the FLS-DB	From the NHFD	Estimated caseload	Percentage of estimated caseload submitted			Total number of non-hip, non-spine	Total cases (non-hip, non-spine) %	Total number of hip cases	Total cases (hip) %
				All	Aged <75	Aged >75				
Salford Royal NHS Foundation Trust	594	297	1,485	40	55	25	514	87	68	11
Salisbury NHS Foundation Trust	715	299	1,495	48	48	48	0	0	284	40
Sandwell and West Birmingham Hospitals NHS Trust	186	372	1,860	10	12	8	0	0	20	11
St George's Hospital	1,418	236	1,180	120	139	102	989	70	286	20
Sunderland Royal Hospital	1,419	439	2,195	65	65	64	947	67	380	27
The Haywood Hospital	1,453	716	3,580	41	55	27	1,093	75	145	10
The Hillingdon Hospitals NHS Foundation Trust	208	208	1,040	20	29	11	181	87	16	8
The Ipswich Hospital NHS Trust	1,816	485	2,425	75	79	71	1,357	75	424	23
The Rotherham NHS Foundation Trust	426	264	1,320	32	61	4	344	81	16	4
United Lincolnshire Hospitals NHS Trust	1,971	759	3,795	52	55	48	1,554	79	346	18
University Hospital Lewisham	344	143	715	48	58	38	260	76	74	22
University Hospital Llandough	826	460	2,300	36	51	21	782	95	10	1
University Hospital of North Durham and Darlington Memorial Hospital	1,670	714	3,570	47	53	40	1,294	77	320	19
University Hospitals Birmingham NHS Foundation Trust	1,530	458	2,290	67	68	65	1,213	79	323	21
University Hospitals Bristol NHS Foundation Trust	1,444	319	1,595	91	99	82	1,026	71	330	23

FLS name	From the FLS-DB	From the NHFD	Estimated caseload	Percentage of estimated caseload submitted			Total number of non-hip, non-spine	Total cases (non-hip, non-spine) %	Total number of hip cases	Total cases (hip) %
				All	Aged <75	Aged >75				
West Berkshire FLS	742	414	2,070	36	43	29	695	94	13	2
West Suffolk NHS Foundation Trust	577	326	1,630	35	31	40	404	70	139	24
Wye Valley NHS Trust	852	307	1,535	56	53	58	524	62	94	11
Yeovil District Hospital	1,489	312	1,560	95	90	101	1,023	69	307	21
Overall (average)	**42,589**	**21,549**	**107,745**	**40**	**45**	**34**	**31,902**	**75**	**7,775**	**18**

Note: The numbers of non-hip fractures, calculated from 2016 NHFD data using 'rule of 5', were used to estimate the annual fragility fracture caseload in order to estimate the percentage case finding by FLSs for the 6 months of the year for hip and non-hip fractures. The NHFD data may underestimate the number of hip fractures, as the NHFD only includes people aged 60 years and over while the FLS-DB includes people aged 50 and over. However, very few patients sustain a fragility fracture of the hip between 50 and 60 years of age, and so underestimation is likely to be small. The estimated caseload at <75 years was calculated as 50% of the total estimated caseload for the FLS.

Royal United Hospitals Bath did not submit any data for 'site of fracture'.

Table 5 **Time from diagnosis of fracture to FLS assessment**

FLS name	Total submitted	Assessed within 90 days	
	n	n	%
Anglian Community Enterprise	90	10	11
Barking Havering and Redbridge University Hospitals NHS Trust	337	63	19
Barnet Hospital	349	308	88
Bradford Teaching Hospitals NHS Foundation Trust	67	55	82
Bromley Healthcare	585	582	99
Broomfield Hospital	737	711	96
Buckinghamshire Healthcare NHS Trust	287	286	100
Croydon University Hospital	192	190	99
Diana Princess of Wales Hospital	144	127	88
Dorset County Hospital	1,152	1,081	94
East Lancashire Hospitals NHS Trust	562	505	90
East Surrey Hospital	709	25	4
Guy's and St Thomas' NHS Foundation Trust	648	121	19
King's College Hospital – Denmark Hill Site	97	95	98
Medway NHS Foundation Trust	926	*	*
Milton Keynes University Hospital Foundation Trust	285	269	94
Morriston Hospital	673	670	100
Musgrove Park Hospital	1,696	1,332	79
North Bristol NHS Trust	2,162	1,487	69
North Tees and Hartlepool NHS Foundation Trust	1,195	1,193	100
North West Anglia NHS Foundation Trust	650	591	91
Nottingham City Care Partnership	64	45	70
Nottingham University Hospitals	2,346	2,332	99
Oxfordshire Fracture Prevention Service	2,989	2,176	73
Poole General Hospital	89	9	10
Portsmouth and Southeast Hampshire FLS	1,816	1,675	92
Queen Elizabeth Hospital Lewisham	533	5	1
Royal Derby Hospital	296	241	81
Royal Surrey County Hospital	533	496	93
Royal United Hospital	214	0	0
Royal Wolverhampton NHS Trust	486	475	98
Salford Royal NHS Foundation Trust	594	19	3
Salisbury NHS Foundation Trust	715	486	68

FLS name	Total submitted	Assessed within 90 days	
	n	n	%
Sandwell and West Birmingham Hospitals NHS Trust	186	100	54
St George's Hospital	1,418	557	39
Sunderland Royal Hospital	1,419	1,407	99
The Haywood Hospital	1,453	1,126	77
The Hillingdon Hospitals NHS Foundation Trust	208	195	94
The Ipswich Hospital NHS Trust	1,816	765	42
The Rotherham NHS Foundation Trust	426	183	43
United Lincolnshire Hospitals NHS Trust	1,971	0	0
University Hospital Lewisham	344	278	81
University Hospital Llandough	826	538	65
University Hospital of North Durham and Darlington Memorial Hospital	1,670	1,169	70
University Hospitals Birmingham NHS Foundation Trust	1,530	1,453	95
University Hospitals Bristol NHS Foundation Trust	1,444	254	18
West Berkshire FLS	742	712	96
West Suffolk NHS Foundation Trust	577	357	62
Wye Valley NHS Trust	852	843	99
Yeovil District Hospital	1,489	876	59
Overall (average)	**42,589**	**28,474**	**67**

Table 6 **Time from fracture diagnosis to DXA in those recommended for a DXA scan**

FLS name	DXA recommended or ordered			Percentage completed within 90 days (%)		
	All	Aged <75	Aged >75	All	Aged <75	Aged >75
Anglian Community Enterprise	82	81	*	9	9	0
Barking Havering and Redbridge University Hospitals NHS Trust	39	32	7	18	22	0
Barnet Hospital	228	177	51	68	67	69
Bradford Teaching Hospitals NHS Foundation Trust	44	38	6	77	76	83
Bromley Healthcare	227	183	44	91	91	91
Broomfield Hospital	691	639	52	22	22	21
Buckinghamshire Healthcare NHS Trust	45	40	5	2	3	0
Croydon University Hospital	140	97	43	86	87	84
Diana Princess of Wales Hospital	55	54	1	76	76	100
Dorset County Hospital	408	367	41	66	67	59
East Lancashire Hospitals NHS Trust	477	363	114	60	61	59
East Surrey Hospital	662	636	26	5	4	15
Guy's and St Thomas' NHS Foundation Trust	26	19	7	27	21	43
King's College Hospital – Denmark Hill Site	12	9	3	8	0	33
Medway NHS Foundation Trust	297	198	99	1	1	1
Milton Keynes University Hospital Foundation Trust	194	151	43	37	38	30
Morriston Hospital	333	190	143	65	70	59
Musgrove Park Hospital	779	683	96	54	51	71
North Bristol NHS Trust	837	780	57	38	38	32
North Tees and Hartlepool NHS Foundation Trust	597	508	89	79	80	72
North West Anglia NHS Foundation Trust	459	397	62	61	60	63

FLS name	DXA recommended or ordered			Percentage completed within 90 days (%)		
	All	Aged <75	Aged >75	All	Aged <75	Aged >75
Nottingham City Care Partnership	22	11	11	0	0	0
Nottingham University Hospitals	1,384	905	479	4	5	2
Oxfordshire Fracture Prevention Service	1,173	1,083	90	55	55	54
Poole Hospital NHS Foundation Trust	16	12	4	81	75	100
Portsmouth and Southeast Hampshire FLS	210	200	10	55	56	30
Queen Elizabeth Hospital Lewisham	*	0	*	0		0
Royal Derby Hospital	172	171	1	91	91	100
Royal Surrey County Hospital	336	224	112	75	75	75
Royal United Hospital	108	95	13	40	40	38
Royal Wolverhampton NHS Trust	345	233	112	0	0	1
Salford Royal NHS Foundation Trust	127	100	27	5	6	0
Salisbury NHS Foundation Trust	96	81	15	64	68	40
Sandwell and West Birmingham Hospitals NHS Trust	102	72	30	10	7	17
St George's Hospital	607	576	31	71	72	65
Sunderland Royal Hospital	853	497	356	69	75	61
The Haywood Hospital	1,444	972	472	78	79	76
The Hillingdon Hospitals NHS Foundation Trust	83	73	10	69	68	70
The Ipswich Hospital NHS Trust	910	849	61	39	39	39
The Rotherham NHS Foundation Trust	376	361	15	43	44	20
United Lincolnshire Hospitals NHS Trust	1,592	872	714	11	14	7
University Hospital Lewisham	182	141	41	75	88	29
University Hospital Llandough	672	533	139	4	4	4
University Hospital of North Durham and Darlington Memorial Hospital	833	586	247	37	38	36

FLS name	DXA recommended or ordered			Percentage completed within 90 days (%)		
	All	Aged <75	Aged >75	All	Aged <75	Aged >75
University Hospitals Birmingham NHS Foundation Trust	529	420	109	39	36	49
University Hospitals Bristol NHS Foundation Trust	567	469	98	74	76	61
West Berkshire FLS	425	420	5	82	82	60
West Suffolk NHS Foundation Trust	238	194	44	68	74	43
Wye Valley NHS Trust	318	295	23	0	0	0
Yeovil District Hospital	540	444	96	19	18	27
Overall (average)	**20,893**	**16,531**	**4,356**	**43**	**45**	**38**

Table 7 **Falls risk assessment performed by the FLS**

FLS name	Falls assessment routinely provided by FLS[1]	Number receiving a falls assessment			Percentage receiving a falls assessment[2]		
		All	<75 years	>75 years	All	<75 years	>75 years
Anglian Community Enterprise	Missing	80	75	5	89	88	100
Barking Havering and Redbridge University Hospitals NHS Trust	Missing	12	8	4	4	3	6
Barnet Hospital	Yes	330	211	119	95	95	94
Bradford Teaching Hospitals NHS Foundation Trust	Yes	*	0	*	*	0	*
Bromley Healthcare	Yes	585	296	289	100	100	100
Broomfield Hospital	No	6	5	1	1	1	1
Buckinghamshire Healthcare NHS Trust	Yes	267	47	220	93	80	96
Croydon University Hospital	Yes	181	116	65	94	94	94
Diana Princess of Wales Hospital	Yes	121	43	78	84	74	91
Dorset County Hospital	Yes	237	64	173	21	10	32
East Lancashire Hospitals NHS Trust	Referred	144	91	53	26	22	34
East Surrey Hospital	Missing	673	647	26	95	100	43
Guy's and St Thomas' NHS Foundation Trust	Yes	287	247	40	44	48	30
King's College Hospital – Denmark Hill Site	Referred	*	0	*	*	0	*
Medway NHS Foundation Trust	No	48	28	20	5	5	5
Milton Keynes University Hospital Foundation Trust	Referred	105	62	43	37	29	60

FLS name	Falls assessment routinely provided by FLS[1]	Number receiving a falls assessment			Percentage receiving a falls assessment[2]		
		All	<75 years	>75 years	All	<75 years	>75 years
Morriston Hospital	Referred	260	55	205	39	19	53
Musgrove Park Hospital	Referred	1,277	547	730	75	70	79
North Bristol NHS Trust	Referred	1,136	779	357	53	71	33
North Tees and Hartlepool NHS Foundation Trust	Yes	789	461	328	66	78	54
North West Anglia NHS Foundation Trust	Yes	623	465	158	96	97	93
Nottingham City Care Partnership	Yes	62	19	43	97	95	98
Nottingham University Hospitals	Yes	731	174	557	31	15	49
Oxfordshire Fracture Prevention Service	Yes	1,360	685	675	46	44	47
Poole General Hospital	Yes	44	30	14	49	44	67
Portsmouth and Southeast Hampshire FLS	No	*	*	0	*	*	0
Queen Elizabeth Hospital Lewisham	Referred	*	0	*	*	0	*
Royal Derby Hospital	Referred	*	*	0	*	*	0
Royal Surrey County Hospital	Yes	482	272	210	90	90	91
Royal United Hospital	No	89	75	14	42	68	14
Royal Wolverhampton NHS Trust	Referred	3	0	3	1	0	1
Salford Royal NHS Foundation Trust	Yes	141	110	31	24	27	17
Salisbury NHS Foundation Trust	Yes	188	77	111	26	22	31
Sandwell and West Birmingham Hospitals NHS Trust	Yes	128	77	51	69	71	66
St George's Hospital	Referred	835	577	258	59	71	43
Sunderland Royal Hospital	Yes	965	422	543	68	59	77
The Haywood Hospital	Yes	584	386	198	40	39	42
The Hillingdon Hospitals NHS Foundation Trust	Yes	6	3	3	3	2	5

FLS name	Falls assessment routinely provided by FLS[1]	Number receiving a falls assessment			Percentage receiving a falls assessment[2]		
		All	<75 years	>75 years	All	<75 years	>75 years
The Ipswich Hospital NHS Trust	Referred	932	548	384	51	57	45
The Rotherham NHS Foundation Trust	Yes	61	48	13	14	12	52
United Lincolnshire Hospitals NHS Trust	Referred	0	0	0	0	0	0
University Hospital Lewisham	Yes	155	60	95	45	29	69
University Hospital Llandough	Yes	112	79	33	14	13	14
University Hospital of North Durham and Darlington Memorial Hospital	Referred	27	9	18	2	1	3
University Hospitals Birmingham NHS Foundation Trust	Yes	1,063	619	445	69	79	60
University Hospitals Bristol NHS Foundation Trust	No	12	3	9	1	0	1
West Berkshire FLS	Yes	128	48	80	17	11	27
West Suffolk NHS Foundation Trust	Yes	342	83	259	59	33	80
Wye Valley NHS Trust	Referred	564	347	217	66	85	49
Yeovil District Hospital	Referred	743	264	479	50	38	61
Overall (average)		**16,926**	**9,265**	**7,662**	**40**	**38**	**42**

[1] As completed by facilities audit question 3.4a.
[2] The denominator is all patients submitted and the numerator is response to 5.01 ‘yes, referred or recommended’.

Table 8 **Percentage of patients where the FLS treatment recommendation was that bone therapy was inappropriate**

FLS name	Number of patients with a treatment recommendation		Percentage where the FLS recommended that bone therapy was inappropriate		Missing (%)	
	n	%	All	<75 years	>75 years	All
Anglian Community Enterprise	*	*	50	53	0	11
Barking Havering and Redbridge University Hospitals NHS Trust	127	38	40	44	25	21
Barnet Hospital	138	40	36	47	15	14
Bradford Teaching Hospitals NHS Foundation Trust	*	*	42	44	36	10
Bromley Healthcare	197	34	41	53	27	18
Broomfield Hospital	12	2	26	28	16	3
Buckinghamshire Healthcare NHS Trust	223	78	4	5	4	1
Croydon University Hospital	35	18	39	50	20	13
Diana Princess of Wales Hospital	65	45	30	40	23	14
Dorset County Hospital	278	24	23	36	8	27
East Lancashire Hospitals NHS Trust	149	27	42	48	27	24
East Surrey Hospital	164	23	69	74	13	6
Guy's and St Thomas' NHS Foundation Trust	69	11	29	34	10	59
King's College Hospital – Denmark Hill Site	0	0	0	0	0	99
Medway NHS Foundation Trust	85	9	15	21	6	59
Milton Keynes University Hospital Foundation Trust	35	12	40	47	18	43
Morriston Hospital ABMHU	167	25	28	27	28	0
Musgrove Park Hospital	669	39	28	44	15	7
North Bristol NHS Trust	90	4	28	44	10	5

FLS name	Number of patients with a treatment recommendation		Percentage where the FLS recommended that bone therapy was inappropriate		Missing (%)	
	n	%	All	<75 years	>75 years	All
North Tees and Hartlepool NHS Foundation Trust	231	19	37	45	30	2
North West Anglia NHS Foundation Trust	42	6	59	69	31	1
Nottingham City Care Partnership	22	34	14	10	16	11
Nottingham University Hospitals	511	22	24	28	21	42
Oxfordshire Fracture Prevention Service	1,186	40	23	37	8	0
Poole General Hospital	16	18	1	1	0	81
Portsmouth and Southeast Hampshire FLS	131	7	2	3	0	25
Queen Elizabeth Hospital Lewisham	36	7	70	78	49	0
Royal Derby Hospital	109	37	40	62	4	4
Royal Surrey County Hospital	127	24	45	54	33	12
Royal United	0	0	0	0	0	100
Royal Wolverhampton NHS Trust	*	*	0	1	0	77
Salford Royal NHS Foundation Trust	12	2	24	27	18	14
Salisbury NHS Foundation Trust	326	46	24	38	11	0
Sandwell and West Birmingham Hospitals NHS Trust	18	10	17	22	9	73
St George's Hospital	498	35	18	26	8	40
Sunderland Royal Hospital	227	16	43	55	30	12
The Haywood Hospital	338	23	59	68	42	1
The Hillingdon Hospitals NHS Foundation Trust	42	20	69	73	59	6
The Ipswich Hospital NHS Trust	520	29	24	38	9	27

FLS name	Number of patients with a treatment recommendation		Percentage where the FLS recommended that bone therapy was inappropriate			Missing (%)
	n	%	All	<75 years	>75 years	All
The Rotherham NHS Foundation Trust	4	1	56	58	28	9
United Lincolnshire Hospitals NHS Trust	0	0	0	0	0	100
University Hospital Lewisham	68	20	37	52	15	15
University Hospital Llandough	46	6	50	59	29	11
University Hospital of North Durham and Darlington Memorial Hospital	389	23	52	61	40	19
University Hospitals Birmingham NHS Foundation Trust	532	35	46	63	28	2
University Hospitals Bristol NHS Foundation Trust	608	42	33	52	11	13
West Berkshire FLS	321	43	37	60	2	0
West Suffolk NHS Foundation Trust	279	48	22	38	10	13
Wye Valley NHS Trust	10	1	1	1	1	32
Yeovil District Hospital	711	48	25	39	13	1
Overall (average)	**9,868**	**23**	**30**	**41**	**16**	**-**

Colours represent: red ≥50%, amber 26–49% and green ≤25%, where the FLS recommended that treatment was inappropriate.

Table 9 **Type of bone therapy recommendations by each FLS**

Table 10

FLS name	Oral bisphosphonates		Zoledronate		Denosumab		Raloxifene and other oral therapies		Teriparatide		Referred to GP		Referred to other clinician	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Anglian Community Enterprise	*	*	0	0	0	0	0	0	0	0	26	29	7	8
Barking Havering and Redbridge University Hospitals NHS Trust	89	26	21	6	15	4	0	0	0	0	0	0	*	*
Barnet Hospital	133	38	6	1	0	0	0	0	0	0	*	*	20	6
Bradford Teaching Hospitals NHS Foundation Trust	0	0	0	0	*	*	0	0	0	0	29	43	0	0
Bromley Healthcare	197	34	0	0	0	0	0	0	0	0	16	3	24	4
Broomfield Hospital	7	1	0	0	5	1	0	0	0	0	480	65	31	4
Buckinghamshire Healthcare NHS Trust	145	51	26	9	43	15	0	0	0	0	18	6	28	10
Croydon University Hospital	34	18	0	0	0	0	0	0	0	0	*	*	51	27
Diana Princess of Wales Hospital	14	10	46	32	*	*	0	0	0	0	16	11	0	0
Dorset County Hospital	222	19	17	1	37	3	0	0	*	*	205	18	4	0

FLS name	Oral bisphosphonates		Zoledronate		Denosumab		Raloxifene and other oral therapies		Teriparatide		Referred to GP		Referred to other clinician	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
East Lancashire Hospitals NHS Trust	110	20	30	5	9	2	0	0	0	0	17	3	0	0
East Surrey Hospital	155	22	*	*	6	1	0	0	0	0	*	*	5	1
Guy's and St Thomas' NHS Foundation Trust	61	9	*	*	7	1	0	0	0	0	7	1	*	*
King's College Hospital – Denmark Hill Site	0	0	0	0	0	0	0	0	0	0	0	0	*	*
Medway NHS Foundation Trust	83	9	0	0	0	0	0	0	0	0	4	0	45	5
Milton Keynes University Hospital Foundation Trust	34	12	*	*	0	0	0	0	0	0	*	*	0	0
Morriston Hospital	118	18	35	6	11	2	0	0	*	*	0	0	308	46
Musgrove Park Hospital	321	19	113	7	228	13	0	0	5	0	302	18	17	1
North Bristol NHS Trust	41	2	24	1	22	1	0	0	0	0	723	33	28	1
North Tees and Hartlepool NHS Foundation Trust	221	18	5	0	*	*	0	0	*	*	429	36	49	4
North West Anglia NHS Foundation Trust	33	5	6	1	*	*	*	*	0	0	193	30	15	23

FLS name	Oral bisphosphonates		Zoledronate		Denosumab		Raloxifene and other oral therapies		Teriparatide		Referred to GP		Referred to other clinician	
	n	%	n	%	n	%	n		n	%	n	%	n	%
Nottingham City Care Partnership	9	14	10	16	3	5	0	0	0	0	10	16	9	0
Nottingham University Hospitals	269	11	214	9	21	1	*	*	7	0	46	2	89	3
Oxfordshire Fracture Prevention Service	819	27	*	*	361	12	*	*	0	0	171	6	11	2
Poole Hospital NHS Foundation Trust	16	18	0	0	0	0	0	0	0	0	0	0	0	0
Portsmouth and Southeast Hampshire Falls prevention	117	6	0	0	14	1	0	0	0	0	20	1	12	1
Queen Elizabeth Hospital Lewisham	34	7	0	0	0	0	*	*	0	0	19	4	102	19
Royal Derby Hospital	97	33	7	2	*	*	0	0	*	*	42	14	7	2
Royal Surrey County Hospital	92	17	5	1	26	5	*	*	0	0	38	7	32	6
Royal United Hospital	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Royal Wolverhampton NHS Trust	*	*	0	0	0	0	0	0	0	0	*	*	0	0

FLS name	Oral bisphosphonates		Zoledronate		Denosumab		Raloxifene and other oral therapies		Teriparatide		Referred to GP		Referred to other clinician	
	n	%	n	%	n	%	n	%%	n	%	n	%	n	%
Salford Royal NHS Foundation Trust	9	2	*	*	*	*	0	0	0	0	15	3	6	1
Salisbury NHS Foundation Trust	248	35	48	7	26	4	*	*	*	*	22	3	46	6
Sandwell and West Birmingham Hospitals NHS Trust	18	10	0	0	0	0	0	0	0	0	0	0	0	0
St George's Hospital	386	27	53	4	55	4	0	0	4	0	48	3	41	3
Sunderland Royal Hospital	218	15	8	0	*	*	0	0	0	0	337	24	45	3
The Haywood Hospital	331	23	4	0	0	0	*	*	*	*	121	8	114	8
The Hillingdon Hospitals NHS Foundation Trust	39	19	*	*	*	*	0	0	0	0	*	*	*	*
The Ipswich Hospital NHS Trust	507	28	12	1	*	*	0	0	0	0	269	15	59	3
The Rotherham NHS Foundation Trust	4	1	0	0	0	0	0	0	0	0	52	12	91	21
United Lincolnshire Hospitals NHS Trust	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FLS name	Oral bisphosphonates		Zoledronate		Denosumab		Raloxifene and other oral therapies		Teriparatide		Referred to GP		Referred to other clinician	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%
University Hospital Lewisham	64	19	4	1	0	0	0	0	0	0	61	18	13	4
University Hospital Llandough	6	1	28	3	12	1	0	0	*	*	205	25	5	1
University Hospital of North Durham – Darlington Memorial Hospital	374	22	*	*	9	1	*	*	0	0	35	2	17	1
University Hospitals Birmingham NHS Foundation Trust	479	31	42	3	9	1	0	0	*	*	13	1	123	8
University Hospitals Bristol NHS Foundation Trust	582	40	12	1	13	1	0	0	0	0	84	6	36	2
West Berkshire	320	43	0	0	*	*	0	0	0	0	24	3	74	10
West Suffolk NHS Foundation Trust	249	43	7	1	19	3	0	0	*	*	53	9	26	5
Wye Valley NHS Trust	10	1	0	0	0	0	0	0	*	*	552	65	*	*
Yeovil District Hospital	532	36	27	2	138	9	0	0	4	0	143	10	9	1
Overall (average)	**7,850**	**18**	**823**	**2**	**1,108**	**3**	**11**	**0**	**31**	**0**	**4,854**	**11**	**1,604**	**10**

Anti-osteoporosis medication included in this audit were: alendronate, risedronate, ibandronate, raloxifene, teriparatide, strontium, denosumab, zoledronate, systemic oestrogens, systemic oestrogen and progesterone, calcitriol and alphacalcidol. There were a few cases where more than one drug was submitted. To identify the recommended drug, a hierarchy was used to select the one drug: oral bisphosphonate > denosumab > zoledronate, then teriparatide or raloxifene or strontium or activated vitamin D or oestrogen therapy.

Table 14 **Proportion of patients having 12–16 week monitoring contact (of those prescribed anti-osteoporosis medication or referred for further clinical opinion or to their GP)**

FLS name	Number of patients eligible for monitoring			Percentage recorded with a monitoring assessment		
	All	Hip fracture	Non-hip fracture	All	Hip fracture	Non-hip fracture
Anglian Community Enterprise	34	*	33	*	*	*
Barking Havering and Redbridge University Hospitals NHS Trust	128	14	114	60	64	60
Barnet Hospital	158	3	155	84	100	84
Bradford Teaching Hospitals NHS Foundation Trust	31	*	29	0	*	0
Bromley Healthcare	235	11	224	82	55	83
Broomfield Hospital	521	78	443	0	0	0
Buckinghamshire Healthcare NHS Trust	260	201	59	0	0	0
Croydon University Hospital	88	10	78	0	0	0
Diana Princess of Wales Hospital	74	38	36	74	82	67
Dorset County Hospital	469	173	296	14	20	11
East Lancashire Hospitals NHS Trust	165	9	156	48	*	50
East Surrey Hospital	171	13	158	0	0	0
Guy's and St Thomas' NHS Foundation Trust	76	*	73	*	*	*
King's College Hospital – Denmark Hill Site	*	0	*	*		*
Medway NHS Foundation Trust	134	27	107	*	0	*
Milton Keynes University Hospital Foundation Trust	37	7	30	62	57	63
Morriston Hospital	474	157	317	49	47	50
Musgrove Park Hospital	929	322	607	60	66	56
North Bristol NHS Trust	832	15	817	55	33	56
North Tees and Hartlepool NHS Foundation Trust	708	149	559	0	0	0
North West Anglia Foundation Trust	245	27	218	*	*	*
Nottingham City Care Partnership	47	21	26	21	33	12
Nottingham University Hospitals	566	320	246	0	0	0
Oxfordshire Fracture Prevention Service	1381	458	923	56	69	50
Poole Hospital NHS Foundation Trust	16	*	14	*	*	*
Portsmouth and Southeast Hampshire FLS	163	33	130	*	0	*
Queen Elizabeth Hospital Lewisham	157	29	128	*	0	*
Royal Derby Hospital	158	40	118	5	8	4

FLS name	Number of patients eligible for monitoring			Percentage recorded with a monitoring assessment		
	All	Hip fracture	Non-hip fracture	All	Hip fracture	Non-hip fracture
Royal Surrey County Hospital	197	16	181	55	63	55
Royal United Hospital						
Royal Wolverhampton NHS Trust	3	0	3	0		0
Salford Royal NHS Foundation Trust	32	5	27	75	80	74
Salisbury NHS Foundation Trust	361	169	192	57	65	49
Sandwell and West Birmingham Hospitals NHS Trust	18	3	15	0	0	0
St George's Hospital	585	96	489	58	69	55
Sunderland Royal Hospital	586	234	352	55	56	55
The Haywood Hospital	571	83	488	66	58	67
The Hillingdon Hospitals NHS Foundation Trust	44	9	35	45	*	54
The Ipswich Hospital NHS Trust	847	306	541	24	11	31
The Rotherham NHS Foundation Trust	147	12	135	0	0	0
United Lincolnshire Hospitals NHS Trust						
University Hospital Lewisham	142	48	94	63	73	57
University Hospital Llandough	255	5	250	49	*	50
University Hospital of North Durham – Darlington Memorial Hospital	429	152	277	67	64	68
University Hospitals Birmingham NHS Foundation Trust	649	228	421	65	50	73
University Hospitals Bristol NHS Foundation Trust	723	279	444	35	8	52
West Berkshire FLS	413	11	402	64	73	64
West Suffolk NHS Foundation Trust	356	99	257	81	88	78
Wye Valley NHS Trust	563	11	552	*	0	*
Yeovil District Hospital	814	222	592	72	83	67
Overall (national)	**15,993**	**4,149**	**11,844**	**41**	**40**	**42**

Table 15 **Proportion of patients prescribed anti-osteoporosis medication (or referred for further clinical opinion or to their GP) for whom adherence was confirmed at 12 months after their fracture**

FLS name	Number of patients eligible for monitoring n	Number confirming adherence at 12 months n	Percentage confirming adherence at 12 months %
Anglian Community Enterprise	18	0	0
Barking Havering and Redbridge University Hospitals NHS Trust	53	6	11
Barnet Hospital	89	36	40
Bradford Teaching Hospitals NHS Foundation Trust			
Bromley Healthcare	122	0	0
Broomfield Hospital	290	0	0
Buckinghamshire Healthcare NHS Trust	38	0	0
Croydon University Hospital	21	0	0
Diana Princess of Wales Hospital			
Dorset County Hospital	228	35	15
East Lancashire Hospitals NHS Trust	63	18	29
East Surrey Hospital	80	*	*
Guy's and St Thomas' NHS Foundation Trust	22	0	0
King's College Hospital – Denmark Hill Site	1	0	0
Medway NHS Foundation Trust	77	0	0
Milton Keynes University Hospital Foundation Trust	22	7	32
Morriston Hospital	25	0	0
Musgrove Park Hospital	480	180	38
North Bristol NHS Trust	445	4	1
North Tees and Hartlepool NHS Foundation Trust	365	15	4
North West Anglia NHS Foundation Trust	137	0	0
Nottingham City Care Partnership	27	0	0
Nottingham University Hospitals	359	0	0
Oxfordshire Fracture Prevention Service	614	187	30
Poole Hospital NHS Foundation Trust			
Portsmouth and Southeast Hampshire FLS	30	0	0
Queen Elizabeth Hospital Lewisham	112	0	0
Royal Derby Hospital	6	0	0
Royal Surrey County Hospital	94	0	0
Royal United Bath			

FLS name	Number of patients eligible for monitoring n	Number confirming adherence at 12 months n	Percentage confirming adherence at 12 months %
Royal Wolverhampton NHS Trust	3	0	0
Salford Royal NHS Foundation Trust	22	0	0
Salisbury NHS Foundation Trust	176	29	16
Sandwell and West Birmingham Hospitals NHS Trust	8	0	0
St George's Hospital	296	0	0
Sunderland Royal Hospital	274	0	0
The Haywood Hospital	278	60	22
The Hillingdon Hospitals NHS Foundation Trust	22	12	55
The Ipswich Hospital NHS Trust	419	54	13
The Rotherham NHS Foundation Trust	68	0	0
United Lincolnshire Hospitals NHS Trust			
University Hospital Lewisham	81	30	37
University Hospital Llandough	110	*	*
University Hospital of North Durham and Darlington Memorial Hospital	270	136	50
University Hospitals Birmingham NHS Foundation Trust	241	3	1
University Hospitals Bristol NHS Foundation Trust	297	8	3
United Lincolnshire Hospitals NHS Trust	215	99	46
West Suffolk NHS Foundation Trust	164	47	29
Wye Valley NHS Trust	223	0	0
Yeovil District Hospital	429	54	13
Overall (average)	**7,414**	**1,023**	**14**

Case study – University Hospitals Birmingham NHS Foundation Trust

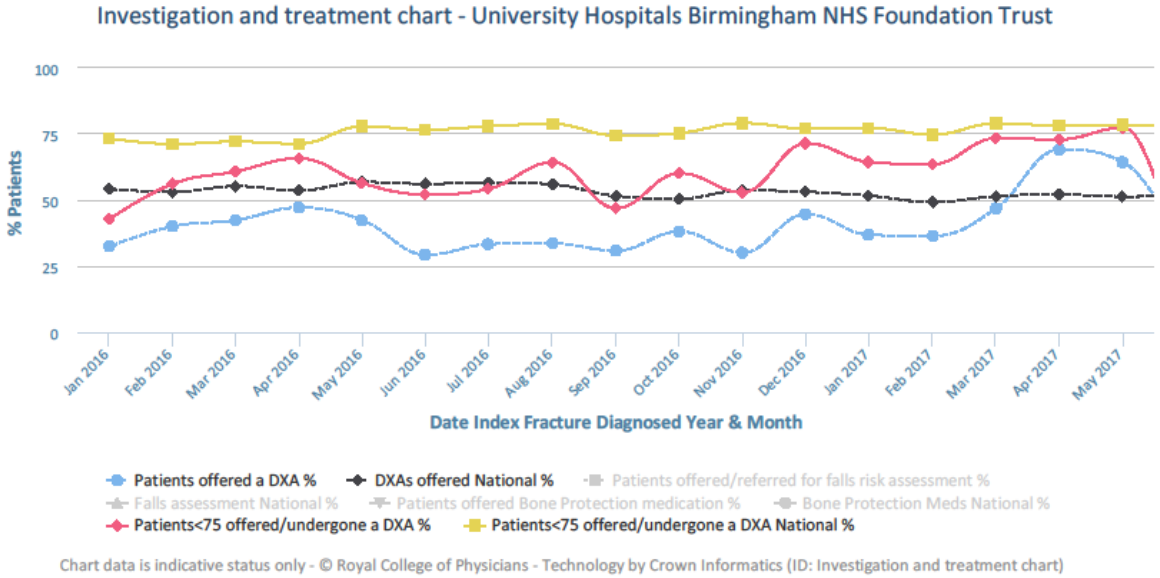
The Queen Elizabeth Hospital site established an FLS in May 2014. The service was developed and implemented to achieve the NOS clinical standards. The Queen Elizabeth Hospital site took a phased approach and decided to develop vertebral fracture pathways after the FLS service was established. The service would identify all patients over 50 years of age who had a fragility fracture with the exclusion of vertebral fractures. The service consisted of a lead nurse, two band 6 nurses (2.0 WTE), 0.5 (part-time) administration support and a lead consultant, and other supporting teams included the DXA team, endocrine nurse specialists, the trust contract monitoring team, fracture clinic staff, and the trauma and orthogeriatric teams.

The two band 6 nurses underwent significant training and development during their induction and they helped to develop the day-to-day running of the service. Patients were identified by a variety of methods, using clinical portal records for fracture clinic patients, trauma lists and liaison with trauma teams; a referral pathway was set up for patients on non-trauma wards; and fracture prevention was included as part of the inpatient falls risk assessment and intervention plan. This enabled the team to see the patients while they were still an inpatient and for the fracture clinic patients to see them jointly with the trauma teams as part of their trauma consultation.

The team developed a simple patient questionnaire to be used in the fracture clinic and a comprehensive four-page assessment form to be used in both the fracture clinic and the inpatient wards. The patient assessment tool included the standards required by the NOS. The team also developed patient template letters for GPs (patients were copied into letters), telephone consultation proformas for 4 and 12 months after the fracture and patient satisfaction questionnaires that are completed quarterly.

The lead nurse, lead consultant and trust contract teams had negotiated with the commissioning CCG the KPIs and the frequency of the reporting of FLS performance. To meet the requirements of capturing patient, clinical and service performance standards, the team developed an Excel spreadsheet that incorporated the requirements for data. As an example, this would include patient demographic details; date of assessment; FRAX and FRAT score; blood results; DXA results; decision about bone treatment; referrals to prevent future falls; telephone follow-up at 4 and 12 months; and patient satisfaction. This enabled the team to audit against standards and to demonstrate a high level of service quality and service delivery.

Fig 5 **University Hospitals Birmingham NHS Foundation Trust (example webtool run chart)**



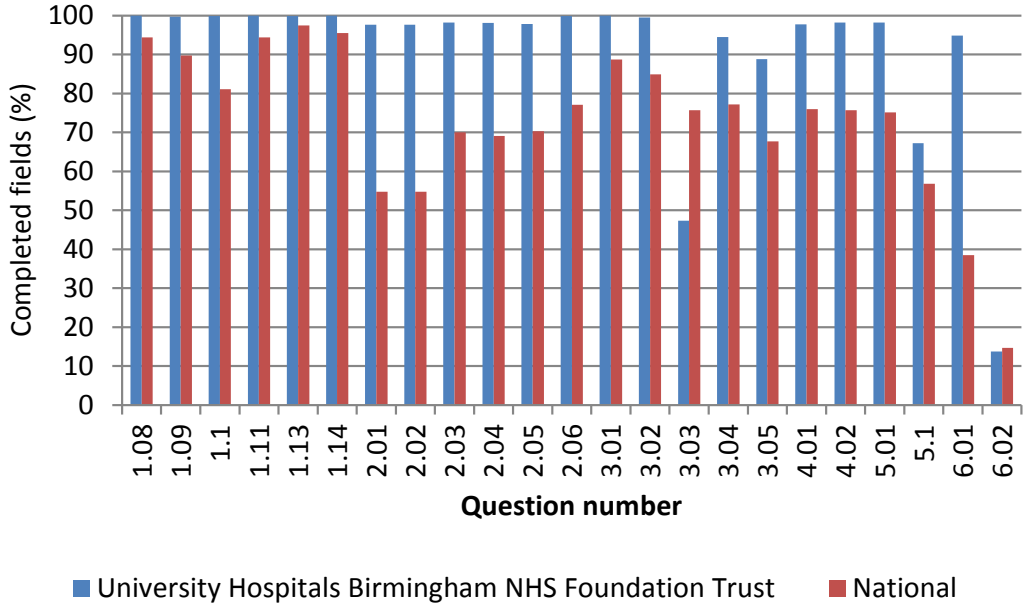
When the RCP developed the FLS-DB standards, the FLS did not perform well in some aspects, due to vocabulary differences in terms of how the Queen Elizabeth Hospital site information was collated compared with the FLS-DB. The team acknowledged that their database had to evolve to include the FLS-DB requirements. They contacted the National Osteoporosis Society (NOS) for support to enhance their existing database to capture the requirements for the FLS-DB, and the commissioning team at the NOS helped the team to include the FLS-DB requirements and automate and upload files from the overall patient data. The first enhanced Excel spreadsheet upload resulted in fatal as well as minor data errors. The team then worked with the NOS to rectify the data collection errors to improve the core data collection information and therefore reducing FLS-DB upload errors. We were fortunate to have an administration apprentice who had an excellent understanding of Excel spreadsheets, which helped with the development process.

As well as enhancing the Excel spreadsheet, the team understood that it was important to ensure that there was a rolling upload of patient data that would complete any missing data fields such as date of DXA, bone treatment decision and referrals. They allocated 1 day per month as the FLS-DB upload day: the team therefore worked towards having an up-to-date dataset to upload on this day.

Unfortunately, staff resource issues in both clinical and administration roles have meant that the FLS was reduced until staff were recruited to the team. As a result, the amount of submitted data has reduced; however, a complete dataset is available for those patients who were seen by the FLS. This is demonstrated in Fig 6 with date of DXA (question 3.03) and date of first follow-up (question 6.02).

The lead nurse for the team is confident that once the FLS is fully staffed, it will deliver for all patients and will develop a spinal FLS pathway.

Fig 6 **Data completeness: Queen Elizabeth Birmingham (QEB) vs national**



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Appendices

Appendix A – Participating FLSs

Table 16 **FLSs submitting patient data to the FLS-DB**

FLS name	Trust or local health board
Anglian Community Enterprise	Anglian Community Enterprise (ACE)
Barking Havering and Redbridge University Hospitals NHS Trust	Barking Havering and Redbridge University Hospitals NHS Trust
Barnet Hospital	Royal Free London NHS Foundation Trust
Bradford Teaching Hospitals NHS Foundation Trust	Bradford Teaching Hospitals NHS Foundation Trust
Bromley Healthcare	Bromley Healthcare
Broomfield Hospital	Mid Essex Hospital Services NHS Trust
Buckinghamshire Healthcare NHS Trust	Buckinghamshire Healthcare NHS Trust
Croydon University Hospital	Croydon Health Services NHS Trust
Diana Princess of Wales Hospital	Northern Lincolnshire and Goole Hospitals NHS Foundation Trust
Dorset County Hospital	Dorset County Hospital NHS Foundation Trust
East Lancashire Hospitals NHS Trust	East Lancashire Hospitals NHS Trust
East Surrey Hospital	Surrey and Sussex Healthcare NHS Trust
Guy's and St Thomas' NHS Foundation Trust	Guy's and St Thomas' NHS Foundation Trust
King's College Hospital – Denmark Hill Site	King's College Hospital NHS Foundation Trust
Medway NHS Foundation Trust	Medway NHS Foundation Trust
Milton Keynes University Hospital Foundation Trust	Milton Keynes University Hospital Foundation Trust
Morriston Hospital	Abertawe Bro Morgannwg University Health Board
Musgrove Park Hospital	Taunton and Somerset NHS Foundation Trust
North Bristol NHS Trust	North Bristol NHS Trust
North Tees and Hartlepool NHS Foundation Trust	North Tees and Hartlepool NHS Foundation Trust
Nottingham CityCare Partnership	Nottingham CityCare Partnership
Nottingham University Hospitals	Nottingham University Hospitals NHS Trust
North West Anglia NHS Foundation Trust	North West Anglia NHS Foundation Trust
Oxfordshire Fracture Prevention Service	Oxford University Hospitals NHS Foundation Trust
Poole Hospital NHS Foundation Trust	Poole Hospital NHS Foundation Trust
Portsmouth and Southeast Hampshire FLS	Portsmouth Hospitals NHS Trust
Queen Elizabeth Hospital Lewisham	Lewisham and Greenwich NHS Trust
Royal Derby Hospital	Royal Derby Teaching Hospitals NHS Foundation Trust
Royal Surrey County Hospital	Royal Surrey County Hospital NHS Foundation Trust

FLS name	Trust or local health board
Royal United Hospital	Royal United Hospitals Bath NHS Foundation Trust
Royal Wolverhampton NHS Trust	Royal Wolverhampton NHS Trust
Salford Royal NHS Foundation Trust	Salford Royal NHS Foundation Trust
Salisbury NHS Foundation Trust	Salisbury NHS Foundation Trust
Sandwell and West Birmingham Hospitals NHS Trust	Sandwell and West Birmingham Hospitals NHS Trust
St George's Hospital	St George's University Hospitals NHS Foundation Trust
Sunderland Royal Hospital	City Hospitals Sunderland NHS Foundation Trust
The Haywood Hospital	Staffordshire and Stoke-on-Trent Partnership NHS Trust
The Hillingdon Hospitals NHS Foundation Trust	The Hillingdon Hospitals NHS Foundation Trust
The Ipswich Hospital NHS Trust	The Ipswich Hospital NHS Trust
The Rotherham NHS Foundation Trust	The Rotherham NHS Foundation Trust
United Lincolnshire Hospitals NHS Trust	United Lincolnshire Hospitals NHS Trust
University Hospital Lewisham	Lewisham and Greenwich NHS Trust
University Hospital Llandough	Cardiff and Vale University Health Board
University Hospital of North Durham and Darlington Memorial Hospital	County Durham and Darlington NHS Foundation Trust
University Hospitals Birmingham NHS Foundation Trust	University Hospitals Birmingham NHS Foundation Trust
University Hospitals Bristol NHS Foundation Trust	University Hospitals Bristol NHS Foundation Trust
West Berkshire FLS	Royal Berkshire NHS Foundation Trust
West Suffolk NHS Foundation Trust	West Suffolk NHS Foundation Trust
Wye Valley NHS Trust	Wye Valley NHS Trust
Yeovil District Hospital	Yeovil District Hospital NHS Foundation Trust

Appendix B – Non-participating trusts and organisations

Table 17 **NHS trusts and organisations where the quality of their FLS meant that it could not be audited due to non-participation in the FLS-DB**

Sites that are not in the patient report				
*	Aintree University Hospital NHS Foundation Trust			East and North Hertfordshire NHS Trust
	Airedale NHS Foundation Trust			East Cheshire NHS Trust
*	Aneurin Bevan University Health Board		*	East Kent Hospitals University NHS Foundation Trust
*	Ashford and St Peter's Hospitals NHS Foundation Trust			East Sussex Healthcare NHS Trust
	Barnsley Hospital NHS Foundation Trust		*	Epsom and St Helier University Hospitals NHS Trust
	Barts Health NHS Trust			Frimley Health NHS Foundation Trust
**	Basildon and Thurrock University Hospitals NHS Foundation Trust			Gateshead Health NHS Foundation Trust
	Bedford Hospital NHS Trust			George Eliot Hospital NHS Trust
*	Betsi Cadwaladr University Local Health Board		*	Gloucestershire Care Services NHS Trust
	Blackpool Teaching Hospitals NHS Foundation Trust			Gloucestershire Hospitals NHS Foundation Trust
	Bolton NHS Foundation Trust		**	Great Western Hospitals NHS Foundation Trust
*	Bone Protection Service, NHS Vale of York CCG			Hampshire Hospitals NHS Foundation Trust
	Brighton and Sussex University Hospitals NHS Trust		**	Harrogate and District NHS Foundation Trust
*	Burton Hospitals NHS Foundation Trust			Heart of England NHS Foundation Trust
	Calderdale and Huddersfield NHS Foundation Trust			Hinchingbrooke Health Care NHS Trust
EXCL	Cambridge University Hospitals NHS Foundation Trust			Homerton University Hospital NHS Foundation Trust
	Central Manchester University Hospitals NHS Foundation Trust			Hull and East Yorkshire Hospitals NHS Trust
	Chelsea and Westminster Hospital NHS Foundation Trust			Hywel Dda University Health Board
*	Chesterfield Royal Hospital NHS Foundation Trust		**	Imperial College Healthcare NHS Trust
	Colchester Hospital University NHS Foundation Trust			Isle of Wight NHS Trust

	Countess of Chester Hospital NHS Foundation Trust			James Paget University Hospitals NHS Foundation Trust
*	Crawley CCG FLS West Sussex		**	Kettering General Hospital NHS Foundation Trust
**	Cwm Taf University Health Board			Kingston Hospital NHS Foundation Trust
**	Dartford and Gravesham NHS Trust		**	Lancashire Teaching Hospitals NHS Foundation Trust
	Doncaster and Bassetlaw Hospitals NHS Foundation Trust			South Tees Hospitals NHS Foundation Trust
**	Leeds Teaching Hospitals NHS Trust		*	South Tyneside NHS Foundation Trust
	London North West Healthcare NHS Trust		**	South Warwickshire NHS Foundation Trust
**	Luton and Dunstable University Hospital NHS Foundation Trust		**	Southend University Hospital NHS Foundation Trust
**	Maidstone and Tunbridge Wells NHS Trust			Southport and Ormskirk Hospital NHS Trust
	Mid Cheshire Hospitals NHS Foundation Trust			St Helens and Knowsley Hospitals NHS Trust
**	Mid Yorkshire Hospitals NHS Trust		**	Stockport NHS Foundation Trust
*	Newcastle upon Tyne Hospitals NHS Foundation Trust		**	Sussex Community NHS Foundation Trust
**	Norfolk and Norwich University Hospitals NHS Foundation Trust		*	Tameside Hospital NHS Foundation Trust
	North Cumbria University Hospitals NHS Trust			The Dudley Group NHS Foundation Trust
EXCL	North Middlesex University Hospital NHS Trust			The Newcastle Upon Tyne Hospitals NHS Foundation Trust
**	Northampton General Hospital NHS Trust			The Princess Alexandra Hospital NHS Trust
*	Northern Devon Healthcare NHS Trust			The Queen Elizabeth Hospital, King's Lynn, NHS Foundation Trust
*	Northern Lincolnshire and Goole NHS Foundation Trust		**	The Royal Bournemouth and Christchurch Hospitals NHS Foundation Trust
	Northumbria Healthcare NHS Foundation Trust			The Whittington Health NHS Trust
**	Pennine Acute Hospitals NHS Trust		**	University College London Hospitals NHS Foundation Trust
**	Plymouth Hospitals NHS Trust			University Hospital of South Manchester NHS Foundation Trust

	Royal Cornwall Hospitals NHS Trust			University Hospital Southampton NHS Foundation Trust
**	Royal Devon and Exeter NHS Foundation Trust		**	University Hospitals Coventry and Warwickshire NHS Trust
	Royal Liverpool and Broadgreen University Hospitals NHS Trust			University Hospitals of Leicester NHS Trust
**	Sheffield Teaching Hospitals NHS Foundation Trust		**	University Hospitals of Morecambe Bay NHS Foundation Trust
	Sherwood Forest Hospitals NHS Foundation Trust		**	University Hospitals of North Midlands NHS Trust
	Shrewsbury and Telford Hospital NHS Trust			Walsall Healthcare NHS Trust
	Torbay and South Devon Healthcare NHS Foundation Trust			
	Warrington and Halton Hospitals NHS Foundation Trust			
	West Hertfordshire Hospitals NHS Trust			
	West Middlesex University Hospital NHS Trust			
	Western Sussex Hospitals NHS Foundation Trust			
*	Weston Area Health NHS Trust			
	Wirral University Teaching Hospital NHS Foundation Trust			
	Worcestershire Acute Hospitals NHS Trust			
	Wrightington, Wigan and Leigh NHS Foundation Trust			
	York Teaching Hospital NHS Foundation Trust			

Note: Non-participation in the audit may be because there is no commissioned FLS or there is a commissioned FLS but it did not participate in the audit.

EXCL = North Middlesex University Hospitals NHS Trust and Cambridge University Hospitals NHS Foundation Trust submitted fewer than 50 cases.

*Sites with an FLS that has submitted facilities audit data, but not patient audit data.

**Sites that submitted facilities audit data, but that do not have an FLS.

Appendix C – Structure and governance

FLS-DB advisory group

Jonathan Bayly, visiting professor of osteoporosis and falls management, Royal College of General Practitioners
Kate Bennett, physiotherapist, AGILE and Chartered Society of Physiotherapy
Chris Boulton, FFFAP programme manager
Rachel Bradley, consultant in care of the elderly, British Geriatrics Society
Will Carr, service development project manager, National Osteoporosis Society
Gavin Clunie, consultant rheumatologist and metabolic bone physician, British Society for Rheumatology
Clare Cockill, osteoporosis and fracture liaison nurse specialist, Royal College of Nursing
Frances Dockery, consultant physician, British Geriatrics Society
Neil Gittoes, consultant endocrinologist and associate medical director, Society for Endocrinology
Celia Gregson, consultant senior lecturer and Arthritis Research UK clinician scientist and honorary consultant orthogeriatrician, University of Bristol
Catherine Gallagher, FLS-DB and Falls project coordinator
Xavier Griffin, consultant orthopaedic trauma surgeon, British Orthopaedic Association
Debbie Jannaway, consultant nurse for falls and osteoporosis and patient safety, Royal College of Nursing
M Kassim Javaid, associate professor in metabolic bone disease, Oxford NIHR Musculoskeletal Biomedical Research Unit (BRU), University of Oxford and FLS-DB clinical lead
Tim Jones, commissioning adviser, National Osteoporosis Society
Finbarr Martin, FFFAP programme chair and clinical lead
Iona Price, Patient and Carer Network, RCP
Jo Sayer, development project manager, National Osteoporosis Society
Alison Smith, patient representative, National Osteoporosis Society
David Stephens, locum and portfolio GP, Royal College of General Practitioners
Naomi Vasilakis, FLS-DB and Falls project manager

FFFAP board

Chris Boulton, FFFAP programme manager, RCP
Tim Chesser, British Orthopaedic Association
David Cromwell, Clinical Effectiveness Unit, Royal College of Surgeons of England
M Kassim Javaid, FLS-DB clinical lead
Antony Johansen, NHFD clinical lead, orthogeriatric medicine
Meghan Liddicoat, PHFSA project manager, RCP
Bill Majrowski, NHFD project manager, RCP
Finbarr Martin, FFFAP programme chair and clinical lead
Shelagh O'Riordan, Falls workstream clinical lead
Anne Thurston, National Osteoporosis Society
Naomi Vasilakis, FLS-DB and Falls project manager
Rob Wakeman, NHFD clinical lead, orthopaedic surgery
Ian Woolhouse, clinical director, accreditation and audit, RCP
Jane Youde, British Geriatrics Society

This report provides the second benchmark for the performance of FLSs at the patient level and demonstrates the step change in engagement and quality improvement in England and Wales.

Falls and Fragility Fracture Audit Programme (FFFAP)

A suite of linked national clinical audits, driving improvements in care; managed by the Royal College of Physicians

- **Falls Pathway Workstream**
- **Fracture Liaison Service Database (FLS-DB)**
- **National Hip Fracture Database (NHFD)**

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