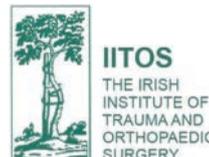


NATIONAL CLINICAL PROGRAMME FOR TRAUMA & ORTHOPAEDIC SURGERY

IRISH FRACTURE LIAISON SERVICE DATABASE

FIRST REPORT



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THE NATIONAL CLINICAL PROGRAMME FOR TRAUMA AND ORTHOPAEDIC SURGERY (NCPTOS)

The National Clinical Programme for Trauma and Orthopaedic Surgery (NCPTOS) was established in 2011 to improve and standardise the quality of care nationally for all orthopaedic patients. The delivery of cost-effective, evidence-based healthcare is in the best interests of all stakeholders.

ITOS – the Irish Institute of Trauma and Orthopaedic Surgery is the clinical advisory body to the programme.

In 2015, the programme published its model of care which highlighted the need for the establishment of a national fracture liaison service.

In 2018, the NCPTOS were members of the trauma steering and working groups which developed “A Trauma System for Ireland”. Recommendation 15 under prevention urges the HSE to develop a comprehensive national fracture liaison service. This has led to the establishment of the current steering group under the governance of the programme and with the support of the National Clinical Advisor and Group Lead for acute operations.

The programme continues to work collaboratively with all stakeholders to ensure optimal utilisation of all available resources nationally and to advocate for additional resources as required to ensure that patients requiring orthopaedic care receive this in a safe, effective and timely manner.

THE ROYAL COLLEGE OF SURGEONS IN IRELAND

The Royal College of Surgeons in Ireland provides education and training in the fields of medicine and the health sciences at undergraduate and postgraduate level. The College has a strong international presence with Schools in Malaysia, Dubai and a University in Bahrain. RCSI also provides surgery and emergency medicine training in all recognised specialities and sub-specialities.

THE NATIONAL OFFICE FOR TRAUMA SERVICES

The National Office for Trauma Services has responsibility for implementing the recommendations of the Report of the Trauma Steering Group; A Trauma System for Ireland (2018). The Strategy recommends the establishment of an inclusive trauma system that will deliver high-end specialist services for the most severely injured patients on dedicated single hospital sites and will result in significant benefits to patients, including reduced death and disability following a traumatic accident in Ireland.

The Strategy also recommends for the HSE to develop a comprehensive Fracture Liaison Service to provide high quality, evidence-based care to those who suffer a fragility fracture with a focus on achieving the best outcomes for recovery, rehabilitation and secondary prevention of further fracture. The National Office for Trauma Services continues to work collaboratively with the National Clinical Programme for Trauma and Orthopaedic Surgery and other stakeholders to implement this recommendation.

AMGEN & UCB

This National Fracture Liaison Service Database (FLS-DB) report was produced following the provision of financial support to RCSI from UCB in the form of a grant and through a joint working agreement with Amgen.

CROWN INFORMATICS DESIGNS

Crown Informatics designs, develops and delivers innovative secure data collection systems for healthcare, social care, clinical audit and research purposes. We specialise in high quality, high performance data collection systems, featuring: rich dataset support, powerful data validation, real time reports, charts and dashboards.



**NATIONAL CLINICAL PROGRAMME
FOR TRAUMA & ORTHOPAEDIC SURGERY**

IRISH FRACTURE LIAISON SERVICE DATABASE

FIRST REPORT



FOREWORD



It gives me great pleasure to endorse and support this first report from the National Fracture Liaison Service Database. Ireland are only the second country behind the UK to publish such a report.

The development of a National Fracture Liaison Service is Recommendation 15 of the HSE's 2018 Report "A Trauma System for Ireland - Report of the Trauma Steering Group".

Recently published data from the 2019-2020 Major Trauma Audit demonstrates that 62% of major trauma resulted from a fall from a height of less than 2 metres, i.e. resulting from low force, from simple falls. Fractures are the main serious injury from these falls.

The development of a national FLS will over time reduce the number of patients who present with major trauma to our hospitals. A key tenant of an FLS is the early identification and management of those "at risk" of a subsequent fracture through clinical assessment, additional investigations when indicated and commencement of the appropriate treatment.

I recognise that this report highlights the gaps that currently exist in the national delivery of Fracture Liaison Services with 26% of the predicted fragility fractures being captured by eight sites. I am also aware that a recent facilities audit has demonstrated

"THE DEVELOPMENT OF A NATIONAL FLS WILL OVER TIME REDUCE THE NUMBER OF PATIENTS WHO PRESENT WITH MAJOR TRAUMA TO OUR HOSPITALS. A KEY TENANT OF AN FLS IS THE EARLY IDENTIFICATION AND MANAGEMENT OF THOSE "AT RISK" OF A SUBSEQUENT FRACTURE THROUGH CLINICAL ASSESSMENT"

that ten of the sixteen sites that manage trauma, report having some FLS in place, with the lack of investment being cited as the main constraint to service delivery. The recent appointment of eight FLS ANP's in the National Service Plan 2022 recognises the government's commitment to developing this service over time.

I would like to commend the clinical leadership of Professor Frances Dockery, Mr Aaron Glynn, National Clinical Leads for the Fracture Liaison Service Database and all the members of the National FLS Steering Committee in producing this report.



Dr Colm Henry
Chief Clinical Officer
HSE

FOREWORD



It is a pleasure to provide the foreword for this inaugural report on secondary fracture prevention by Fracture Liaison Services (FLSs) in Ireland. Across the globe, there is now robust evidence that ensuring all adults presenting with fragility fractures are assessed and managed

to improve their bone health reduces their risk of further fractures with significant benefits for patients, their families, the healthcare system and society.

Despite this, most patients with a broken bone are not flagged for bone health checks and falls management. Implementing FLSs from political and commissioning prioritisation is the first step, as the healthcare burden of fractures in Ireland is estimated to exceed €1 billion per year. However, FLSs often operate in complex healthcare systems, tracking patients through different hospital departments, community and primary care. This volatile, uncertain, complex and ambiguous environment challenges FLSs to deliver their expected benefits. Supporting FLSs to deliver their expected benefits requires bravery on the part of FLSs to critically examine their current performance and use that information to guide improvement in their local service delivery for patients. The power of the FLS-DB Ireland is in openly using data to inform service improvement and changes in key performance indicators over time.

“I COMMEND IRELAND ON BEING THE SECOND COUNTRY IN THE WORLD TO PUBLISH ITS NATIONAL FLS-DB PROGRAMME THAT MEASURES THE PERFORMANCE OF LOCAL FLSS IN AN OPEN AND TRANSPARENT REPORT”

I commend Ireland on being the second country in the world to publish its national FLS-DB programme that measures the performance of local FLSs in an open and transparent report. The report is encouraging, with 50% hospital engagement in the first year. The report describes variation between the eight participating FLSs across the Key Performance Indicators, presenting an opportunity for FLSs in Ireland to learn from each other and improve secondary fracture care for patient benefit. Critically, the report also gives clear recommendations for hospitals, clinicians, the Health Service Executive and the National Clinical Programme in Trauma and Orthopaedic Surgery (NCPTOS).

I want to thank key decision makers for supporting the audit, the Ireland FLS-DB team, and all the FLSs actively participating in this vital audit as a bold step to use local data to improve local care delivery for patient benefit.



MK Javid

Clinical Lead, Fracture Liaison Service Database for England and Wales, Royal College of Physicians, UK

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EXECUTIVE SUMMARY

This is the first report from the Irish Fracture Liaison Service (FLS) Database. This represents a significant milestone in that Ireland is only the second country globally to publish a national aggregated FLS report, after the UK, allowing an insight into fracture prevention treatment in Ireland, as well as how this care varies in different centres nationally. This report includes data gathered on all non-hip fragility fractures for the period 1st January to 31st December 2021.

The illness burden of osteoporotic fractures has been clearly established, which represent one of the commonest diseases in postmenopausal women and older men. There are at least 30,000 such fractures annually in Ireland (Kelly, 2008). These fractures are associated with a substantial reduction in both quality and quantity of life as well as enormous healthcare costs. In Ireland, it is estimated that ~ 300,000 people have osteoporosis. Ireland has one of the highest rates of hip fractures per head of population in Europe (Kanis, 2021). Many fractures are preventable with safe, simple, clinically- and cost-effective measures. The 2008 HSE Report “Strategy to Prevent Falls and Fractures in Ireland’s Ageing Population” suggested the cost of managing patients with osteoporotic fractures would be approximately €1billion in 2020 and this would likely double by 2030. The authors noted current statistics for this patient group are likely to reflect only ‘the tip of the iceberg’, because hospital coding only counts those patients admitted with their fracture, yet it is known from several local audits that there are at least the same number if not more, whose fracture is managed in either the outpatient or GP settings. Unfortunately, studies show a substantial gap exists between scientific evidence, best practice, and current clinical practice.



IN IRELAND, IT IS ESTIMATED THAT ~ 300,000 PEOPLE HAVE OSTEOPOROSIS. IRELAND HAS ONE OF THE HIGHEST RATES OF HIP FRACTURES PER HEAD OF POPULATION IN EUROPE (KANIS, 2021).

In February 2018, “A Trauma System for Ireland: Report of the Trauma Steering Group” recommended the establishment of a National Fracture Liaison Service. A FLS provides a service for patients presenting with fragility fractures, to identify those at risk of subsequent fracture through clinical assessment, additional investigations when necessary, and initiation of appropriate treatment in collaboration with other healthcare professionals (Javaid, 2015). The purpose of a FLS is to reduce recurrent fractures, particularly of the hip and spine, by ensuring delivery of effective secondary prevention following a first/index fracture. The benefits of this can be seen in patient outcomes, and in potential savings for the HSE and primary care settings.

A Fracture Liaison Service Database is essential to identify the number of patients at risk of fracture and to determine the extent to which these patients are being appropriately treated to reduce this risk. As demonstrated by the National Hip Fracture Databases in Ireland and other countries, standards of care are driven upwards by the audit and benchmarking process and are a cornerstone in the roll out of these systems of care (Walsh, 2021).

There is a campaign led by the International Osteoporosis Foundation (IOF) to roll out FLS globally given the clear evidence-base in existence for the benefits of FLS in reducing fracture numbers (Akesson, 2013).

There are sixteen hospitals managing trauma patients in Ireland, (although fragility fractures are also treated in primary care, private ambulatory trauma settings and local injury units). This first annual report describes the secondary fracture prevention received by patients aged 50 years and older who sustained a non-hip fragility fracture in 2021 and

Mr Paddy Kenny



who were managed in eight of the sixteen hospitals that receive trauma patients with fractures.

As highlighted in a facilities audit (Dockery, 2022) completed on Irish hospitals in 2019, currently FLS in Ireland falls far short in terms of its ability to capture and assess patients due to insufficient resourcing. Contemporaneously, the re-allocation of staffing during the Covid-19 pandemic and the HSE IT cyber-attack (May 2021) created additional impediments to services, so the current audit represents a considerable achievement by the eight hospitals that non-hip

AS HIGHLIGHTED IN A FACILITIES AUDIT (DOCKERY, 2022) COMPLETED ON IRISH HOSPITALS IN 2019, CURRENT FLS IN IRELAND FALLS FAR SHORT IN TERMS OF ITS ABILITY TO CAPTURE AND ASSESS PATIENTS DUE TO INSUFFICIENT RESOURCING

fragility fracture patients were captured through an online hospital portal in the face of these significant challenges.

These eight hospitals managed 1,631 hip fractures (44% of national total) in the calendar year 2021 according to the Irish Hip Fracture Database (IHFD). This contrasts with the 2019 facilities audit, where 10 FLS reported that they had identified and managed 55% of expected fracture numbers. Facilities audits may overestimate performance hence the importance of patient-level data, as we present in this report.

Data for non-hip fracture cases are more difficult to measure since there is no national outpatient electronic record or registry where many are managed, and vertebral fracture documentation for inpatients is poor. The UK FLS database estimates that for every hip fracture there are at least an additional four other fragility fracture types presenting clinically and uses this figure as the denominator for expected total fracture numbers per hospital or FLS local audit data (unpublished) from a number of Irish centres estimates this figure to be at least 1:5 if not 1:8, so a 1:5 is used rather than 1:4 ratio for estimated Hip: Non-hip fractures. Similarly vertebral fractures that present clinically are estimated at 1:1 vs. hip fracture numbers.

In this inaugural Fracture Liaison Service Database Report, based on this ratio the eight hospitals should have captured data on 8,155 non-hip fragility fractures. These hospitals with limited resources and in a challenging healthcare environment captured 26.4% (2,147) which for a first national database is significant and is a benchmark against which future improvements can be measured.

The FLS Steering Group welcomes the appointment during 2022 of eight Advanced Nurse Practitioners (ANP's) to deliver FLS through funding from the HSE via the Office of the Nursing and Midwifery Services Director (ONMSD).

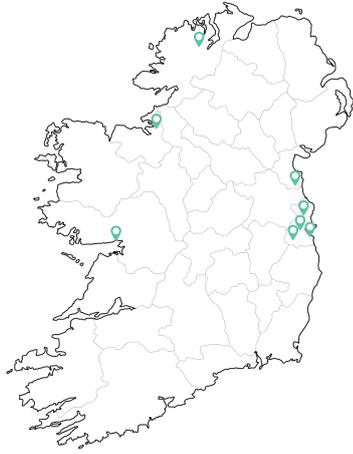
KEY FINDINGS

KEY FINDINGS FROM THE FLS DATABASE 2021

- 8 of the existing 16 hospitals managing trauma patients participated in this audit.
- In 2021, a total of 2,147 non-hip fragility fractures were identified (1,732 Females (81%), 415 (19%) males), representing 26.4% of the expected number.
- The median age was 71 years [range 50-97] in males and 70 years [range 50-100] in females.
- 1042 (48.5%) of patients identified were admitted to hospital to manage their fracture and 1.7% of patients sustained their fracture whilst already an inpatient.
- The most common sites of fracture (hip fractures excluded from this database) were:
 - Forearm 36%
 - Spine 22%,
 - Humerus 14%,
 - Lower Limb 16%,
 - Other 12%
- 25% of patients reported having had a prior fracture, of whom 38% were recorded as being on osteoporosis medication.
- Only 29% of expected vertebral fracture numbers were captured on the database
- A 4-month follow up call took place in just 31.6% of patients who had started or were expected to start osteoporosis treatment.
- Of those followed up at 16 weeks, 18% of patients who were deemed in need of osteoporosis treatment were confirmed as having commenced treatment 4 months after their fracture.
- Only 1 FLS service could confirm that a very small number of patients had started a strength & balance exercise programme for falls prevention despite it being a recommended intervention.

KEY HIGHLIGHTS

FROM THE **FLS DATABASE 2021**



8

8 of the 16 existing hospitals managing trauma patients participated



NON-HIP FRAGILITY FRACTURES IN 2021



1,732
(81%)
FEMALE

MEDIAN AGE

70
YEARS

[range 50-100]



415
(19%)
MALE

MEDIAN AGE

71
YEARS

[range 50-97]

ONLY 26%
of the expected number were identified



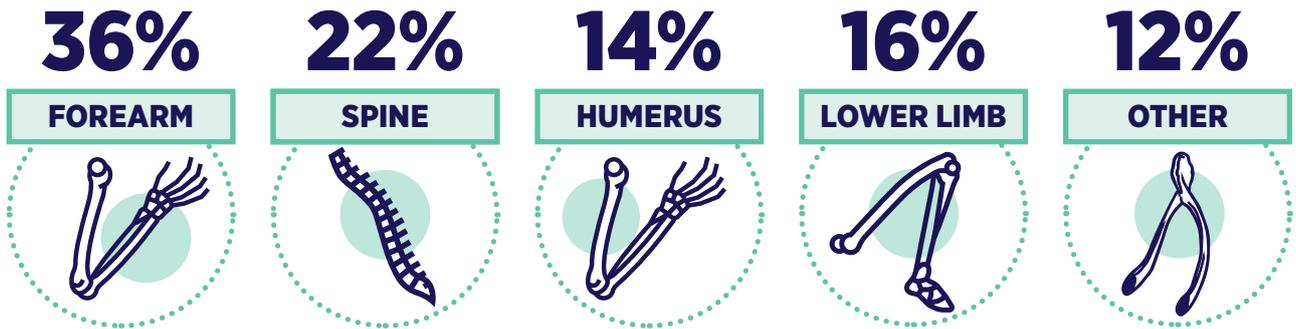
1.7%

of patients sustained their fracture whilst already an inpatient

KEY HIGHLIGHTS

FROM THE **FLS DATABASE 2021**

THE MOST COMMON SITES OF FRACTURE (EXCLUDING HIP FRACTURES) FROM THIS DATABASE WERE:



1,042 (48.5%)
of patients
were admitted
to hospital



42%

were recommended
osteoporosis treatment
of whom just 18%
confirmed starting it
by 4 months



KEY RECOMMENDATIONS

RECOMMENDATIONS FOR HOSPITALS/CLINICIANS

- Hospitals that currently do not have a FLS or are not contributing to the FLS Database need to establish same to improve patient care which will ultimately reduce demands on acute services through reduced fragility fracture numbers.
- All FLS should review how they are capturing fragility fractures, to ensure equitable service provision to a greater number of fragility fracture patients.

RECOMMENDATIONS FOR THE HEALTH SERVICE EXECUTIVE

- The HSE in conjunction with the Department of Health needs to continue to support the work of all stakeholders in the implementation of Recommendation 15 of “A Trauma System for Ireland” (2018) and the establishment of a national FLS. This can be done by incorporating data from all 16 hospitals which manage patients with trauma.
- The HSE should ensure the long-term management and funding of the FLS Database is secured.

RECOMMENDATIONS FOR NATIONAL CLINICAL PROGRAMME FOR TRAUMA AND ORTHOPAEDIC SURGERY

- NCPTOS should continue to advocate for adequate resourcing of a national FLS and database thus improving patient outcomes and quality of life.

CAPTURING PATIENTS' PERSPECTIVES



My name is Sandra Daly I am 68 years of age and working as a Clerical Officer for the past 22 years at Tallaght University Hospital. My health has been good over the past number of years and for this I am grateful. However on the 14th May 2019

I suffered a major trauma that changed my world as I knew it. That day started off like most others with my only worry of getting a parking spot at work, which I did, so all was looking good. However when heading home that evening things changed for the worst as I was leaving work. I suddenly tripped over a floor mat, falling to the ground. I knew when it happened that I was in trouble. I remember my friend assisting me up and walking me to the Emergency Department. I sustained a proximal humerus fracture in my right shoulder from this simple fall. I had to be admitted that night for surgery on my shoulder the following morning. After 2 days in hospital I was discharged home for follow up in Trauma & Orthopaedic outpatients and physiotherapy. It was like I was in another person's life for the next few weeks, unable to drive or do such things that were previously simple tasks like dressing, washing myself; even brushing my hair or teeth were a major struggle.

David Askin coordinates the Fracture Liaison Service (FLS) at Tallaght University Hospital and identified me shortly after this fracture. I was so grateful to David for the help, support and advice he offered. A bone density scan was arranged at Tallaght University Hospital, identifying that I had

osteoporosis and my bones were considered fragile putting me at higher risk of another fracture in the future. David coordinated further investigations, discussing results with Rheumatology colleagues and immediately commenced me on a course of injections for two years. This treatment is to improve my bone density and lower my future fracture risk. I was so grateful for the intervention by the Fracture Liaison Service.

At the time I didn't feel privileged as I thought services like this are available nationwide for all who sustain low trauma fractures. How wrong was I to discover when I was asked to join as a patient representative on the Fracture Liaison Steering Group. I soon discovered the service I was privileged to attend was only available in a few hospitals in Ireland. I was delighted to be invited to the steering group in the hope that my story shows how my recovery was helped by the FLS service. I had no idea my bones were so fragile and that I had a higher risk of fracture going forward. The FLS informed me of my risk and intervened with treatment and information to lower my future fracture risk. A person's recovery from an injury such as mine should not be determined by where they live – this service should be available to everyone.

My message to those in power would be to remember that not spending the money on such services as the FLS only leads to more costs down the line, so as they saying goes, spend a penny today saves pounds tomorrow!!

I am hoping that by being a patient representative and telling my story it may help bring the message to those who have the power to change things and that ALL patients in the future will be as lucky as I was and have this service irrespective of where they live.

“MY MESSAGE TO THOSE IN POWER WOULD BE TO REMEMBER THAT NOT SPENDING THE MONEY ON SUCH SERVICES AS THE FLS ONLY LEADS TO MORE COSTS DOWN THE LINE, SO AS THEY SAYING GOES, SPEND A PENNY TODAY SAVES POUNDS TOMORROW!!”

CHAPTER 1 INTRODUCTION

What is a Fracture Liaison Service?

A Fracture Liaison Service (FLS) is a system of healthcare whereby people who have suffered a fracture resulting from a low level of trauma (termed 'fragility fracture') are identified proactively, assessed, treated and monitored for osteoporosis and falls risk.

FLS represents part of a comprehensive osteoporosis service which often includes primary prevention, assessment and management of complex conditions including investigations such as DXA scans. FLS can be considered a 'secondary prevention' service, provided to those following an initial fragility fracture, and addresses issues such as balance, muscle strength and falls risk reduction.

FLS are proven to reduce future fracture risk and are cost-effective services that have been adopted globally to help tackle the burden of fragility fractures in an ageing population. The IOF have established evidence-based standards for all fragility fracture patients which are applicable worldwide and provide support and a framework for the development and audit of FLS programmes.

“A FRACTURE LIAISON SERVICE (FLS) IS A SYSTEM OF HEALTHCARE WHEREBY PEOPLE WHO HAVE SUFFERED A FRACTURE RESULTING FROM A LOW LEVEL OF TRAUMA (TERMED ‘FRAGILITY FRACTURE’) ARE IDENTIFIED PROACTIVELY, ASSESSED, TREATED AND MONITORED FOR OSTEOPOROSIS AND FALLS RISK.”

What are Osteoporosis and Fragility Fractures?

Osteoporosis is characterised by reductions in bone mineral density and quality, leading to disruption of the normal bone architecture, increased bone fragility and greater propensity to fracture.

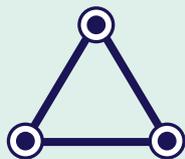
Osteoporosis is extremely common and affects approximately 300,000 people in Ireland, resulting in more than 30,000 fragility fractures every year. (Irish Osteoporosis Society, 2022)

Osteoporosis is often described as a silent disease, as most people do not know that they have the condition until they suffer the pain of a fracture, most commonly of the forearm, hip or spine. These fractures, termed fragility fractures, usually result from relatively minor injuries, including simple falls, twists and turns, and occasionally occur spontaneously without any degree of force.

A diagnosis of osteoporosis can be made in the appropriate clinical setting by measuring bone mineral density (BMD) using DXA. It can also be diagnosed in the setting of certain fragility fractures regardless of BMD, such as spine or hip fracture, these being the hallmark of osteoporosis. The International Society for Clinical Densitometry has established standards (ISCD, 2021) for who should have a DXA and how the test should be performed, reported and interpreted. Not everyone with osteoporosis goes on to break a bone, but their risk is greatly increased compared to the rest of the population

Numerous studies globally including in Ireland show that the majority of men and women who suffer a fragility fracture are not diagnosed with, assessed for, or given appropriate therapy for osteoporosis, termed 'the treatment gap' (Walsh 2021). In Ireland it is estimated that only €37.7 million of €464.3 million in 2019 was spent on fracture prevention i.e. assessment and treatment following a first fragility fracture. In some countries such as Sweden, osteoporosis is deemed the third leading cause of death in older adults after cardiovascular disease and dementia (Kanis, 2021).

The Key Facts



A common disease

It is estimated that worldwide, a fragility fracture occurs every three seconds



One fracture leads to another

Having suffered a prior fragility fracture almost doubles a patient's future fracture risk



Fracture signs are warning signs

Half of patients presenting with hip fractures have suffered a prior fracture



We fail to 'capture' the first fracture

The majority of fragility patients are neither assessed, nor treated by their health care system to reduce fracture risk



The care gap

To achieve a significant reduction in future rates and resulting healthcare costs, healthcare systems must target those patients who have already suffered a fracture, as they are the ones at highest risk for future fractures

FIGURE 2: Key Facts - Fragility Fractures

What is the FLS Database?

The Fracture Liaison Service Database (FLS-DB) is a clinically-led web-based national audit of secondary fracture prevention in the Republic of Ireland, which is managed by the Royal College of Surgeons in Ireland (RCSI) under the governance of the National Clinical Programme for Trauma and Orthopaedic Surgery.

The Fracture Liaison Service Database (FLS-DB) was established in 2020 and is an online portal managed by Crown Informatics Limited which collects data on non-hip fragility fracture patients. Crown Informatics Limited are the service providers for the UK FLS and Hip Fracture Databases.

The first step in creating consistency and providing the best possible care for all patients is to have a baseline which identifies what care patients are currently receiving, which areas of the country have/haven't an FLS, and how successful each service is at identifying, assessing, and treating those with osteoporosis following a non-hip fragility fracture.

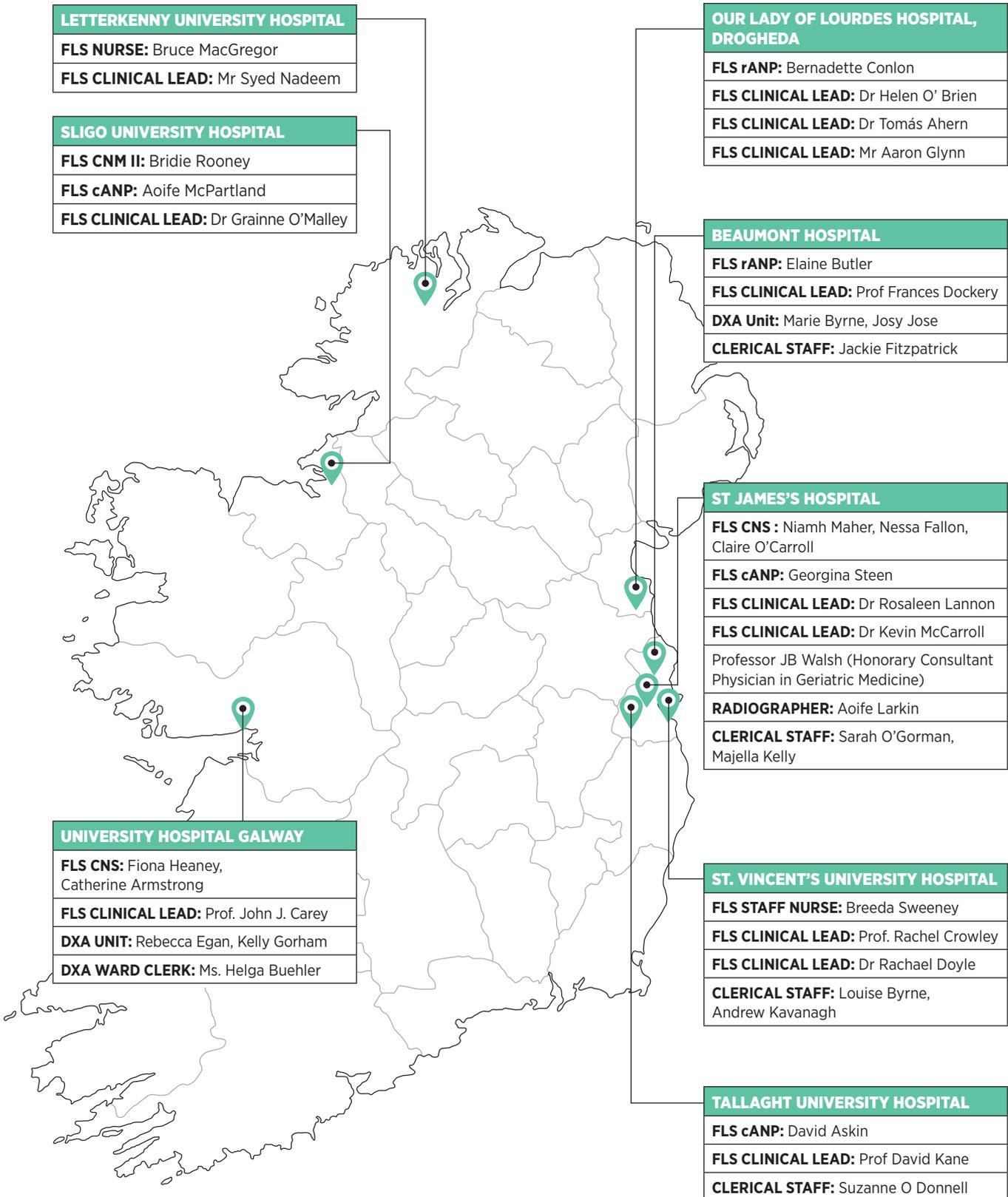
This data can then be used to identify service gaps and improve the quality and coverage of secondary fracture prevention care. The database will help to:

- Identify differences in availability, access and quality of care and service provision
- Highlight areas of good quality care and areas for improvement
- Make recommendations to healthcare providers and policy makers on the provision of services and best practice.
- Identify if hospitals are following international standards through an agreed set of key performance indicators (KPI's)

The database is aligned with other international databases and includes sufficient fields that have been adjusted for the Irish healthcare setting to answer a set of internationally agreed criteria from the IOF, which measure effectiveness of a service and so improve patient outcomes. By comparing Irish performance to international standards, the database is central to identifying service gaps and guiding national service development.

Being part of the FLS-DB does not mean that patients will be given different care or have treatment options limited. The database simply collects details of care the patient receives, in order to understand how the service in that patient's area operates. By collecting this information, the National Steering Group can inform and assist the Department of Health, HSE, Irish Osteoporosis Society, voluntary agencies and patients understand how care is being implemented across the country, thus ensuring that all patients are getting equity of access and the best possible care available.

Hospitals included in the FLS Database



CHAPTER 2 METHODOLOGY

The National Fracture Liaison Service Steering Group when established in 2018 identified the urgency of establishing an FLS database and completing a facilities audit.

The facilities audit completed in 2019 found that 9 out of 16 hospitals in Ireland that manage trauma, have some semblance of a FLS in place. None are capturing and treating the full range or numbers of non-hip fragility fractures that are occurring. The main reason cited in all of them was insufficient resourcing (Dockery, 2022).

The patient-level audit commenced data collection in 2022. As hip fractures in Ireland are already captured on the Irish Hip Fracture Database (IHFD), this audit focused only on *non-hip fractures*.

Inclusion Criteria

Analysis is based on FLS-DB records as captured on the Crown Informatics software. It includes:

- (i) Patients presenting to participating hospitals between 1 January 2021 and 31st December 2021
- (ii) Diagnosed with a non-hip fragility fracture
- (iii) Aged 50 years and over



Exclusion Criteria

- (i) Aged 49 years or under
- (ii) Pathological (fractures due to known cancer in the affected bone)
- (iii) Fractures resulting from high impact trauma/force
- (iv) Hip/neck of femur fractures
- (v) Fractures of facial bones, fingers, toes and ribs



Data Collection

The data is collected in the local hospitals by FLS practitioners who enter the data from patient's healthcare records. A customised data collection template has been designed for this purpose (Table 2.1) and it, outlines the options for hospitals to contribute their data to the national database.



Data Entry Method	Detail
1. Manual Data Entry	Hospital practitioner completes proforma and enters this data directly into the FLS Database.
2. Excel Upload	Practitioner enters data into a locally held excel/access database, converts this to a csv file and uploads monthly to the online FLS database
3. Existing Hospital System	Hospitals local IT system exports an extract of data matching the FLS dataset and uploads as a csv file to the online FLS database

TABLE 2.1: DATA COLLECTION OPTIONS

CHAPTER 3 DATA QUALITY

The purpose of the data quality statement (Table 3.1) is to highlight the methodology employed in evaluating the quality of the 2021 data. This uses nationally agreed dimensions of data quality as laid out in the data quality framework for health and social care (Health Information and Quality Authority, 2018).

This data quality statement supports the interpretation and judgement of the information covering the reporting period 1st January 2021 to 31st December 2021, and identifies strengths and areas for improvement.

This report utilises aggregated data i.e. high level data which is acquired by combining individual level data.

DATA QUALITY STATEMENT		
Dimensions of data quality	Definitions (HIQA,2018)	Assessment of dimension (FLS-DB)
<p>RELEVANCE</p> 	<p><i>Relevant data meet the current and potential future needs of users</i></p>	<p>The FLS Steering Group under the governance of the National Clinical Programme for Trauma & Orthopaedic Surgery agreed the dataset in 2020.</p> <p>The dataset was derived from the UK FLS-DB and the IOF's "Capture the Fracture" key performance indicators (KPIs). The dataset that is collected ensures that reporting can take place on all IOF KPIs.</p> <p>This report shares aggregated data from eight hospitals that participated in the audit and individual hospital reports on all data will be available in Q3 2022.</p>
<p>ACCURACY AND RELIABILITY</p> 	<p><i>Accuracy of data refers to how closely the data correctly describe what they were designed to measure.</i></p> <p><i>Reliability refers to whether those data consistently measure, over time, the reality of the metrics that they were designed to represent.</i></p>	<p>The FLS-DB collects data on non-hip fragility fracture patients through an online database. Data that is collected and stored on the database is anonymised. No patient identifiable data leaves each hospital. Before a hospital joins the database a data agreement is signed by the CEO/General Manager.</p> <p>The reference population for the national report focuses on patients aged 50 years and over. These patients are identified by the FLS practitioner attending or reviewing outpatient clinic attendances or by receiving reports from hospital IT systems. In many cases these patients are not admitted to hospital and are not on the Hospital In-Patient Enquiry (HIPE)</p> <p>Data Validation is built into the database and alerts users if there is an error when entering data. An alert will appear on the screen for the user if data has been entered incorrectly. For hospitals that upload their data a data validation report is created by the system that will identify any errors.</p> <p>All users of the FLS-DB system are trained by the FLS Project Manager prior to the system going live in each hospital. A user cannot access the system without a username and password and cannot receive access to the system without completing the required training.</p>

DATA QUALITY STATEMENT CONTINUED

Dimensions of data quality	Definitions (HIQA,2018)	Assessment of dimension (FLS-DB)
<p>TIMELINESS AND PUNCTUALITY</p> 	<p><i>Timely data is collected within a reasonable & agreed time period after the activity that the data measures. Punctuality refers to whether data is delivered on the dates promised, advertised, or announced.</i></p>	<p>Data entry targets set by the FLS Steering Group are reviewed at each monthly hospital meeting and also at each FLS Steering Group meeting that takes place every 2 months. The closing date for 2021 data entry was 8th April 2022. This was to facilitate hospitals who were managing patients who had a fracture in 2021 to be included for this report.</p>
<p>COHERENCE AND COMPARABILITY</p> 	<p><i>Coherent and comparable data are consistent over time and across providers and can be easily combined with other sources.</i></p>	<p>THE FLS-DB dataset was developed following a review and evaluation of the only existing FLS-DB – UK.</p> <p>It was concluded that the NHS dataset aligned most closely to the needs in Ireland. This database will report on the International Osteoporosis Foundations (IOF) Best Practice Framework (BPF) and standards for secondary prevention osteoporotic fractures.</p> <p>The FLS-DB dataset follows the patient pathway from the point of first presentation to treatment recommendations and follow up which occurs at 16 weeks and one year.</p> <p>The use of international agreed comparators allows the FLS-DB data to be benchmarked to the international standards for FLS care. Once hospital specific reports are developed in Q3 2022, this will also enable local benchmarking.</p>
<p>ACCESSIBILITY AND CLARITY</p> 	<p><i>Data is easily obtainable and clearly presented in a way that can be understood.</i></p>	<p>Each hospital has access to the database where there are definitions built in for each data field at the point of data entry.</p> <p>There are several inbuilt reports that can be run by the clinical lead and audit coordinator. All data can be exported locally into Excel for further analysis.</p> <p>This report will be available online via the RCSI website.</p> <p>Infographics and summary reports ensure that the data is clear, easy to understand and useful for discussions with all relevant stakeholders</p>

TABLE 3.1: OVERVIEW OF DATA QUALITY FOR THE FLS DATABASE 2021

CHAPTER 4 RESULTS

Age and gender distribution

- There were 2,147 non-hip fragility fracture patient records submitted to the FLS-DB from the eight hospitals receiving trauma.
- These eight hospitals managed 46% of the total number of hip fractures reported nationally in 2020 (1,669 of 3,666) (IHFD National Report 2020).
- The present report accounts for these eight hospitals seeing just under half of the fragility fractures presenting to public hospitals in Ireland.
- There was a preponderance of females, in line with the known increased fracture risk amongst women, as per figure 1 below.
- Median age was 71 years [range 50-97] in males and 70 years [range 50-100] in females. A FLS provided to those following an initial fragility fracture addresses issues such as balance, muscle strength and falls risk reduction.

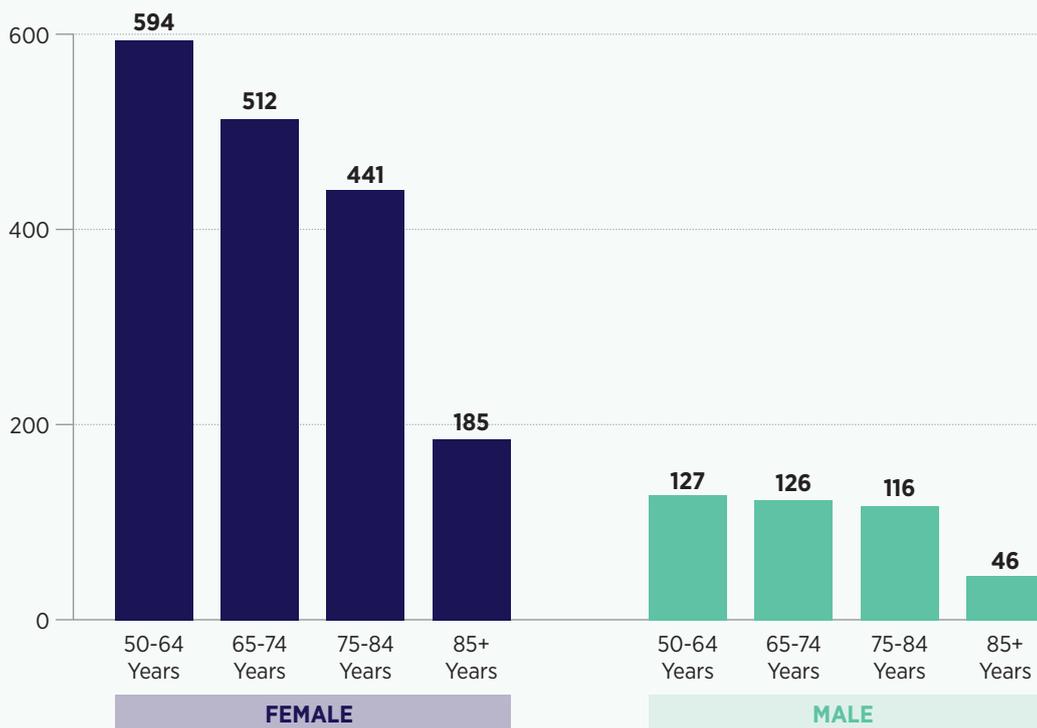


FIGURE 4.1: Age and gender distribution

Patients admitted to hospital

- There were 48.5% (1,042) who had a hospital admission to manage their fracture with 1.7% sustaining their fracture whilst already an inpatient (Figure 2). The figures reported varied considerably amongst hospital sites, largely due to their fracture case-finding methods. In hospitals, falls are common, as inpatients may be frail, have reduced mobility, altered mental status and are in an unfamiliar environment. Approximately 2.3-7 patient falls occur per 1,000 bed days used. Approximately 30% of inpatient falls result in injury, with 4%-6% resulting in serious injury such as fracture (Hitcho, 2004)

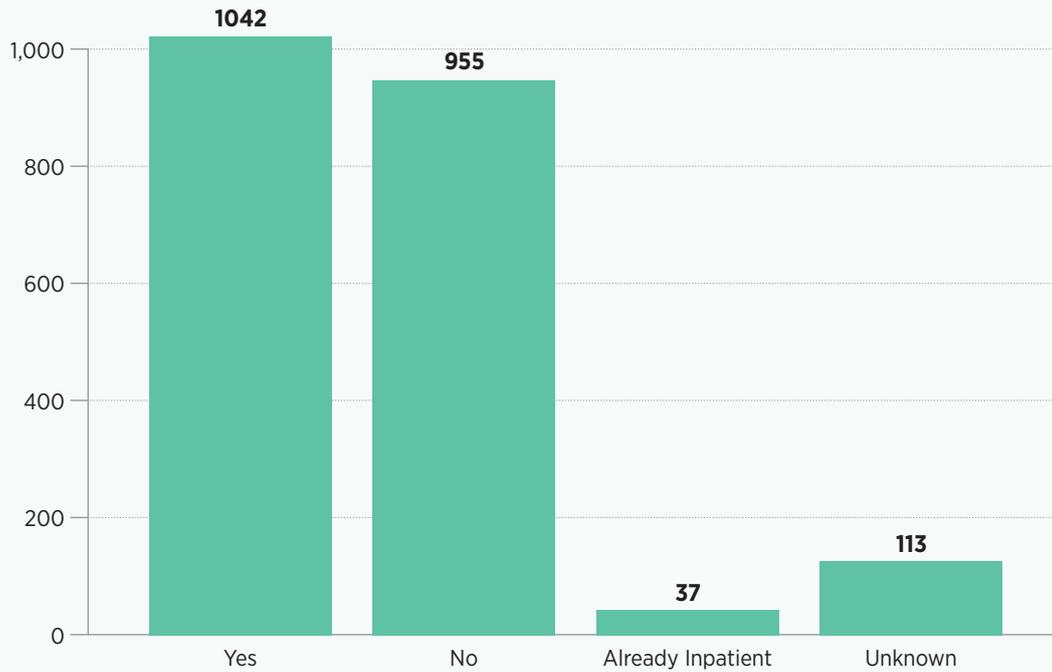


FIGURE 4.2: Patients admitted to hospital

Site of fracture

- There were 82 patients aged >65yrs who were nursing home residents. This equates to 5.75% of the population aged >65yrs. In Ireland, 22,763 persons aged over 65 years (3.9%) live in a nursing home compared with 577,171 > 65 years living at home (CSO, 2016). The findings of this report would be in line with this figure but the small sample size is not representative of the population.
- The range of fracture types captured is shown in Figure 3, with marked variation per hospital site as per their case-finding methods and their admission processes.

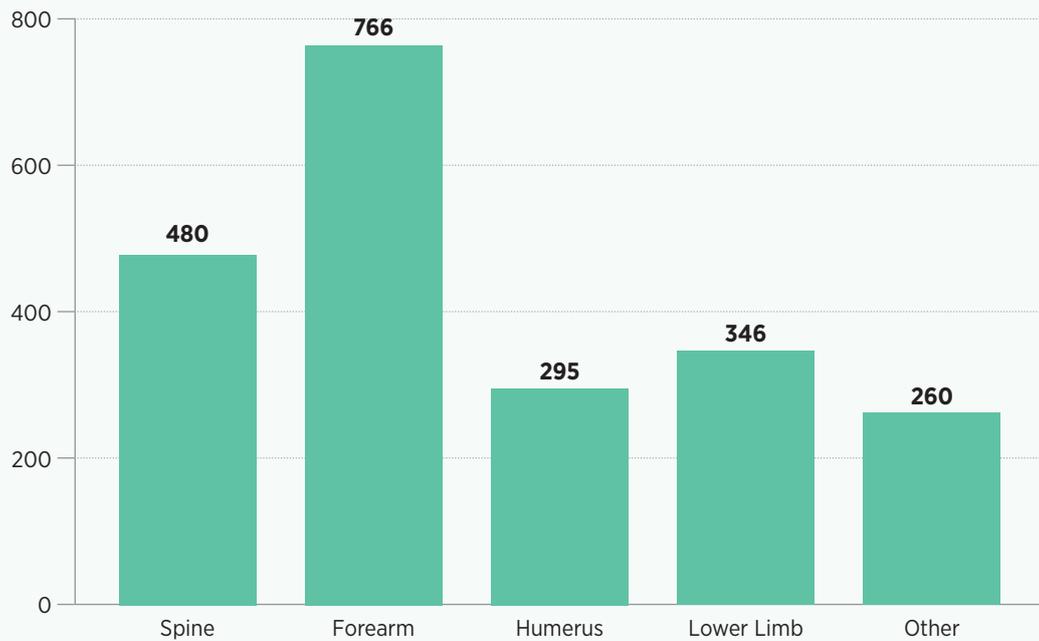


FIGURE 4.3: Site of fracture

Current treatment

- Figure 4: 25% of non-hip fragility fracture patients reported having previously had a fracture also. Of these, 38% of patients were on appropriate anti-osteoporosis medication.

In a recent Irish study looking at 36,799 patients in a primary care setting only 21% of those at risk of osteoporotic fracture were on appropriate medication (Walsh et al 2021), so in this cohort a 38% figure seems higher but this is likely due to the fracture types captured, e.g. a higher number of vertebral fractures which are more likely to be treated than other fracture types. Many studies have demonstrated that a significant proportion of men and women at high fracture risk do not receive therapy for osteoporosis (the treatment gap). For Ireland, the treatment gap amongst women amounted to 32% in 2019 (Kanis, 2021).

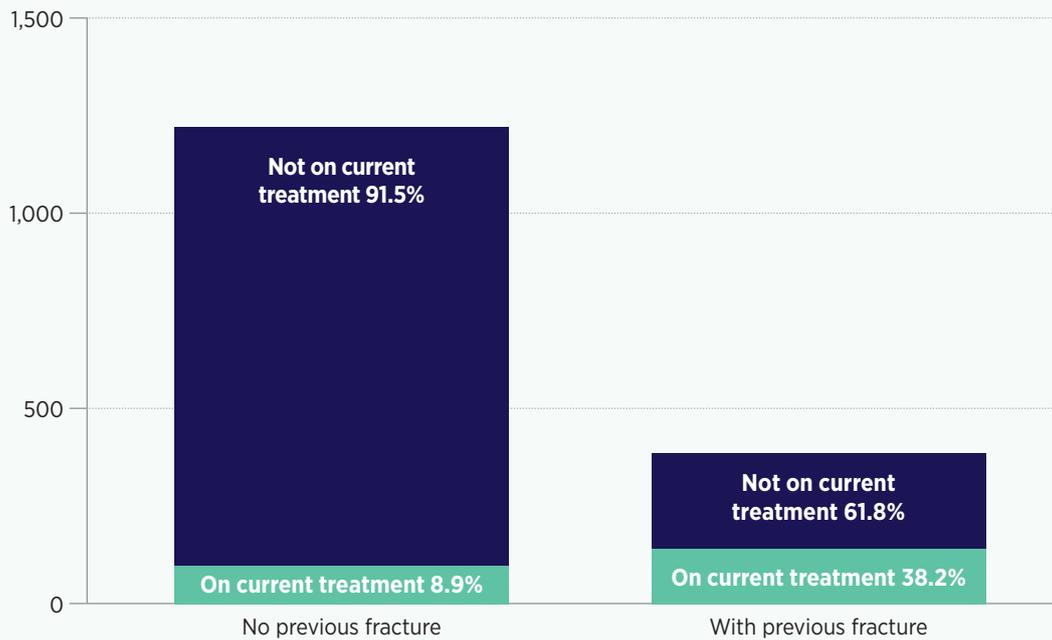


FIGURE 4.4: **Current treatment**

International Osteoporosis Foundation (IOF) Standards

This section focuses on the individual hospital performance as per the International Osteoporosis Foundations (IOF) Key Performance Indices (KPIs) as set out in their 'Capture the Fracture' campaign. These 11 KPIs were adapted from the existing metrics of the UK-based Fracture Liaison Service Database, in collaboration with the IOF's Fragility Fracture Network and the National Osteoporosis Foundation. These standards have been made available globally to measure service impact and standardise patient care in a FLS. (Javaid, 2020).

Indicator	Description	%
KPI 1 - Data completeness	Defined as all KPIs greater than 80% complete.	-
KPI 2 - Identification (all fragility fractures)	Percentage of patient records submitted compared with the local estimated case load	26.4%
KPI 3 - Identification (spinal fractures)	Percentage of patients with a spine fracture as their index fracture site	22.4%
KPI 4 - Time to FLS assessment	Percentage of patients who were assessed by the FLS within 90 days of their fracture	81.2%
KPI 5 - Time to DXA	Percentage of patients who had a DXA ordered or recommended and were scanned within 90 days of fracture.	17.4%
KPI 6 - Falls assessment	Percentage of patients who received a falls assessment or were referred or recommended for a falls assessment	38.6%
KPI 7 - Bone therapy recommended	Percentage of patients who were recommended anti-osteoporosis medication	42.8%
KPI 8 - Strength and balance training	The percentage of non-hip fracture patients who had attended a strength and balance class within 16 weeks of their fracture	0.5%
KPI 9 - Monitoring contact 12-16 weeks post fracture	The percentage of patients who were followed up between 12 and 16 weeks following their fracture	31.6%
KPI 10 - Commenced bone therapy by 16 weeks	The percentage of patients who had commenced (or were continuing) anti-osteoporosis medication.	17.5%
KPI 11 - Adherence to prescribed anti-osteoporosis medication at 12 months post fracture	The percentage of patients who had confirmed adherence to a prescribed anti-osteoporosis medication at 12 months post fracture	NA

TABLE 4.1: KPIS FOR THE FLS-DB, AS PER THE INTERNATIONAL OSTEOPOROSIS FOUNDATION

Not reported given the number of incomplete fields in this inaugural report.

***Defined as five times the number of hip fractures per hospital, based on UK estimates and local audit data (unpublished) suggesting the number of non-hip fragility fractures in Ireland to be at least 5-8 times that of hip fracture numbers.*

**Defined as equal to the number of hip fractures per hospital, based on UK estimates.*

***Not reported as first year of audit*

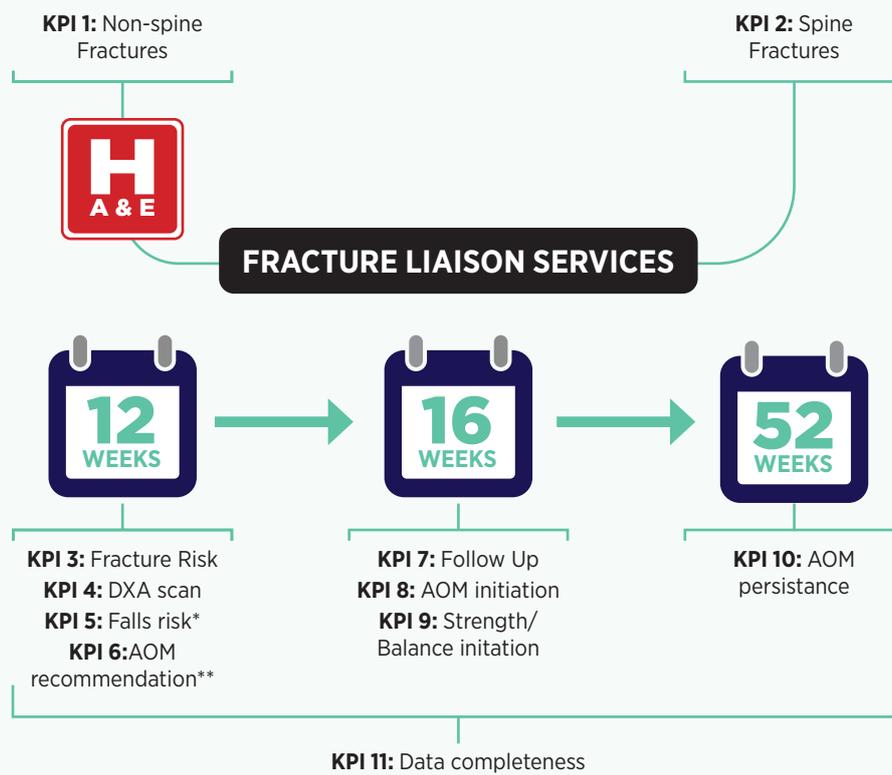


FIGURE 5: Mapping the key performance indicators to the patient pathway following a fragility fracture (Javaid, 2020)

KPI 2 – Identification (all fragility fractures)

Percentage of patient records submitted compared with the local estimated case load

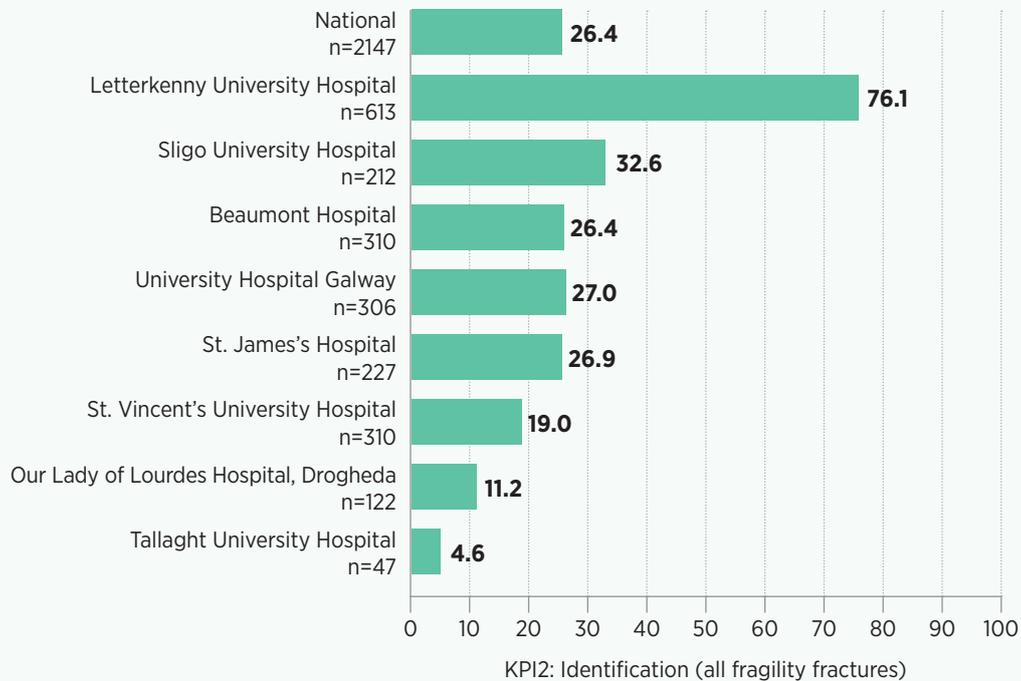


FIGURE 6: KPI2: Identification (all fragility fractures)

Nationally there were 2,147 (non-hip fragility fracture) patient records submitted from the eight hospitals. Based on the '5:1' non-hip to hip fracture ratio, it is estimated that our pilot sites should have captured data on 8,345 patients (source: Irish Hip Fracture Data Report, 2020). Considerable variation in patient numbers was seen between hospitals. This is multifactorial in nature but includes the lag in FLS assessment (reported in KPI 4) as some hospitals with long waiting lists, were assessing patients in 2021 who had been referred in 2020.

KPI 3 – Identification (spinal fractures)

Percentage of patients with a spine (vertebral) fracture as their index fracture site

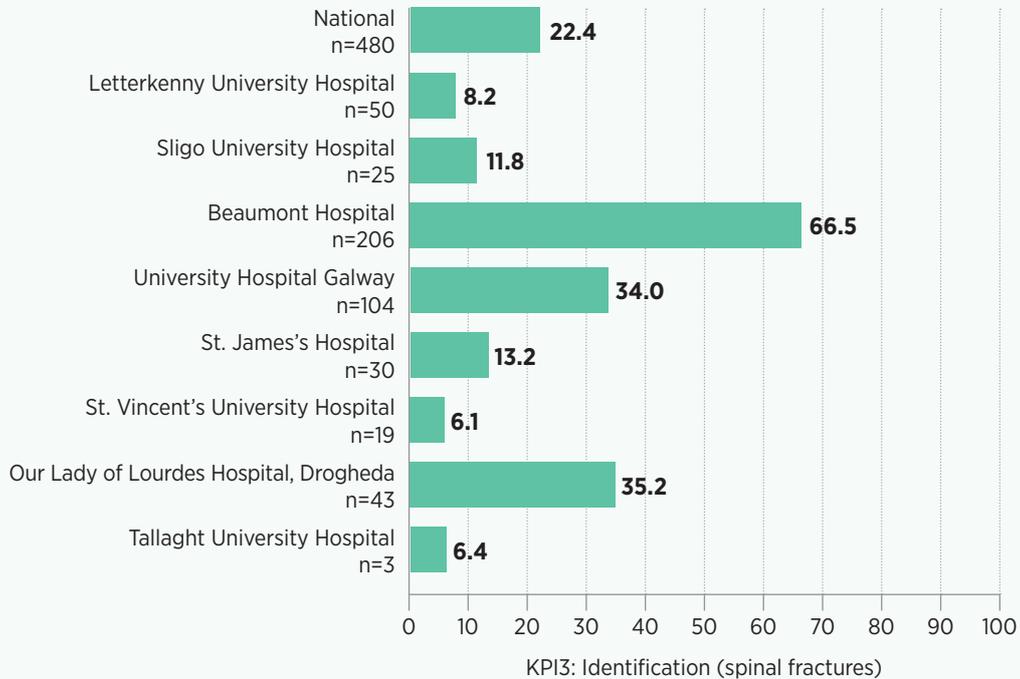


FIGURE 7: KPI3: Identification (spinal fractures)

Vertebral (spine) fractures are very important for a FLS to identify due to their commonality, particularly high re-fracture rates and marked benefits in fracture risk reduction with drug treatments. Vertebral fractures that present clinically are thought to represent only a third of all vertebral fractures, with another two thirds being picked up as incidental findings.

The UK FLS-DB estimated that the number of 'clinical' vertebral fractures roughly equates to that of hip fractures (n=1,669, source IHFD), so this denominator has been used for the Irish FLS-DB

The number submitted is about a 1/5th of other fracture types, showing that systems are in place to identify vertebral fractures but it remains challenging given that it represented only 29% of expected vertebral fracture numbers.

There is clearly great variability in services' ability to capture vertebral fractures with some centres prioritising vertebral fracture capture ahead of all other fracture types (based on their total number of fractures submitted), so direct comparisons cannot be made in this regard. All centres fall short of predicted numbers.

KPI 4 – Time to FLS Assessment:

Percentage of patients who were assessed by the FLS within 90 days of their fracture

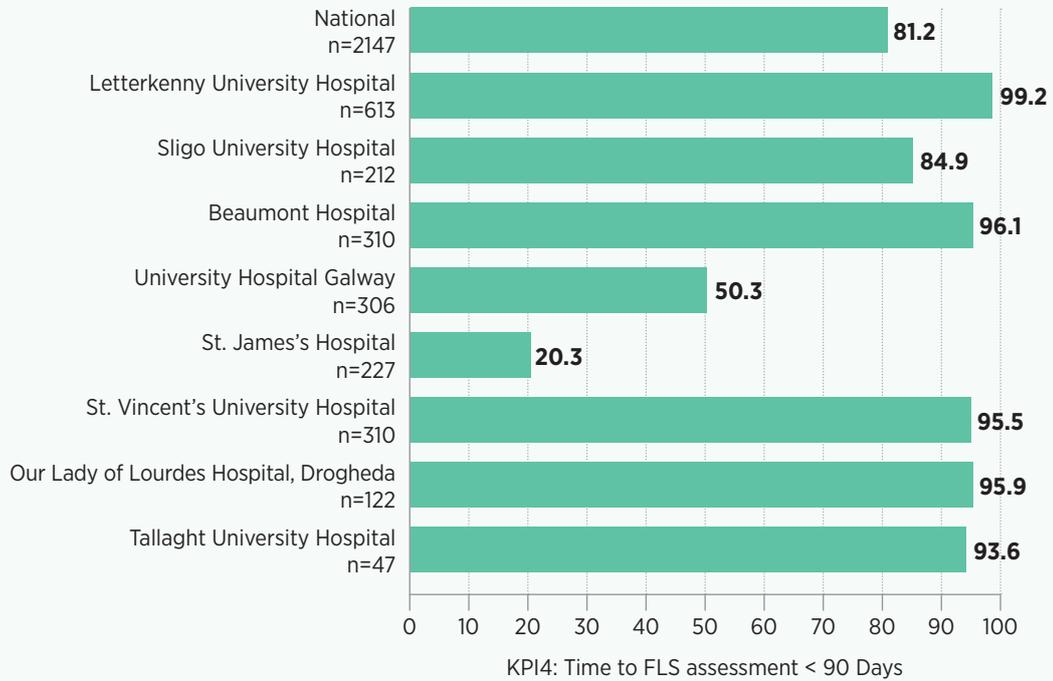


FIGURE 8: KPI4: Time to FLS assessment <90 Days

This is an important metric because the likelihood for a repeat fracture is significantly greater in the first two to three years following a major osteoporotic fracture (MOF). Getting those in need assessed and managed as early as possible is an important step. Timely FLS assessment is a critical step in ensuring this.

This standard was well-achieved in almost all centres but must be interpreted in conjunction with the low fracture capture rate in many hospitals.

Improvements in fracture capture rate without increases in resources to manage this will compromise this KPI considerably.

KPI 5 – Time to DXA:

Percentage of patients who had a DXA ordered or recommended and were scanned within 90 days of fracture.

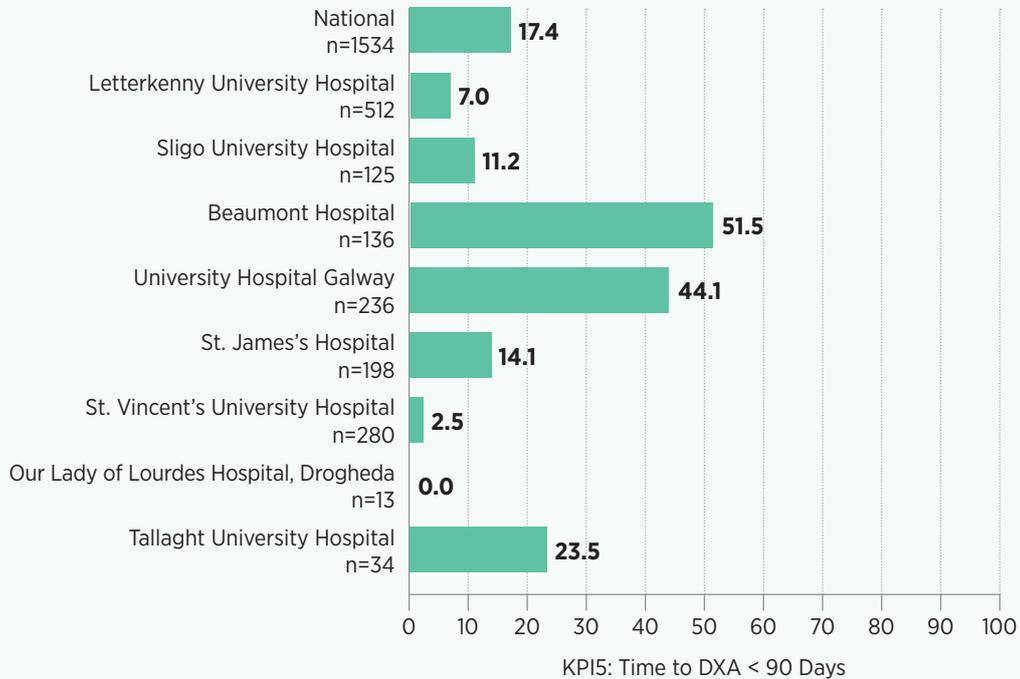


FIGURE 9: **KPI5: Time to DXA <90 Days**

The denominator here was the number who had a scan ordered or recommended which amounted to 71% of the total cohort. Delays in getting a DXA were evident with very low numbers overall getting their DXA within three months of their fracture.

Quality DXA scanning is a critical component to assess the likelihood of future fractures and to monitor their treatment. It is important to note though, that many patients may be treated without the need for a DXA, such as those with a recent fragility fracture of the spine or hip or those of advanced age where osteoporosis is highly prevalent. Any delays in treating patients is to be avoided in order to address imminent fracture risk, and it is likely that delays for DXA scans adds to this for some patients unnecessarily. Quality of DXA scanning is also critical however, as errors in DXA acquisition, reporting and interpretation are common which can lead to under-treatment.

KPI 6 – Falls Assessment:

Percentage of patients who received a falls assessment or were referred or recommended for a falls assessment.

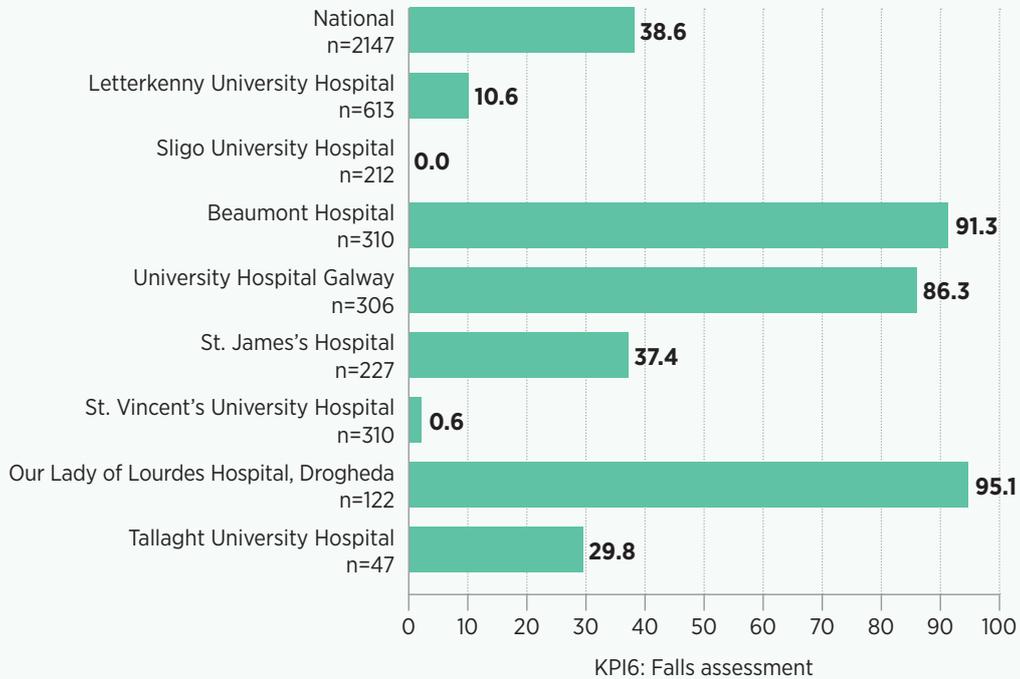


FIGURE 10: **KPI6: Falls assessment received**

A multifactorial falls risk assessment is warranted following any fall that requires medical attention in an older person. This assessment should address gait and balance impairments, medication use, cardiovascular risks, vision, cognition and continence. Almost all non-hip fragility fractures occur following a fall, and it is remiss of any FLS to overlook the importance of assessing falls risk, unless confident that this is being addressed by an alternative service with the HSE, with imminent fracture risk in mind.

The number of patients having a multifactorial falls risk assessment varied widely across services, with some having little or no facility to address falls risk. Details of what comprised the falls risk assessment are not reported here but quality of assessment varied greatly. Sub-selecting those aged over 75 years it was reported that 50.7% of this group had a falls risk assessment, compared to 38.6% for the group overall.

KPI 7 – Bone Therapy recommended:

Percentage of patients who were recommended anti-osteoporosis medication

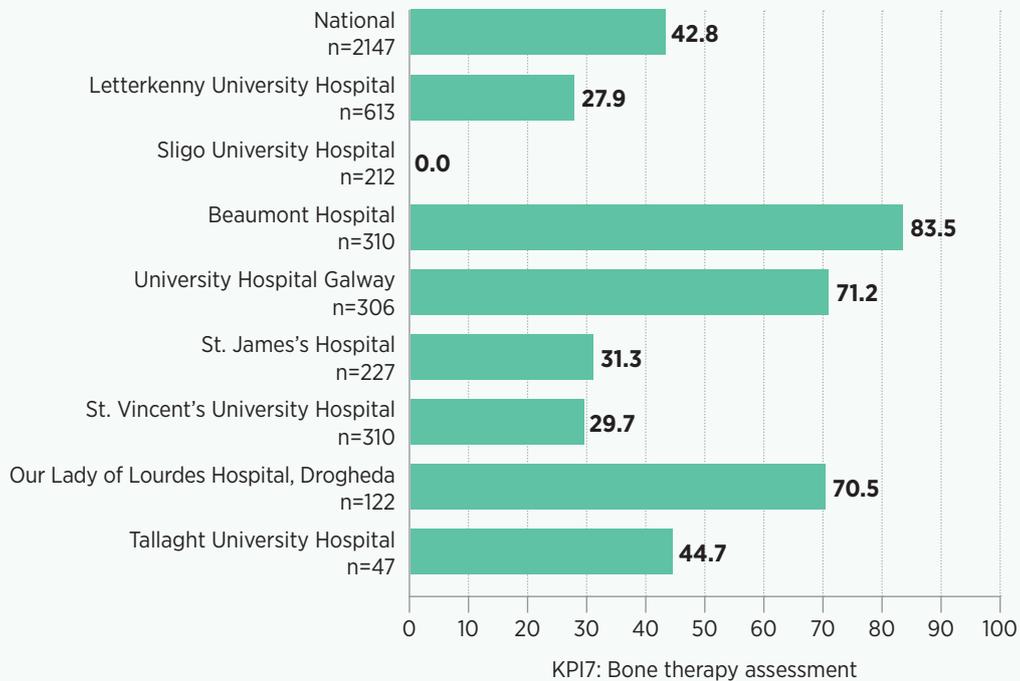


FIGURE 11: **KPI7: Bone therapy recommended**

Osteoporosis drug treatment is a cornerstone of future fracture risk reduction. Not all those who are assessed following a fragility fracture will require treatment. Some may already be on treatment and will require a review of their regime while others may have specific contraindications to pharmacological treatment. Treatment guidelines both locally and nationally vary, as will guidelines with fracture types, within age groups and other fracture risk categories. Reflecting this, IOF suggests a standard that 50% of patients would be expected to commence osteoporosis treatment following a fragility fracture.

The percentage of patients recommended treatment of 42% in this data is close to this IOF standard, but with notable variation. Some centres recommending osteoporosis drug treatment in very high proportions likely reflects the fracture types these centres captured (e.g. predominantly vertebral fractures where treatment is generally recommended in all cases). Local clinician's preferences and local treatment guidelines may also influence this.

KPI 8 – Strength and Balance Training:

The percentage of non-hip fragility fracture patients who had attended a strength and balance class within 16 weeks of their fracture.

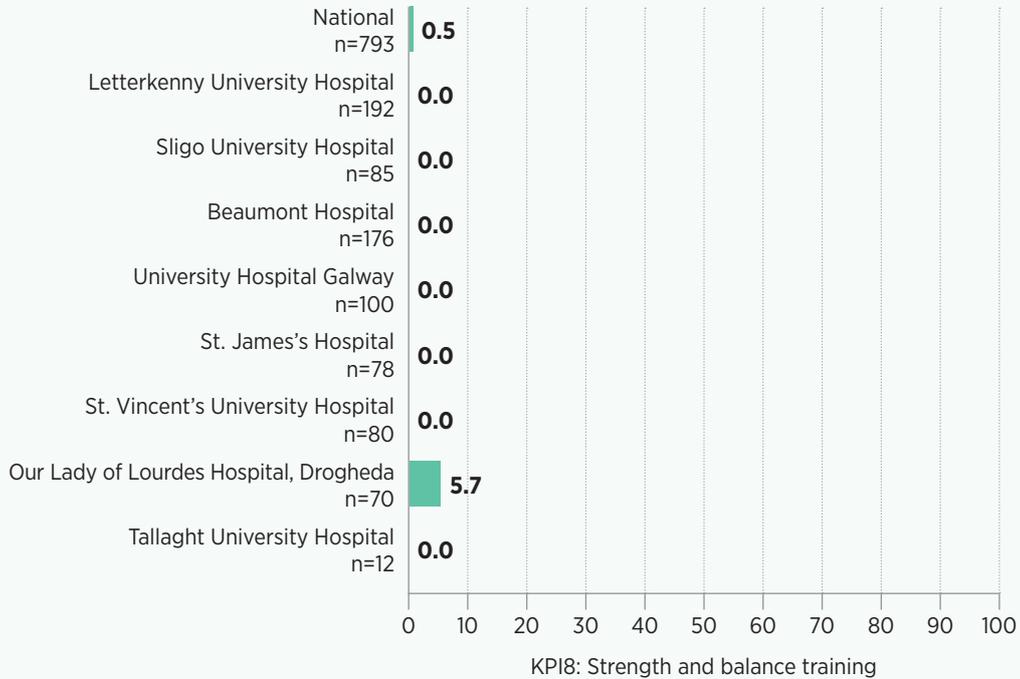


FIGURE 12: KPI8: Strength and balance training

One of the leading interventions in falls risk reduction is a strength and balance exercise programme. There is substantial evidence to support this in those at risk of falling.

This KPI only applies to those who were eligible for a 16-week follow up call (i.e. only those patients who were recommended osteoporosis drug treatment). The denominator therefore was those who were recommended a strength and balance exercise programme as well as an osteoporosis treatment following FLS assessment, and so does not represent the whole cohort.

Only one FLS could confirm that a very small number of patients had started the exercise programme, despite it being recommended. This highlights the disparity in available services nationally.

KPI 9 – Monitoring contact 12–16 weeks post fracture:

The percentage of patients who were followed up between 12 and 16 weeks following their fracture.

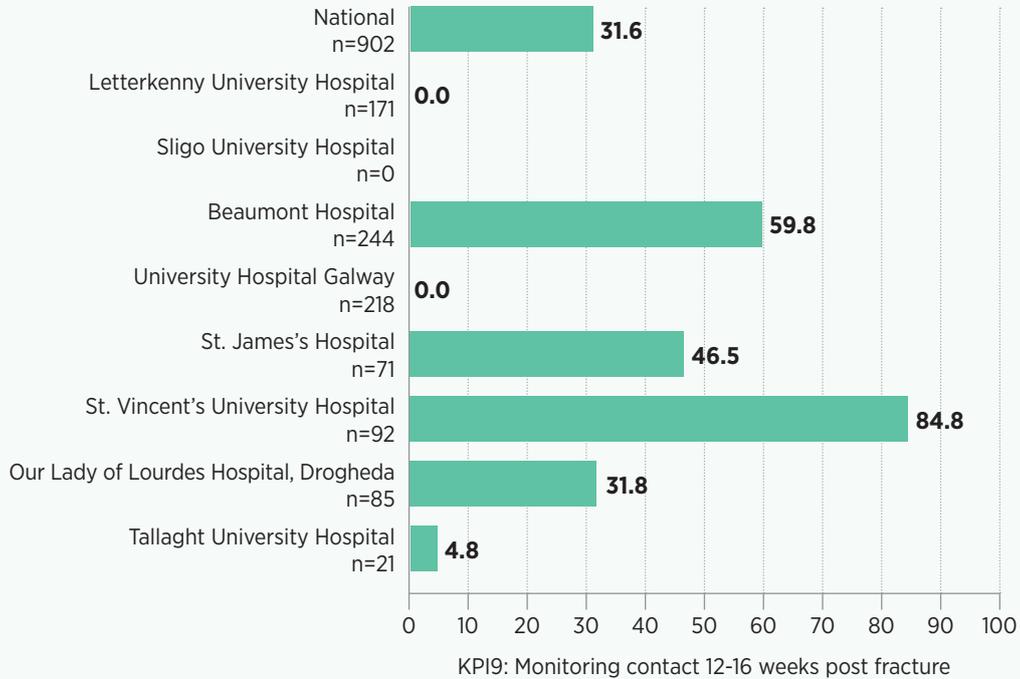


FIGURE 13: KPI9: Monitoring contact 12-16 weeks post fracture

It is critical that those who are recommended osteoporosis treatment commence it in a timely manner given the imminent fracture risk as described earlier. Not all FLS prescribe treatment, often leaving it to the patient's GP, hence an early monitoring contact must take place. This occurred in 31.6% of cases which is very encouraging. The standard here is time since fracture rather than since FLS assessment, so in some centres the interval between these two may have been too short to enquire about treatment tolerability and adherence. It is also notable that no monitoring contact takes place in three FLS.

KPI 10 – Commenced Bone Therapy by 16 weeks:

The percentage of patients who had commenced (or were continuing) anti-osteoporosis medication.

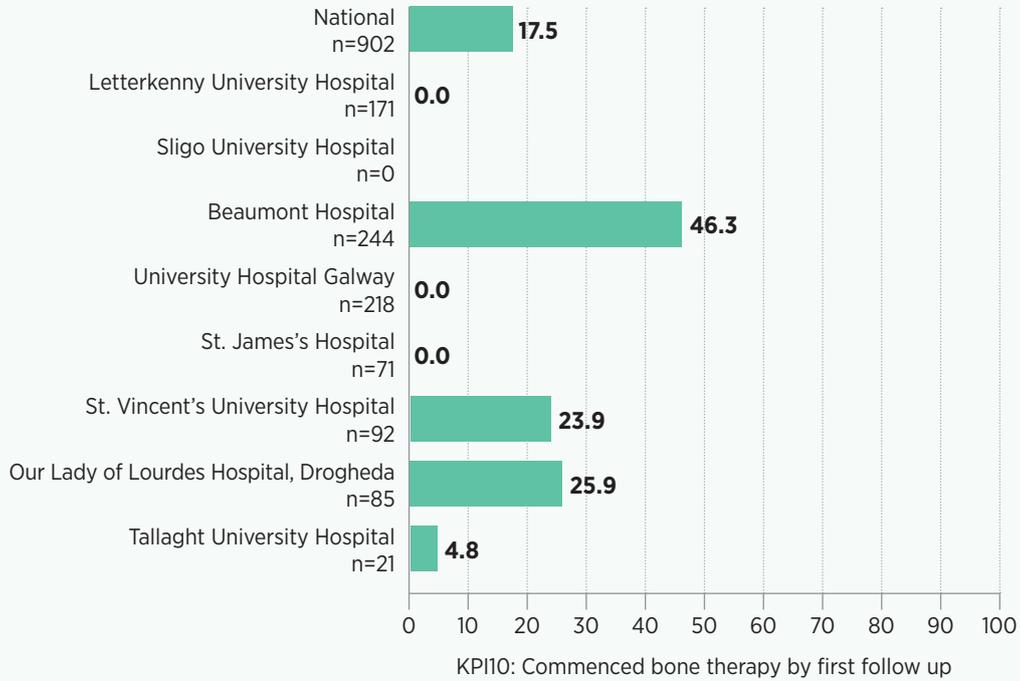


FIGURE 14: **KPI10: Commenced bone therapy**

The importance of effective, timely osteoporosis treatment as soon as possible after a fragility fracture is critical given the high imminent fracture risk. Only 18% of those patients who were deemed in need of osteoporosis treatment were confirmed as having commenced treatment four months after their fracture. This is concerning as per KPI 9, a monitoring call took place in just 31% of patients who had started or were expected to start osteoporosis treatment.

This data tells us that of this 31%, only 55% had commenced their treatment despite recommendations.

CHAPTER 5 CONCLUSIONS

This is the first report from the Irish Fracture Liaison Service (FLS) Database. This report is a significant milestone as it establishes a baseline for assessment and treatment of those patients who present with a non-hip fragility fracture in Ireland. This report highlights the gaps currently within service delivery nationally.

Care needs to be taken when interpreting the results presented in this report as it is not a complete national picture; 2,147 patient records were included in this report from eight of a possible sixteen hospitals. This figure represents just 26.4% of the projected number of non-hip fragility fractures occurring in these eight hospital sites in Ireland for this period.

Nine of the eleven IOF “Capture the Fracture” key performance indications (KPI’s) are reported on in this report. What is evident from the results is the disparity in access to and resourcing of services nationally. This has been highlighted in the 2019 national facilities audit (Dockery, 2022) The Steering committee welcomes the appointment of eight Advanced Nurse Practitioners earlier this year. This will assist in improving identification, management, follow up and discharge of a greater number of fragility fracture patients, thus improving adherence with the KPI’s. However, an additional 24 ANP’s and 17 clerical staff are required to ensure national implementation of FLS.

Any delays in treating patients must be avoided in order to address imminent fracture risk. It is likely that delays for DXA scans adds to this for some patients. Many should commence treatment while awaiting a DXA but this does not always happen in practice. Timely access to quality DXA for public patients in Ireland has been identified as a problem which needs resourcing, however quality of scanning is critical. Errors in DXA acquisition, reporting and interpretation are common which leads to under-treatment for many patients who fracture believing they have “osteopenia” or “normal bones” though they clearly have osteoporosis

as manifest by their fractures. Standards for DXA, training programmes on quality densitometry and certification in clinical densitometry have been provided nationally since 2009 by the Irish DXA Society in collaboration with the ISCD to address this.

The number of reported vertebral fractures within this report is low – 1/5th of all other fracture types entered into the database which would be the expected proportion relative to the other fracture types presenting clinically, but is still vastly below the expected total number of clinical vertebral fractures for the eight sites. Those presenting clinically represent only a third of all vertebral fractures. This is a worrying finding as this patient group often present to emergency departments in severe pain, many require hospitalisation to manage their pain and they are at particularly high re-fracture risk. This is an area for considerable improvement.

FLS is an integrated care service with some of these interventions well suited to be based in the community settings. FLS is interdisciplinary in its approach. Areas highlighted within this report for improvement include more timely access to falls risk assessments, and referral to a strength and balance exercise programme. Local hospitals are encouraged to work with other disciplines such as physiotherapy in delivering these services.

The cost of osteoporotic fractures in Ireland accounts for approximately 2% (€450 million) of healthcare spend on direct care costs according to a European survey in 2020 (Kanis 2020). Of this, just 8% (€37 million) is estimated to be spent on assessment and treatment – i.e. prevention of fragility fractures. FLS should be considered a ‘secondary prevention’ service, and as such is an enabler in improving patient health and wellbeing. Changing the focus on expenditure from reactive to preventative will not only extend the quality and duration of life but will also reduce the burden on the acute hospitals.

CHAPTER 6 HOSPITAL PROFILE

Hospital FLS Overview

Each hospital participating in the FLS Database was asked to submit an overview of their service since commencement.

Beaumont Hospital

The Fracture Liaison Service (FLS) at Beaumont and St Joseph's hospitals commenced in 2019, under the governance of Prof Frances Dockery, Geriatrician and led by Elaine Butler, registered Advanced Nurse Practitioner (rANP). The service provides a comprehensive Falls & Bone Health assessment in line with national and international standards of care.

A case finding approach is used to identify all new vertebral fractures presenting to the radiology department. Other fracture types are referred on an ad-hoc basis. This is due to limited resources which prevents proactive case-find and assessment of all fracture types due to the high numbers involved. The service has recently expanded to start case

finding upper limb fracture patients however, and the aim is to expand to case-find all fracture types as the team grows.

In 2020, the FLS assisted in the establishment of a DXA unit in Beaumont Hospital on the St. Joseph's hospital campus, which is led by two Clinical Nurse Specialists trained in DXA scanning and analysis. This enables a 'one stop shop' approach for recent fracture patients who attend for DXA, blood tests, falls & bone health assessments all on the same day. The DXA CNSs are being mentored by the FLS rANP and geriatrician to help deliver this one-stop service and so enable greater capture of fractures towards building a 'gold standard' high quality FLS and integrated bone health unit.



Left to right: Elaine Butler, Prof Frances Dockery, Maria Byrne, Josy Jose

Galway University Hospitals

The Galway Fracture Liaison Service (FLS) commenced officially in 2005, following preliminary work by the Rheumatology, Radiology and Orthopaedic departments. Known as the S.P.O.O.F. service (Secondary Prevention of Osteoporotic Fracture), the H.O.O.F. (Hospital Outcome following Osteoporotic Fracture) was established in 2008 for hip fracture patients ≥ 50 years. The FLS service is part of a more comprehensive osteoporosis and metabolic bone centre.

The service is recognised nationally and internationally, with invited presentations at the European League against

Rheumatism, World Orthopaedic Nursing, and World Osteoporosis Congresses. Galway was the first Irish service accredited by the International Osteoporosis Foundation's 'Capture the Fracture Programme' in 2013, awarded a silver medal, a gold award at the World Congress of Osteoporosis and an HSE Excellence awards in 2017.

The FLS service provides remote and in person consultations for almost 20 years, accepting referrals for patients with major osteoporotic fractures. A "one stop shop" is available for patients to obtain a clinical, DXA and laboratory assessment on the same day, and treatment recommendations.



Left to Right: Fiona Heaney, Catherine Armstrong, Prof John Carey



Left to Right: Rebecca Egan and Kelly Gorham, Catherine Armstrong, Prof John Carey

Letterkenny University Hospital (LUH)

The Fracture Liaison Service (FLS) Nurse at LUH was appointed in 2008 and is responsible for the assessment of bone health in patients who present to the Orthopaedic department following a low trauma fracture, patients with 2 or more risk factors are referred for DXA scanning.

The Orthopaedic department has 4 Consultant Orthopaedic surgeons and the FLS Nurse works closely with the surgeons and has access to their patients who present at the hospital or through the fracture clinics.

The FLS Nurse attends the Orthopaedic ward daily and also attends Fracture clinics. The FLS Nurse also carries out DXA scans on Orthopaedic patients within the hospital and has 1.5 scanning sessions per week which equates to 16 scans per week. The service has been audited by the IOF Capture the Fracture programme and was awarded a bronze star. The challenges for the service relate to the ability to follow with patients diagnosed with Osteoporosis in the medium and long term.



Left to Right: Bruce Macgregor, Mr Syed Nadeem

Our Lady of Lourdes Hospital Drogheda (OLOLD)

The FLS in Our Lady of Lourdes was set up in October 2019 with the appointment of Ms Bernadette Conlon as Registered Advanced Nurse Practitioner. The FLS is largely an inpatient service, looking after 230 patients with hip fracture and 1,350-1,400 patients with non-hip fragility fractures per annum. The FLS ANP assesses and treats inpatients in relation to falls and bone health and provides weekly rANP-led OPD clinics. The ANP also runs a compliance & adherence follow up clinic, co-ordinates the Intravenous Zoledronic acid pathway and manages the local FLS Database, uploading regularly to the National FLS-DB.

Dr Helen O'Brien, Consultant Ortho-Geriatrician provides an inpatient FLS consult service and also leads a weekly FLS outpatient clinic, while Dr Tomás Ahern, Consultant Endocrinologist, provides Bone Health assessment in a monthly Metabolic Bone outpatient clinic. They also provide clinical governance for the FLS.

While hip fracture care in Drogheda is leading the way nationally, having won the IHFD "Golden Hip" award for the last 2 years, it is not yet resourced to assess all fragility fracture patients. Participation in the first pilot national Fracture Liaison.



Dr Helen O'Brien



Bernadette Conlon



Dr Tomás Ahern

St James's Hospital (SJH)

The Bone Health and Osteoporosis team is led by Dr Rosaleen Lannon and Dr Kevin McCarroll. There are more than 7,500 patient attendances annually. The Unit receives referrals from consultant hospital colleagues and general practitioners throughout Ireland. It is currently equipped with two state-of-the-art high resolution Hologic Horizon type A DXA scanners and, together with the department of Clinical Biochemistry in St James's Hospital, it has access to the most up to date bone biochemistry and bone turnover markers as well as a modern tandem mass spectrometer for accurate measurement of serum vitamin D levels.

A key part of the service is also the identification of fragility fractures through a dedicated fracture liaison service which the bone health nurses are actively involved in and which has greatly expanded year on year. They have a designated medical, nursing, and administrative team that works extensively with the wider Multi-Disciplinary Team in order to deliver integrated patient-centred care. The specialist team work closely with each other and collaborate to ensure best possible care is delivered.



Left to Right, Nessa Fallon, Georgina Steen, Claire O Carroll



Left to Right, Dr. Rosaleen Lannon, Dr. Kevin McCarroll



Left to Right, Mary Barrett, Sarah O Gorman, Chelsea Nepomuceno, Niamh Maher, Majella Kelly

Sligo University Hospital, Fracture Liaison Service

The current Fracture Liaison Service (FLS) in Sligo University Hospital (SUH) was set up in 2018 and operates on 8 hours per week as an adjunct to an already busy full time DXA Service. It is run by a Clinical Nurse Manager Grade II (CNM II) in the DXA Service, Bridie Rooney with support from the Osteoporosis Nurse Specialist, Aoife McPartland, who is located offsite in the Regional Rheumatology Unit. Presently the Fracture Liaison Service in Sligo University actively case finds patients over the age of 50 attending the fracture clinics with a recent low trauma fracture. A letter is then sent to the patients GP to alert them of the need to review their bone health. FLS Patients who are referred for DXA scan are offered an appointment within 12 weeks and are reported on as a matter of priority.

Due to limited time for FLS the CNM II is not in a position to

review patients in person when they present at the fracture clinic and is therefore reliant on information inputted on patient information systems. This can lead to either an over estimation or an underestimation of the patients fracture history and risk. Limited resources also means the current FLS in SUH is reliant on cooperation from GPs for DXA referral and post-DXA scan management.

The recent announcement that a Full time Candidate Advanced Nurse Practitioner, FLS is to be appointed to SUH will ensure that all individuals attending SUH at high risk of fragility fracture are appropriately assessed and treated in a timely manner. Service (FLS) database last year in 2021, revealed that the service was able to assess and treat only 10% of the total number of predicted fragility fracture patients.



Left to Right: Aoife McPartland, Bridie Rooney, Dr Grainne O'Malley

St. Vincent's University Hospital

The fracture liaison service in SVUH commenced in Sept 2016 and is managed by 0.5 FLS nurse who is also a DXA technologist (ISCD trained)

Fractures are collected through Orthopaedic OPD, Orthopaedic theatre list and since January 2022 the physios give a monthly spreadsheet of all patients that have come through their clinics post-low trauma fractures. To date in total they have captured 2,571 fractures of whom 1,511 have had DXA scans.

A DXA referral card is completed by the FLS nurse, it is

signed by Ortho Registrar and administrative staff send out appointments to patients.

On day of DXA the patient completes a self-assessment sheet, which the FLS nurse reviews with them and she provides an education session with the patient. They are also provided with an information booklet on osteoporosis and an invitation to a free online information lecture on bone health. The patient is also given a letter that they should return the DXA department once they have been to their GP to discuss their results, ticking a box indicating if they have commenced on bone protection medication.

Tallaght University Hospital (TUH)

A sole nurse leads the Fracture Liaison Service since its establishment in 2009 within the Department of Rheumatology. David Askin and Prof. David Kane created an internationally recognised case finding strategy to identify fragility fractures in those age 50 and over and under the care of Trauma Orthopaedics. A major facilitator of this case finding is electronically automated Trauma Orthopaedic admission reports.

The service's initial focus was to identify inpatient fragility fractures, forging links with Prof. Tara Coughlan (Age Related Health Care) to coordinate with the Irish Hip Fracture Database. Outpatient screening developed slowly due to lack of physical space but the emergence of a Bone and Joint Unit at the hospital created space for a fracture risk assessment screening service. Screening now occurs over the telephone

reducing 'did non-attend' rates from 50% down to 4%.

A one stop shop model of care is accessible to high risk inpatient groups through expansion of the Clinical Nurse Specialist's scope of practice. The service commences and monitors treatment response following multifaceted lifestyle fracture risk assessment with or without bone mineral density values. Nursing time is greatly impacted by administrative duties warranting adequate resourcing that has not changed since the service opened despite the service's growth. Health Service Executive funding was secured in 2022 for the service to develop an Advanced Nurse Practitioner. David Askin will pursue this with a plan to build on the Capture the Fracture Bronze award to achieve Gold from the International Osteoporosis Foundation for best practice standards in secondary prevention.



Left to Right: David Askin, Suzanne O Donnell, Prof. David Kane

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APPENDIX 2: Glossary of Terms and Definitions

FLS	Fracture Liaison Service
FLS-DB	Fracture Liaison Service Database
HSE	Health Service Executive
IOF	International Osteoporosis Foundation
ISCD	International Society for Clinical Densitometry
MOF	Major Osteoporotic Fracture
NCPTOS	National Clinical Programme for Trauma and Orthopaedic Surgery
NHS	National Health Service
DXA	Dual-energy x-ray absorptiometry

FACILITIES AUDIT SUMMARY

16

PUBLIC HOSPITALS

were invited to participate in the survey with a **100% RESPONSE RATE**.

10 OF 16 SITES REPORTED the existence of a **FRACTURE LIAISON SERVICE**.

These 10 sites managed:

3,444

non-hip fractures during 2019

REPRESENTING ONLY

19%

of the expected non-hip fragility fracture numbers occurring annually in Ireland.

FRAGILITY FRACTURES IN IRELAND

The **ECONOMIC COST OF CARE IN 2019** was

€464
MILLION.

Ageing population will result in an **ESTIMATED INCREASE OF**

58%

the highest of all EU countries.

TIMELY IDENTIFICATION & TREATMENT

of first episode fragility fracture has been proven to **REDUCE RISK OF SUBSEQUENT FRACTURE**.

ONLY **50%**

of sites could confirm patients received a first prescription within the **CRITICAL 4 MONTHS FOLLOWING THEIR FRACTURE**.

WHY NO FLS IN IRELAND IS CAPTURING ALL FRAGILITY FRACTURES?

All sites reported being **INADEQUATELY RESOURCED** and consequently:

- Unable to provide an effective service that ensures **ALL PATIENTS ARE IDENTIFIED AND TREATED**
- FLS's in Ireland are failing to meet **INTERNATIONAL BEST PRACTICE STANDARDS**

A NATIONAL POLICY

to support the implementation of this programme in line with international standards of patient care **URGENTLY NEEDED**.

APPENDIX 4: FLS-DB Dataset (Page 1)



RCSI FLS Dataset v1 (2021)

(Applicable to FLS patients from 1 Jan 2021)

Patient details

1.01 Audit Reference (K)	1.02A Year of Birth (M)	1.02B Month of Birth (M)
1.03 Gender (Sex) (K)	1.04 Nursing home resident (M)	Hospital code (e.g: TAL) (K)
<input type="checkbox"/> Male <input type="checkbox"/> Female	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	---

Admission

1.05 Admitted to hospital	1.06 Date of FLS assessment (K)
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Already an inpatient - fall on ward <input type="checkbox"/> Already an inpatient - late diagnosis of fracture <input type="checkbox"/> Unknown	___ / ___ / _____ 1.07 Date current fracture diagnosed (M) ___ / ___ / _____
1.08 Site of current fracture (M)	1.09 Site of any concurrent fracture
<input type="checkbox"/> Spine <input type="checkbox"/> Forearm <input type="checkbox"/> Humerus <input type="checkbox"/> Lower Limb (Non-Hip) <input type="checkbox"/> Other	<input type="checkbox"/> Spine <input type="checkbox"/> Forearm <input type="checkbox"/> Humerus <input type="checkbox"/> Lower Limb (Non-Hip) <input type="checkbox"/> Other

Risks

2.01 Previous fragility fracture	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.02 Current or regular oral or iv steroids	2.06 Current osteoporosis medication
<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> None <input type="checkbox"/> On Drug Holiday <input type="checkbox"/> Unknown <input type="checkbox"/> Alendronate <input type="checkbox"/> Risedronate <input type="checkbox"/> Ibandronate <input type="checkbox"/> Zoledronate <input type="checkbox"/> Etidronate <input type="checkbox"/> Denosumab <input type="checkbox"/> Teriparatide <input type="checkbox"/> Raloxifene <input type="checkbox"/> Systemic Oestrogen/HRT <input type="checkbox"/> Calcitriol <input type="checkbox"/> Alfacalcidol
2.03 Alcohol excess	
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Previous excess <input type="checkbox"/> Unknown	
2.04 Current smoker	
<input type="checkbox"/> Yes <input type="checkbox"/> No	
2.05 Secondary causes of increased fracture risk or osteoporosis	
<input type="checkbox"/> Yes <input type="checkbox"/> No	

DXA

3.01 DXA request	3.02 Date of DXA
<input type="checkbox"/> Yes - ordered by FLS <input type="checkbox"/> Yes - ordered by FLS but patient did not attend <input type="checkbox"/> Yes - recommended GP to order DXA <input type="checkbox"/> No - done in last 24 months <input type="checkbox"/> No - deemed not necessary	___ / ___ / _____ 3.03 FRAX used in treatment decision <input type="checkbox"/> Yes <input type="checkbox"/> No

APPENDIX 4: FLS-DB Dataset (Page 2)

Drug treatment

4.01 Bone therapy recommended		(M)
<input type="checkbox"/> Inappropriate <input type="checkbox"/> Unknown <input type="checkbox"/> Patient declined <input type="checkbox"/> Referred to GP to decide prescription <input type="checkbox"/> Referred for specialist opinion <i>Otherwise, select one or more therapies from this list (tick all that apply)...</i>	<input type="checkbox"/> Alendronate <input type="checkbox"/> Risedronate <input type="checkbox"/> Ibandronate <input type="checkbox"/> Zoledronate <input type="checkbox"/> Etidronate <input type="checkbox"/> Denosumab <input type="checkbox"/> Teriparatide	<input type="checkbox"/> Raloxifene <input type="checkbox"/> Systemic Oestrogen <input type="checkbox"/> Romosozumab <input type="checkbox"/> Abaloparatide <input type="checkbox"/> Calcitriol <input type="checkbox"/> Alfacalcidol
4.02 Prescription		
<input type="checkbox"/> FLS prescribed <input type="checkbox"/> FLS asked GP or Specialist to prescribe <input type="checkbox"/> Inappropriate		

Fall assessments

5.01 Risk assessment performed	
<input type="checkbox"/> Yes <input type="checkbox"/> No - Not assessed or referred <input type="checkbox"/> No - Referred to dedicated falls service <input type="checkbox"/> No - Asked GP to assess or refer <input type="checkbox"/> No - Currently under falls service <input type="checkbox"/> No - Patient declined assessment/referral <i>If falls risk is 'Yes', complete questions 5.02 to 5.10...</i>	
5.02 History suggestive of syncope/blackout	5.03 Fear of falling
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded
5.04 Taking medications linked with falls risk, pre-fracture	5.05 Gait or balance impairment pre fracture
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded
5.06 Vision	5.07 Continence/urinary problems
<input type="checkbox"/> Abnormal <input type="checkbox"/> Normal <input type="checkbox"/> Not recorded	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded
5.08 Cognitive impairment	5.09 Orthostatic BP drop
<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not recorded
5.10 Strength and Balance	5.11 Other referrals
<input type="checkbox"/> Yes - Referred by FLS to physiotherapist <input type="checkbox"/> Yes - Referred by FLS directly to exercise class <input type="checkbox"/> Yes - Advised patient to self refer <input type="checkbox"/> No - Left with GP or Falls service to decide <input type="checkbox"/> No - Not necessary <input type="checkbox"/> No - Patient declined <input type="checkbox"/> No - Service unavailable <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes - Referred by FLS to one or more services <input type="checkbox"/> No - Advised patient to self-refer <input type="checkbox"/> No - Left with GP or Falls service to decide <input type="checkbox"/> No - Not necessary <input type="checkbox"/> No - Patient declined <input type="checkbox"/> Unknown

APPENDIX 4: FLS-DB Dataset (Page 3)

Follow up at 4 months (16 weeks)

6.01 Followed up 4 months <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Uncontactable <input type="checkbox"/> Contacted but declined <input type="checkbox"/> Patient dead	6.02 Bone protection therapy started <input type="checkbox"/> Not started <input type="checkbox"/> Taking recommended bone therapy <input type="checkbox"/> Switched to another bone therapy <input type="checkbox"/> No longer clinically appropriate <input type="checkbox"/> Patient declined <input type="checkbox"/> Unknown
6.03 Started strength and balance exercise <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/> Not appropriate <input type="checkbox"/> Informed decline	

Follow up at 12 months (52 weeks)

7.01 Followed up 12 months <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Uncontactable <input type="checkbox"/> Contacted but declined <input type="checkbox"/> Patient dead	7.02 Patient adherence to prescribed drug <input type="checkbox"/> Not started <input type="checkbox"/> Taking recommended bone therapy <input type="checkbox"/> Switched to another bone therapy <input type="checkbox"/> No longer clinically appropriate <input type="checkbox"/> Patient declined <input type="checkbox"/> Unknown
7.03 Continuing strength & balance <input type="checkbox"/> Yes <input type="checkbox"/> No	

Dataset notes

Inclusion criteria:

All FLS patients aged 50 and over should be included.

K = Key field. Key fields uniquely identify each record. If missing or invalid data is entered, the record will be rejected.

M = Mandatory field. If missing or invalid data is entered, the record will remain in **draft** form.

All data must be submitted electronically.

Users wishing to import data should refer to the import notes and specifications available on the FLS website.

Thank you for your continuing support of the RCSI Fracture Liaison Services Database.



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