AUSTRALIAN & NEW ZEALAND FRAGILITY FRACTURE REGISTRY

ANZFFR ANNUAL REPORT 2024

WITH THANKS TO OUR SPONSORS

He aha te mea nui o te ao? He tangata! He tangata! He tangata!

What is the most important thing in the world? It is people! It is people! It is people!

The ANZFFR acknowledges Māori as tangata whenua and Te Tiriti o Waitangi partners in Aotearoa.

This whakataukī talks to the importance of human connection and relationships. This is what creates community and enables people to flourish. It values the human being in all of us and reminds us of what is most important – not money, not success, not a job or a thing – it is people. Without the people this report would not have been possible.

The ANZFFR acknowledge and pay our respect to Elders, past and present, who are custodians of the land in which we live and work. We acknowledge Country as the foundation of health and well-being and through all our activities we are committed to improving health outcomes for First Nations Peoples.

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FOREWORD

Welcome to the first Annual Report of the Australian & New Zealand Fragility Fracture Registry (ANZFFR). After intensive testing and development in early 2022 the Registry “went live” on 8th March 2022. This report covers the first year of recruitment and 16-week follow-up of all participants, completed in November 2023.

In New Zealand, Fracture Liaison Services (FLS) have had publicly funded support from the Accident Compensation Corporation (ACC) since before the launch of ANZFFR, which has helped us achieve near-complete national Registry coverage within a year. The situation is very different in Australia, where, without defined funding or a national Clinical Standard as a benchmark for care quality, progress has been much slower. This report therefore focuses almost entirely on the NZ experience. We very much hope that in Year 2 our friends and colleagues across the Tasman will have much more to say.

ANZFFR is built on the experience of other Fracture Registries around the world. Since pioneering work in the UK and Scandinavia in the 1990’s, Fracture Registries have recruited tens of thousands of people with fragility fractures and changed care for the better in many countries. However, every country is different and setting up a new Registry takes much more than a “cut and paste” from previous projects. Credit for the huge amount of work and leadership which went into getting ANZFFR off the ground is widely shared but without Dr Roger Harris, Christine Gill, Nicola Ward and Stewart Fleming we would not be where we are now. Equally, without ACC’s backing New Zealand would not have the network of Fracture Liaison Services on which the Registry depends.

The ultimate goal of the Australian and New Zealand Fragility Fracture Registry is to use data to improve health system performance and maximise outcomes for people with fragility fractures by improving secondary fracture prevention, reducing rates of further fragility fractures and their associated morbidity and mortality.

This will be achieved by:

- Evaluating Fracture Liaison Services performance against the Clinical Standards for Fracture Liaison Services in New Zealand.
- Preventing future fragility fractures by monitoring secondary prevention interventions.
- Standardising care across Australia and New Zealand by addressing barriers to the use of the best available evidence.
- Providing publicly available information so that patients can be reassured they receive the standard of care they need after a fragility fracture.
- Provide data for research questions or projects, nationally and internationally, as required.

Reducing the rate of new fractures takes time and it is far too early to know if we are achieving our goals. Nonetheless, ANZFFR’s launch has been a huge success, and I am proud to present this report.

Dr Frazer Anderson, Co-chair ANZFFR Steering Committee and NZ National Clinical Lead

MAKING THE FIRST FRACTURE THE LAST

The ANZFFR would like to thank all of the staff in the 19 New Zealand and one Australian Fracture Liaison Service teams, ACC and also those at Health NZ - Te Whatu Ora for their dedication to improving fragility fracture care and for their hard work participating in the ANZFFR. We hope that their passion for their patients and commitment to quality improvement is visible in this report.

AN EXTRA HOSPITAL FOR NEW ZEALAND: THE PRIZE FOR EFFECTIVE FALL AND FRAGILITY FRACTURE PREVENTION

Key messages

- Preventing fragility fractures delivers wide-ranging economic, health-system, societal and personal healthcare benefit.
- The number of fragility fractures in NZ is predicted to rise by ~75% in the next ten years.
- People admitted with fragility fracture and fall-related injury required over 300,000 hospital bed days in 2022, equivalent to every bed in Christchurch Hospital occupied for the entire year.
- Best-practice prevention has been shown to reduce fractures by 30-40% and falls by up to 30% in patients suitable for intervention, potentially saving tens of thousands of bed days.
- This is equivalent to building a new small-to-medium-size hospital.
- Through its Live Stronger For Longer (LSFL) programme which funds falls prevention programmes, ANZFFR and FLSs, ACC has funded development of the workforce and skills to reduce preventable falls and fragility fractures in NZ.
- ANZFFR enables clinical teams to benchmark patient care against national clinical standards for FLS in real time.
- By funding the clinical aspects of the LSFL program Health NZ - Te Whatu Ora can fulfil its obligation to provide best-practice fracture prevention while freeing up resources to meet New Zealand's other major healthcare needs.

Context

During the 21st century the age structure of the population of New Zealand is set to undergo rapid and substantial change, as shown in Figure i. Without systematic intervention, this "longevity miracle" will result in a dramatic increase in the incidence of long-term conditions that afflict older people, including falls and osteoporotic fractures.

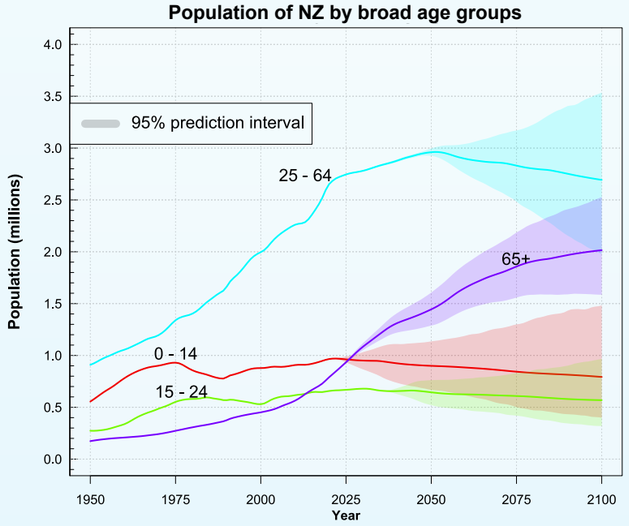


Figure i. From World Population Prospects 2022, by the Department of Economic and Social Affairs Population Division, © 2022 United Nations. Reprinted with the permission of the United Nations. Available for download from https://population.un.org/wpp/Graphs/DemographicProfiles/Line/554. Downloaded on 17 January 2024.

Falls and fractures suffered by older people currently cost the Accident Compensation Corporation ACC (the Crown Entity responsible for injury prevention) NZ$360 million per year. Without effective intervention this cost is predicted to double to more than NZ$720 million by 2035. Concerns about the anticipated economic, social and personal cost of older adult falls and fractures led Health NZ - Te Whatu Ora, Health Quality & Safety Commission Te Tāhū Hauora (HQSC) and ACC to create the Live Stronger For Longer (LSFL) program for falls and fracture prevention in 2016. For various reasons the funding for LSFL has been provided almost entirely by ACC.

However, the costs of falls and fractures do not fall exclusively on ACC. The high bed occupancy related to these conditions impairs Health NZ - Te Whatu Ora's ability to meet Kiwis' other pressing healthcare needs such as care for cancer and kidney disease. The societal and personal impacts of these events, while hard to measure in monetary terms, are substantial and under-recognised – for example, family members taking time off work to provide care.

Challenges

Any public entity with an inclusive vision of health is a stakeholder in falls & fracture prevention. However, at the moment there is a "silo effect" which markedly hinders delivery of best practice care.

For example, intravenous zoledronic acid (Zol), given every 12-18 months for 3-5 doses, is the most cost-effective treatment for fracture prevention, reducing fracture risk by around 50% during treatment and for several years after it is stopped. Zol attracts full subsidy from PHARMAC, but patients treated in primary care must pay NZ$100-$240 to have the infusion, assuming they can access a GP surgery able and willing to give it. Patient adherence is therefore suboptimal and there are equity issues around poverty and rurality. Starting Zol while someone is in hospital after a fracture is ideal, but the vast majority of fragility fractures are managed in the community. The skills and expertise needed to deliver an integrated hospital and community fracture prevention service ensuring treatment for all who need it already exist within FLSs but until this is seen (and funded) as core Health NZ - Te Whatu Ora business the full potential of the prevention opportunity will not be realised. HNZ - Te Whatu Ora funding of an ACC/ONZ network of FLSs is a "turnkey solution" leading to reduced hospital admissions and ACC gains from reduced billing for accident-related healthcare costs. This kind of strategic partnership is the only way to optimise health outcomes in patients at risk of falls and fragility fracture and reduce growing health system demand.

Conclusion

In New Zealand there is a growing epidemic of undiagnosed, preventable bone disease. The analysis of ANZFFR's first year presented in this report puts solid evidence behind the impression of wide variation in quality of care available to people experiencing and at risk of fragility fractures depending on where they live. It is the purpose of quality improvement projects such as the ANZFFR to highlight this kind of variability and the opportunities to address the economic, social, and personal cost. Doing so will require changes to the way New Zealand structures its delivery of care to fragility fracture patients, but the potential rewards are very substantial.

Recommendations

These key recommendations are founded on experience gained from the ongoing national quality improvement program for Fracture Liaison Services in New Zealand. The recommendations are closely aligned with the Global Call to Action on Fragility Fractures published in 2018 by leading international organisations in the osteoporosis and fragility fracture arena, and since endorsed by more than 130 healthcare professional and patient organisations at global, regional and national levels. These include ACC, Ministry of Health (MOH) - Manatū Hauora, and Health Quality & Safety Commission (HQSC) - Te Tāhū Hauora.

Patients and Patient Advocacy Organisations

- To expect and call for access to care at the right time, in the right place and by the right health care professionals to optimise patient outcomes after a fragility fracture and to prevent further falls and fractures.

Policymakers and Government Agencies

- To allocate funding that ensures ongoing universal access to International Osteoporosis Foundation (IOF)-accredited Fracture Liaison Services, and so enable the care of individuals who sustain fragility fractures to be continuously benchmarked against the Clinical Standards for FLS in New Zealand in the Australian and New Zealand Fragility Fracture Registry.

Healthcare Professionals and National Professional Associations

- To play their role as members of local and national multidisciplinary teams to support Fracture Liaison Services to deliver optimal secondary fracture prevention for patients who sustain fragility fractures.

Chief Executive Officers of Health Sector Organisations

- To support Fracture Liaison Services within their organisations to provide optimal patient care and be active participants in the ongoing national quality improvement programme for Fracture Liaison Services.

Dr Frazer Anderson,
Co-chair ANZFFR Steering Committee
and NZ National Clinical Lead

Paul Kennedy,
Manager Business Enablement & Targeted
Investment, Injury Prevention, ACC

SNAPSHOT OF SECONDARY FRACTURE PREVENTION IN NZ.

HOW MANY PEOPLE WITH FRAGILITY FRACTURES DID WE FIND?

12,285
fragility fractures occurred among

11,600
people, representing:

55%
of the fractures predicted to occur annually in New Zealand

OVER 90%
was the "true" capture rate for participating FLS, as they joined the Registry at various times throughout the year

WHO ARE THE PEOPLE THAT HAD A FRAGILITY FRACTURE?

80%
were NZ European

5%
Māori and

2%
Pacific peoples

Average age
76 YEARS

45%
were over 80

OVER 80%
living in their own home

OVER 60%
did not use a walking aid before their fracture

20%
had known dementia or were cognitively impaired

FLS TEAMS IDENTIFIED
90%
OF PREDICTED NON-SPINE FRACTURES

FLS TEAMS IDENTIFIED
126%
OF PREDICTED SPINE FRACTURES

WHAT BONES DID THEY BREAK?

4 IN 5
had one of the "big five" fragility fractures: hip, wrist, spine, pelvis and humerus

WITHIN 12 WEEKS OF THEIR FRACTURE

95%
of patients had a bone health assessment

48%
recommended for DXA scan had it completed

99%
had a falls risk assessment

OVER 80%
of patients were sent written or digital information about bone health and/or falls prevention

OVER 80%
of those warranting osteoporosis treatment had a recommendation to start or continue treatment

OVER 80%
were followed up at 16 weeks:

53%
recommended for treatment were receiving it

47%
recommended Strength and Balance classes had started them

82%
of patients' primary care provider received a long-term care plan about osteoporosis treatment

19
FLS TEAMS
covering 17 out of 20 districts serving

80%
of the NZ population

FLNNZ
delivered 18 virtual education sessions

FRACTURE FEST 2023
educational forum enabled sharing of best practice between all FLS Teams

WHY DO WE NEED A FRAGILITY FRACTURE REGISTRY?

Dr Frazer Anderson, Co-chair ANZFFR Steering Committee and NZ National Clinical Lead

Fragility fractures change people's lives. Most attention is focused on hip fracture, a life-threatening injury which incurs huge costs in terms of health and social care. But other fragility fractures such as those of the wrist, shoulder, pelvis and spine also cause pain, disability and lost life opportunities. My interest in osteoporosis dates back to my teens when I saw my grandmother increasingly disabled by repeated vertebral fractures. Spinal curvature meant that not only did her clothes no longer fit but this skilled seamstress couldn't sit at her sewing machine to alter them. It also wrecked her gait, increasing her risk of falls and making her dependent on others to get out of the house. Pain, social isolation and poor mobility took away much of her joy of life. Like many others she passed away after a hip fracture.

We cannot hope to prevent all fragility fractures, but the strongest risk factor for a fracture is having had a previous fracture. Identifying people's first fractures gives us the chance to ensure high-quality treatment, improve bone health and reduce falls risk. The Registry enables us to improve standards of care across the country by driving every FLS team's capabilities up towards the best achievable practice.

The Registry in NZ has got off to a flying start. By next year's Report I hope we will be able to show that we are making a difference to fracture rates and therefore to the people whose lives are affected by them.

FLS IN AUSTRALIA – CURRENT STATE OF PLAY

Dr Kirtan Ganda, Endocrinologist, Concord Hospital, NSW & Co-chair ANZFFR Steering Committee

The Australian branch of the ANZFFR has been under the stewardship of the Australian Fragility Fracture Foundation (AFFF). The initiation and development of the Registry in Australia has been funded by the Australian National Alliance for secondary fracture prevention (SOSFA) and in the first two years received an unemcumbered educational grant from Amgen Australia.

To obtain a snapshot of Fracture Liaison Services (FLS's) in Australia, The AFFF asked FLS's to fill out a brief five question survey in early 2023. The survey asked the following questions relating to FLS setting, identification methods, assessment of osteoporosis and osteoporosis pharmacotherapy. Among an estimated 36 FLS in Australia, 17 FLS's responded: 11 were from NSW, 4 from Victoria, one each from WA and QLD. There were significant variations in search methods for identification of patients with minimal trauma fractures, with each FLS often using multiple search methods. An automated electronic search was utilised in 10 FLS's (56%) whereas 9 FLS (50%) used ED admissions lists. Other methods included manual medical record searches, radiology report searches, orthopaedic outpatient lists and inpatient lists. Clinical history and examinations, and pathology tests were performed in the vast majority of facilities (16 of 17), whilst DXA was performed routinely in only in 14 FLS (78%). Spine imaging were only performed in 4 FLS (22%) and falls assessment in 13 FLS (72%). Pharmacotherapy was recommended in all facilities.

The mini survey of FLS's in Australia indicates the significant variation in the way patients are identified and assessed for osteoporosis, indicating a significant variation in care. This in turn emphasises the urgent need for adoption of Clinical Care Standards for FLS in Australia together with a roll-out of a national FLS Registry in Australia. Clinical Care Standards already exist in NZ, modelled upon the IOF Clinical Care Standards for FLS which have been endorsed by multiple organisations in Australia, including ANZBMS, ANZHFR, ENSA, SOSFA, and internationally (IOF, FFN). However, Clinical Standards for FLS in Australia are seen as a low priority and have yet to be developed and endorsed by the Australian Commission of Safety and Quality in Health. The combination of Clinical Standards and a national Registry will help standardise outcome measures, providing benchmarking of care between FLS's and thereby improve care of patients who suffer from minimal trauma fractures.

Fortunately, in collaboration with NZ, the Registry is now functioning in Australia at Concord Hospital (watch video). However, despite being freely available, easily integrated into clinical processes and serving as an excellent tool to assess KPI's for each FLS in real time, there has been limited uptake. This may be due to a lack of national Clincial Standards and resources to enable data entry in FLS's that are overwhelmed with patients. The AFFF is working towards expanding the Registry to all FLS across Australia through applying for funding to support data entry personnel. On a national level, the AFFF is advocating to the Australian Commission on Safety and Quality in Health Care around establishing a National Clinical Standard for Secondary Fracture Prevention. On a state level, the AFFF will aspire to collaborate with the ACI in NSW to increase uptake of the Registry. Therefore, we hope the coming year will lead to a greater uptake so optimal care is provided for patients with minimal trauma fractures in Australia.

ANZFFR – AN INTERNATIONAL PERSPECTIVE

Kassim Javaid, Professor of Osteoporosis and Rare Bone Diseases, Clinical Lead of the FLS Data Base, University of Oxford, UK

The Australian and New Zealand Fragility Fracture Registry (ANZFFR) is to be praised for its pioneering efforts in enhancing the life quality of all adults in New Zealand by mitigating the impact of preventable fractures. Globally, bone health initiatives are emerging as a crucial component of healthcare policy, transforming the perception of aging from a burden to an opportunity. This shift enables the elderly to lead fulfilling lives, encompassing physical, mental, emotional, and social aspects.

As evidence mounts, policymakers are beginning to recognize the significant burden osteoporosis imposes on societal health and economic productivity, both directly and indirectly through informal caregiving roles. These priorities are in alignment with the Decade of Healthy Aging and World Health Organization (WHO) projects focused on Integrated Care for Older People, emphasising a functional approach to care, Combating Ageism in relation to bone health stereotypes around vertebral kyphosis and osteoporosis as simply aging, Long-Term Care facilities which have very high fracture rates, and developing Age-Friendly Environments that address intergenerational bone health challenges through the Age-Friendly Cities and Communities Network.

The ANZFFR is part of an expanding group of nation states implementing Fracture Liaison Service (FLS) programmes nationally as evidenced by both organizational and patient-level data. This report underscores the necessity for clinical standards in establishing FLSs, as illustrated by the International Osteoporosis Foundation (IOF) star rating, and national registries that drive service enhancement. The report emphasises reducing access inequity to ensure that all New Zealanders reap benefits equally.

The registry has already documented over half of the anticipated total annual fragility fracture incidence. Participating FLSs have effectively identified both spine and non-spine fractures with a 16-week follow-up. However, challenges persist in ensuring prompt access to funded Dual-energy X-ray Absorptiometry (DXA) to bridge the equity divide further. Other challenges include increasing the number who commence recommended treatment and evaluating 52-week outcomes. The FLS in New Zealand can now utilise the Registry data to advance their service quality and expansion towards achieving comprehensive secondary fracture prevention by serving as beacons to encourage other FLS to get started and become more effective.

WHY IS ACC FUNDING THE LIVE STRONGER FOR LONGER OLDER ADULT FALL AND FRACTURE PREVENTION PROGRAMME?

Paul Kennedy, Manager Business Enablement & Targeted Investment, Injury Prevention, ACC

By 2034, it is projected that New Zealand will have more than 1.2 million individuals aged 65 and over, comprising over a fifth of the total population. While older adults contribute significantly to society, communities, and the economy through work, volunteering, caregiving, and financial contributions, they also become increasingly vulnerable as they age.

Falls are the most common and costly cause of injury among individuals aged 65 and above, with an even earlier onset at 55 for Māori. Falls often result in a loss of independence, social isolation, and loneliness, further increasing the risk of falls and fall-related injuries. Preventing falls is crucial in preventing fall injuries, particularly as most fractures sustained by individuals over 50, especially women, are fragility fractures. These fractures are the result of low-energy trauma such as a fall from standing height or less and are most often attributed to undiagnosed and preventable bone disease.

The Live Stronger for Longer programme aims to sustainably minimise the economic, social, and personal burden of falls and fragility fractures. Evidence suggests that by engaging those most at risk it is possible to prevent 30-40% of fractures experienced by older people. Strength and balance programs, along with the national network of independently accredited Fracture Liaison Services established by the Accident Compensation Corporation and Osteoporosis New Zealand, are now informed by the Australian and New Zealand Fragility Fracture Registry.

ACC is proud of the part it has played to date in positioning New Zealand to address the tidal wave of falls and fragility fractures that will arrive in the absence of intervention. It is our hope that the New Zealand Health Agency -Te Whatu Ora recognises that New Zealand's aging population is playing a large part in health system demand growth and works even more closely with ACC to enable the diagnosis and treatment of bone disease at the root of fragility fractures. Only by working together can we effectively, affordably, and sustainably address the rising issue of falls and fractures, improve the well-being of older adults, and ensure a healthier future for all New Zealanders.

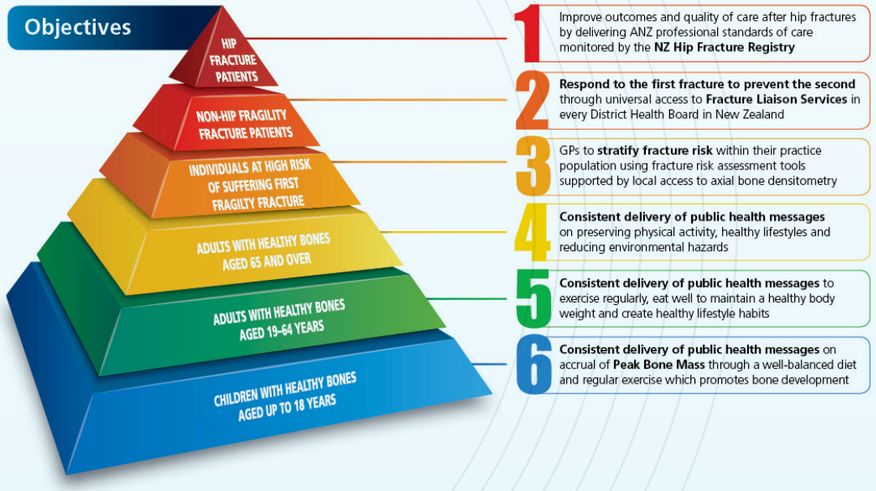
WHAT IS A FRACTURE LIAISON SERVICE (FLS)?

A Fracture Liaison Service (FLS) is a coordinated, multidisciplinary model of care that delivers comprehensive and systematic secondary fracture prevention so that all people aged 50 years and over who sustain a fragility fracture are proactively identified. Ideally, this should include individuals managed in both the primary and secondary care settings.

FLS typically includes a team of healthcare professionals such as nurses, physiotherapists, exercise physiologists, and physicians who work together to provide individualised care plans. People with a fragility fracture follow a service pathway where after a patient experiences a fracture, the FLS team carries out a thorough assessment including bone health, evaluation of the patient's future fracture risk and falls risk. This will often include bone mineral density (DXA) measurement and blood testing. Based on these assessments, a patient-centred long term care plan is developed with the patient and is integrated into primary and secondary care. This tailored plan may include medication management, lifestyle modifications and physical therapy to enhance bone strength and balance, subsequently reducing the risk of falls and fractures.

Furthermore, FLS plays a pivotal role in patient education, equipping individuals with the knowledge to manage their bone health effectively. It emphasises the importance of adherence to treatment plans, regular follow-up appointments, and ongoing risk assessments to adapt and optimise treatment strategies. A Fracture Liaison Service is integral in promoting bone health, enhancing the quality of life, and reducing the incidence and impact of fragility fractures in at-risk populations.

A SYSTEMATIC APPROACH TO THE CARE AND PREVENTION OF FRAGILITY FRACTURES



STARTING AN FLS Natasha Nagar, Clinical Pharmacist, Hutt FLS.

Capital, Coast and Hutt officially started its Fracture Liaison Service in September 2022. At this time, the service started in the Hutt with staffing ready to go there, and to establish processes in a bit more of a familiar environment. Service development is under way for an expansion into Capital and Coast, with two more co-ordinators starting in August 2023 (a clinical nurse specialist and a nurse practitioner). An additional administrator has also been employed. Our plan is to start on the Kapiti Coast, moving to Porirua and then into Wellington Central.

Our service runs differently to others around the country, as I am a pharmacist prescriber. This means that patients attend either virtual or face to face clinics for bone health and falls assessments. The purpose of these clinics is to assess the appropriateness to prescribe medications to reduce secondary fractures. The benefits of this are that patients have full assessments completed for their bone health including any investigation work-ups, results are then actioned and then a long term plan is handed back to their General Practitioners (GP). There is also opportunity for medication counselling especially in the case of using new devices such as teriparatide pens. There are GPs in our area who are already managing their patients' bone health too which is great.

Overall, our service hopes to achieve opportune initiation of a treatment plan (including medication initiation if appropriate) following a fragility fracture, take the pressure off GPs to see patients in a timely manner after their fracture, minimise the patients contact with multiple healthcare providers for the same problem, and showcase a new way of running a Fracture Liaison Service. We're looking forward to our expansion into Capital and Coast and utilising all the skills and expertise that will come from the new co-ordinators too.

JANET'S STORY

"I DIDN'T SEE A DIAGNOSIS OF OSTEOPOROSIS COMING!"

Janet from Māpua, Tasman, age 62

It was a total surprise to be walking one moment and to then suddenly find myself thrown to the ground on our driveway. It was an even greater surprise when I looked at my right wrist which I had fallen onto as I went down. However, the biggest shock was the results of a bone density scan – I didn't see a diagnosis of osteoporosis coming!

Although I suffered a comminuted intra-articular fracture with the joint block in at least 3 fragments, my radius healed well without surgery and following 6 weeks in a cast my orthopaedic consultant said I was good to go. But what about hand therapy/rehab I asked and was told to just start using my arm. What about my bone density – should I be getting this checked out? The reply was no need. With a background as an occupational therapist, I had a few ideas as to what I needed to do to regain movement and strength. I also referred myself to a hand therapy clinic where I got great advice, exercises and support (including a splint for my wrist!).

I am very grateful that I also received a phone call from our local Fracture Liaison Service who somehow knew about me, even though no one had told me that this service was available to me. Going through the check list criteria I was on the borderline for referral for a DXA and was pleased when this was approved. As the technician said, it would be good to get a baseline at my age! Actually, too late for a 'baseline' but at least I am now getting treatment.

I feel fortunate that I have had a good outcome following my fall and know this is not everyone's experience. I am aware that I have knowledge of the health system and confidence to be assertive to ask for what I need/know is available. I worry for those who are trying to recover without this knowledge or support. A key reason I have recently agreed to be a consumer representative on the ANZFFR is to advocate for service delivery where all people get access to services that enables their recovery.

PARTICIPATION

Data in this report shows a **55%** capture rate of fragility fractures expected in NZ each year. From 1st July 2022 - 30th June 2023, 19 FLSs in New Zealand entered data into the ANZFFR. Sites went live on the Registry at different times during the year once funding, staffing and FFR training was approved, so the "true" capture rate within the territory of a participating FLS was **>90%**. This report shows no data from Australia as only one Australian FLS participated.

YEAR FLS ESTABLISHED IN NZ

2013 Auckland City & Northshore Hospitals

2014 Whanganui Hospitals

2015 Middlemore, Tauranga, Wellsouth & Whangarei Hospitals

2016 Christchurch FLS

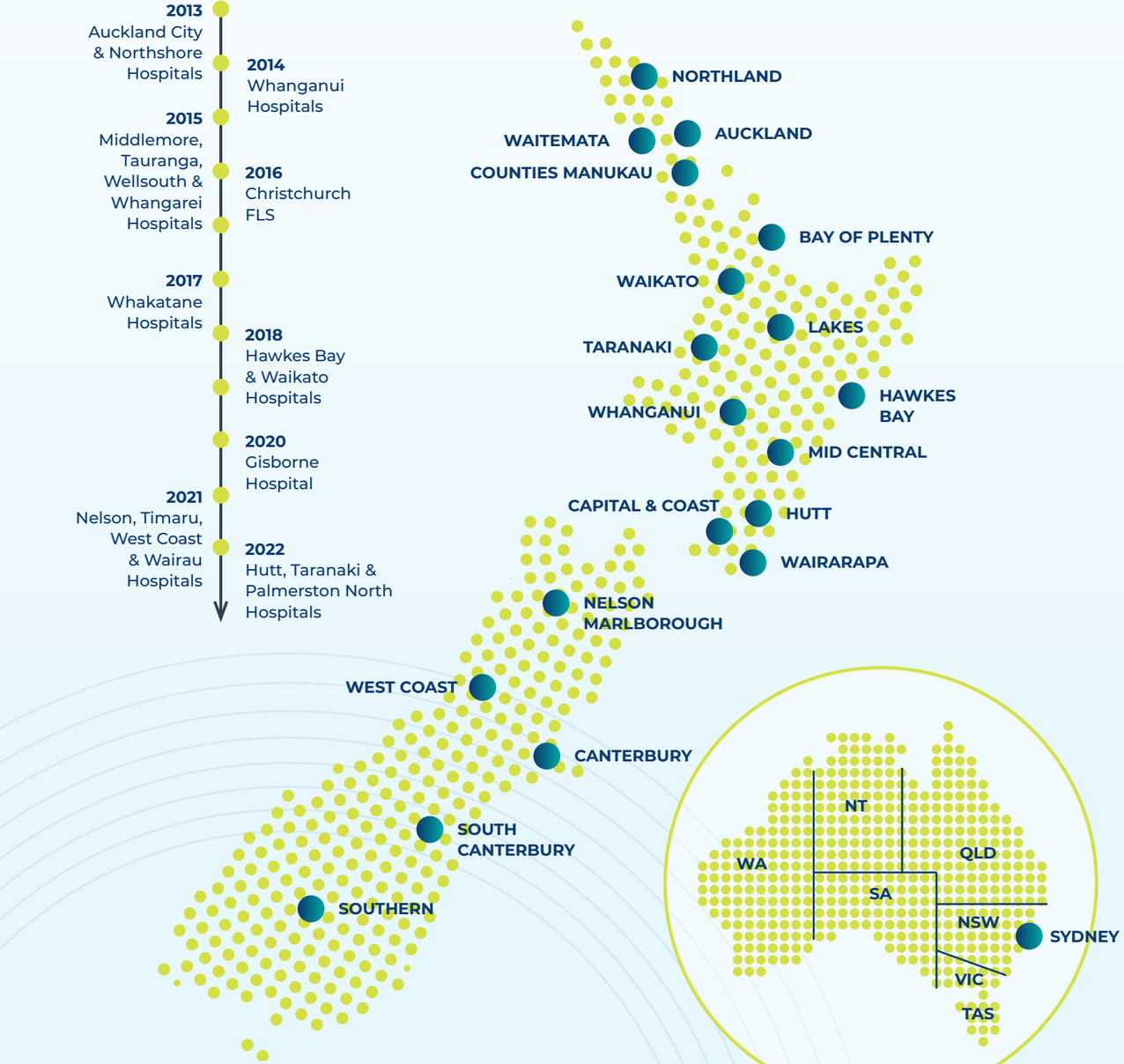
2017 Whakatane Hospitals

2018 Hawkes Bay & Waikato Hospitals

2020 Gisborne Hospital

2021 Nelson, Timaru, West Coast & Wairau Hospitals

2022 Hutt, Taranaki & Palmerston North Hospitals



NEW ZEALAND FRACTURE LIAISON SERVICES PARTICIPATING IN ANZFFR

1st July 2022-30th June 2023

FACILITY	PATIENT COUNT	PARTICIPATION START
Hawkes Bay Hospital	577	July 2022
Timaru Hospital	279	July 2022
Middlemore Hospital	1311	July 2022
Auckland City Hospital	959	July 2022
Northshore Hospital	1796	July 2022
Whangarei Hospital	799	July 2022
Gisborne Hospital	203	July 2022
Tauranga Hospital	836	July 2022
Whakatane Hospital	189	July 2022
Waikato Hospital	894	July 2022
Whanganui Hospital	274	July 2022
Nelson Hospital	376	July 2022
Wairau Hospital	169	July 2022
Taranaki Base Hospital	339	July 2022
Hutt Hospital	463	Aug 2022
Wellsouth Primary Health Network	553	Sept 2022
Palmerston North Hospital	220	Nov 2022
Christchurch FLS	1289	Nov 2022
West Coast	74	Nov 2022

New Zealand Total Record Count for 2022/23 **11,600**

BEST PRACTICE FRAGILITY FRACTURE CARE AND PREVENTION

The How Approach: Since December 2020, Osteoporosis New Zealand (ONZ) and the Accident Compensation Corporation (ACC) have collaborated on a pioneering quality improvement programme for secondary fracture prevention. This programme, aligning with global best practices, aims to systematically ensure that every New Zealander with a fragility fracture receives comprehensive, equitable care, including effective management, support, education, and falls assessment to significantly reduce future fractures. Key achievements of the program include:

Workforce Development: A national survey was conducted in December 2020 to assess the baseline capabilities and performance of Fracture Liaison Services (FLS) across the country. Facilitated development and delivery of multidisciplinary workshops in each region, enhancing the engagement of broader healthcare teams beyond just FLS Coordinators. Offered dedicated support and mentoring through ONZ and the Fracture Liaison Network of New Zealand (FLNNZ), enabling FLS to deliver world-class services aligned with the International Osteoporosis Foundation's (IOF) Capture the Fracture® Best Practice Framework.

Nationwide Quality Improvement: Developed and implemented Clinical Standards for FLS, which were published in Dec 2021 and endorsed by 17 organisations, featuring measurable patient-level Key Performance Indicators (KPIs). Established the New Zealand arm of the Australia and New Zealand Fragility Fracture Registry, allowing FLS teams to benchmark their care in real-time, identify service delivery variations, and continuously enhance secondary fragility fracture prevention.

Preparation for Health Care Reform: Initiated a national systems approach in anticipation of significant health reforms. Implemented evidence-based, standardised contracting managed regionally by ACC Regional Injury Prevention Partners, ensuring equitable service provision across New Zealand and accountable funding utilisation. The program's effectiveness is measured by:

- Benchmarking services against the IOF Capture the Fracture® best practice framework.
- Real-time analysis of care quality in the New Zealand arm of the Fragility Fracture Registry.

This collaborative effort represents a significant stride in establishing a robust, equitable, and sustainable framework for fragility fracture care and prevention in New Zealand.

5IQ-BASED CLINICAL STANDARDS
FOR SECONDARY FRACTURE PREVENTION BY FLS

Clinical standards comprise a small number of quality statements – usually in the range 6 to 12 – that describe the clinical care that a patient should be offered for a specific clinical condition. Clinical standards include quality indicators – also known as key performance indicators or KPIs – that can be used by health services to monitor the implementation of, and adherence with the quality statements, and to identify and address areas that require improvement.

In the context of the management of people who sustain fragility fractures, clinical standards have been developed in several countries – including New Zealand, Japan and the United Kingdom – for the secondary prevention of fragility fractures by Fracture Liaison Services (FLS) for people who present with a fragility fracture.

These clinical standards have been structured according to the so-called "5IQ" model:

The first **"i"** describes which specific patient groups should be **identified** for clinical assessment.

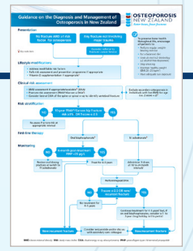
The second **"i"** describes which **investigations** should be undertaken to characterise the patient's risk of sustaining subsequent events.

The third **"i"** relates to what types of **information** the patient and their families and/or carers should be provided with to engage them in their care.

The fourth **"i"** relates to the **interventions** that should be offered to the patient, including pharmacological interventions where indicated, non-pharmacological interventions - such as falls prevention programmes - and lifestyle advice relating to diet, exercise, alcohol consumption and so forth.

The fifth **"i"** is concerned with **integration** of care across the various sectors of the health system, including primary care, secondary care, and tertiary care, with a view to ensure seamless transitions of care and to ensure that long-term care plans are devised and adhered to, with clear delineation of where clinical responsibility for provision of care resides at various stages in the long-term management of the patient.

The **"q"** of the 5IQ clinical standards relates to **quality**, which includes efforts to benchmark performance of FLS Teams against the 5IQ clinical standards, involving the use of registries or other information technology tools. The registries provide real-time feedback to FLS teams to enable continuous evaluation of their performance, and a continuous approach to quality improvement.



CLINICAL GUIDELINES

Statements that include recommendations, intended to optimise patient care, that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options *— Institute of Medicine*

FROM WHICH ARE DERIVED >>

CLINICAL STANDARDS

A Clinical Care Standard is a small number of quality statements that describe the clinical care that a patient should be offered for a specific clinical condition — *Australian Commission on Safety and Quality in Health Care*

WHICH INCLUDE >>

KEY PERFORMANCE INDICATORS

A Clinical Care Standard Key Performance Indicators (aka Quality Indications) can be used by health services to monitor the implementation of the quality statements, and used to identify and address areas that require improvement e.g. Proportion of people with a fragility fracture with a recommendation to treat with osteoporosis specific treatment, within 12 weeks of the index.sentinel/fracture *— Osteoporosis New Zealand*

WHICH ARE REPORTED BY >>

FRAGILITY FRACTURE REGISTERIES

Clinician driven audit of secondary fracture prevention which includes annual facilities level audit and continuous patient level audit from admission to 12 months after discharge *— Australian and New Zealand Fragility Fracture Registery*

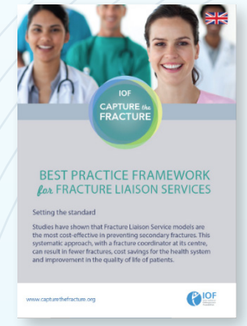
*Reproduced with kind permission of the Australian and New Zealand Fragility Fracture Registry and Osteoporosis New Zealand. *This image 'Clinical Standards for Fracture Liaison Services in New Zealand' was developed by Osteoporosis New Zealand.*

INTERNATIONAL OSTEOPOROSIS FOUNDATION
CAPTURE THE FRACTURE® PROGRAMME

The Capture the Fracture® Programme guides healthcare systems in implementing their own FLS and provides a platform for the global exchange of existing projects and resources on FLS and local implementation strategies. The implementation of FLS is the single most important thing that can be done to directly improve patient care and reduce spiralling fracture-related healthcare costs worldwide. The Best Practice Framework (BPF) serves as the measurement tool for IOF to award 'Capture the Fracture® Best Practice Recognition' in celebration of successful FLS worldwide.
Read more at www.capturethefracture.org

NZ FLS'S WITH IOF ACCREDITATION as of June 2023	STAR LEVEL
Northshore	**Gold**
Middlemore	**Gold**
Waikato	**Gold**
Christchurch	**Gold**
West Coast	**Gold**
Northland	**Silver**
Auckland	**Silver**
Tauranga	**Silver**
Whakatane	**Silver**
Whanganui	**Silver**
Hawkes Bay	**Silver**
Gisborne	**Bronze**
Wellsouth	**Bronze**

FLS yet to apply: Palmerston North, Taranaki, Hutt Valley, Nelson, Wairau & Timaru.



Achieving Gold "Waitemata FLS team having been the first FLS in the country established in 2013 and serving the largest population in New Zealand, take great pride in our journey and where we have come to now. After achieving IOF Capture the Fracture programme's Bronze status back in 2014, we were able to continue working on our deficiencies, and attained Gold star recognition in 2020."

From L to R: Elaine Alix (CNS), Michelle Cowley (CNS), Dr David Kim (Endocrinologist/FLS Lead Clinician), Dr Min Yee Seow (Orthogeriatrician), Julia Spinley (CNS), Verity Whittaker (Admin), Haneyn Musa (Admin)

OVERALL RATING

FLS FACILITY LEVEL AUDIT

To know what you are doing, you need to understand who is doing it and how they perceive what they are doing. We carried out a Facility Level Audit (FLA) by questionnaire in November 2023. Answers revealed among other things that it is difficult and possibly pointless to audit teams which have only just been formed, and that a surprising number of responders did not have a clear picture of their own team membership. We are not therefore presenting numerical data this year but will strive to provide meaningful quantitative information in our next report. Nonetheless the FLA gave us a valuable insight into how our teams were receiving their professional education and on their aspirations for the future.

The top five sources of education were: Fracture Fest, FLNNZ, FFN and IOF conferences and webinars.

The top five on the "wish list" for service improvement were:
DXA access, vertebral fracture identification, better community communication, referral improvement and Zoledronic Acid (Aclasta®) access for all.

What came through most clearly was a sense of mission: our FLS teams believed in what they were doing and were committed to better care of fragility fracture patients well beyond simply fulfilling the requirements of their job.

LOOK WHAT WE ARE ACHIEVING

Timaru Hospital FLS won the "Most Improved Hospital" Golden Hip at the NZ Hip Fracture Registry Golden Hip awards in Sept 2023, Sandy Knight, FLS nurse states, "I was speechless when I heard about being a finalist and when they announced the winner, I was ecstatic that Timaru had won even with the gaps I knew that were still there. I still don't believe that we won. I had not heard of the golden hip award until I started my job as FLS co-ordinator in 2021. I took over the completion of both Hip Fracture and Fragility Fracture Registries. I worked with the anaesthetists, house surgeons and the orthopaedics registrars to complete and be able to find the information required to complete the Hip Fracture Registry. I put together a pathway of how I would identify and collect information to match all of the clinical standards for the Fracture Liaison Service. Working alongside my Clinical Lead, Dr Eric Bindewald, we have managed to get a reasonably good service up and running. There still are some things that need to be addressed and they are in the pipeline."

Second from right: Sandy Knight with Timaru team accepting their award from Carolyn Cooper, Aged Care Commissioner (far right)

photo L to R Lynda Te Momo (FLS Coordinator), Catherine Flain (FLS Coordinator) & Leona Rooney (admin)

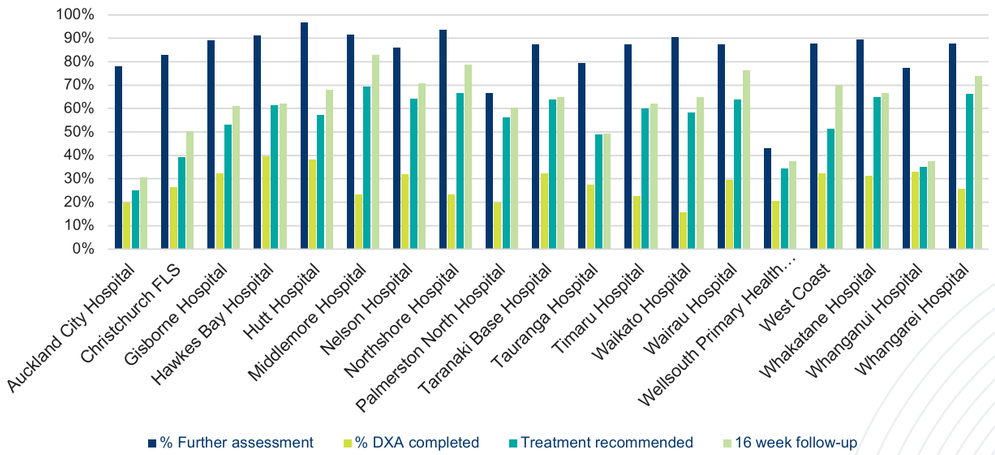
"Since November 2021 the Canterbury FLS expanded to include x2 additional nurses and 1 administration personnel. The expansion of staff has been beneficial in allowing the FLS more time to assess and follow up patients. Having an administrative person has been a game changer!"

Lynda Te Momo, FLS Coordinator
Te Waipounamu/Waitaha Canterbury

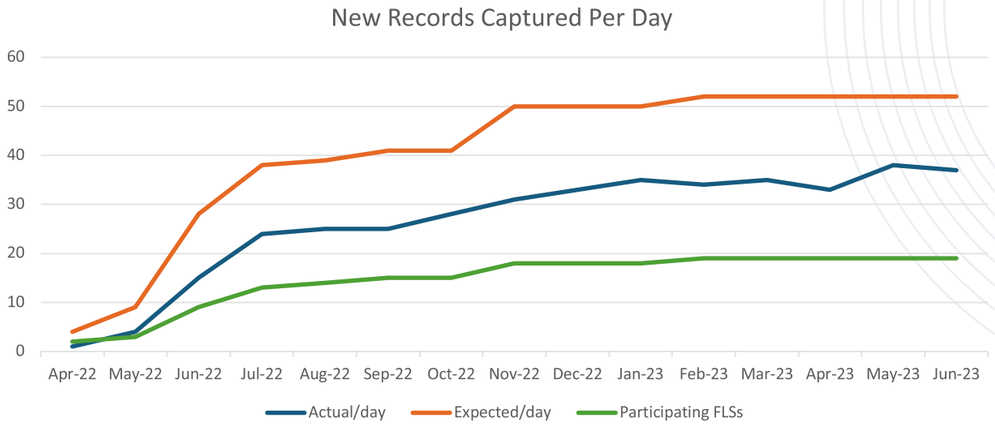
FRACTURE LIAISON SERVICES IN NEW ZEALAND

THE FOLLOWING PAGES HIGHLIGHT THE JOURNEY OF 11,600 PATIENTS AFTER THEIR FRAGILITY FRACTURES THROUGH 19 FRACTURE LIAISON SERVICE SITES IN NEW ZEALAND FOR THE PERIOD 1ST JULY 2022 TO 30TH JUNE 2023 (including completed 16-week follow up to 31st October 2023).

Data and outcomes for each centre are available in the electronic version of this report link along with other supporting information including the patient data collection form.



This graph summarises the key activities each Fracture Liaison Service carries out with their patients.



This graph shows the daily number of people with fractures identified by FLS before, during and since the launch phase of ANZFFR in New Zealand. As new FLSs enrolled (green line) the number of fractures expected in the catchment area of participating FLS rose (orange line). Over time the actual number identified (blue line) is rising towards the expected total. If all 22 districts in NZ had FLSs participating in the Registry, the expected daily total would be 61 fractures. As a condition of Health and Disability Ethics Committees (HDEC) approval patients may choose to opt out but very few (118 in total = 1.01%) have done so.

SECTION 1: PATIENT DEMOGRAPHICS

Where a national percentage figure only is shown, the expanded individual site figure can be viewed in the electronic report.

FIGURE 1 – SEX //KPI 1

77% Female & 23% Male

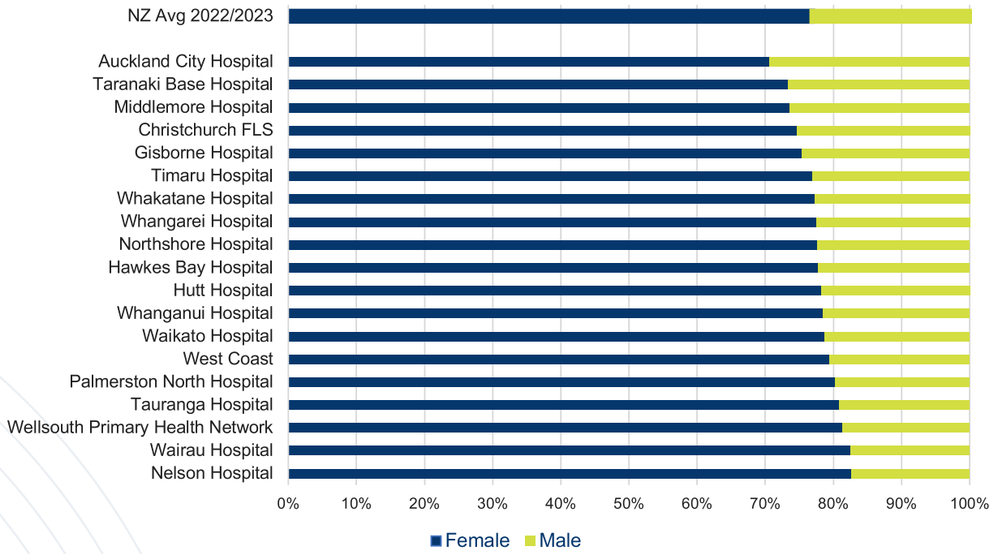
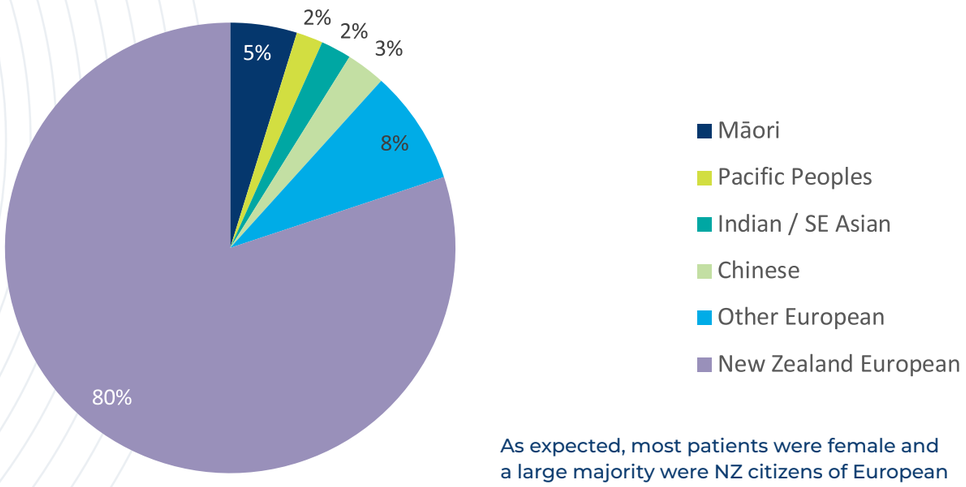


FIGURE 2 – ETHNICITY

Ethnicity is prioritised according to HISO Ethnicity Data Protocols (HISO 10001:2017).

Australian, Canadian and American have been grouped into Other European. Cook Island Māori, Fijian, Niuean, Tongan, Samoan and Other Pacific People have been grouped into Pacific Peoples. Middle Eastern / Latin American / African and Not elsewhere included have been omitted as they were less than 0.2%.



As expected, most patients were female and a large majority were NZ citizens of European descent. Over 60 ethnicities were represented; for clarity these are shown here grouped by regional heritage.

FIGURE 3 – AGE AT PRESENTATION

National Median Age = 78; National Average Age = 76

Sorted by % patients 80+

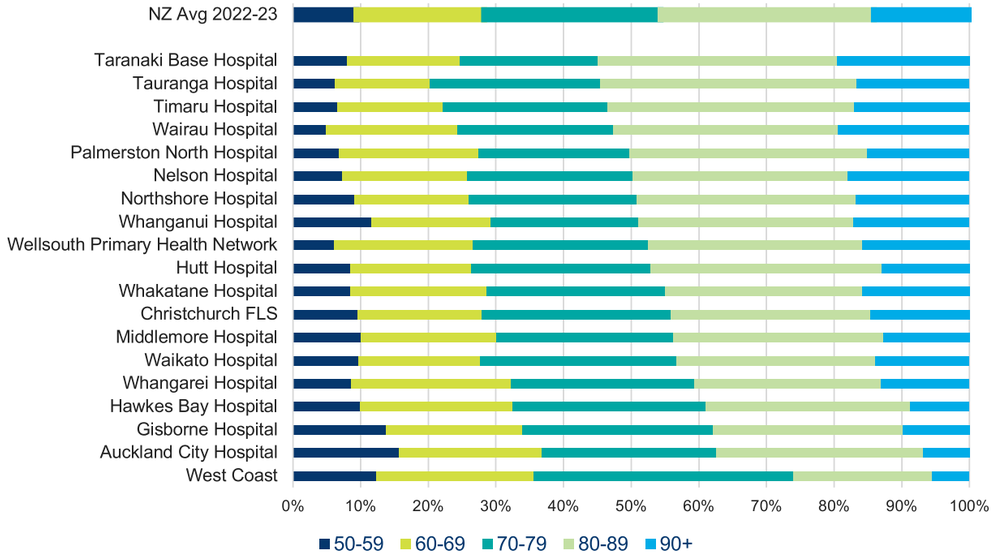


FIGURE 4 – PRE–FRACTURE RESIDENCE

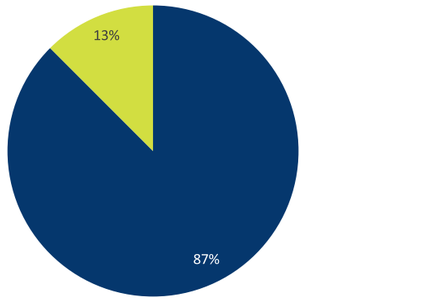


FIGURE 5 – PRE–FRACTURE MOBILITY

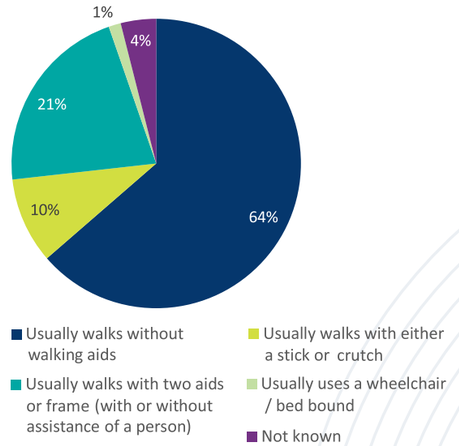
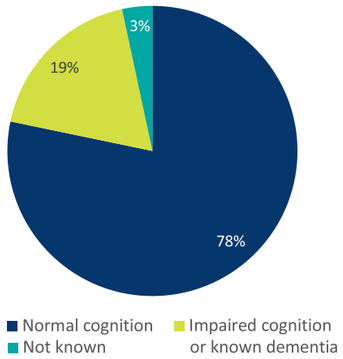


FIGURE 6 – PRE–FRACTURE COGNITIVE STATUS



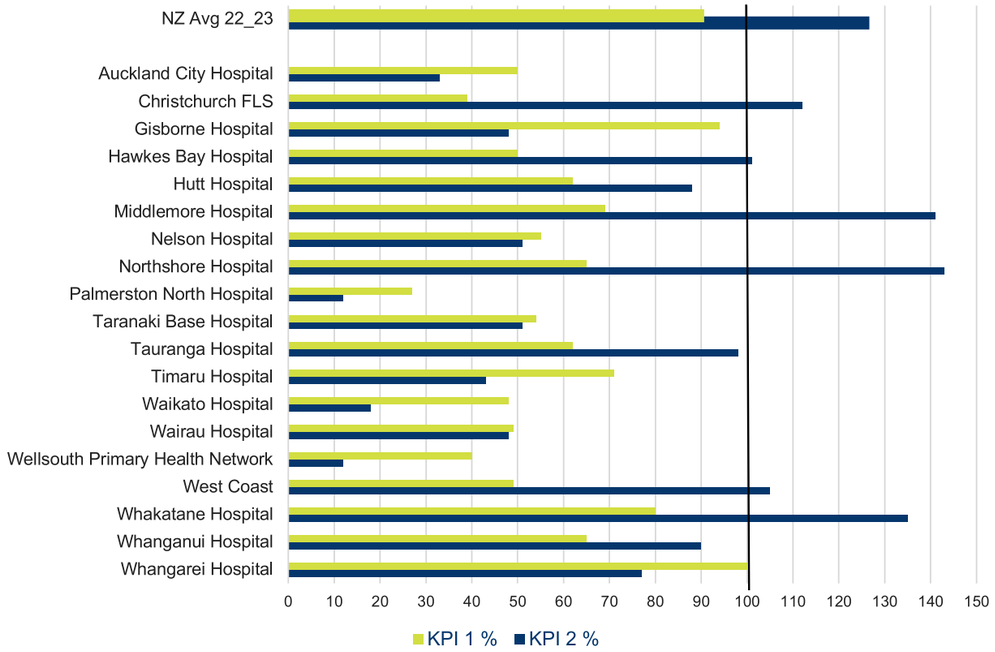
One of the greatest barriers to recovery after fracture is cognitive impairment including dementia, which may not have been recognised before their injury. People with dementia are less able to take part in rehabilitation and more likely to fall again.

STANDARD 1: IDENTIFICATION

All people aged 50 years or over who sustain a fragility fracture will be systematically and proactively identified by the FLS.

FIGURE 7 – //KPI 1 & //KPI 2

Percentage of predicted new non-spine (KPI 1) and spine (KPI 2) fractures for each hospital. Of the predicted all-NZ total ANZFFR captured **55%** in Year 1 but this represented **>90%** of those with access to a participating FLS at the time of their injury. Spine fractures from previous years are often identified later – FLS teams which actively sought these out, recorded detection rates above 100% of predicted.



"When case finding we look for any ED presentation that could possibly indicate fracture. This includes a long list of reasons including things like inguinal pain, seizure and difficulty weightbearing. Fracture clinic lists tend to capture the ones seen at Whitecross or at their GP and we include all fractures the FFR suggests."

From L to R: Sijoy Alex (CNS), Frazer Anderson (Geriatrician) & Lynsey Griffiths (CNS), Whangarei Hospital FLS, Te Tai Tokerau / Northern Region.

FIGURE 8 – IDENTIFICATION METHOD

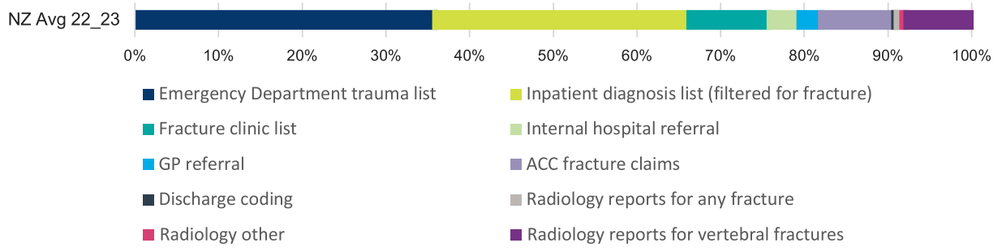
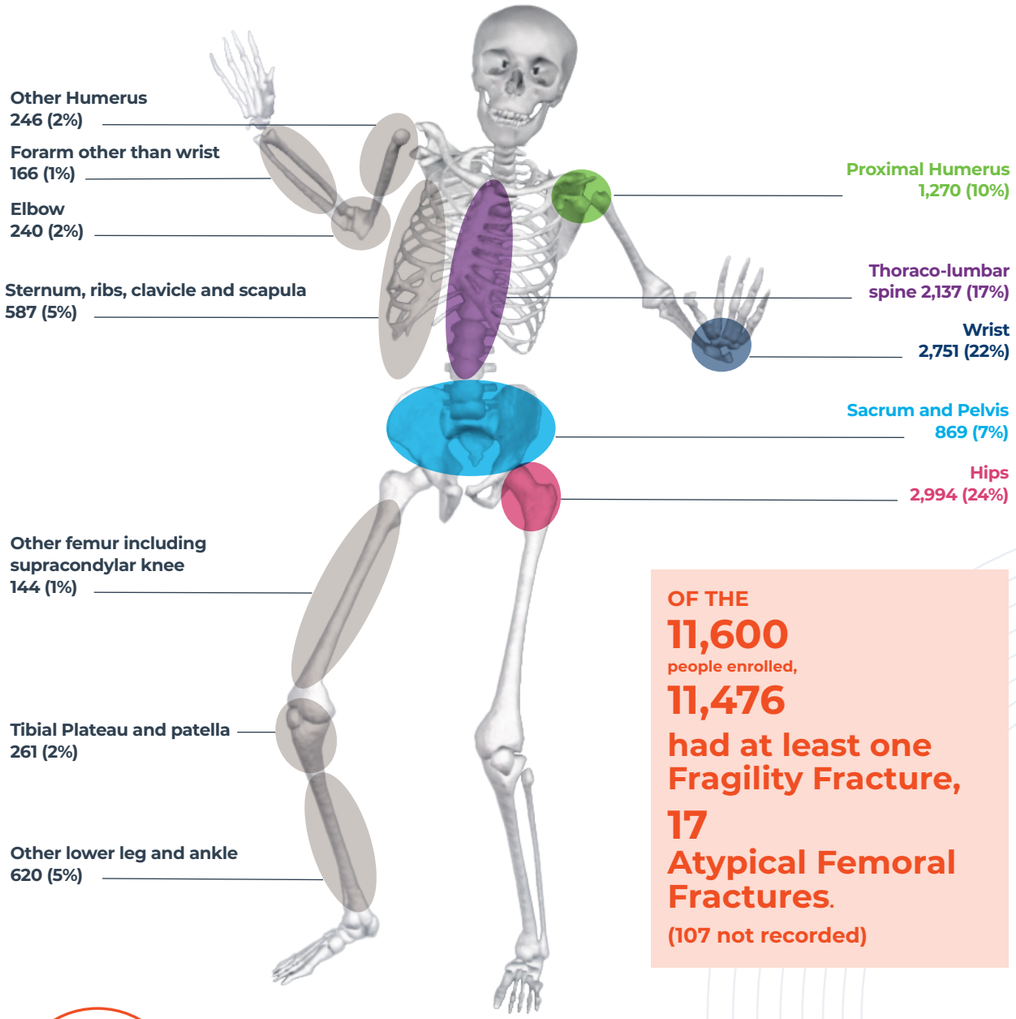


FIGURE 9 – FRACTURE SITES AT PRESENTATION

There are 12,285 separate fractures. Among the 11,600 patients who sustained at least one fragility fracture, 5.2% (644) of patients had a second fracture site and 0.47% (58) patients had a third fracture site that occurred in the same injury event.



OF THE
11,600
people enrolled,
11,476
had at least one Fragility Fracture,
17
Atypical Femoral Fractures.
(107 not recorded)

IDENTIFICATION OF
PEOPLE WITH FRAGILITY FRACTURES

FIGURE 10 – ADMISSION TO HOSPITAL

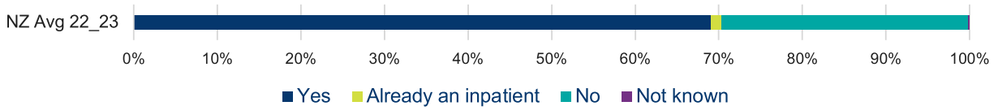


FIGURE 11 – FURTHER ASSESSMENT

85% of patient records are marked for Further Assessment.

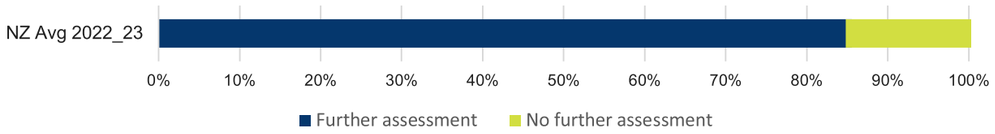
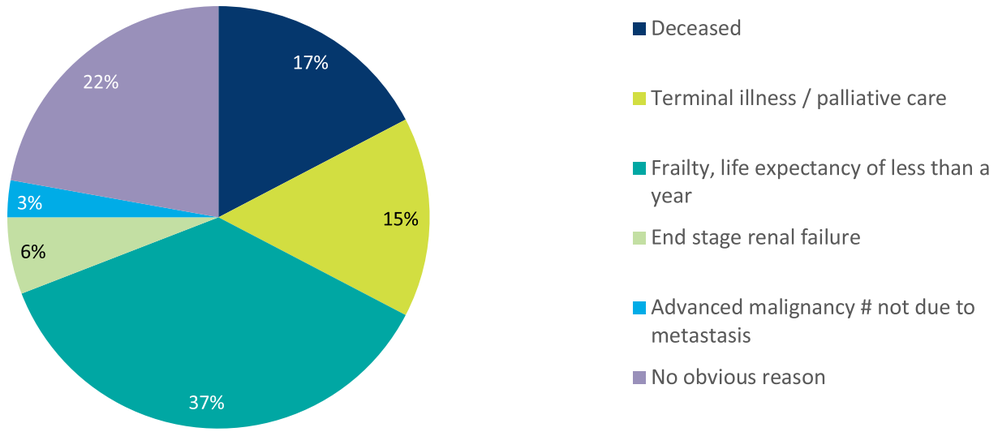


FIGURE 12 – NO FURTHER ASSESSMENT REASON



"Middlemore Hospital's internal daily fracture reporting system is one of the nation's best fracture reporting systems, identifying fragility fractures from the Emergency Department, Nursing handovers from the wards, fracture clinics, and especially vertebral fractures from the radiology list. FLS has worked with our IT department and radiology to develop a system that is accurate, efficient, reliable, and user-friendly, which allows fast and easy access to identify fragility fracture patients aged 50 years and over in the Middlemore catchment daily and are included in ANZFFR with consent."

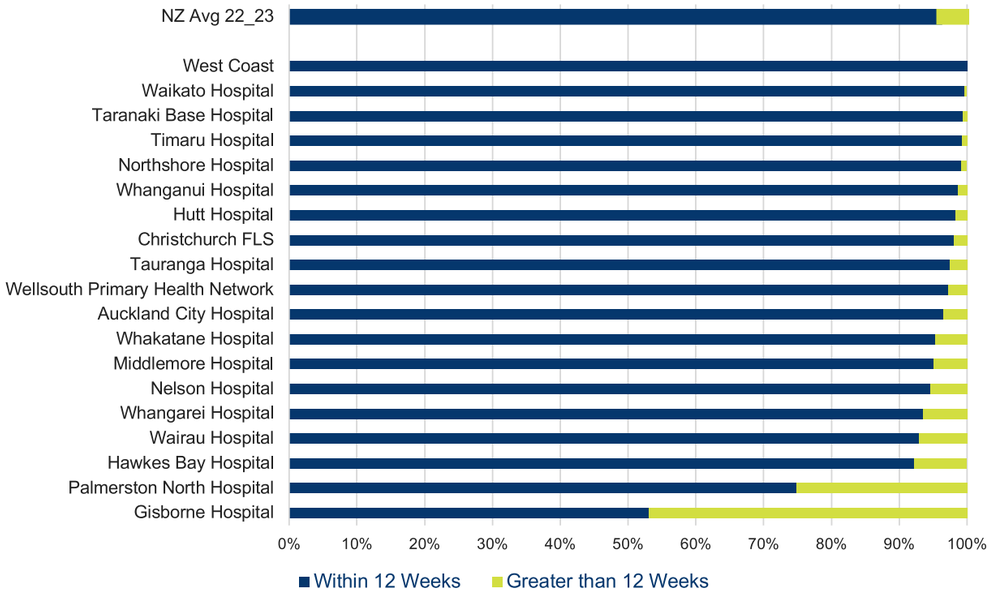
L to R-Sumitha Sahadew (Operations Manager), Amy Joseph (FLS, CNS), Sunita Paul (Clinical Lead consultant geriatrician), Elizabeth Priya Singh (FLS, CNS), Rashika Chandra (FLS Administrator).

STANDARD 2: INVESTIGATION

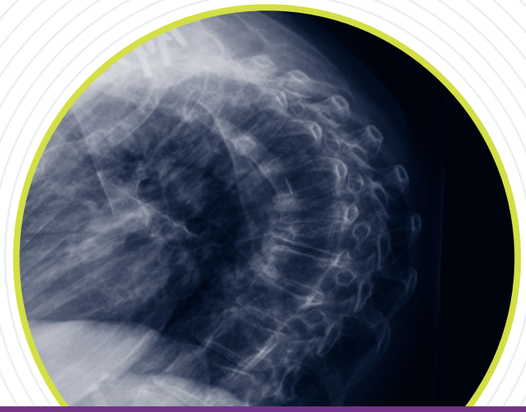
People with a fragility fracture will undergo timely assessment for future fracture risk including bone health (i.e. osteoporosis) and falls risk.

FIGURE 13 – //KPI 3 DATE OF ASSESSMENT WITHIN 12 WEEKS OF INDEX FRACTURE DATE

Nationally, 95% of people enrolled in ANZFFR had a Bone Health Assessment within 12 weeks



Waikato FLS highlight "We have good access to patients notes both in hospital and out in the community. Additionally, we see all our patients whilst they are in hospital in person, so the time required to complete the assessment on those patients is low. We aim to see these patients within 3 working days, of course this excludes any patients that have cognitive impairment or a delirium."



INVESTIGATION INCLUDING TIMELY ASSESSMENT OF BONE HEALTH AND FALLS RISK

BONE HEALTH ASSESSMENT

FLS coordinators are guided by the patient assessment form investigation section on bone health and falls assessments questions to ask. Risk factors for osteoporosis and any previous fractures and treatment is documented, alongside secondary causes review and fracture risk scores.

FIGURE 14 – REPORTED PREVIOUS FRAGILITY FRACTURES

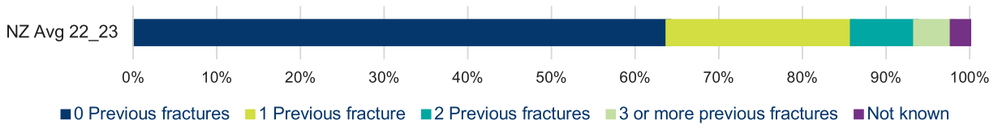


FIGURE 15 – RISK FACTORS

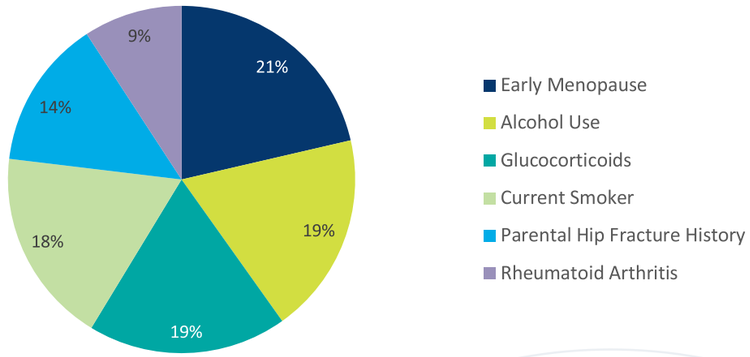


FIGURE 16 – CURRENT OSTEOPOROSIS MEDICATION

Taking osteoporosis medication at time of index fracture

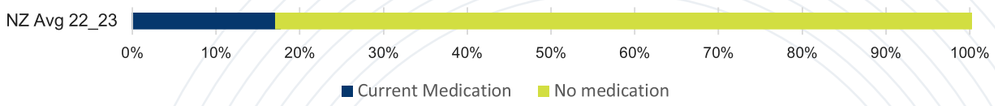
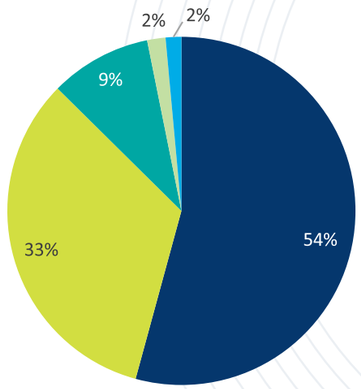


FIGURE 17 – CURRENT OSTEOPOROSIS SPECIFIC TREATMENT



A further 22% of patients reported that they had previously taken an osteoporosis specific treatment at some time before their index fracture but were no longer on this treatment.

FIGURE 18 – THORACO–LUMBAR IMAGING WITHIN LAST 5 YEARS

Imaging of the spine by plain X-ray, CT or MRI scan: 7,558 (76%) recorded, 4,042 not recorded

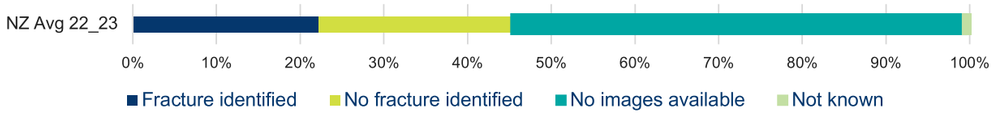


FIGURE 19 – SECONDARY CAUSE REVIEW

In some people, osteoporosis is secondary to (caused by) another medical condition. This is identified by reviewing their medical history and carrying out blood tests. Secondary Cause Review count: 8,519 (73%), 3,081 not recorded

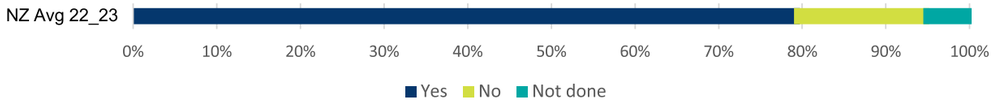
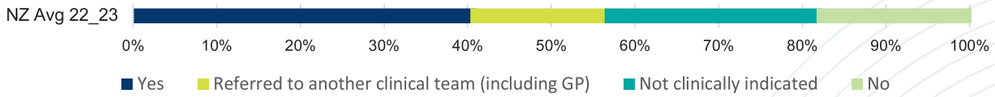


FIGURE 20 – SECONDARY CAUSE BLOOD TESTS

Secondary Cause Blood Tests count: 7,961 (81%), 3,639 not recorded



CLEAR EXPLANATIONS SUPPORT PATIENT UNDERSTANDING

Barbara Bentley, FLS Physio at Wairua Hospital finds clear explanations help the patients understand the FLS Bone Health assessment clearly. “We see some inpatients face to face to do the initial bone health and falls assessment, but the majority are done over the telephone. Once I have introduced our service and the reason behind the bone screening questions, I generally find that patients are happy to answer some simple “yes/no” questions relating to their bone health.

Smoking: “Do you currently smoke?”

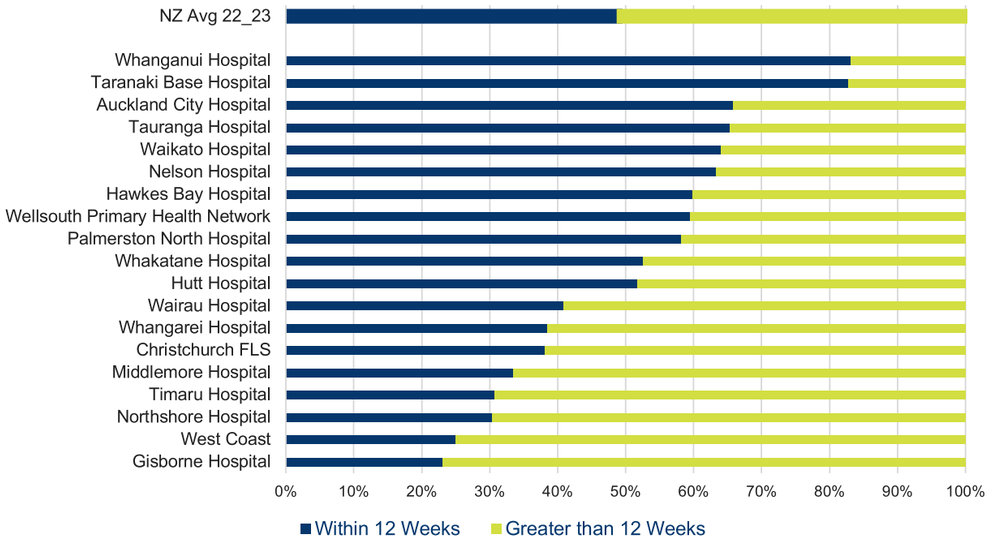
Alcohol: “Do you typically drink more than 2 or 3 drinks of alcohol a day?”

Early menopause: “Do you remember if you had an early menopause — we generally consider younger than 45 years old when your periods stopped to be early.” We find that some people can understand ‘periods stopping’ better than “menopause”.

INVESTIGATION INCLUDING TIMELY ASSESSMENT OF BONE HEALTH AND FALLS RISK

FIGURE 21 – //KPI:4 DXA DATE WITHIN 12 WEEKS

1,448 with DXA within 12 weeks, 1,501 outside 12 weeks

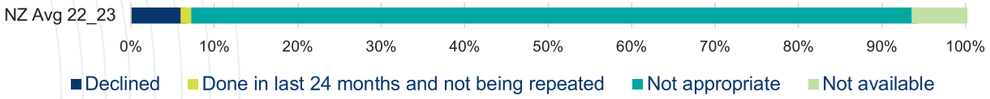


Access to funded DXA scans varies across the country, which contributes to the variation in achievement of KPI 4. In some districts Health NZ Te Whatu Ora funds DXA for patients who meet set criteria; elsewhere there is no central funding available. In those districts patients without private medical insurance who according to NZ Clinical Guidelines require a DXA for calculation of their fracture risk must meet the full cost of up to NZ$250 themselves.

In order to achieve more consistent performance on KPI 4, efforts must be made to standardise access to funded DXA across New Zealand. Better access to DXA improves treatment selection and compliance and therefore increases the impact on fragility fracture rates.

FIGURE 22 – DXA – REASONS NOT DONE

346 patients met standard criteria for DXA scan but no funded DXA scan was available in their area



Not appropriate equals DXA scan not indicated or DXA scan contraindicated.

ACCESS TO DXA IN NZ DEPENDS ON WHERE YOU LIVE

Auckland City Hospital's FLS is managed by endocrinology and has the privilege of having an in-house DXA scanner, Jenny Watson CNS highlights the benefits, "Scans are performed by the FLS nurse. This gives us the opportunity to discuss bone health and treatment with patients being scanned. We do run a 'one stop shop' for those referred to specialist i.e. patients have a scan, see a bone specialist afterwards and then receive treatment (IV Zoledronate) or script for oral medications. Those receiving Denosumab or Teriparatide will receive training in the department".

Those in rural areas are less fortunate and have many hours to travel to their nearest DXA scan provider. "The challenges on the West Coast that are ongoing is the large distance some patients must travel (up to 4 hours) to receive a DXA which is only done at Greymouth (Te Nikau) Hospital and IV treatment which is the same. There are currently no GP practices that offer the infusion service," reports FLS CNS Cath Flain.

FALLS RISK ASSESSMENT

99.93% OF PATIENTS HAD A FALLS RISK ASSESSMENT WITHIN 12 WEEKS OF THEIR FRACTURE – //KPI 5

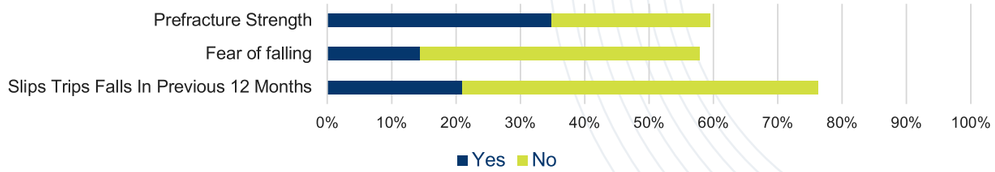
Potential cardiac causes

8,965 patients (91%) were asked about symptoms suggesting a potential cardiac cause of their fall. Of these, 467 (5.2%) reported symptoms suggesting a need for further assessment:

- 111 reported loss of consciousness/fainted.
- 130 can't remember falling or woke up on floor.
- 226 with prodromal symptoms such as light-headedness associated with postural changes.

FIGURE 23 – FALLS, FALLING AND STRENGTH

Patients reported the following concerns about falls risk factors

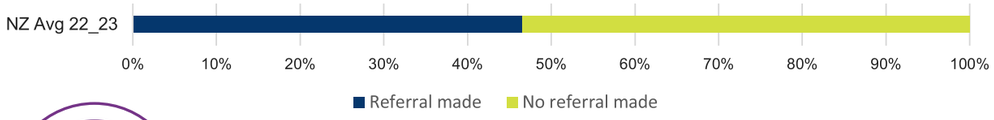


66 records were excluded from this graph as they were marked "not for further assessment" earlier in the assessment process.

FIGURE 24 – STRENGTH AND BALANCE REFERRALS

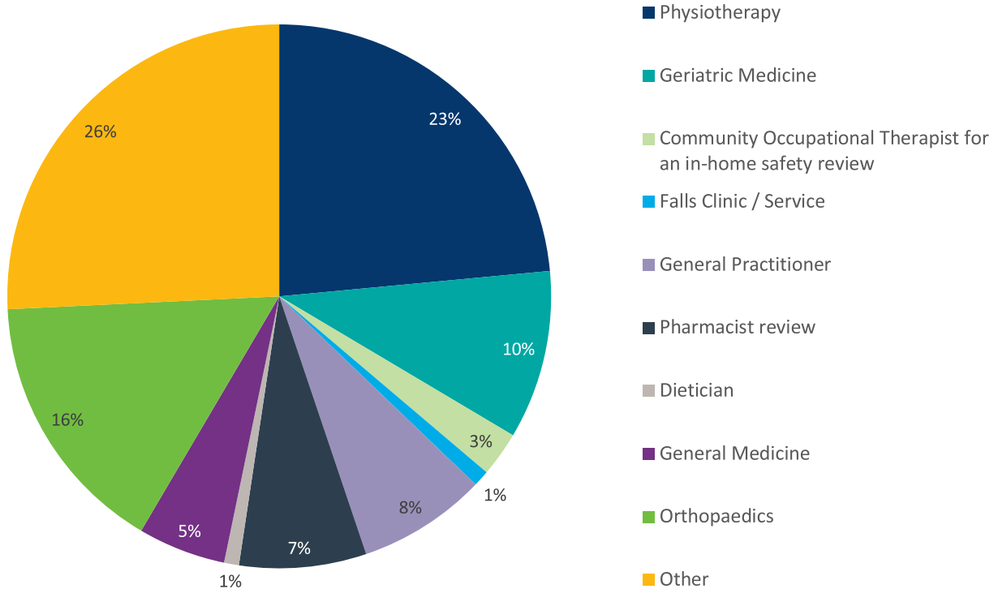
Strength and Balance Referrals count: 8,930 (85%)

FIGURE 25 – REFERRALS FOR FURTHER MANAGEMENT OF FALLS RISK



INVESTIGATION INCLUDING TIMELY ASSESSMENT OF BONE HEALTH AND FALLS RISK

FIGURE 26 – FALLS RELATED REFERRAL TYPES



IMPROVING FALLS THROUGH FLS

"I have an extensive osteoporosis history dating back to 1997. My mother also had osteoporosis. I have thoracic kyphosis with two vertebral fractures in 2007, at T7 and T8. I managed quite well with Aclasta infusions since 2013 and monthly Vitamin D3. In December 2021 an accident getting out of a car resulted in two significant fractures on my left side (neck of humerus and neck of femur). This was my introduction to FLS team and to bone clinic appointments. Our GPs are not specialists so it is invaluable to have this service which sends comments and recommendations to our GP. I am so grateful for their expert advice. Physiotherapy arranged privately (ACC) has featured in my recovery alongside regular strength and balance exercise classes. In January 2022 I had a minor fall in the house which resulted in pelvic fractures. I now use a walker and or walking stick and have had no falls for 7 months. Extensive foot problems contribute to my lack of balance but I am still active and involved in community activities. The follow up after a fracture makes a significant difference to our care and outcomes."

Angela Scott, 86, Tauranga Resident and FFR consumer Rep, with Juanita Berridge CNS Tauranga FLS at FLS meeting.

ANNUAL FRACTURE FEST

The augural Fracture Fest 2022, Wellington.

Each year in May the ANZFFR hosts a day of free education for all FLS staff in New Zealand. The coming together of all the FLS teams at a national level, encourages networking and a sharing of knowledge and processes to help support a national approach to issues and outcomes. Our big city urban FLS hospital teams function differently to our small Primary Health Network rural site, yet by using the same framework and clinical standards we can highlight great working processes and share at these events.

The first ever Fracture Fest in 2022 was held in Wellington with the theme "Pathway to Gold" highlighting how far we had come, how to achieve IOF gold star status and 101 of osteoporosis, with lots of time for networking and open discussion. With ACC as stakeholders speaking about their commitment.

Auckland hosted the 2023 Fracture Fest with the theme "All Things Vertebral" with a wide variety of fantastic speakers covering radiological anatomy, treatment of vertebral fractures, case studies and reporting of a local FLS's ethnicity data looking at equity.

Carolyn Cooper, Aged Care Commissioner, attended to listen to the great work happening with patients to help improve quality of life after fracture. Day 2 focused on workshops and specific clinician sessions. Feedback from the event emphasises the important of gathering together and sharing our work, the collegial interaction and collaboration opportunities helps build a national relationship amongst the teams. Fracture Fest 2024 will be held in Christchurch focusing on "FLS in the Older Adult".

In Australia, Dr Mary Bussell presented the Integrated Care Pathways for Bone Health. This was sponsored by AMGEN and was an overview of global policies in October 2022. In early 2023 a joint ANZFFR / SOSFA meeting to showcase the registry and let potential sites see the benefits of using the system. A recording of this meeting can be found at fragilityfracture.com.au.

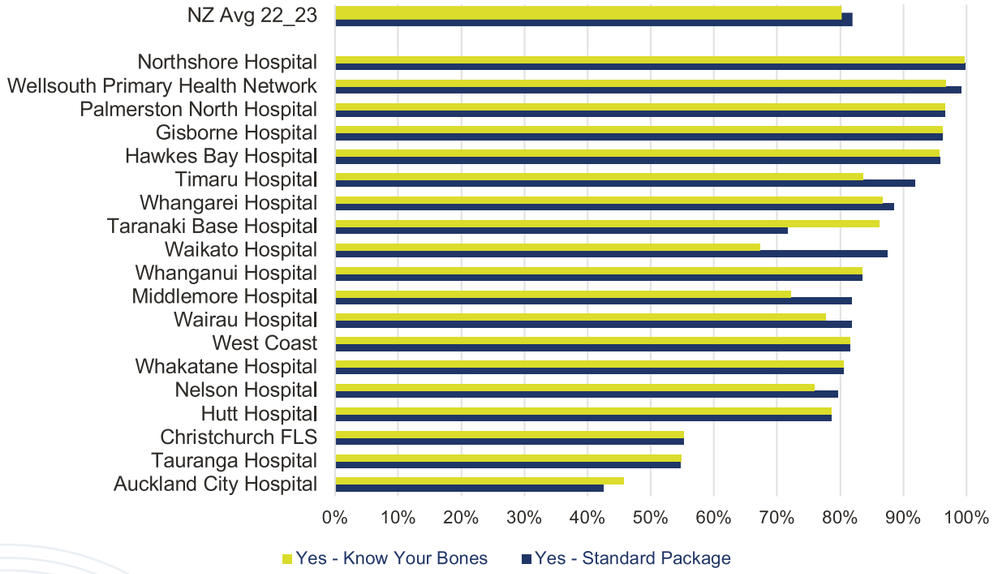
Nicola Ward, NZ FFR Coordinator & Carolyn Cooper, Aged Care Commissioner. Dr Frazer Anderson, NZ FFR Clinical Lead presenting 2023. Dr Roger Harris former NZ FFR clinical lead presenting 2022.

STANDARD 3: INFORMATION

People with fragility fracture, their family members and whānau or carers will be provided with information – in their own language and in plain language – on bone health, lifestyle measures including exercise, alchohol and smoking), nutrition (including calcium and vitamin D intake), sun exposure and the relationship between osteoporosis and fracture risk.

FIGURE 27 – //KPI: 6 INFORMATION PACKAGE AND //KPI 7 KNOW YOUR BONES WITHIN 12 WEEKS

This graph shows the percentage of patients marked for Further Assessment that received a Standard Package or Know Your Bones™ leaflet.



A standard package is bone health information either handed/posted or digitally sent to the patient, whānau or carers in their own language. It includes information such as lifestyle measures (such as exercise, alcohol, and smoking), nutrition (including calcium and vitamin D intake), sun exposure and information about osteoporosis, fracture risk and medication options. Region-specific information on local strength and balance classes is included where appropriate. Know Your Bones™ supports self-assessment of bone health by family members with a fragility fracture.

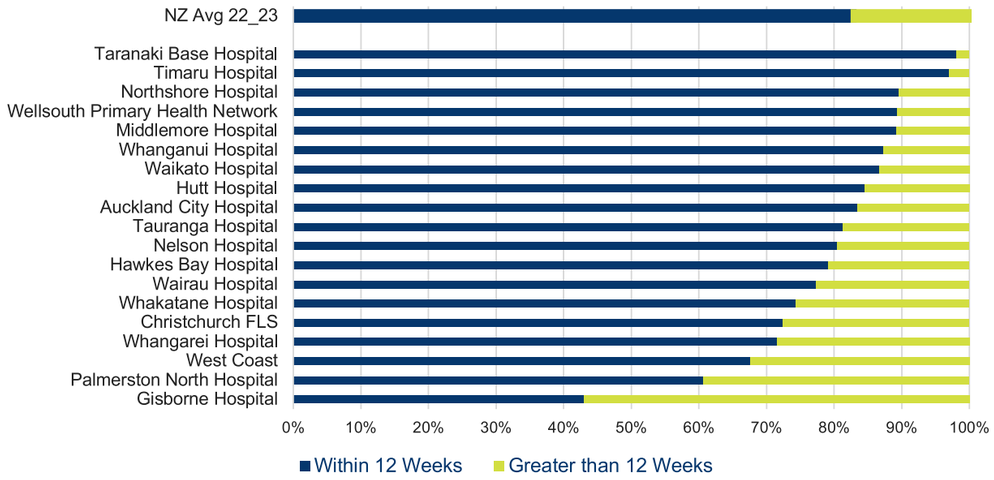
INFORMATION GIVEN TO SUPPORT PATIENT AND FAMILY/WHĀNAU

STANDARD 4: INTERVENTION

People with a fragility fracture determined to be at high risk of sustaining future falls and/or fractures will be offered appropriate osteoporosis treatment with PHARMAC subsidised medicines and be referred for interventions to reduce falls risk.

FIGURE 28 – //KPI: 8 DATE OF OSTEOPOROSIS TREATMENT RECOMMENDATION

Number of patients already on treatment, started after fracture or treatment recommended by FLS 5,129 within 12 weeks, 1,060 outside 12 weeks



SWIFT FLS CONTACT IMPROVING TREATMENT RECOMMENDATIONS

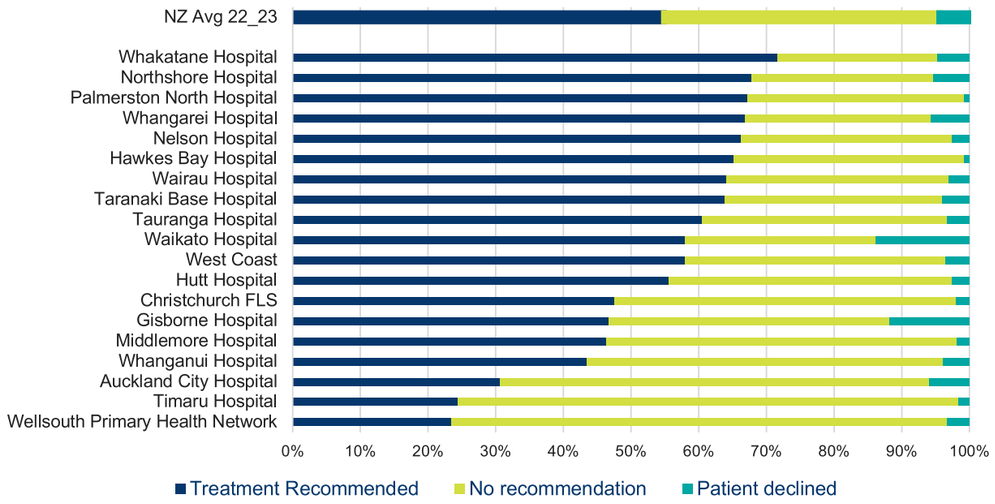
"WellSouth FLS sees direct patient contact, in the community, as soon as possible after fragility fracture to be the most important part of our job and the best way to ensure that patients, across the largest FLS area in the country, get the best possible bone health advice and care."

L to R: Nicola Haywood (FLS Manager), Richard Macharg, (GP & Clinical Lead), Tracey Barnett (FLS Nurse), Nicole Hogg (FLS Physio), Bevan Taiaroa (FLS Nurse & Geo) Joseph (FLS Admin) for Wellsouth Primary Health Network FLS

INTERVENTION WITH OSTEOPOROSIS SPECIFIC TREATMENT AND FALLS PREVENTION

FIGURE 29 – OSTEOPOROSIS TREATMENT RECOMMENDATION VS NO RECOMMENDATION

5,016 recommended for treatment, 3,719 not recommended or unknown, 1,808 treatment decision pending while investigation results awaited, 407 patients recommended treatment but declined.



Patients awaiting a treatment decision not included

FIGURE 30 – REASON TREATMENT NOT RECOMMENDED

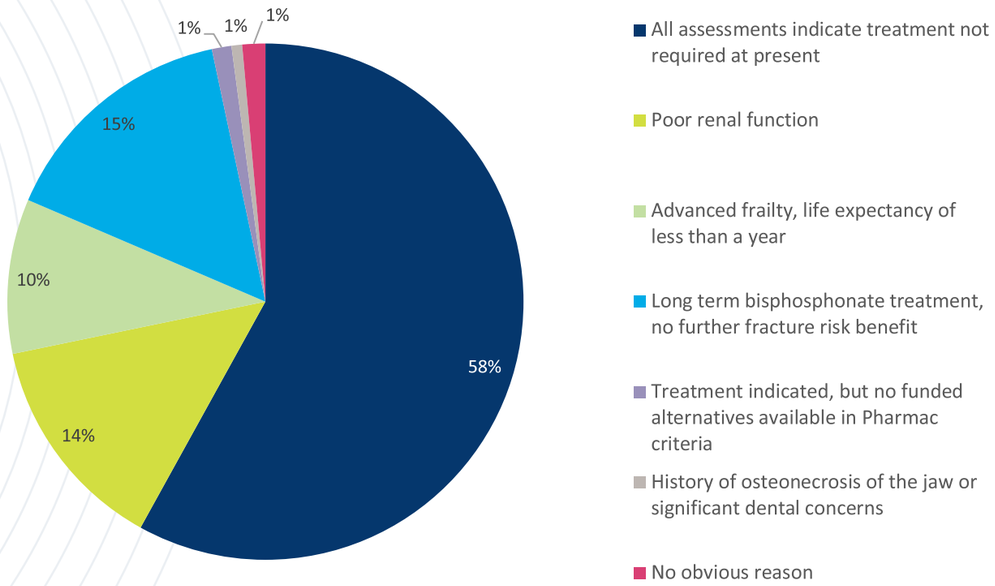
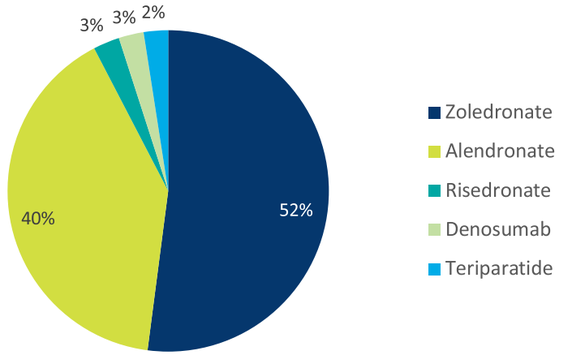


FIGURE 31 – OSTEOPOROSIS SPECIFIC TREATMENT RECOMMENDATION



VITAMIN D-ONLY RECORDED FOR THOSE LIVING IN RESIDENTIAL AGED CARE FACILITY, (RACF)

Vitamin D supplementation is not usually necessary and has not been shown to reduce fracture risk for most adults in New Zealand. However, a Vitamin D supplement is recommended for older people living in a RACF in whom it may reduce falls risk. 88% of RACF residents enrolled in ANZFFR were recorded as taking Vitamin D at the time of their fracture.

INFORMED DECISIONS MAKE A DIFFERENCE

"Following my injury, I was promptly contacted by a CNS from the Fracture Liaison Service. They were informative and supportive with their extensive knowledge and experience relating to the treatment for osteoporosis, preventative treatment options and their mechanism of action. My husband and I greatly appreciated their informed answers to our technical questions. It has enabled me to make an informed decision on which course of action I will be taking. I strongly feel that the FLS is an essential and valuable service, I feel this Service would be of great benefit to women identified as having osteopenia or osteoporosis and who have not yet had a fracture, especially if they wish to be well informed. The Fracture Liaison Service significantly contributes to reducing the likelihood of future fracture incidents and the impact of osteoporosis on health, lifestyle and well-being as well as reducing potential future demands on the resources of our Health System." *Wendy, Northshore Hospital FLS patient*

MAKING IMPROVEMENTS IN A RURAL SETTING

"We are so proud of the success our small team has achieved. Our service covers a large geographical area, with a significant proportion of our patients living in rural settings which makes accessibility a challenge. The Eastern Bay of Plenty also has a large Māori population, so this is our small way of trying to achieve health equity for our patients."

Dr Esra Venecourt-Jackson (Geriatrician), Whakatāne (FLS Clinical Lead), Tracy Wilson (CNS FLS) & Daniel Lee (Pharmacist). (L to R)

INTERVENTION WITH OSTEOPOROSIS SPECIFIC TREATMENT AND FALLS PREVENTION

FIGURE 32 – 16 WEEK FOLLOW UP DATE- //KPI: 9

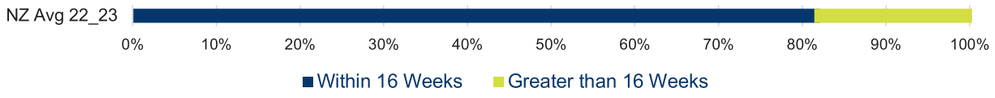


FIGURE 33 – 16 WEEK FOLLOW UP COMPLETED

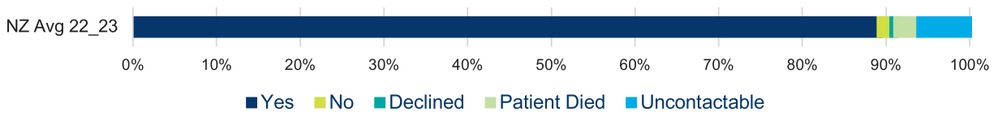


FIGURE 34 – 16 WEEK RESIDENCE AT TIME OF 16-WEEK FOLLOW UP

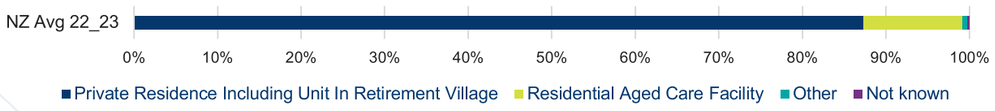
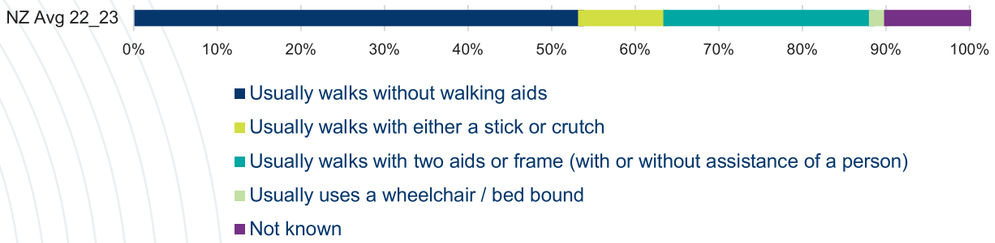


FIGURE 35 – 16 WEEK MOBILITY



THE BENEFITS OF FOLLOW UP

"Bay of Plenty (BOP) region FLS has been running since 2015 with limited staff resource and no follow up of the patient after osteoporosis treatment was given or recommended. With increased staffing from the ACC national program, our patients are followed up at both 16 weeks and now at 52 weeks all recorded in the FFR. Follow up offers both a chance to check in with your patient and refresh your bone health education or discuss fracture care and on-going falls prevention options. Plus, has finally allowed us to see how the service is tracking with treatment outcomes. The 52 week follow ups have been very rewarding hearing how the patients have improved and are on track with their medication regime. Patients are very keen to share their accomplishments with you. But it has made our service realise it does take up to a year from patients to fully recover from a fragility fracture. Reviewing our follow ups has been a real eye opener for the service to see how many patients we treat, the FFR has made this an easy process to review and a great feedback loop to ensure patients are supported longer term with both their bone health and falls".

Nicola Ward (FLS CNS Team Lead), BOP region.

FIGURE 36 – MEDICATION COMMENCED AT 16 WEEKS - //KPI: 10

54% Medication Commenced, 45% No

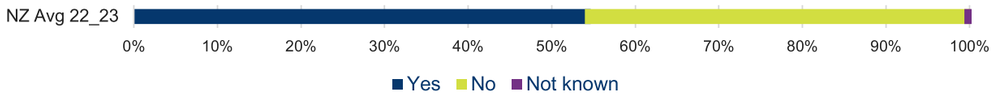


FIGURE 37 – 16 WEEK MEDICATION TYPE

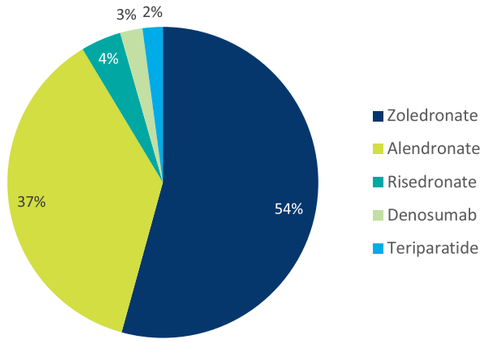
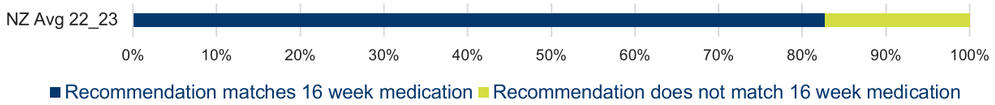


FIGURE 38 – RECOMMENDED MEDICATION MATCHES 16-WEEK MEDICATION



PATIENT JOURNEY

"Mrs Delia Ann Robinson is an 83-year-old women who is independent at baseline fell onto sacrum and sustained first fracture of her life. Her radiology images revealed bilateral sacral wing fractures and osteopenic bones. She lives at home alone, cooks, independent with ADLs and drives. Delia's fracture was managed conservatively and progressed with physiotherapy and occupational therapist input.

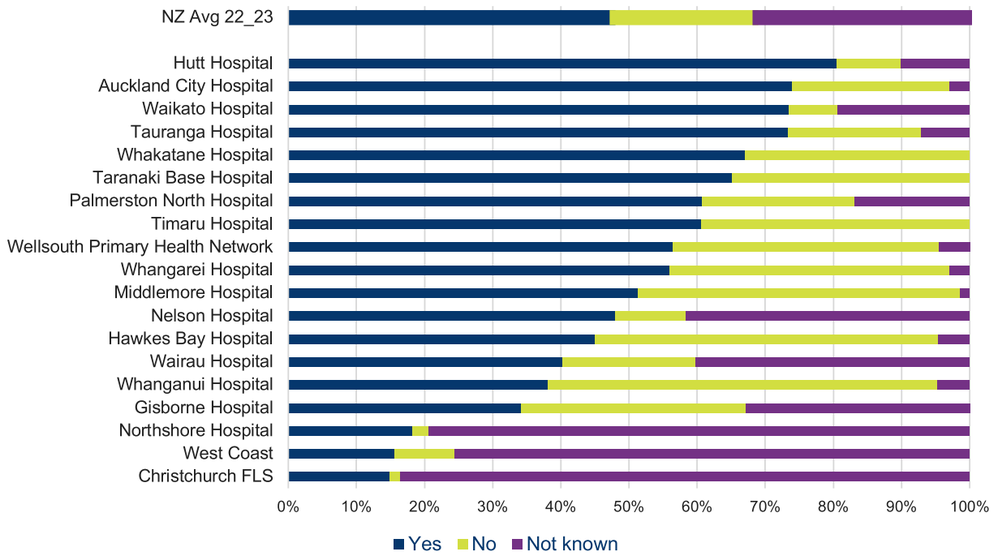
Delia was very happy and consented for the Fracture Liaison Service input and I completed Fragility Fracture Assessment. Delia's dental Xray and notes were reviewed by the hospital dentist and approved for the bisphosphonate treatment. Delia completed 10 days of Vit D loading dose and received zoledronic acid infusion on the 10th day of admission without any complications. During Delia's stay in the hospital, I spoke with her about the importance of nutrition, weight-bearing activity, strength and balance classes and getting enough sun exposure to improve bone health. Delia has made great progress during her 16 days of rehabilitation and mobilized around the ward independently with stroller, was independent getting on and off the bed, chair and toilet. Delia is discharged with a once daily package of care through ACC, for support as needed with washing, dressing, and making breakfast. Delia was referred to ICATT for follow-up, to work on her goals to become independent with showering, dressing, meal preparation, and shopping.

Delia said that 'your bone health knowledge, explanation and treatment are so good. Thanks for the information about strength and balance classes'."

by Jack Saju, FLS Coordinator Taranaki.

INTERVENTION WITH OSTEOPOROSIS SPECIFIC TREATMENT AND FALLS PREVENTION

FIGURE 39 – STRENGTH AND BALANCE STARTED AT 16 WEEKS - //KPI: 11



For ACC, a fracture is an injury. For the health system, a fracture is often a marker of frailty and an indicator of several health care issues. For the older person, a fall or fracture often means a loss of independence. The Live Stronger for Longer programme aims to improve the wellbeing and quality of life for Kiwis by reducing the incidence and severity of falls and fractures suffered by older adults.

To achieve this, ACC is committing to support New Zealand's health sector to establish and embed best practice Fracture Liaison Services within each region, and we want to enable everyone over 50 years of age to sustain or improve their strength and balance by participating in approved community-based and/or digital strength and balance programmes.

Botany class, Balancing Bloomers & Otara class - with thanks to Ohunga S&B coordinator for sharing her classes

STANDARD 5: INTEGRATION

The FLS. in partnership with the person with fracture and their general practitioner, develops a long-term care plan to reduce risk of falls and fractures, and promote long-term management.

FIGURE 40 – LONG TERM PLAN DATE WITHIN 12 WEEKS AS PERCENTAGE OF TOTAL FRACTURES - //KPI 12

This shows the percentage of patients for whom their FLS met the KPI 12-week target. The next graph shows the additional patients who received a Long Term Plan after 12 weeks - not ideal but still a significant benefit.

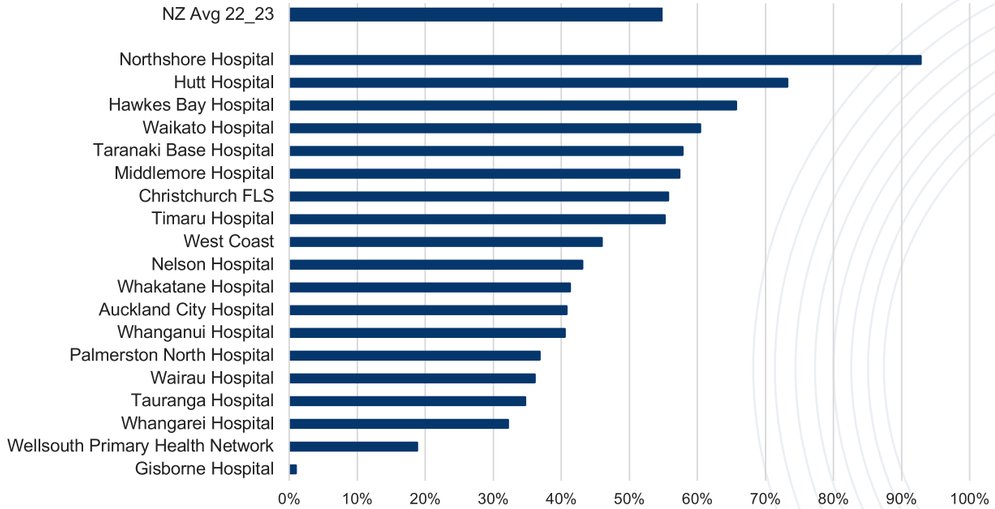
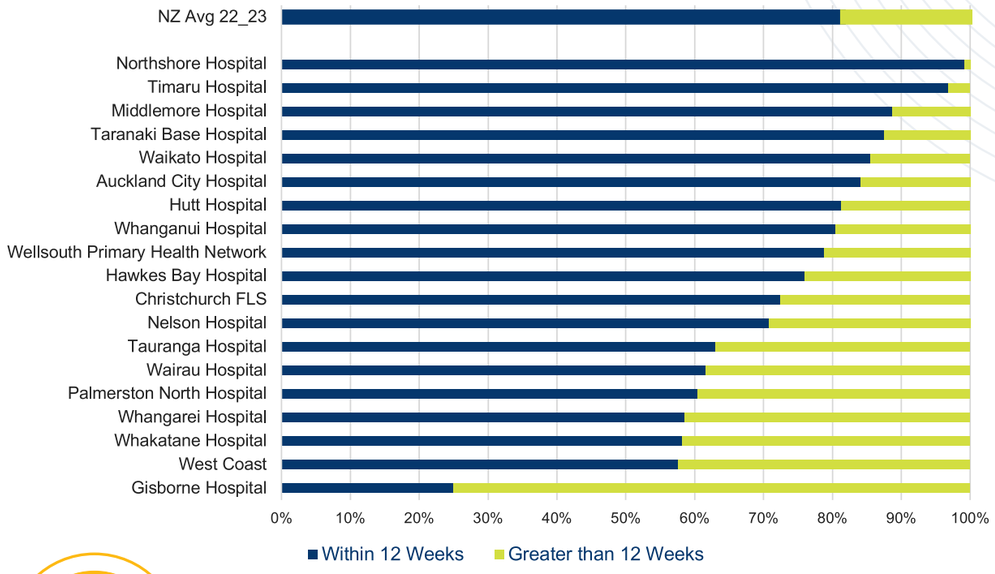


FIGURE 41 – LONG TERM PLAN DATE



INTEGRATION THROUGH LONG TERM CARE PLANNING AND MANAGEMENT

LONG TERM TREATMENT PLAN

A Long-Term Treatment Plan (LTTP) template has been developed by Osteoporosis New Zealand in conjunction with the ANZFFR to help support clinicians' bone protection decision making and to share information between FLS, the patient and the patient's GP. The LTTP template sits within the registry and transfers selected information to a letter which can be sent to the patient and GP. FLS co-ordinators have the option to select relevant patient assessment information, the results of any investigations and recommended actions. The aim of the treatment plan is to outline who is responsible for the initiation and ongoing management of bone protection medication, recommend specific treatment choices and the expected duration of treatment. Coordinators have the option to personalise the treatment plan by adding free text commentary to help guide both the GP and the patient towards the best long-term fracture and falls prevention outcomes.

PRESCRIBING RESTRICTIONS CAN LEAVE SOME PATIENTS WITH NO GOOD TREATMENT OPTIONS

"After a fall from my bike with instant back pain and thoracic spine fracture discovered on X-ray, I eventually came in contact with my local Fracture Liaison Services who recommended osteoporosis treatment after I had a bone density scan, FLS communicated frequently as required to keep abreast of my treatment plan and progress back to full activity. Along the way the information on the treatment options I have requested has been provided with references to materials accessible on the internet so that I can conduct my own research if desired. I did receive my first (and last) dose of Aclasta. I reacted badly to it with severe eye irritation. When I sought treatment in Auckland twice and then back in Tauranga (ED) the medical specialists did not link effect and cause and provide appropriate interventions. It was only when I consulted an optometrist that he referred me immediately to the Urgent Eye care department at the hospital. Luckily, I haven't suffered permanent eye damage, but Aclasta is no longer an option for me. Given the likely incidence of bad reactions the treatment should include an advisory to GPs how to combat the side effects and that patients should immediately seek help at their GP if they have an adverse reaction. Now that I am due for my next treatment, we (FLS and me) are battling with PHARMAC to fund an alternative treatment regime (that is freely available in Australia), which seems counterproductive as the hospital / treatment costs associated with treating a degenerating spine would far exceed the costs of the drug treatment. In the meantime, FLS is liaising with me frequently and doing a sterling job with the other FLS teams making a case to PHARMAC. I nearly gave up cycling, but the FLS nurse encouraged me to continue with the sound advice of keep fit and "just don't fall off", how wise can you get! I have just completed a cycle holiday in Europe averaging 60km per day and covering 2,300km in 6 countries over an 8-week period."

Alan, 71, BOP Region

//KPI 13: 52-WEEK FOLLOW UP

Only those people who were recruited in the first few months after the Registry launch have completed a year since their fracture and were due for their one-year follow-up before this report went to press. Results will therefore be included in next year's report. Monthly tracking to date shows good rates of completion for those early recruits and a strong sense of appreciation from them that "somebody cares enough" to make contact and ask how they are.

STANDARD 6: QUALITY

The FLS will undertake ongoing performance review enabled by participation in the NZ arm of the Australian and New Zealand Fragility Fracture Registry and ensure appropriate Continuing Professional Development (CPD) for FLS staff.

//KPI 14:

Review of the past year's education in the NZ 2023 Facility Level Audit highlighted Fracture Fest, FLNNZ, FFN and IOF conferences and webinars as FLS teams' main source for continued professional development.

FRAGILITY FRACTURE NETWORK CONGRESS 2022

In October 2022 a group of New Zealand delegates attended the Fragility Fracture Network congress in Melbourne. Members from the FFR core team and five district FLS team members were sponsored by ACC to attend. The four-day conference covered a wide range of topics including secondary fracture prevention, hip fracture outcomes and aspects of treatment, nutrition, exercise and fracture care. The opportunity to attend such a big conference was appreciated by FLS members. Leon Penny, FLS Physio Coordinator Hawkes Bay felt "the Congress was valuable as it shone a light on the international focus on fragility fractures and the story so far in the provision of Fracture Liaison Services around the world. It highlighted how the goal to reduce the incidence of these fractures requires the participation of a number of different professions from orthopaedic surgeons to geriatricians, from dietitians to physiotherapists, from nurses to Fracture Liaison Service Coordinators – plus an occasional endocrinologist and psychologist along the way. The importance of collaboration stood out. To that end it was extremely beneficial that ACC supported the attendance at the Congress of a number of us involved in the Fracture Liaison Service in New Zealand. Though regionally separated we are a team, and best outcomes for New Zealand will only be achieved through us working as such."

Fragility Fracture Registry team and NZ FLS members

Fracture Fest 2023 - Admin Forum Krystal Boyes Whanganui Administrator

In 2023 for the first time the FLS administrators had an opportunity to all get together in person in a forum designated for them, we had started regular online meetings, but nothing beats an in-person catch up. The festival itself is always interesting from an admins perspective and learning and listening along with the Coordinators and Clinical leads, I find is a great opportunity to get a better understanding of the service as a whole. Seeing the bigger picture means that you can complete your admin duties knowing what information will be helpful to the FLS Nurse and it becomes less jargon when you have that understanding. One of the other things this has led to, was a request from all the admin to have more of the clinical side of the FLS explained at our regular meetings. Safe to say we are all hooked! As for the Admin forum, we had really good discussions around resources, and I am currently collating the resources from all the FLS admins so that we can see what is being given out around the country and also to see if there is anything that would be useful in our own services.

It was interesting to see how the admins all have a slightly different way of doing things, mostly because of where and how they get their information. Lots of tips and tricks were shared, and we were able to clarify some of the questions we had which led to more useful discussions. It was a great opportunity to learn, network and feel part the FLS team. I took away some ideas to make Whanganui FLS even better and enjoyed building relationships with the other FLS teams.

QUALITY ENSURED BY REGISTRY PARTICIPATION AND EDUCATION FOR FLS STAFF

ADVOCACY AND PROJECT MANAGEMENT

Christine Gill – Executive Director ONZ

Osteoporosis New Zealand is the sole national entity charity dedicated to enhancing the quality of life for individuals at high risk of or living with osteoporosis in NZ. Our mission is to ensure that all New Zealanders enjoy a life free from fragility fractures resulting from poor bone health. Since December 2020, ONZ, in collaboration with ACC and other partners within the Live Stronger for Longer Program, has spearheaded a comprehensive national initiative aimed at elevating the standard of care and prevention for fragility fractures in NZ. This initiative includes the nationwide establishment of FLS, setting a global benchmark in post-fracture care. Key elements of this program involve providing support and mentorship through clinical experts, including an extensively experienced Clinical Nurse specialist. This expert guidance is instrumental in fostering the development and enhancement of FLS across NZ. Additionally, the program facilitates Peer Support, creating a national framework for continuous professional growth and development in this field.

ONZ SUPPORT & MENTORING FOR FLS

Denise MacKenzie – Clinical Nurse Specialist

The FLS support and mentoring programme has been instrumental in supporting new FLS in the development and expansion phases, providing onsite visits and induction days co-presented by myself (ONZ) and Nicola Ward the ANZFFR & HFR coordinator and BOP FLS team leader. The sessions are tailored to meet the specific requirements of the service and co-ordinators to provide information and advice to overcome common barriers new services face. To further support the FLS teams, a 'Toolbox' has been developed for staff new to FLS, providing useful information and resources, which include a FLS patient brochure, letter template and patient information sheet. All resources are able to be provided to the teams in electronic form to enable service specific personalisation. The mentorship service also includes support and guidance for service applications to the IOF Capture the Fracture® programme which is an international benchmarking framework for FLS. Our aim is to support all FLS teams in New Zealand to achieve Gold Star IOF recognition.

FFR NZ COORDINATOR

Nicola Ward – Clinical Nurse Specialist

The national coordinator role for the FFR covers many aspects from training and supporting FLS teams, database functionality, committee and stakeholder work, providing education and report planning and delivery. Since going live in March 2022, it has been a joy to see all NZ FLS embrace the FFR within their daily work processes. Teaching each FLS on FFR use and function is the main role and sharing any ongoing updates and teaching new staff as they start. The FLS teams are a vocal group who identify any gaps in FFR flow and data to make it work for their patients and service, which are then reviewed, ethics approved and updated annually to improve patient flow and data outcomes. The role also entails administrative support for the NZ committees and meetings to run smoothly (see page 43). Organising the annual Fracture Fest and seeing all the FLS teams come together each year is a highlight of the job and allows great networking opportunities for teams to share and learn from others. Learning how to produce a first annual report has been challenging and learnings will be taken to improve the process for next year. Having a national picture of FLS and being a team leader of a local FLS has helped with understanding the role the Registry plays for FLS teams and in supporting the national roll out and uptake. The ONZ team working together has helped each FLS come on board with FFR and supports each FLS to be integral in this report and its data.

EDUCATION AND NETWORK LEAD FOR FLS

Kim Fergusson – Occupational Therapist

Fracture Liaison Network of New Zealand (FLNNZ) is a professional network of Fracture Liaison Service team members that work in FLS around New Zealand. FLNNZ has evolved and expanded, from a group of 5 FLS coordinators in 2016 to now include 16 Clinical Leads, 33 FLS Coordinators and 17 FLS Administrators. The aim of FLNNZ is to create a peer mentorship network to support each other in the delivery of sustainable and evidence-based fracture liaison and falls prevention services in NZ.

FLNNZ has delivered 18 virtual education sessions throughout the year, structured under the 5IQ model of the NZ FLS Clinical Standards. These virtual sessions were delivered by a range of guest speakers, experts in their field, including FLNNZ members and non-members and are recorded to provide a reference library. Sessions have contributed toward members Continuing Professional Development and adherence to the 'Quality' standard of the NZ FLS Clinical Standards. FLS-specific professional development is not readily available in NZ, and we would like to thank all the speakers for generously donating their time in preparing and presenting to our FLNNZ network. This has assisted in deepening and broadening the skill set of our FLS staff, which in turn benefits the people of our communities.

FIGURE 42 – COMPLETENESS

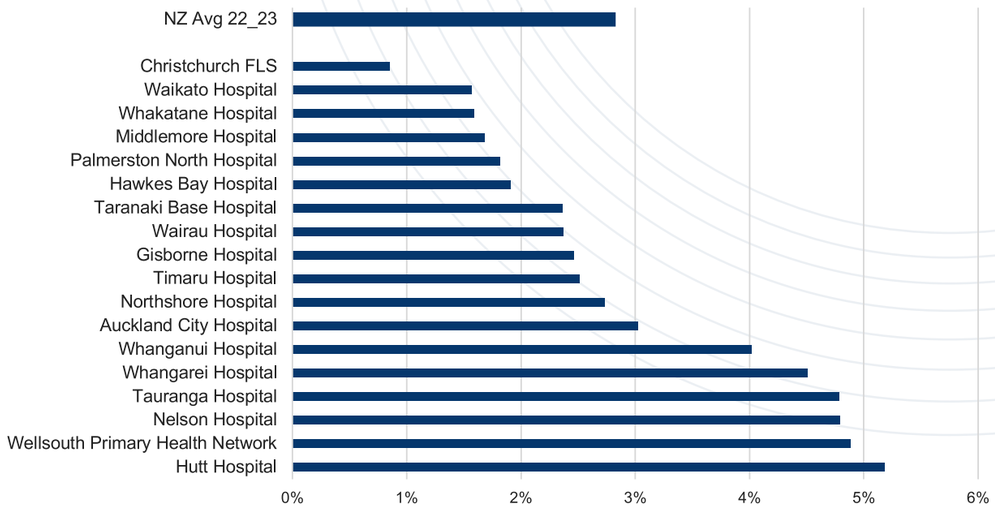
Completeness of documentation for Key Performance Indicator (KPI) 1 to 12.

THIS IS RANKED BY //KPI 15 (AVERAGE OF 1-12)

Facility Name	KPI 1	KPI 2	KPI 3	KPI 4	KPI 5	KPI 6	KPI 7	KPI 8	KPI 9	KPI 10	KPI 11	KPI 12	KPI 15
Wellsouth Primary Health ...	40	12	45	47	46	45	43	32	98	123	48	24	**50**
Auckland City Hospital	50	33	77	42	77	40	35	25	100	88	33	48	**54**
Palmerston North Hospital	27	12	69	48	69	66	66	56	97	71	26	61	**56**
Christchurch FLS	39	112	85	60	86	46	46	39	100	53	12	77	**63**
Gisborne Hospital	94	48	88	64	88	85	85	53	100	29	22	4	**63**
Waikato Hospital	48	18	94	37	94	80	61	59	100	52	62	71	**65**
Tauranga Hospital	62	98	80	56	80	44	44	48	100	66	45	55	**65**
Whanganui Hospital	65	90	82	66	82	66	66	35	100	59	16	50	**65**
Wairau Hospital	49	48	92	58	92	72	68	65	100	65	28	59	**66**
Nelson Hospital	55	51	88	61	89	70	66	64	100	64	37	61	**67**
West Coast	49	105	88	78	88	72	72	50	100	49	12	80	**70**
Taranaki Base Hospital	54	51	87	67	87	77	75	62	100	65	53	66	**70**
Whangarei Hospital	100	77	89	53	89	78	77	66	100	40	31	55	**71**
Timaru Hospital	71	43	90	33	90	81	73	60	100	129	30	57	**71**
Whakatane Hospital	80	135	89	65	90	72	72	64	100	56	48	71	**78**
Hawkes Bay Hospital	50	101	92	81	92	88	87	61	100	70	46	86	**79**
Hutt Hospital	62	88	99	78	99	77	77	57	100	80	52	90	**80**
Northshore Hospital	65	143	94	50	94	93	93	66	100	67	16	94	**81**
Middlemore Hospital	69	141	93	97	93	76	67	63	100	69	74	65	**84**
NZ Avg 22_23	**91**	**126**	**85**	**60**	**86**	**70**	**67**	**54**	**100**	**68**	**36**	**62**	**68**

FIGURE 43 – REFRACTURE EVENTS

The percentage of patients with at least 1 further fracture after enrolment in ANZFFR. National = 2.80 %



QUALITY ENSURED BY REGISTRY PARTICIPATION AND EDUCATION FOR FLS STAFF

LIMITATIONS & WEAKNESSES

This is Year 1 of a planned multi-year project and there has been much learning to do as the year has progressed. Despite many months of planning, intensive support from Osteoporosis NZ (especially Nurse Educator Denise McKenzie) and an incredibly helpful IT developer, the KPI 15 graph above shows just how disparate Fracture Liaison Services in New Zealand are. Some centres have been running FLS for many years and have their own unique culture. Others are brand new and have been bringing team members with little experience in the fracture prevention space up to speed in a brief window before finding themselves compared with the long-established FLS teams. Special mention goes to Richard Macharg and his team in Southland who have created NZ's first primary-care-based FLS from a standing start and brought a different perspective to the project.

The months leading up to July 1st, 2022, saw a torrent of suggestions for improvement flow back from FLS pilot centres to the central team. Incorporating many of these undoubtedly strengthened the Registry but also confused team members on the ground who were grappling with a user interface which seemed to change daily. Pauses to catch up explain some of the dips in recruitment visible in [the KPI 1 & 2 figure]. Some of our KPIs have been found not to match up well with real-life experience; for example, it seems that 16-week follow up is too soon for patients to recover from their fracture, complete investigations and start on medical treatment or falls prevention classes.

There is no true consensus on what constitutes a fragility fracture, let alone how many of them there are. The IOF definition includes all fractures other than those of hands, feet and face/skull. That is the basis of FLS and Registry contracts with our principal funding body ACC. However, many well-established FLSs in NZ have concentrated on the "Big Five" fragility fractures – hip, spine, wrist, shoulder and pelvis – excluding more marginal sites such as ankle and ribs. This concentrates resources on those most likely to have osteoporosis but are they missing people who could benefit from FLS intervention? The truth is that we don't know, but with luck the Registry will give us some answers.

Perhaps surprisingly, we don't know how many fragility fractures there are in NZ. Hip fractures are easy – almost everyone presents to a public hospital and leaves a paper trail a mile wide. Other limb fractures may present to a private acute care facility and most vertebral fractures go no further than the patient's GP. Knowing the true number of fragility fractures is crucial to establishing the completeness of the Registry; supporting projects outside ANZFFR are working on this as I write. Meanwhile, the convention (based on countries such as Finland which do have complete ascertainment) is that total non-spine fractures are five times the number of hip fractures and spine fractures are 0.75 times the number of hip fractures. We have used those estimates throughout this report.

Registries stand or fall on full ascertainment: what fraction of people with the relevant condition are included in Registry data? Low participation rates disproportionately exclude people disadvantaged by low income, rurality and/or ethnicity, which are all major issues in NZ. I am extremely proud of our first-year completeness figures but unless we can improve, not just maintain, our inclusion rate we risk missing underserved populations with most to gain from high-quality fracture prevention.

ANZFFR is a large project built very quickly on freshly poured foundations. All of our stakeholders are looking for answers and our most important stakeholders – people with a fragility fracture – are very much hoping that we can reduce their risk of having another one. Our first year has been an unprecedented success but there is much to do to ensure that this translates into real benefit for the people this project is intended to help.

Dr Frazer Anderson, Co-chair ANZFFR Steering Committee and NZ National Clinical Lead.

ESSENTIAL READING:

Dreinhofer KE, Mitchell PJ, Begue T, et al. **A global call to action to improve the care of people with fragility fractures.** *Injury.* Aug 2018;49(8):1393-1397.

Fergusson K, Gill C, Harris R, et al. ***Clinical Standards for Fracture Liaison Services in New Zealand*** *2nd Edition.* Wellington: Osteoporosis New Zealand; 2021.

Call to action: a five nations consensus on the use of intravenous zoledronate after hip fracture - *Age and Ageing* 2023; 52: 1–9 https://doi.org/10.1093/ageing/afad17

www.livestronger.org.nz

ANZFFR STRUCTURE:
COMMITTEES AND MEMBERSHIP

ANZFFR is a project in two countries with different research ethics frameworks and profoundly different healthcare systems. It is therefore structured as two separate operational entities under a common leadership structure:

- The binational ANZFFR Steering Group is the senior decision-making body with overall responsibility for strategic direction, governance and research ethics compliance.
- Each country has an Implementation Management Committee (IMC) including national health agencies, patient representatives and advocacy for Māori/First Nations interests. The IMC guides local implementation and informs strategy at the binational level.
- Day-to-day operational management is handled by an Executive Team who meet weekly to deal with issues as they arise. This includes the national Project Co-ordinator and Clinical Lead

Thank you to all the committee members who have given their time and commitment to supporting the development and work of the ANZFFR - it is very much appreciated. See below for a full list of committee members.

FFR NZIMC members via zoom meeting

For any questions or queries regarding this report or ANZFFR please contact:

New Zealand Clinical Lead: Dr Frazer Anderson
Frazer.Anderson@northlanddhb.org.nz

New Zealand National Coordinator:
Nicola Ward nicola@nzoa.org.nz

ANZFFR STEERING GROUP MEMBERS:

Dr Kirtan Ganda	Endocrinologist	Co-Chair
Dr Frazer Anderson	Geriatrician	Co-Chair
Stewart Fleming	IT developer	Coordinator
Nicola Ward	FLS Nurse	Coordinator
James Ansell	Executive Officer	SOFSA
Dr Tania Winzenberg	GP	General Practice Representative
Dr Mark Kotowicz	Endocrinologist	AFFF
Dr Roger Harris	Geriatrician	ONZ
Dr Markus Seibel	Endocrinologist	SOFSA
Christine Gill	Contracts Manager	ONZ
Solange Bernardo	FLS Nurse	FLS Rep
Dr Myrla Reis Sales	Exercise Physiologist	Melbourne University, Victoria Representative
Jennifer Coombes	Community Member	Aboriginal and Torres Strait Islander Representative
Dr Charles Inderjeeth	Geriatrician/Rheumatologist	WA Representative

NZ IMPLEMENTATION MANAGEMENT COMMITTEE:

Dr Roger Harris	ANZ Geriatric Medicine Society/ ANZHFR & FFR NZ Previous Clinical Lead & Co-Chair
Dr Frazer Anderson	Geriatrician Northland Health NZ Te Whatu Ora & FFR Clinical Lead & Co-Chair
Christine Gill	ONZ
Paul Mitchell	FFN Global
Nicola Ward	FLS Nurse & HFR & FFR Coordinator
Denise McKenize	ONZ
Dr David Kim	ANZ Bone Mineral Society - Co-Chair
Kim Ferguson	FLNNZ Chair
Joanna Hikaka	University of Auckland & Māori Representative
Dr Leona Dann	Te Tāhū Hauora - HQSC
Prof Ngaire Kerse	University of Auckland
Andrea Vujnovich	Legal Counsel, Auckland University of Technology
Stewart Fleming	Web Master
Mr Pierre Navarre	Orthopaedic Surgeon - Southern Health NZ Te Whatu Ora & NZ Orthopaedic Association
Anna Ikenaga	Health Promotion Officer, Age Concern
Rebbecca Lilley	Researcher Otago University
Carole Dunnett	Endocrinology CNS Hawkes Bay Health NZ Te Whatu Ora
Dr Colin Patrick	Psychiatrist Waikato Health NZ Te Whatu Ora
Dr Joanne Williams	Geriatrician Hutt Health NZ Te Whatu Ora
Dr Kate Scott	Clinical Chief Advisor Manatu Hauora
Angela Scott	Consumer Rep
Dr Richard Macharg	GP & WellSouth FLS Clinical Lead
Ashley Simmons	Physiotherapy NZ
Colleen Dunne	Te Whatu Ora Healthy Ageing Team
Janet Taylor	Consumer Rep
Dr Karen Billington	Radiologist Auckland
Harminder Gill	ACC Health Partnerships
Dr Janine Ryland	ACC Health Partnerships

NZ EXECUTIVE TEAM:

Comprises of the NZ FFR Clinical Lead, Coordinator, ONZ staff, FLNNZ Chair and IT Webmaster from the committee above.

ABBREVIATIONS

ACC	Accident Compensation Corporation
ADL	Activities of Daily Living
AFFF	Australian Fragility Fracture Foundation
ANZBMS	Australian and New Zealand Bone and Mineral Society
ANZFFR	Australian and New Zealand Fragility Fracture Registry
ANZHFR	Australian and New Zealand Hip Fracture Registry
BOP	Bay of Plenty
CNS	Clinical Nurse Specialist
CT	Computed Tomography
DXA scan	Dual energy x-ray absorptiometry scan
ENSA	Endocrine Nurses' Society of Australasian
ED	Emergency Department
FFN	Fragility Fracture Network
FLA	Facility Level Audit
FLNNZ	Fracture Liaison Network New Zealand
FLS	Fracture Liaison Service
GP	General Practitioner
HDEC	Health and Disability Ethics Committees
HQSC	Health Quality & Safety Commission Te Tāhū Hauora
ICATT	Intermediate Care, Assessment and Treatment Team
IOF	International Osteoporosis Foundation
IT	Information Technology
IMC	Implementation Management Committee
IV	Intravenous
KPI	Key Performance Indicators
LSFL	Live Stronger for Longer programme
LTTP	Long Term Treatment Plan
MRI	Magnetic Resonance Imaging
NZ	New Zealand
NSW	New South Wales
PHARMAC	Pharmaceutical Management Agency
PHN	Primary Health Network
ONZ	Osteoporosis New Zealand
RACF	Residential Aged Care Facility
SOSFA	The Australian National Stop Osteoporotic Secondary Fracture Alliance
QLD	Queensland
WA	Western Australia
ZoI	Zoledronic Acid

SUPPLEMENTARY REPORT

This supplementary report expands on the results presented in the main ANZFFR report, showing data for individual sites in place of national data.

SECTION 1: PATIENT DEMOGRAPHICS

FIGURE 2 – ETHNICITY

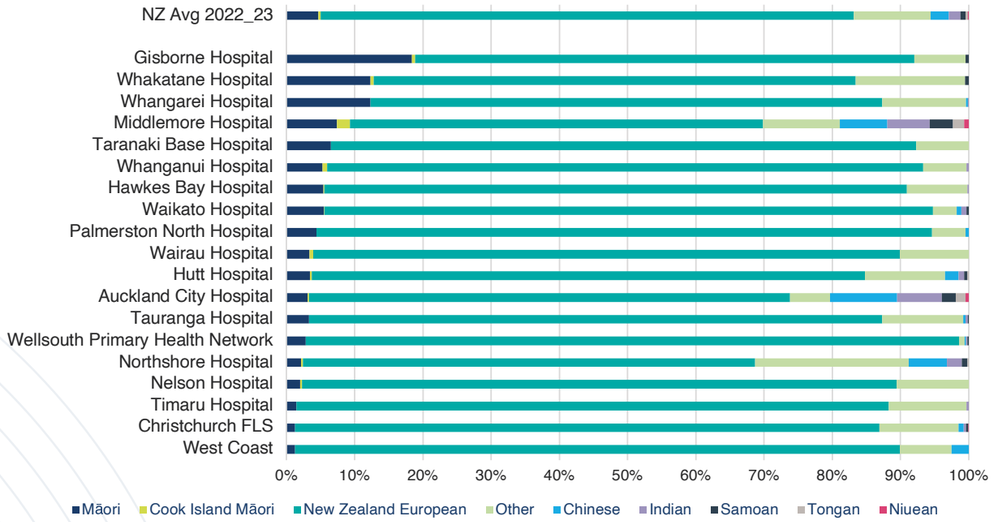


FIGURE 4 – PRE–FRACTURE RESIDENCE

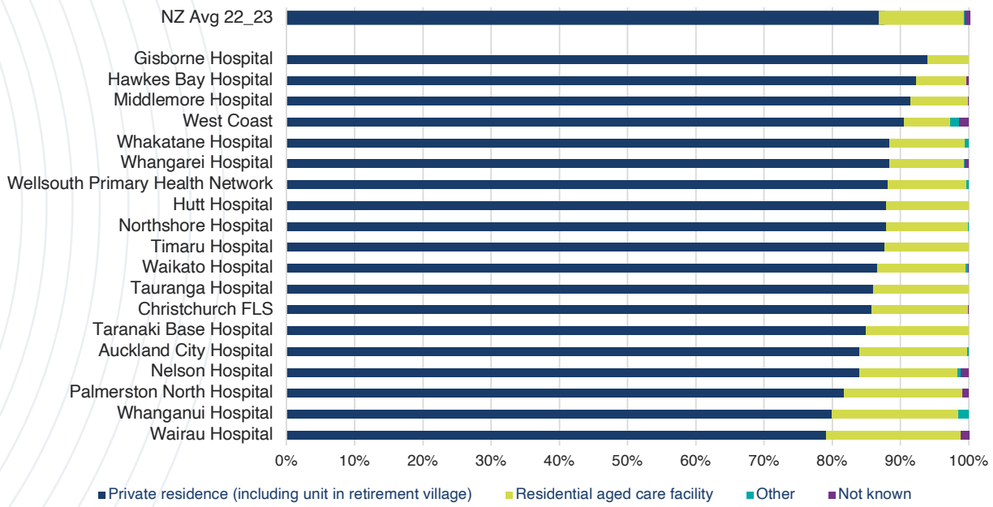


FIGURE 5 – PRE–FRACTURE MOBILITY

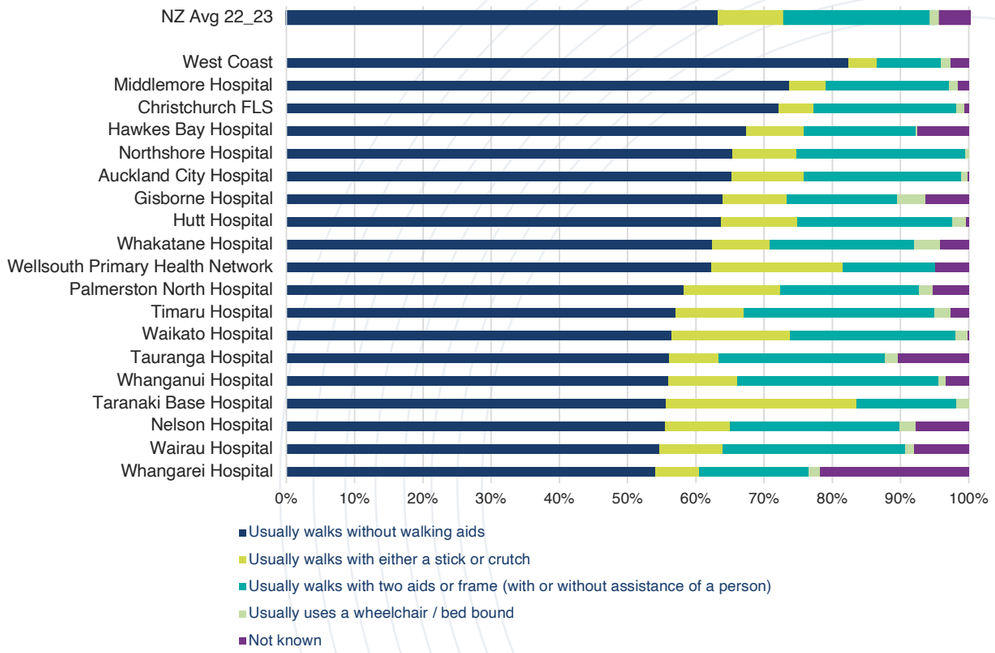
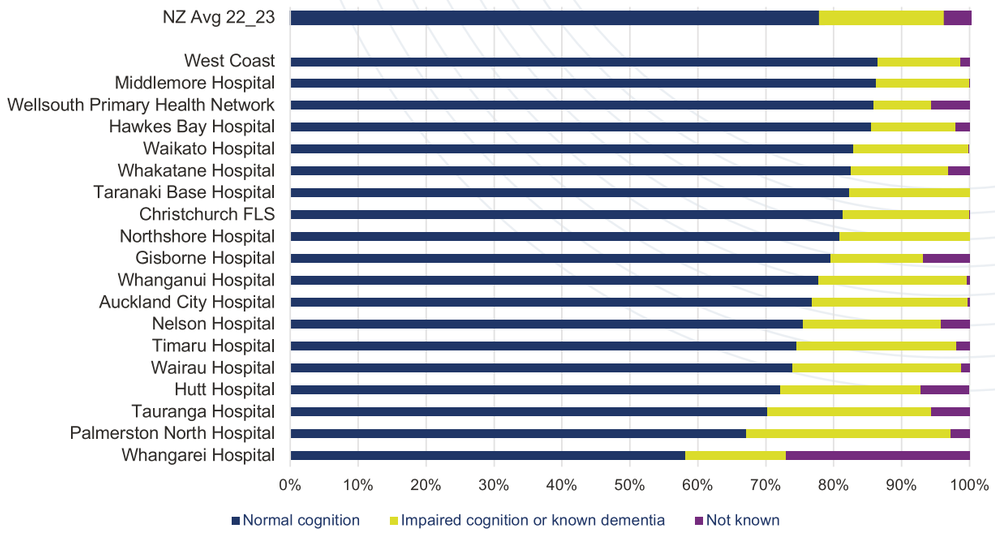


FIGURE 6 – PRE–FRACTURE COGNITIVE STATUS



STANDARD 1: IDENTIFICATION

All people aged 50 years or over who sustain a fragility fracture will be systematically and proactively identified by the FLS.

FIGURE 7A – SPINE VS NON-SPINE

In international reference data, spine fractures account for roughly 15% of all fragility fractures.

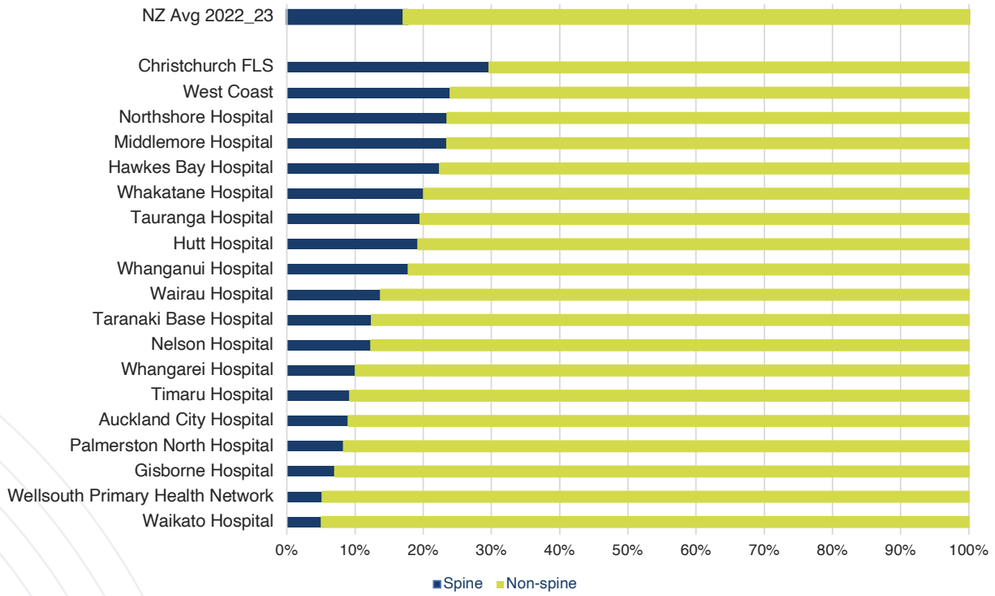


FIGURE 8 – IDENTIFICATION METHOD

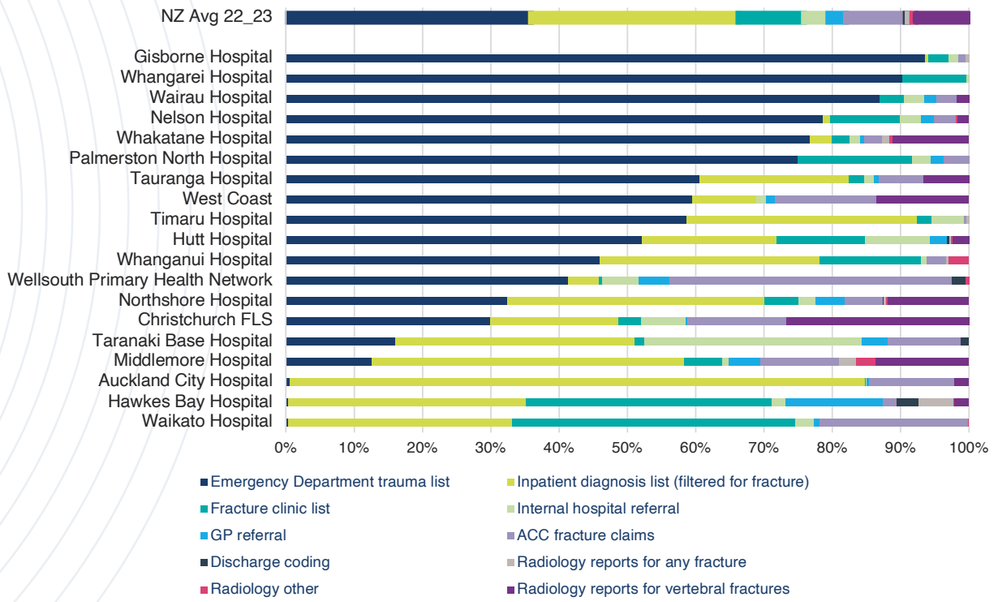


FIGURE 10 – ADMISSION TO HOSPITAL

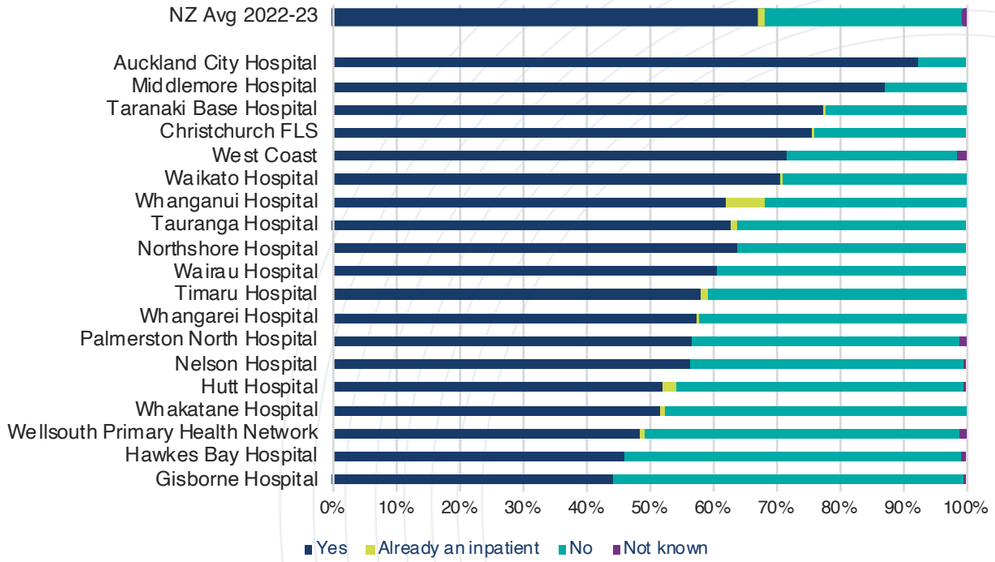


FIGURE 11 – FURTHER ASSESSMENT

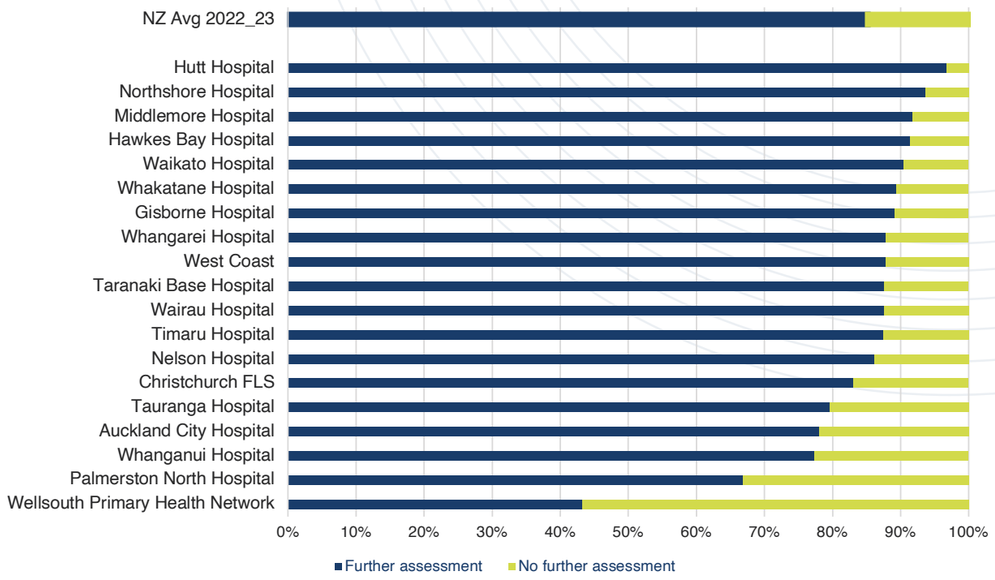
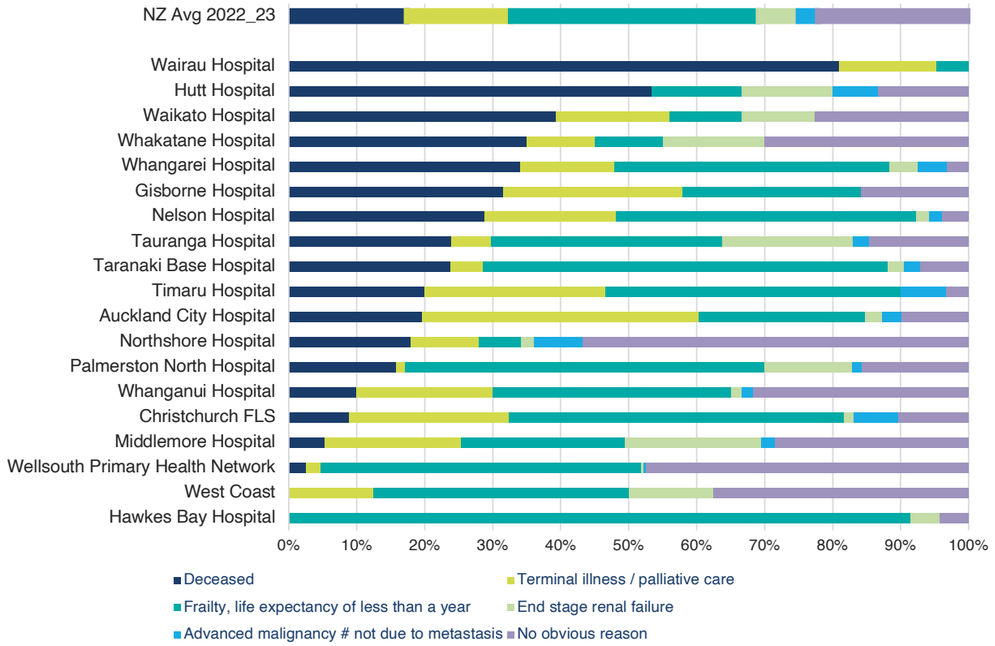


FIGURE 12 – NO FURTHER ASSESSMENT REASON



STANDARD 2: INVESTIGATION

People with a fragility fracture will undergo timely assessment for future fracture risk including bone health (i.e. osteoporosis) and falls risk.

BONE HEALTH ASSESSMENT

FIGURE 14 – REPORTED PREVIOUS FRAGILITY FRACTURES

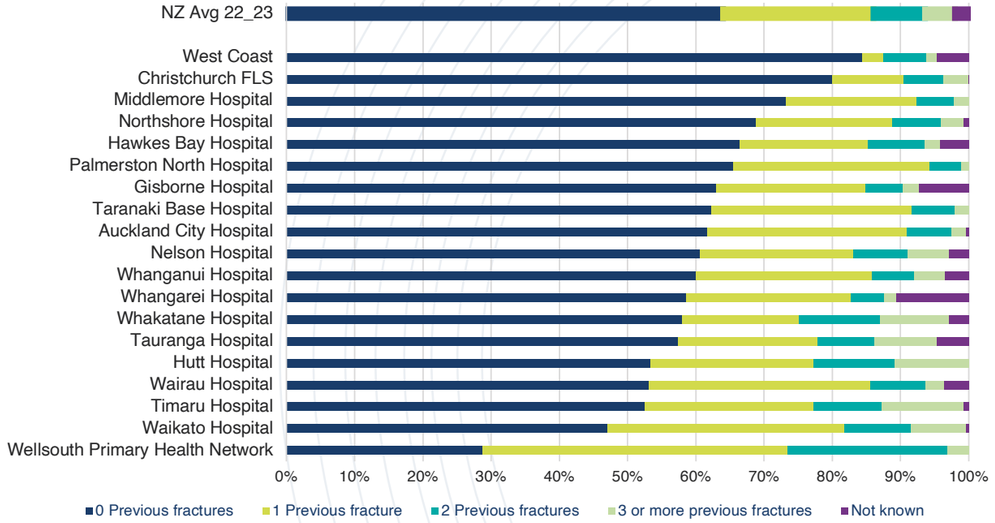


FIGURE 15 – RISK FACTORS

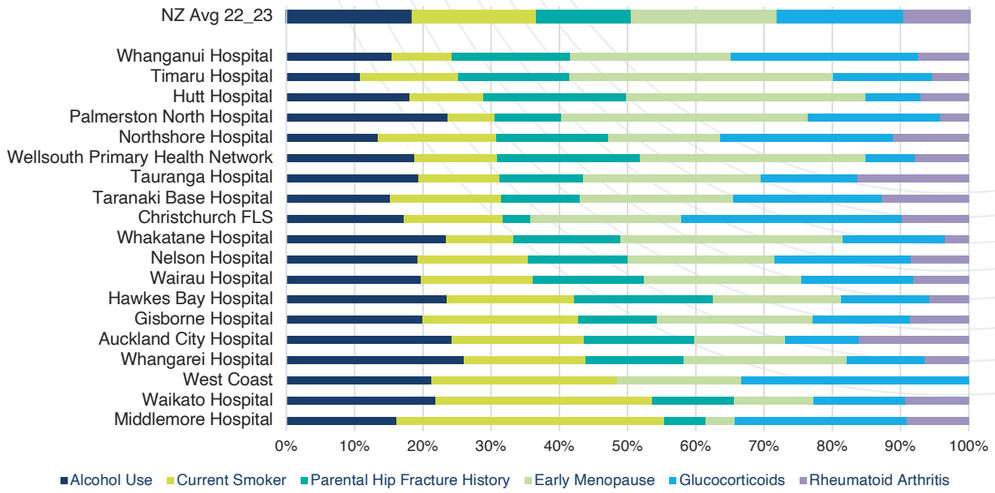


FIGURE 16 – CURRENT OSTEOPOROSIS MEDICATION

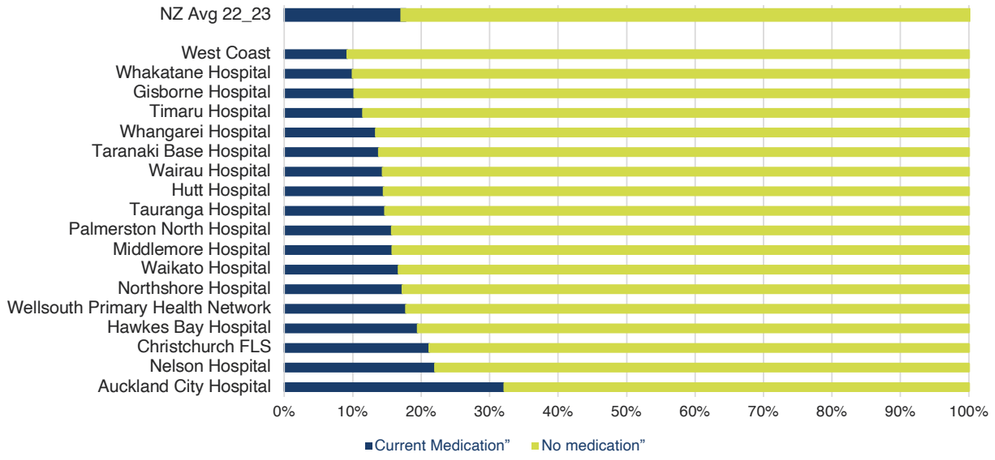


FIGURE 17 – CURRENT OSTEOPOROSIS SPECIFIC TREATMENT

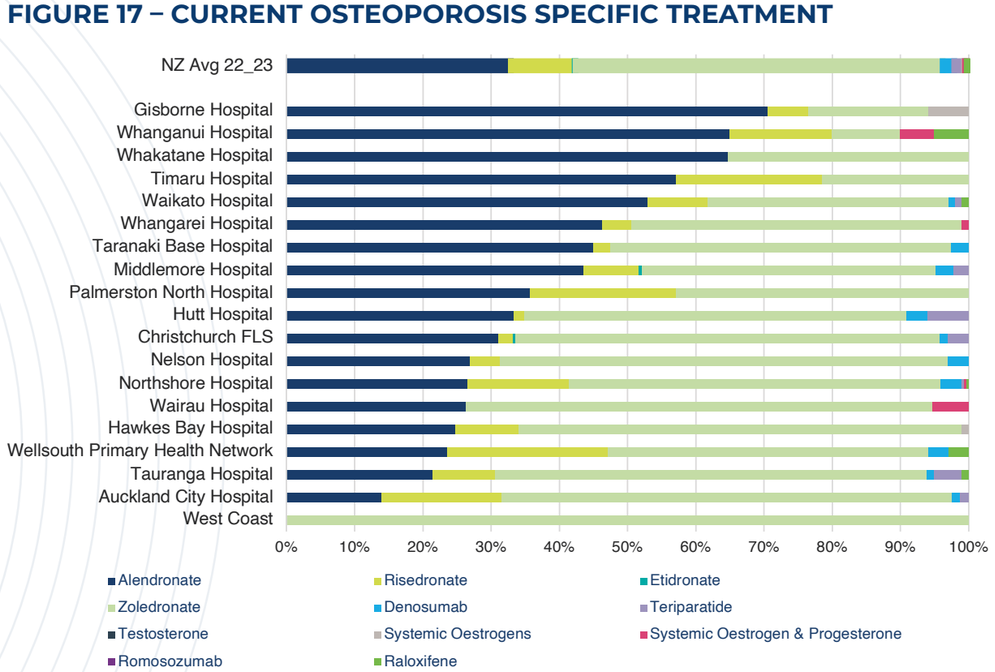


FIGURE 17A – PREVIOUS SIGNIFICANT OSTEOPOROSIS SPECIFIC TREATMENT

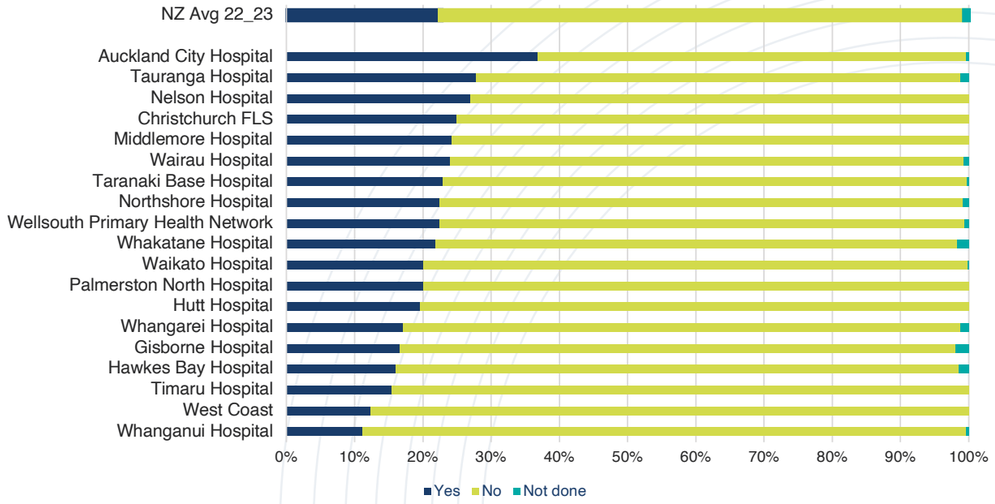


FIGURE 18 – THORACO–LUMBAR IMAGING WITHIN LAST 5 YEARS

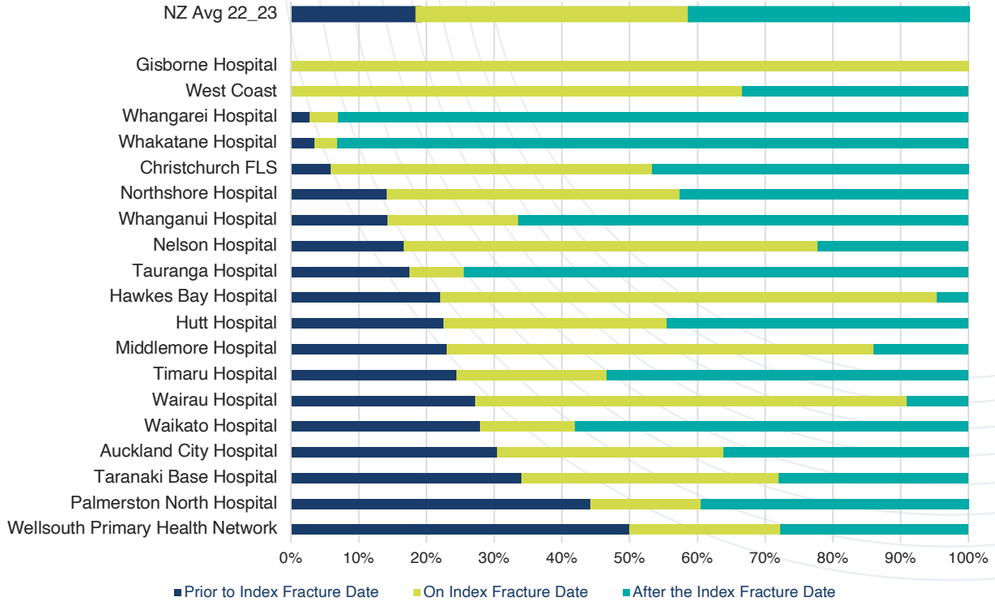


FIGURE 19 – SECONDARY CAUSE REVIEW

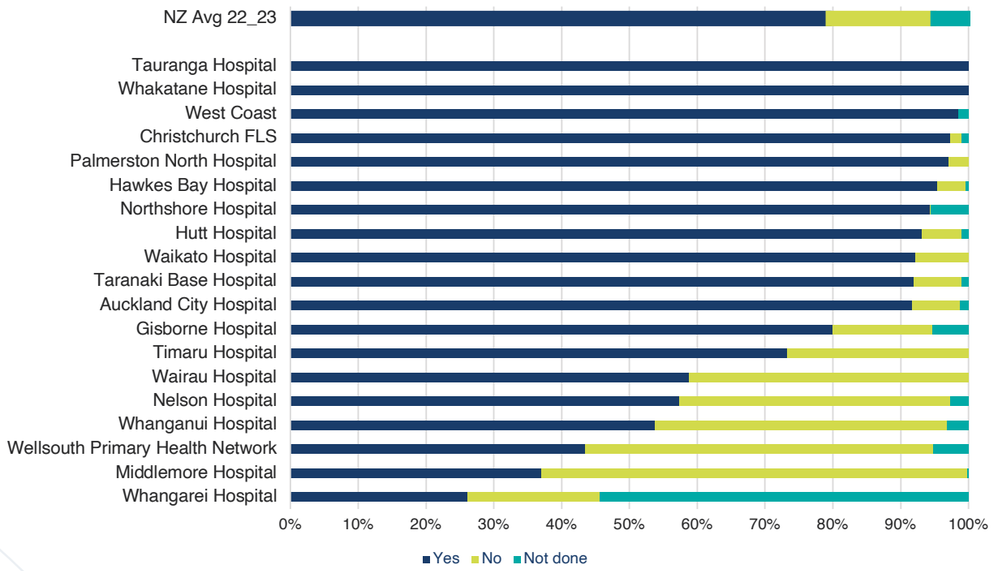


FIGURE 20 – SECONDARY CAUSE BLOOD TESTS

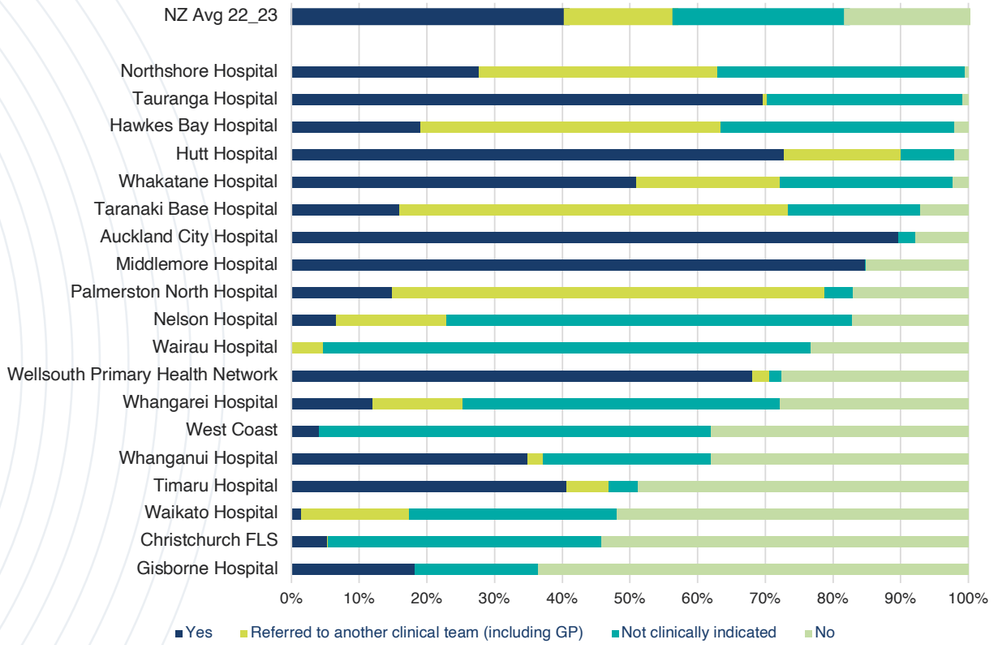
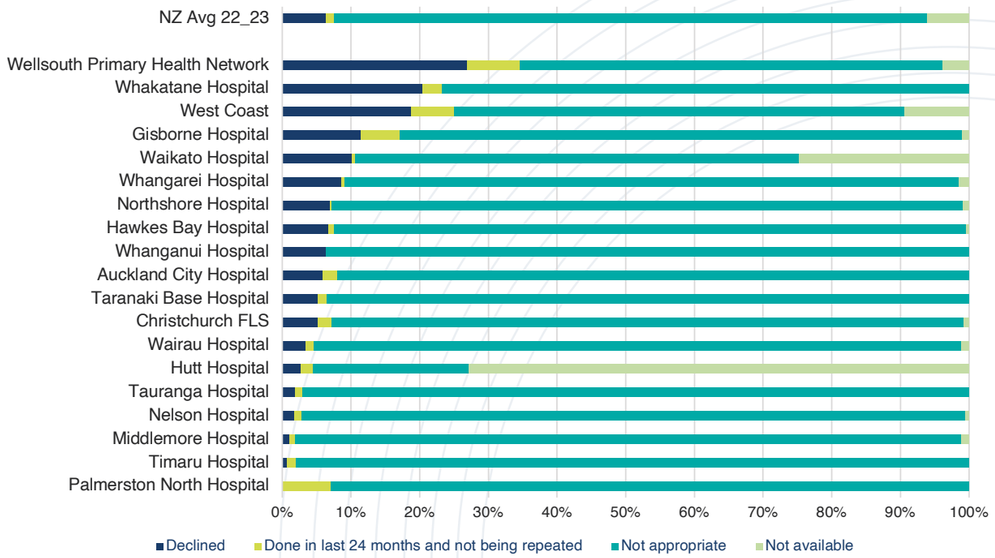


FIGURE 22 – DXA – REASONS NOT DONE



FALLS RISK ASSESSMENT

FIGURE 23A – POTENTIAL CARDIAC CAUSES

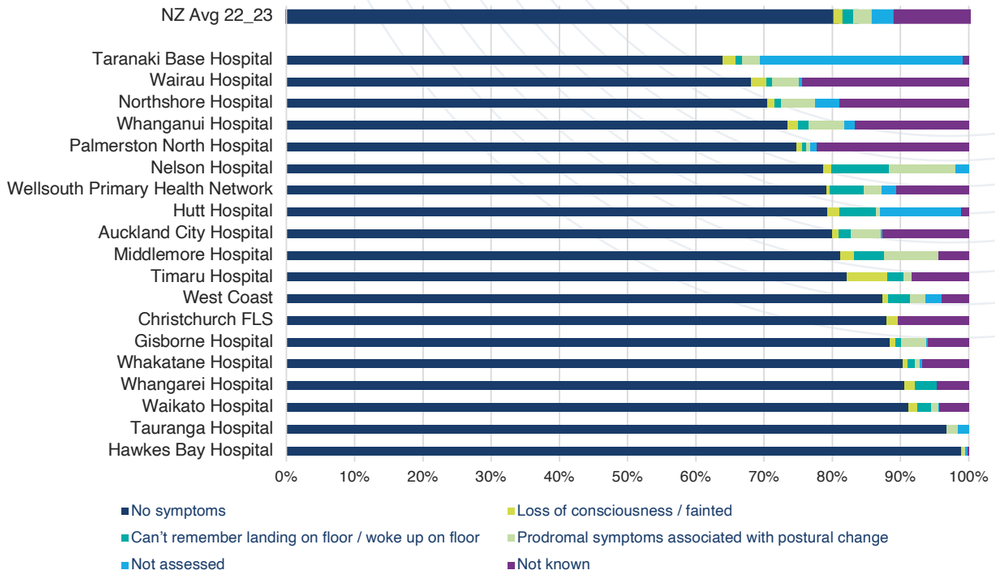
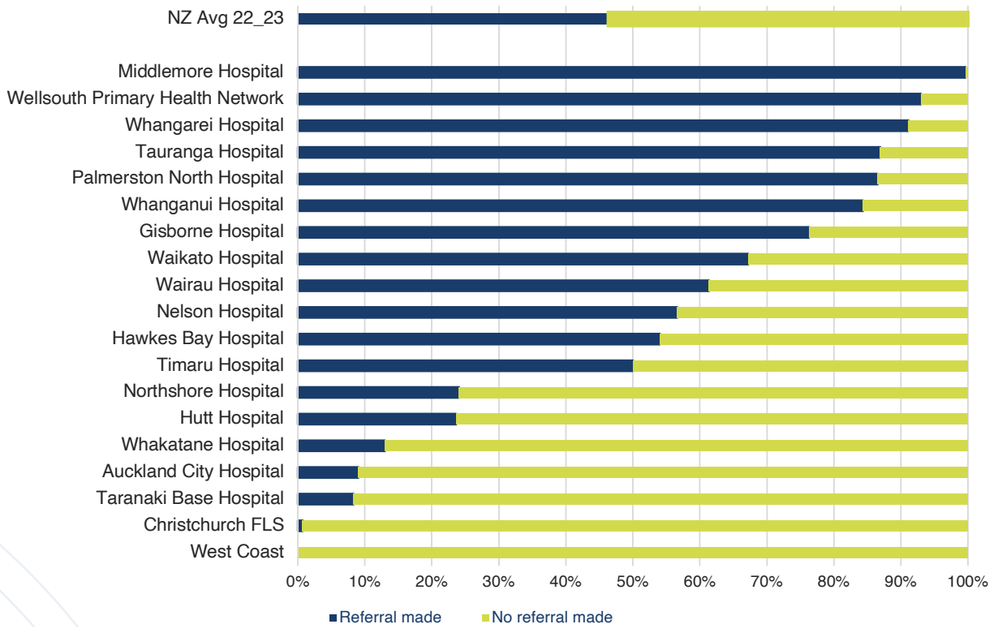


FIGURE 25 – REFERRALS FOR FURTHER MANAGEMENT OF FALLS RISK



STANDARD 3: INFORMATION

needs no extra graphs in this supplementary report

STANDARD 4: INTERVENTION

People with a fragility fracture determined to be at high risk of sustaining future falls and/or fractures will be offered appropriate osteoporosis treatment with PHARMAC subsidised medicines and be referred for interventions to reduce falls risk.

FIGURE 30 – REASON TREATMENT NOT RECOMMENDED

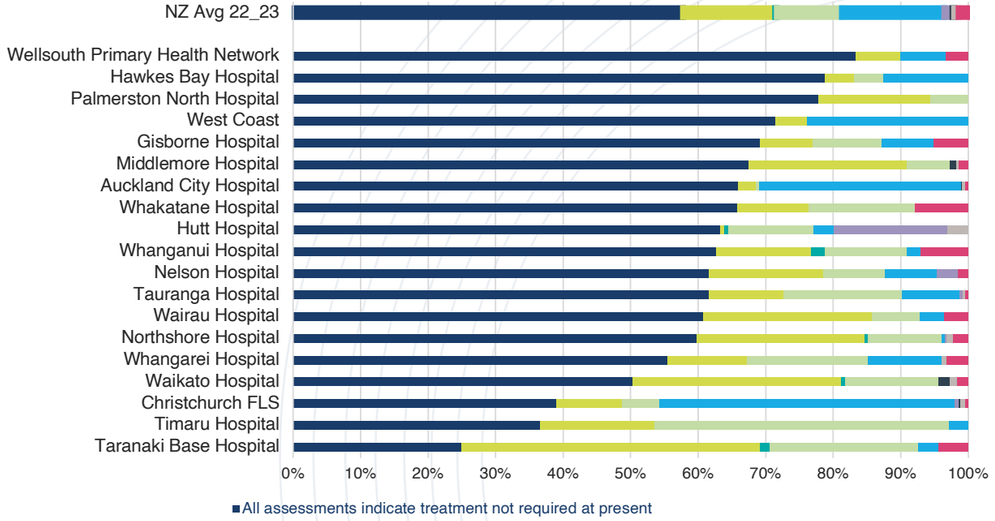


FIGURE 31 – OSTEOPOROSIS SPECIFIC TREATMENT RECOMMENDATION

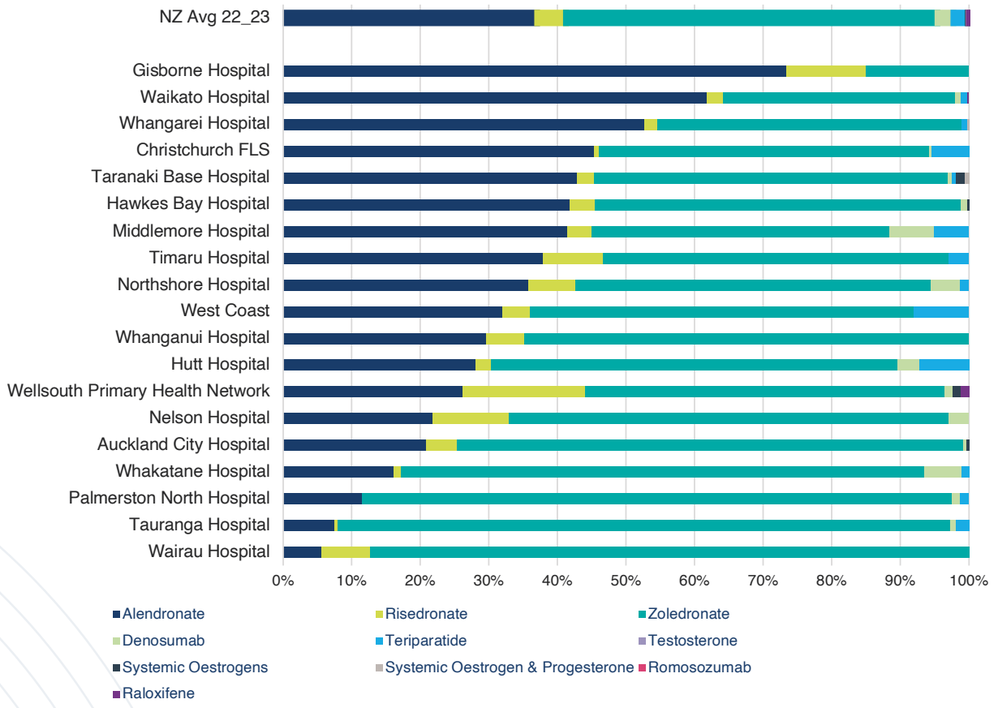


FIGURE 31A – VITAMIN D – ONLY RECORDED FOR THOSE LIVING IN RESIDENTIAL AGED CARE FACILITY, (RACF)

88% Yes, 11% No, 1% Not known.

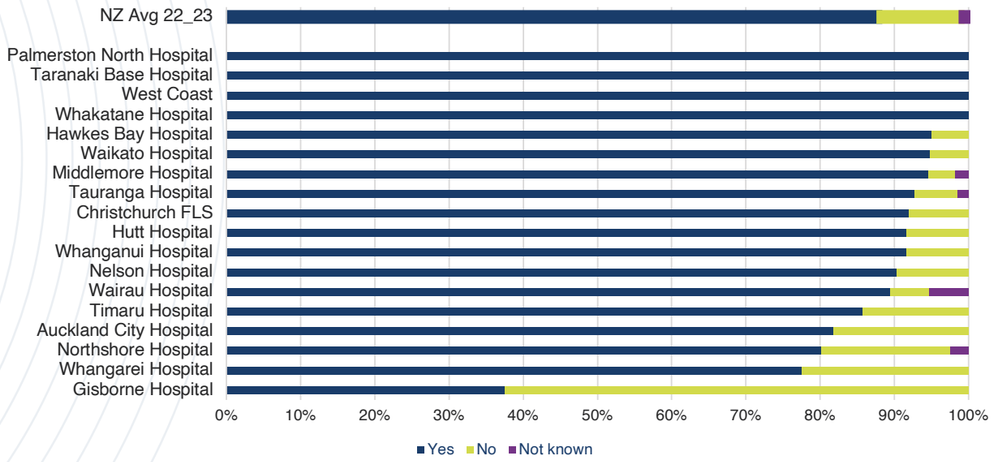


FIGURE 32 – 16 WEEK FOLLOW UP DATE - //KPI: 9

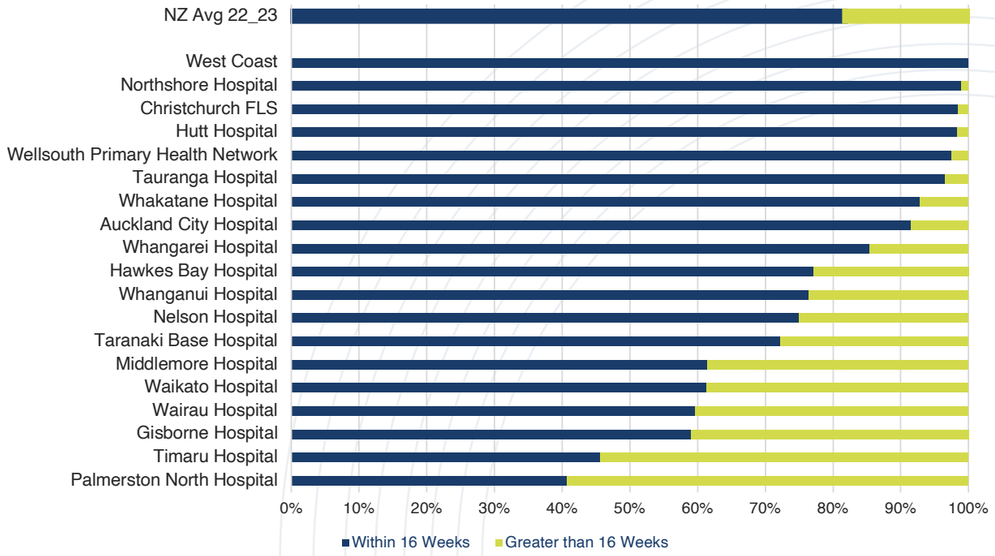


FIGURE 33 – 16 WEEK FOLLOW

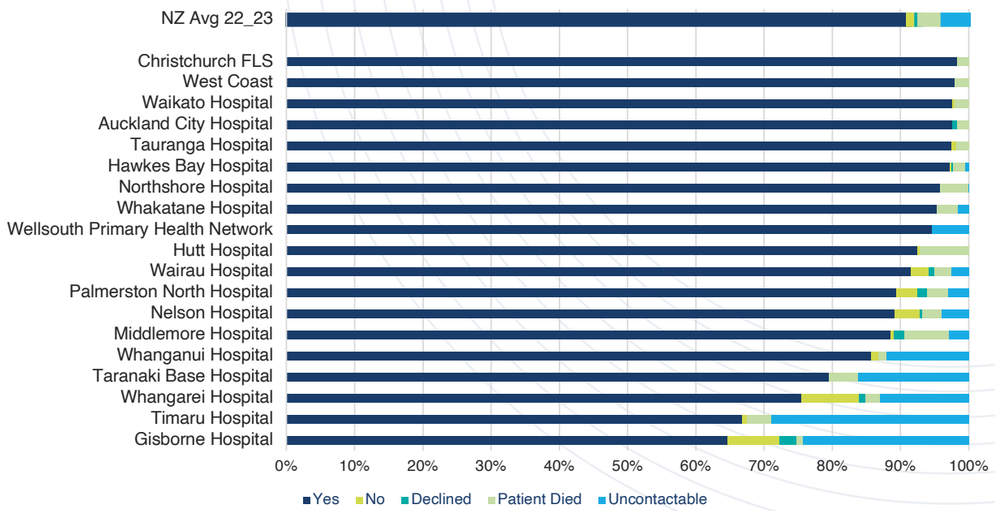


FIGURE 34 – 16 WEEK RESIDENCE

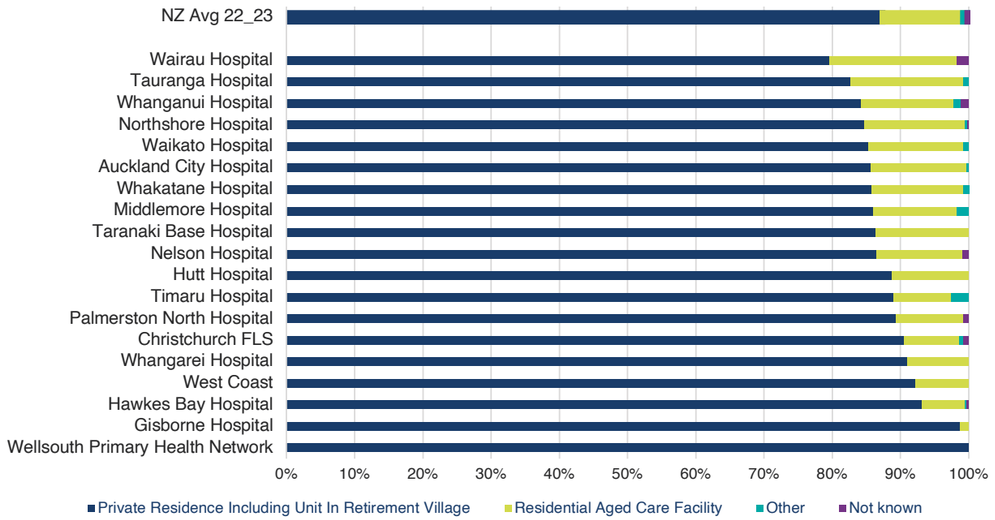


FIGURE 35 – 16 WEEK MOBILITY

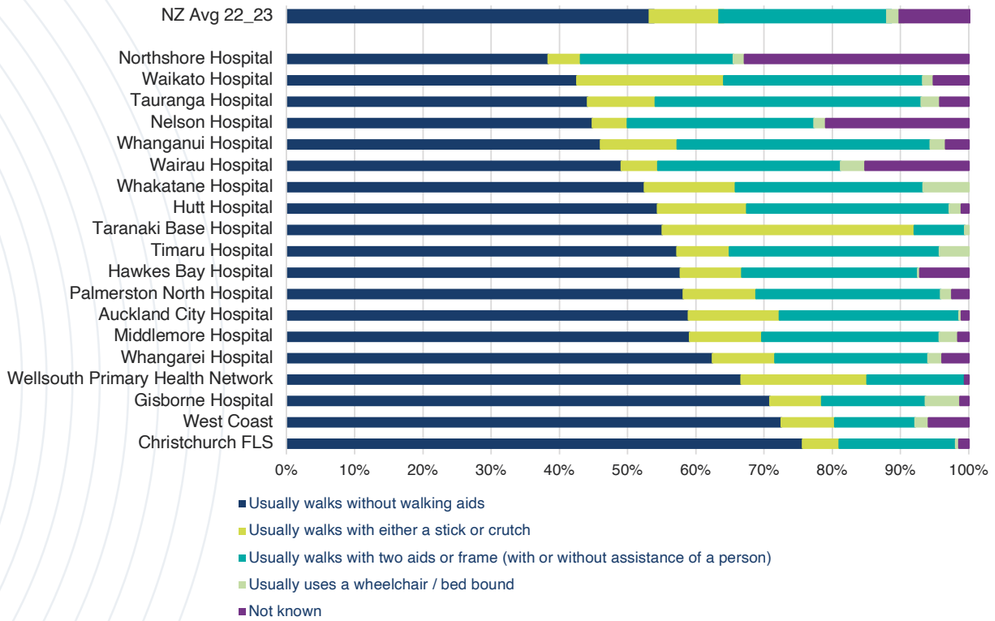


FIGURE 36 – MEDICATION COMMENCED AT 16 WEEKS - //KPI: 10

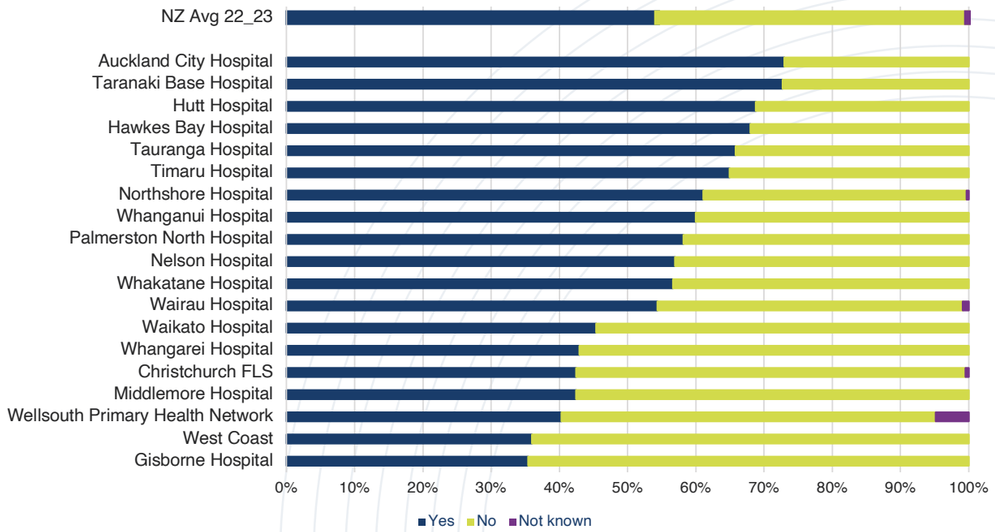


FIGURE 37 – 16 WEEK MEDICATION TYPE

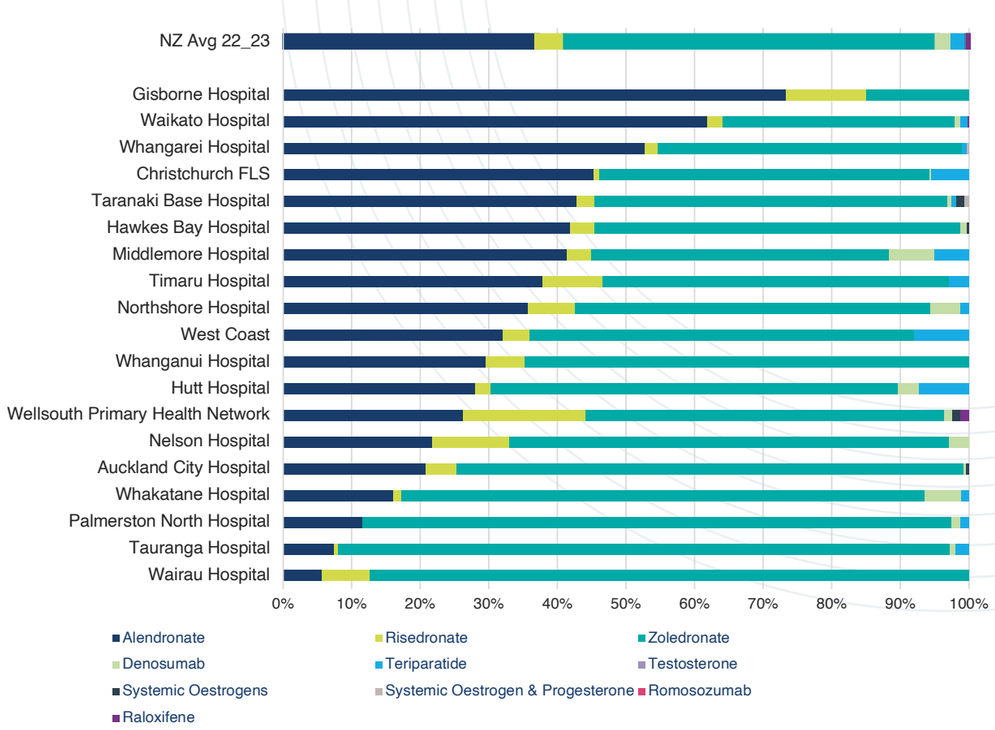
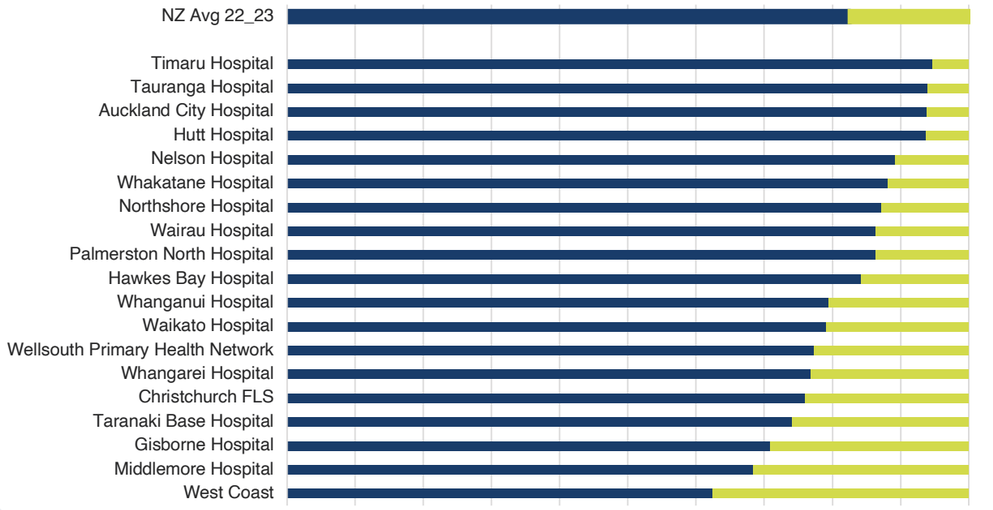


FIGURE 38 – RECOMMENDED MEDICATION MATCHES 16-WEEK MEDICATION



APPENDIX 1:

NZ FRAGILITY FRACTURE REGISTRY - PATIENT LEVEL AUDIT

Facility Name: _____

Headings in italics //

Heading*

These boxes relate to KPIs of the FLS Clinical Standards

* These boxes are required to save a record

PATIENT DEMOGRAPHICS

First Name	Last Name	*National Health Index**

Date of birth (dd/mm/yyyy)	Sex	NZ Ethnic Status
_ _ /_ _ /_ _ _ _	☐ Male ☐ Female ☐ Other	☐ New Zealand European ☐ Māori ☐ Cook Island Māori ☐ Samoan ☐ Tongan ☐ Niuean ☐ Chinese ☐ Indian ☐ Not elsewhere included ☐ Other
Contact Phone Number	**Post Code**	
Email		

IDENTIFICATION

*Index Fracture Date** //	Index Type of Fracture	Admission to Hospital
_ _ /_ _ /_ _ _ _	☐ Fragility ☐ Atypical	☐ Yes ☐ No ☐ Already an inpatient ☐ Not known

Fracture Sites (1 = index fracture. Mark as numbers, up to 3 fractures) //

☐ Wrist	☐ Sacrum and pelvis	☐ Sternum, ribs, clavicle, and scapula
☐ Proximal humerus	☐ Other humerus	☐ Other femur including supracondylar knee
☐ Hip	☐ Elbow	☐ Tibial plateau and patella
☐ Thoraco-lumbar spine	☐ Forearm other than wrist	☐ Other lower leg and ankle

Pre-fracture Residence	Pre-fracture Mobility	Pre-fracture Cognitive Status
☐ Private residence (including unit in retirement village) ☐ Residential aged care facility ☐ Other ☐ Not known	☐ Usually walks without walking aids ☐ Usually walks with either a stick or crutch ☐ Usually walks with two aids or frame (with or without assistance of a person) ☐ Usually uses a wheelchair / bed bound ☐ Not known	☐ Normal cognition ☐ Impaired cognition or known dementia ☐ Not known
		Appropriate for Further Assessment
		☐ Yes ☐ No

Method of Identification		Reason Not Appropriate for Further Assessment
☐ Emergency Department trauma list ☐ Inpatient diagnosis list (filtered for fracture) ☐ Fracture clinic list ☐ Internal hospital referral ☐ GP referral	☐ ACC fracture claims ☐ Discharge coding ☐ Radiology reports for any fracture ☐ Radiology other ☐ Radiology reports for vertebral fractures ("wedge, compression etc")	☐ Deceased ☐ Terminal illness / palliative care ☐ Frail - life expectancy of less than a year ☐ End stage renal failure - dialysis ☐ Advanced malignancy # not due to metastasis ☐ No obvious reason

NOTES

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First Name	Last Name	*National Health Index**

INVESTIGATION - BONE HEALTH ASSESSMENT

Bone Health Assessment Date //	Reported Previous Fragility Fractures	Parental history of hip fracture
_ _/_ _/_ _ _ _	☐ 0 ☐ 1 ☐ 2 ☐ 3 or more ☐ Not known	☐ Yes ☐ No ☐ Not done
Early Menopause	**Current Smoker**	**Glucocorticoids**
☐ Yes ☐ No ☐ Not done	☐ Yes ☐ No ☐ Not done	☐ Yes ☐ No ☐ Not done
Rheumatoid Arthritis	**Alcohol Use**	**Previous Significant Osteoporosis Specific Treatment**
☐ Yes ☐ No ☐ Not done	☐ Yes ☐ No ☐ Not done	☐ Yes ☐ No ☐ Not done

Current Osteoporosis Specific Treatment

☐ None at time of index fracture
☐ None: planned "drug holiday"
☐ Alendronate
☐ Risedronate
☐ Etidronate
☐ Zoledronate
☐ Denosumab
☐ Teriparatide
☐ Testosterone
☐ Systemic Oestrogens
☐ Systemic Oestrogen & Progesterone
☐ Romosozumab
☐ Raloxifene
☐ Not known

Secondary Cause Review

☐ Yes ☐ No ☐ Not done

Secondary Cause Blood Tests

☐ Yes ☐ No ☐ Not clinically indicated
☐ Referred to another clinical team (including GP)

Thoraco-Lumbar Imaging	Thoraco-Lumbar Imaging date	**Creatinine Clearance** (Cockroft Gault)
☐ Fracture identified ☐ No fracture identified ☐ Not known ☐ No images available	_ _/_ _/_ _ _ _	_ _ _ ml/min
Patient Weight	**Patient Height**	**Body Mass Index**
_ _ _ kg	_ _ _ cm	_ _ . _
FRAX Score	**Garvan Score**	
_ _ %	_ _ %	

INVESTIGATION - FALLS RISK ASSESSMENT AND REFERRALS

Falls Risk Assessment Date //	What happened?
_ _/_ _/_ _ _ _	

2+ Slips, Trips, Falls in Previous 12 months

☐ Yes ☐ No ☐ Not known

Fear of Falling

☐ Yes ☐ No ☐ Not known

Pre-fracture Strength

Standing from chair without using hands
☐ Yes ☐ No ☐ Not known

Strength and Balance Referral Date

_ _/_ _/_ _ _ _

Potential Cardiac Cause

☐ Can't remember landing on floor / woke up on floor
☐ Loss of consciousness / fainted
☐ Prodromal symptoms associated with postural change (dizziness, light headedness, nausea, diaphoresis, palpitations, chest pain)
☐ No symptoms
☐ Not known
☐ Not assessed

Strength and Balance Referrals

☐ Already attending a recognised strength and balance programme
☐ Already engaged in a self-directed exercise programme
☐ Referred to a community strength and balance programme
☐ Referred to an in-home strength and balance programme
☐ Referred to the "Training for Independence" programme
☐ No referral made to a strength and balance training programme
☐ Patient declined
☐ Not known

Falls Related, Referral for Assessment (Tick all that apply)

☐ No referral made
☐ Physiotherapy
☐ Geriatric Medicine
☐ Community Occupational Therapist for an in-home safety review
☐ Falls Clinic / Service
☐ General Practitioner
☐ Pharmacist review
☐ Dietician
☐ Podiatry
☐ General Medicine
☐ Orthopaedics
☐ Continence Service or Urology
☐ Smoking Cessation
☐ Other
☐ Not known

First Name	Last Name	*National Health Index**

DXA

DXA Ordered or Not //		Date DXA Ordered
☐ Ordered ☐ Declined ☐ Done in last 24 months and not being repeated ☐ Not appropriate ☐ Not available		_ _/_ _/_ _ _ _
DXA Date //	**DXA Spine T-score**	**DXA Hip T-score**
_ _/_ _/_ _ _ _	+/-_._ _	+/- _._ _

INTERVENTION

Osteoporosis Specific Treatment Recommendation //		Reason Treatment Not Recommended
☐ Not clinically indicated ☐ Recommended but declined ☐ Referred to specialist ☐ Alendronate ☐ Risedronate ☐ Zoledronate ☐ Denosumab	☐ Teriparatide ☐ Testosterone ☐ Systemic Oestrogens ☐ Systemic Oestrogen & Progesterone ☐ Romosozumab ☐ Raloxifene ☐ Not known	☐ Poor renal function ☐ Poor swallowing, severe GORD, Barret's oesophagus, achalasia ☐ Advanced frailty, life expectancy of less than a year ☐ Long term bisphosphonate treatment, no further fracture risk benefit ☐ Treatment indicated, but no funded alternatives available in Pharmac criteria ☐ Atypical femur fracture ☐ History of osteonecrosis of the jaw or significant dental concerns ☐ All assessments indicate treatment not required at present ☐ No obvious reason

Date of Osteoporosis Treatment Recommendation //	Vitamin D (ARCF)	*Long Term Plan* //
_ _/_ _/_ _ _ _	☐ Yes ☐ No ☐ Not known	☐ Yes ☐ No ☐ Not known
Long Term Plan Date //	***Information Package (Tick all that apply)*** //	
_ _/_ _/_ _ _ _	☐ Yes – Standard package ☐ Yes – Know Your Bones ☐ No ☐ Not known	

PATIENT NOTES

First Name	Last Name	*National Health Index**

16 WEEK FOLLOW UP

Follow up //

☐ Yes ☐ No ☐ Uncontactable
☐ Declined ☐ Patient died

Follow up Date //

_ _/_ _/_ _ _ _

Residence

☐ Private residence (including unit in retirement village)
☐ Residential aged care facility
☐ Other
☐ Not known

Mobility

☐ Usually walks without walking aids
☐ Usually walks with either a stick or crutch
☐ Usually walks with two aids or frame (with or without assistance of a person)
☐ Usually uses a wheelchair / bed bound
☐ Not known

Medication Commenced //

☐ Yes ☐ No ☐ Not known

Strength and Balance Started //

☐ Yes ☐ No ☐ Not known

Medication //

☐ Recommended but declined
☐ Awaiting specialist opinion
☐ Alendronate
☐ Risedronate
☐ Zoledronate
☐ Denosumab
☐ Teriparatide
☐ Testosterone
☐ Systemic Oestrogens
☐ Systemic Oestrogen & Progesterone
☐ Romosozumab
☐ Raloxifene
☐ Not known

52 WEEK FOLLOW UP

Follow up //

☐ Yes ☐ No ☐ Uncontactable
☐ Declined ☐ Patient died

Follow up Date //

_ _/_ _/_ _ _ _

Residence

☐ Private residence (including unit in retirement village)
☐ Residential aged care facility
☐ Other
☐ Not done
☐ Not known

Mobility

☐ Usually walks without walking aids
☐ Usually walks with either a stick or crutch
☐ Usually walks with two aids or frame (with or without assistance of a person)
☐ Usually uses a wheelchair / bed bound
☐ Not done
☐ Not known

Further Fragility Fractures

☐ Yes
☐ No
☐ Not asked
☐ Not known

Further Falls

☐ None
☐ One
☐ Two
☐ Three or more
☐ Not asked
☐ Not known

Medication //

☐ No longer taking osteoporosis specific treatment
☐ Alendronate
☐ Risedronate
☐ Zoledronate
☐ Denosumab
☐ Teriparatide
☐ Testosterone
☐ Systemic Oestrogens
☐ Systemic Oestrogen & Progesterone
☐ Romosozumab
☐ Raloxifene

Strength and Balance

☐ Yes ☐ No
☐ Not asked ☐ Not known

Reason for no medication

☐ No longer appropriate (clinician)
☐ Informed decline (patient)
☐ Side effects
☐ Cost to patient
☐ Nil obvious
☐ Other
☐ Not asked
☐ Not known

PATIENT NOTES

“WE ARE PROUD TO BE PART OF A WORLD LEADING BEST PRACTICE FRAGILITY FRACTURE CARE & PREVENTION PROGRAMME. THANK YOU TO ALL OUR FRACTURE LIAISON TEAMS AND FUNDERS WHO MAKE THIS WORK POSSIBLE AND IMPROVE CARE FOR OUR PATIENTS WITH PASSION AND COMMITMENT.”