

# CAPTURE THE FRACTURE® PARTNERSHIP

## GUIDANCE FOR POLICY SHAPING



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## Guidance for Policy Shaping

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On behalf of the IOF Board and Executive Committee (Jean-Yves Reginster, Chair of Committee of National Societies; Bess Dawson Hughes, General Secretary; René Rizzoli, Treasurer; John Kanis, Honorary President; Philippe Halbout, CEO).

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### About IOF

The International Osteoporosis Foundation (IOF) is the world's largest nongovernmental organization dedicated to prevention, diagnosis and treatment of osteoporosis and related musculoskeletal diseases. IOF Members, including committees of scientific researchers as well as 260 patient, medical and research societies in more than 100 locations, work together to make fracture prevention and healthy mobility a worldwide health care priority. @iofbonehealth www.osteoporosis.foundation

### About Capture the Fracture®

Capture the Fracture® (CTF) is a multi-stakeholder initiative led by the International Osteoporosis Foundation. The initiative hopes to drive changes at local and international levels, so that secondary fracture prevention becomes a global reality. Its aim is to set global best practices for Fracture Liaison Services (FLS), while serving as a benchmark tool to which clinics and hospitals can adhere and aspire to, while receiving international recognition on the CTF Global Map of Best Practice. The CTF program has a diverse set of tools that provides essential resources and documentation to drive quality improvement in FLS and offers mentorship programs that support development and sustainability of FLS at the local level. #CaptureTheFracture www.capturethefracture.org



*An IOF initiative, supported by Amgen and UCB in collaboration with the University of Oxford.*









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# PREFACE





This document extolls the vital importance of preventing fractures, and particularly future fractures in individuals who have already broken a bone. There are clear public health and financial benefits to confronting the issue of secondary fracture prevention.

**“Osteoporosis is a major public health concern causing more than 8.9 million debilitating and lifechanging fragility fractures every year across the globe with serious societal and economic consequences.**

The ageing of society is driving an enormous increase in fragility fracture incidence and imposing a massive burden on patients, their families, health systems and societies around the world.

A fragility fracture is caused by osteoporosis and is a lifechanging event which can have an impact on the individual's quality of life and ability to live independently. Every three seconds, someone in the world breaks a bone because of osteoporosis. Once a woman has her first fragility fracture due to osteoporosis, she is five times more likely to fracture again within a year – and her risk remains elevated over time.

In spite of the screening and the availability of effective treatments fewer than 1 in 5 women are diagnosed and over 90% of patients with a fragility fracture are not treated. Osteoporosis-related fractures are responsible for more hospitalizations than heart attacks, strokes, and breast cancer.”

## **This toolkit will:**

# **1 Address**

**The policy needs of such secondary fracture prevention by outlining the generic components of global, regional and national calls to action.**

# **2 Explain**

**The need for Post-Fracture Care (PFC) Coordination Programs.**

# **3 Provide**

**A step-by-step policy guide to design and evaluate PFC Coordination Programs in hospitals and health systems throughout the world.**

# CAPTURE THE FRACTURE<sup>®</sup> PARTNERSHIP GUIDANCE FOR POLICY SHAPING

## Executive Summary

### The Headline

Fragility fractures are the broken bones **which cripple millions of adults** and can be prevented with proven and effective therapies.

### The Problem

Fragility fractures **affect millions of individuals globally**. It is estimated that **13.5 million fractures per year** will occur by 2025 with a cost of **\$400 billion** to global **healthcare** systems. It is a problem which has been **overlooked by** policy makers **for too long** and is set to **rise exponentially** with the expanding elderly population. However, a **solution exists**.

### The Solution

*Capture the Fracture<sup>®</sup> Partnership - Guidance for Policy Shaping* provides a **step-wise approach** to building policy which is not only based on decades of dedicated, rigorous research but has also been repeatedly shown to **improve patient outcomes, save money and save lives**. It is targeted at the highest risk group; those who have already fractured, and so is termed *Post-Fracture Care*. This guidance document outlines four simple building blocks of an effective policy response:



#### CATCH FRACTURES EARLY

Ensure that those who have fractured are identified for treatment



#### TREAT FRACTURES WELL

Employ world-class models of *Post-Fracture Care* to treat those identified



#### LIFETIME PREVENTION

Encourage healthy ageing through straightforward public health measures



#### ENHANCE ENGAGEMENT

Empower the public to understand the problem and become part of the solution

### The Bottom Line

**Fragility fractures, like other chronic diseases, are not going away.** However, unlike other chronic diseases, there is a solution which is tried, tested and ready to use. It will **reduce fractures by up to 50%**, it will deliver **financial savings**, it will **save lives**.

# ABOUT POST-FRACTURE CARE COORDINATION PROGRAMS

Post-Fracture Care (PFC) Coordination Programs, such as Fracture Liaison Services (FLS), are coordinated systems of care that identify, treat and monitor patients presenting with a fragility fracture.

PFC Coordination Programs have demonstrated their potential clinical and cost effectiveness and have been recommended worldwide to reduce fracture risk after a first fracture.

**PFC Coordination Programs are designed to:**

## Close the care gap

Currently only 20% of fragility fracture patients are offered screening or treatment for osteoporosis. This represents a substantial missed opportunity to reduce fractures and is known as 'The Care Gap'.

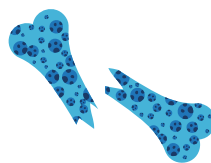
## Enhance communication

Between health care providers by providing a care pathway for the treatment of fragility fracture patients.

**80%**  
FRACTURE  
PATIENTS



**ARE NEVER  
OFFERED  
SCREENING  
AND/OR**



**TREATMENT  
FOR  
OSTEOPOROSIS**

## PFC Coordination Programs Structure

PFC Coordination Programs, most commonly known as FLS, are made up of a committed team of stakeholders, employing a dedicated co-ordinator to act as the link between the patient and the orthopaedic team, the osteoporosis and falls prevention services, and the primary care physician.

An FLS ensures that all patients presenting with fragility fractures to the locality or institution receive fracture risk assessment and treatment where appropriate. The service is comprised of a dedicated case worker, often a clinical nurse specialist, who works to pre-agreed protocols to case-find and assess fracture patients. The FLS can be based in secondary or primary care health care settings and requires support from a medically qualified practitioner, whether it be a hospital doctor with expertise in fragility fracture prevention or a primary care physician with a specialist interest.

# ABOUT THE CAPTURE THE FRACTURE® PARTNERSHIP

The Capture the Fracture® (CTF) Partnership, an IOF initiative supported by Amgen and UCB, in collaboration with the University of Oxford, began in late 2019. The CTF Partnership is a global program that helps to proactively implement FLS coordination programs in hospitals and healthcare systems to help patients prevent subsequent fractures due to osteoporosis. This long-term program is supported by the largest global corporate-non-governmental organization (NGO) partnership ever to be launched in the bone field. The official launch was announced by all partners on June 16th, 2020.

## Objectives and geographic areas of focus

This global program will focus on five key pillars of action: **Policy, Coalition, Mentorship, Scalable Solutions and Digital Tools** across 17 countries in Asia-Pacific, Europe, Latin America and the Middle East.

**The Partnership's key objectives are to:**

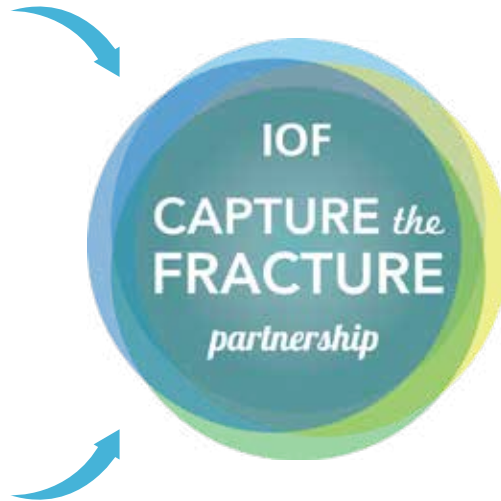
- a.** **Foster**  
The development and implementation of new CTF initiatives
- b.** **Double**  
The number and quality of existing FLS programs by the end of 2022.
- c.** **Reduce**  
The number of hip and vertebral fractures due to osteoporosis by 25% by 2025.



**DEVELOP & IMPLEMENT NEW CTF INITIATIVES**



**REDUCE HIP & VERTEBRAL FRACTURES BY 25% BY 2025**



**DOUBLE EXISTING FLS PROGRAMS**



### **Pillar 1 - Policy**

Bringing policy makers, regulators, professional and patient, organizations and opinion leaders together around a defined call to action to drive policy change to enable specific, impactful changes at the local, regional and national level.



### **Pillar 2 - Coalitions**

Uniting national societies with medical groups, Non-Government Organizations (including patient societies) and other stakeholders to amplify the four additional program pillars at a national, regional and international level.



### **Pillar 3 - Mentorship**

Providing customized educational, best practices and peer-to-peer mentorship support and tools (both to established PFC programs and those under development) to ensure long-term sustainability.



### **Pillar 4 - Scalable Solutions**

Creating a central, go-to hub of resources, solutions and best practices to enable PFC programs to more efficiently start and improve the delivery of PFC services. This includes a PFC Benefit Calculator for decision makers to understand the impact of implementing PFC in their country, region or hospital.

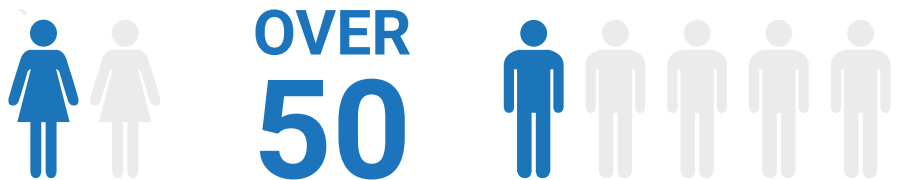
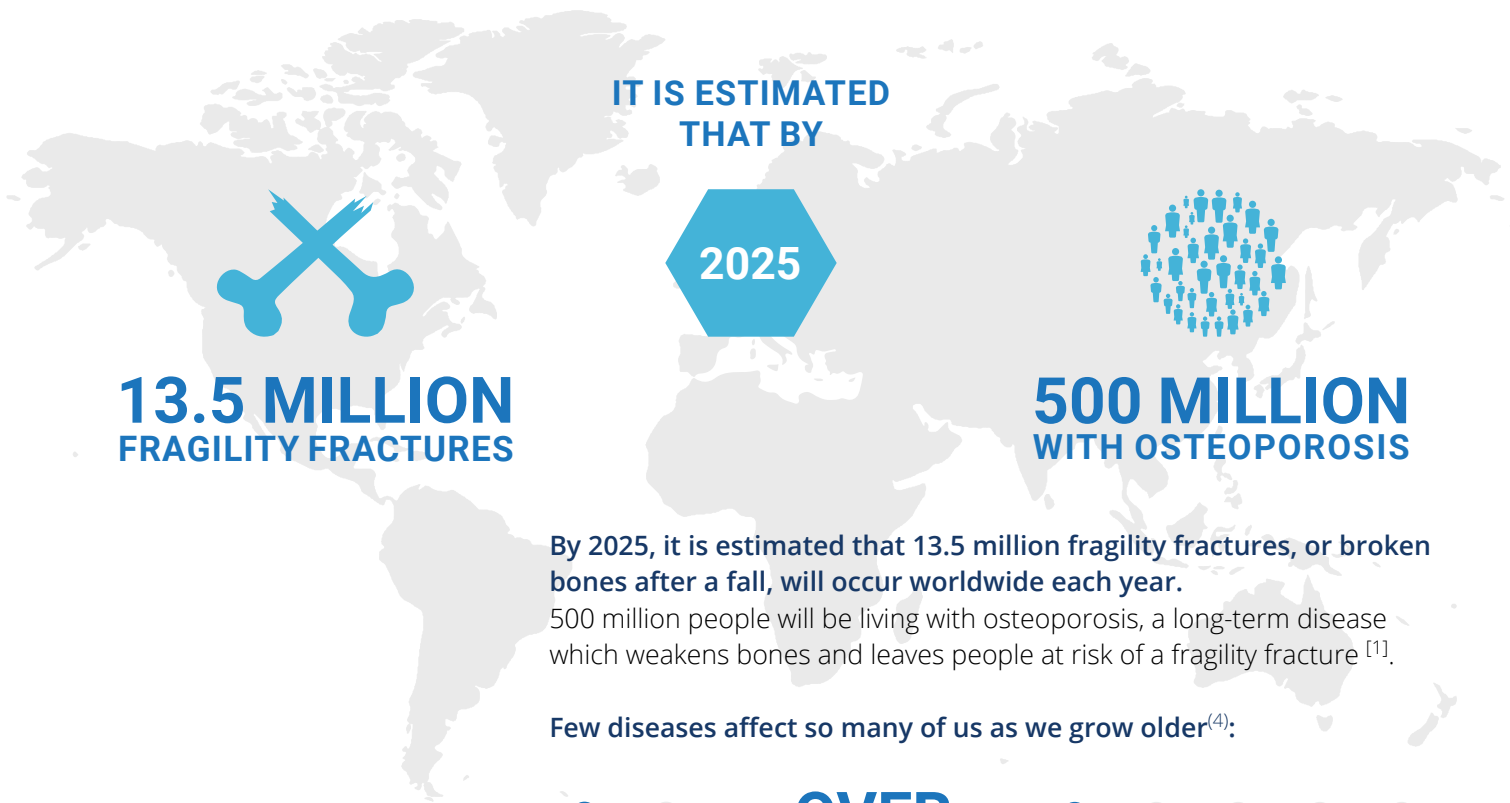


### **Pillar 5 - Digital Tools**

Capturing critical globally-recognized PFC key performance indicators in a digital tool to help PFC programs improve the effectiveness of their program and increase patient outcomes.



**CALL TO  
ACTION**



Up to one in two women and one in five men aged 50 years or over will experience a fragility fracture in their lifetime – often leading to a loss of mobility and independence <sup>[2]</sup>.

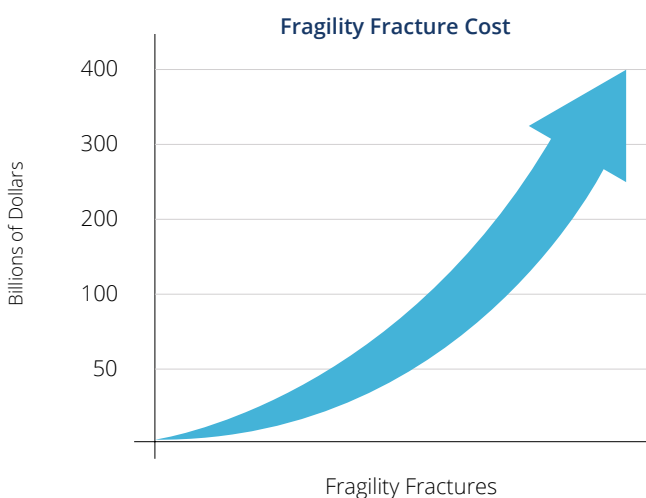
**This represents a huge economic burden.**

With the ageing demographic and the emergence of hyperageing societies with over 25% of the population over the age of 65 years, the impact of fragility fractures will increase by 23% by 2030 <sup>[3]</sup>.

**Yet osteoporosis and fragility fractures have been ignored in health policy and research agendas for too long <sup>[4,5]</sup>.**

Even policies, strategies and programs that focus on healthy ageing and women’s health often ignore the impact of osteoporosis and bone fragility. This has left millions of people – mostly women – without access to the care and support they need to live full, independent lives.

Fragility fractures cost global healthcare systems \$400 billion <sup>[1]</sup> and account for around 3% of healthcare costs, significantly higher than for many other leading chronic diseases <sup>[1]</sup>.



**Active research and clinical trials, have led to effective treatments.**

These have been developed, tested and shown to strengthen bones and reduce the risks of fractures by 30-70%. These treatments are now established as cost-effective in many countries around the world, with bigger benefits for patients than many other treatments for other chronic diseases.

**One of the most important risk factors for a future fracture is a previous fracture [6].**

There is clear evidence that focusing on secondary fracture prevention by driving policy change that is affordable and implementable across nearly all healthcare systems, will help prevent the next broken bone - and thus return benefits quickly for patients, their families, the healthcare system, and society as a whole.

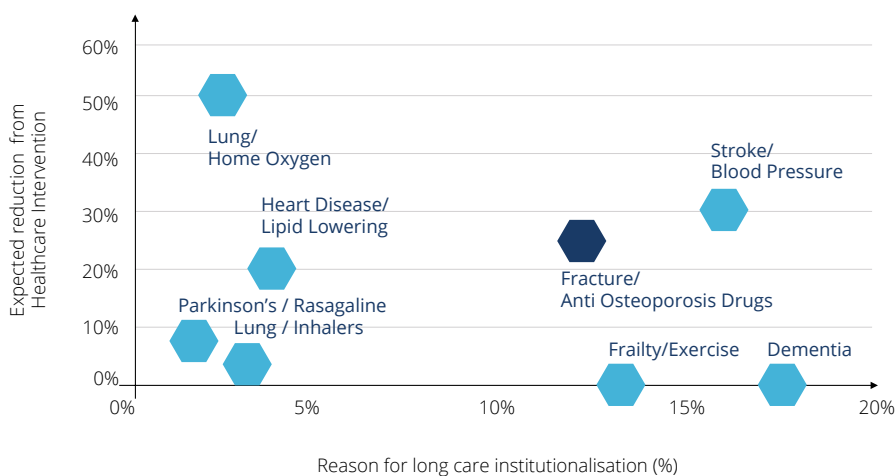
**Post-fracture Care (PFC) Coordination Programs are the single most important health service intervention to reduce the risk of subsequent fractures.**

PFC Coordination Program is a small clinical team based in the local healthcare system that works with patients to make sure they receive effective bone and falls protection as soon possible after their sentinel fracture. The *International Osteoporosis Foundation* (IOF) has developed a number of resources to support PFC Coordination Programs so that they can improve and deliver the expected benefits.

**The due diligence, in terms of research and quality improvement assessment, for secondary fracture prevention policy is complete and globally accepted making it ripe for implementation.**

The worldwide acceptance of this approach makes policy implementation in this a space a very low risk intervention, with the potential to see improvement far out-stripping that of other disease areas.

Figure  
Infographic comparing cause for long term care and expected benefit from treatment.





Fragility fractures have a substantially greater impact on women than on men. Thus, by prioritizing post-fracture care, gender differences in health and wellbeing can be reduced. The quality of life of older people can be improved and the financial sustainability of our healthcare systems can be strengthened.

Implementing a policy change that prioritizes prevention of the next fracture through PFC Coordination Programs will lead to 80% of patients at high risk of another fracture receiving basic healthcare and a reduction in fractures in the next two to five years that will be felt by patients, families, healthcare systems and societies around the globe.

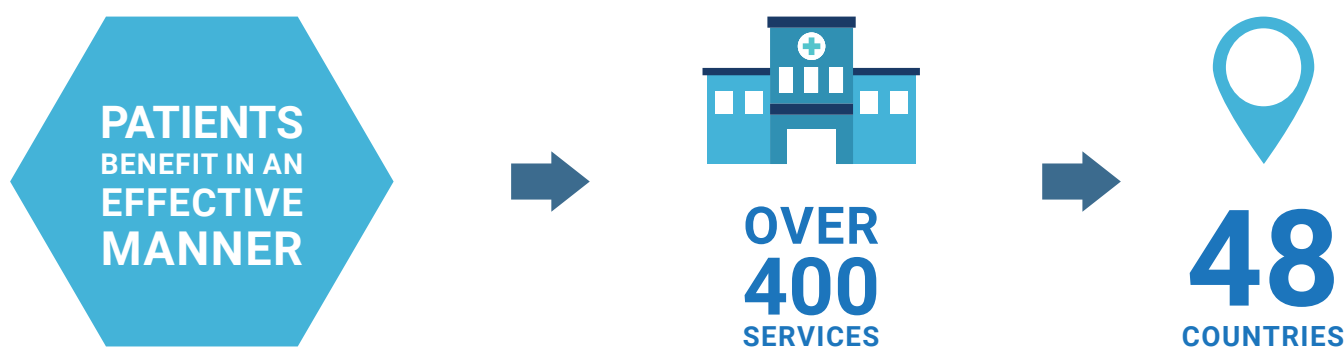
**As the authors, contributors and supporters of this policy toolkit, we cannot accept a future where preventable fragility fractures are allowed to cause such needless suffering and cost.**

**The time has come for urgent action on osteoporosis and fragility fractures, uniting patient, carer and clinical leadership with wider societal and political advocacy actors in order to strengthen the call for change.**

*The International Osteoporosis Foundation (IOF) has developed a robust and comprehensive resource centre that supports PFC Coordination Programs to deliver on their expectations.*

This provides confidence to policy makers that the implemented programs have a framework to local adaptation to allow delivery of patient benefit in an effective and efficient manner. It is based on learning from over 400 services in 48 countries across the globe.

We endorse the policy aspirations of the IOF and wish to play our part in building wider societal and political awareness for progress and change.



# NATIONAL

**Inadequacies in the care of osteoporosis and the prevention of fragility fractures are profound. Prevention of subsequent fractures will not be achieved without over-arching, political leadership.**

We call on policymakers to ensure public policy on subsequent fracture prevention is fit-for-purpose and sustainable. We call on governments, parliaments, payers and national public health institutes to:

- 1 Integrate subsequent fracture prevention into high-level national strategies and plans for health and healthcare.**  
Including those which aim to address chronic diseases, ageing medicine and women's health.
- 2 Acknowledge the huge importance of subsequent fracture prevention**  
By ensuring it is integrated into wider societal plans and policy.
- 3 Develop a national consensus on preventing subsequent fragility fractures**  
Through more systematic identification of people with index fragility fractures. The feasibility and cost-effectiveness of opportunistic fracture screening via routine imaging studies should be addressed.
- 4 Adopt and encourage the implementation of national best care clinical guidelines for subsequent fracture prevention and management**  
Which are endorsed by pertinent patient and professional groups. These guidelines should be available in the national language, include nationally approved risk assessment tools, rapid referral pathways and access to necessary diagnostic resources.



## **5** Ensure reimbursement structures reflect national scientific consensus on detection, care and prevention for subsequent fragility fractures

Reimbursement decisions should reflect the true costs of subsequent fractures to the wider healthcare system and society. At a minimum, there should be reimbursement for nationally recommended treatments.

## **6** Develop nationwide fracture identification and secondary prevention registries to enable local-level service benchmarking and improvement

This will ensure PFC Coordination Programs deliver their expected benefits and decision makers can see the benefits of supporting PFC Coordination Programs. This should include collecting and monitoring data on the identification and treatment of patients in line with internationally agreed best practice and key performance indicators. Policymakers should also consider how these data could be used to incentivize improvements in the quality of care.

## **7** Actively support efforts to improve public awareness of osteoporosis, fragility fractures and falls prevention

This includes ensuring people have a clear understanding of their own risk factors and the preventative options available to them.

# REGIONAL AND LOCAL

**Improvements to people's lives will ultimately be driven by change at a local level; to identify and treat those at risk of subsequent fragility fractures**

We call on health system leaders, including payers and the medical community, to invest in PFC Coordination Programs, a sustainable, multidisciplinary care model for fragility fractures which spans hospital and community settings. This will require:

## **1** Ensuring the availability of person-centred multidisciplinary models of care with demonstrated impact on reducing the risk of repeat fractures and death

At the very least, every general hospital should offer orthogeriatric services and a PFC Coordination Program so that every fracture patient has the option to be treated or referred there for care and immediate follow-up post-fracture. This care should be delivered in a way that addresses people's needs, concerns and preferences.

## **2** Primary care professionals to take a supporting role in the identification and management of individuals at risk of subsequent fragility fractures

Specific roles and responsibilities in primary care should be developed with professional bodies and payers.

## **3** Every locality to develop and adopt a secondary fracture prevention care pathway

This should include implementation of established organizational and patient level indicators to benchmark the efficacy of the pathway to identify and treat at risk individuals. This approach will inform service improvement and empower programs to deliver their expected results



#### **4** Ensuring a comprehensive falls assessment is available for every geriatric patient who sustains an index fragility fracture

This should be available in clinical settings as well as community settings and offer the opportunity for self-assessment. It should bring together risk factor management for falls alongside detection and treatment of fragility fractures.

#### **5** Liaising with regional and expert bodies to dove-tail a coherent and robust secondary fracture prevention policy within the global context

Organizations such as the European Union have demonstrated an intense interest in secondary fracture prevention through the creation of committees and reports. Such continental governance bodies are complemented by domain expert institutions including the *International Osteoporosis Foundation*, the *American Society for Bone and Mineral Research* and the *IOF Regional Asia-Pacific Consortium*.



**MAKING  
THE CASE**

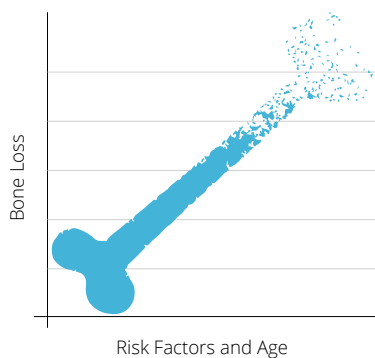


# WHAT ARE OSTEOPOROSIS AND FRAGILITY FRACTURES?

**Osteoporosis is a chronic disease that weakens bones, leaving them prone to fractures**

Bone mass naturally decreases in older age, but low body weight, inadequate physical activity, smoking, alcohol consumption and certain medications contribute to more rapid bone loss [10].

Risk Factors and Age as Factors in Bone Loss

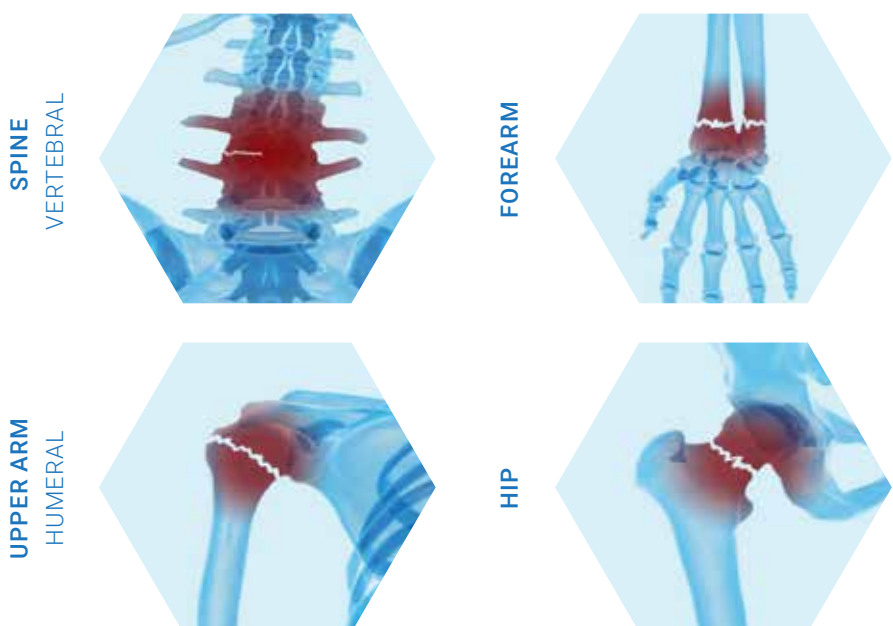


Osteoporosis is characterized by low bone mass, which is the result of the peak bone accrual during childhood and how quickly bone is lost through adulthood [7,8].

While bone development is influenced by genetic and biological factors, such as sex and age (see page 26), a number of lifestyle factors also play a role including nutrition and physical activity [9].

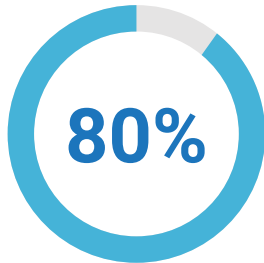
Osteoporosis is typically a 'silent' disease which can often progress without symptoms until its most severe consequence, a fragility fracture, is experienced.

Fragility fractures are fractures which may occur with surprisingly modest stresses and impacts that would not be expected to cause breakages in healthy bones. The most common fragility fractures are [1]:





# Fragility fractures can be life-changing events, with severe physical and psychological consequences



WOMEN AT  
**HIGH  
RISK**



OF DEVELOPING  
**HIP  
FRACTURE**



**WOULD  
RATHER  
DIE**

**Pain and limited mobility following a fragility fracture mean people are often at risk of losing their independence.**

In a study, 80% of women at high risk of developing a hip fracture stated that they would rather die than experience the loss of independence attributed to a hip fracture <sup>[1,2]</sup>. The experience of a fracture can cause anxiety due to a fear of falling, self-image issues and the limitations associated with carrying out day-to-day activities <sup>[2,11]</sup>.

**Family and friends can suddenly find themselves becoming carers with often limited support.**

National programs are often insufficient or difficult to access, leaving people to manage the emotional and financial burden of becoming an informal carer without the necessary support.



# Older women are most at risk of osteoporosis and associated fractures, but men are also at risk

**While lifestyle factors can influence the development of osteoporosis, the most common risk factors are being female and older age.**

With advancing age, bone structures become weaker and bone mass decreases progressively; due to the ageing of the population, the proportion of people with osteoporosis is increasing. Additionally, older people are also at greater risk of falls, making them particularly prone to fragility fractures [12].

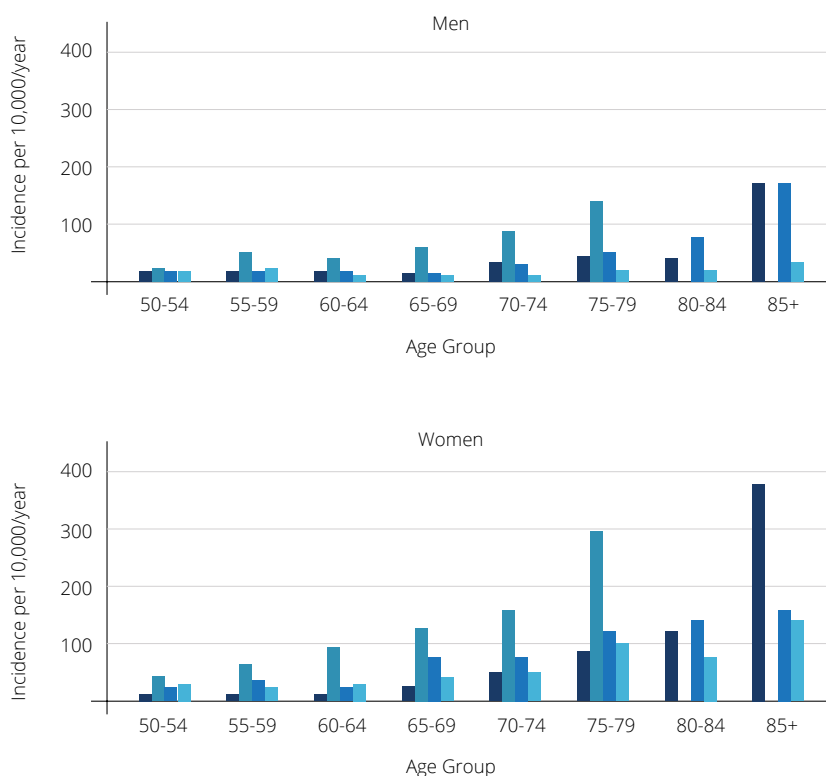
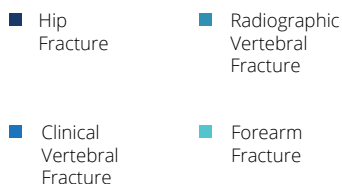
**Being female is a considerable risk factor, but both sexes experience fragility fractures.**

Women undergo a deterioration in bone structure and alterations in bone metabolism as a result of loss of oestrogen following the menopause [13]. Men initially experience a slower decline in bone mass than women, but by the age of 65 the rate of bone loss mass is the same for both sexes. As men are often older when they experience a fragility fracture, the consequences can be more severe, including a higher risk of death [14].

**The burden of osteoporosis and fragility fractures is significant and growing.**

Globally, as many as one in two women and one in five men over 50 will experience a fragility fracture in their lifetime [15] causing an estimated 8.9 million fragility fractures every year [16].

Figure  
The incidence of osteoporotic fracture by age for men and women [20].



Sambrook P, Cooper C (2006) Osteoporosis. Lancet 367 (9527):2010.2018. doi:10.1016/s0140-6736(06)68891-0

The burden of fractures does differ between continents with more fractures occurring in European countries compared to Africa (Nigeria, South Africa and Tunisia) and South America (Ecuador) <sup>[17]</sup>.

The burden of fragility fractures varies across continents, with much higher rates in northern European countries compared to countries in the south such as Spain and Portugal <sup>[1]</sup>. The problem is not going away, with fracture rates either stable or on the increase, particularly in Asia <sup>[18,19]</sup>.

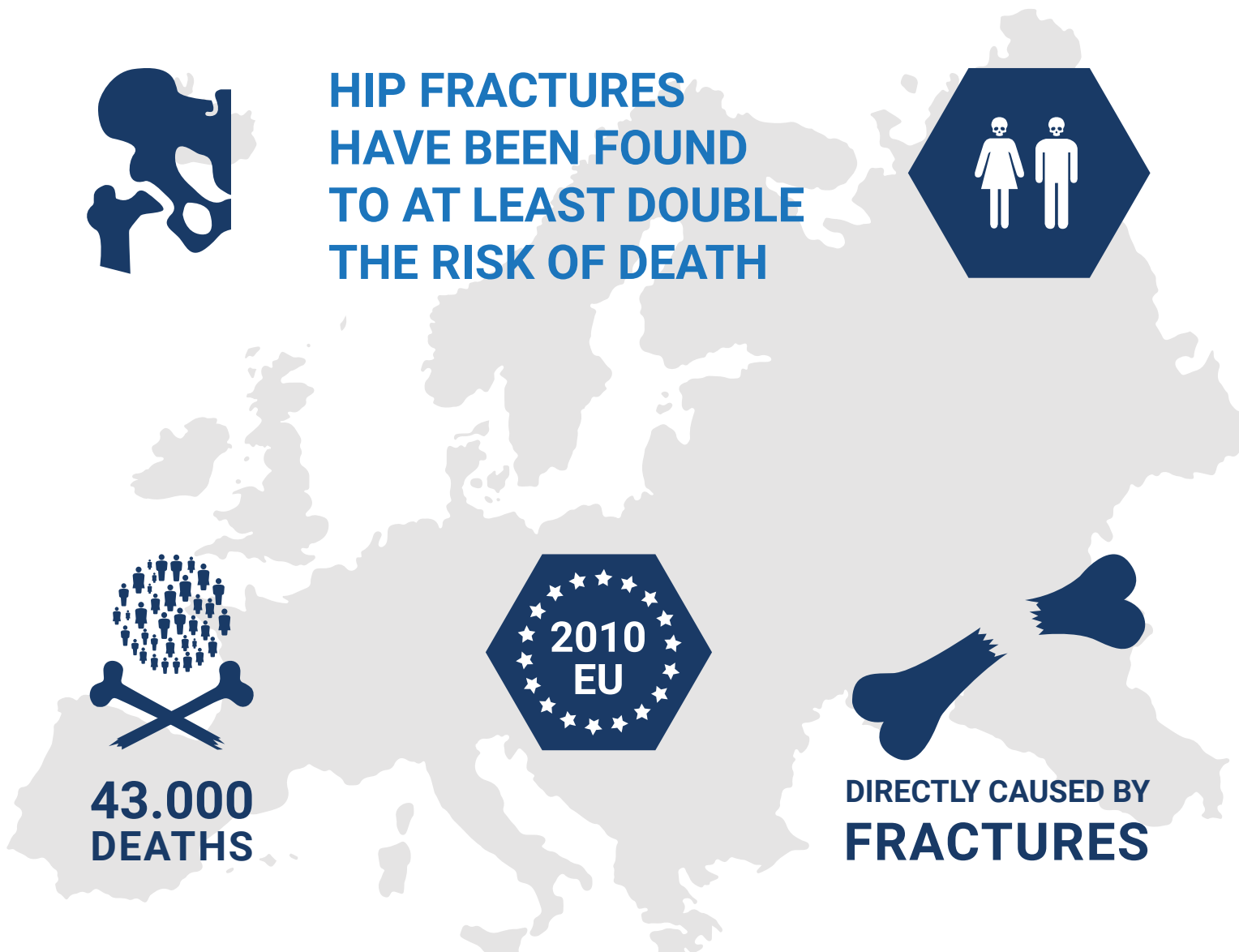
## Fragility fractures are a major driver of preventable deaths and disability

**Fragility fractures are associated with increased risk of death and disability, and more frequent hospital admission <sup>[21]</sup>.**

Globally, the burden of years lived in poor health due to osteoporosis is greater than that caused by cancers (except for lung cancer) and is comparable to or greater than that of many other non-communicable diseases, such as asthma and hypertension-related heart disease <sup>[15]</sup>.

In 2010, 43,000 deaths in the EU were directly caused by fractures <sup>[23]</sup>.

Hip fractures have been found to at least double the risk of death for both men and women <sup>[14,22]</sup>.



# THE COST OF INACTION: THE ECONOMIC CASE FOR CHANGE

The economic impact of fragility fractures is significant and is set to rapidly rise if no action is taken.

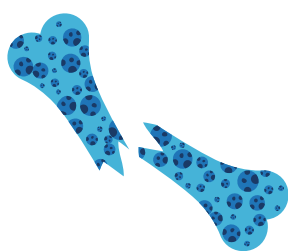
By supporting the implementation of available cost-effective prevention strategies, policymakers can help reduce the burden of fractures on health systems and the wider economy.

## Fragility fractures represent a significant cost to health systems

Fragility fractures incur substantial medical costs each year, putting significant pressure on health systems <sup>[24]</sup>.

On average, fragility fractures represent 3% of countries' healthcare spending, estimated at €37.4 billion across the EU in 2010 – rising to €98 billion when taking into account the impact on health-related quality of life <sup>[1]</sup>. This financial burden is higher than for many other non-communicable diseases. For example, the EU's direct healthcare costs in 2015 were estimated at €20 billion for stroke and €19 billion for coronary heart disease. In Australia, the cost of hip fracture alone is estimated to reach \$1 billion per year by the year 2022 <sup>[25]</sup>.

What is more, the costs of fragility fractures are set to double by the year 2050 <sup>[26]</sup>.



FRAGILITY  
FRACTURES  
**€37.4**  
BILLION



STROKE  
**€20**  
BILLION



CORONARY  
HEART  
DISEASE  
**€19**  
BILLION

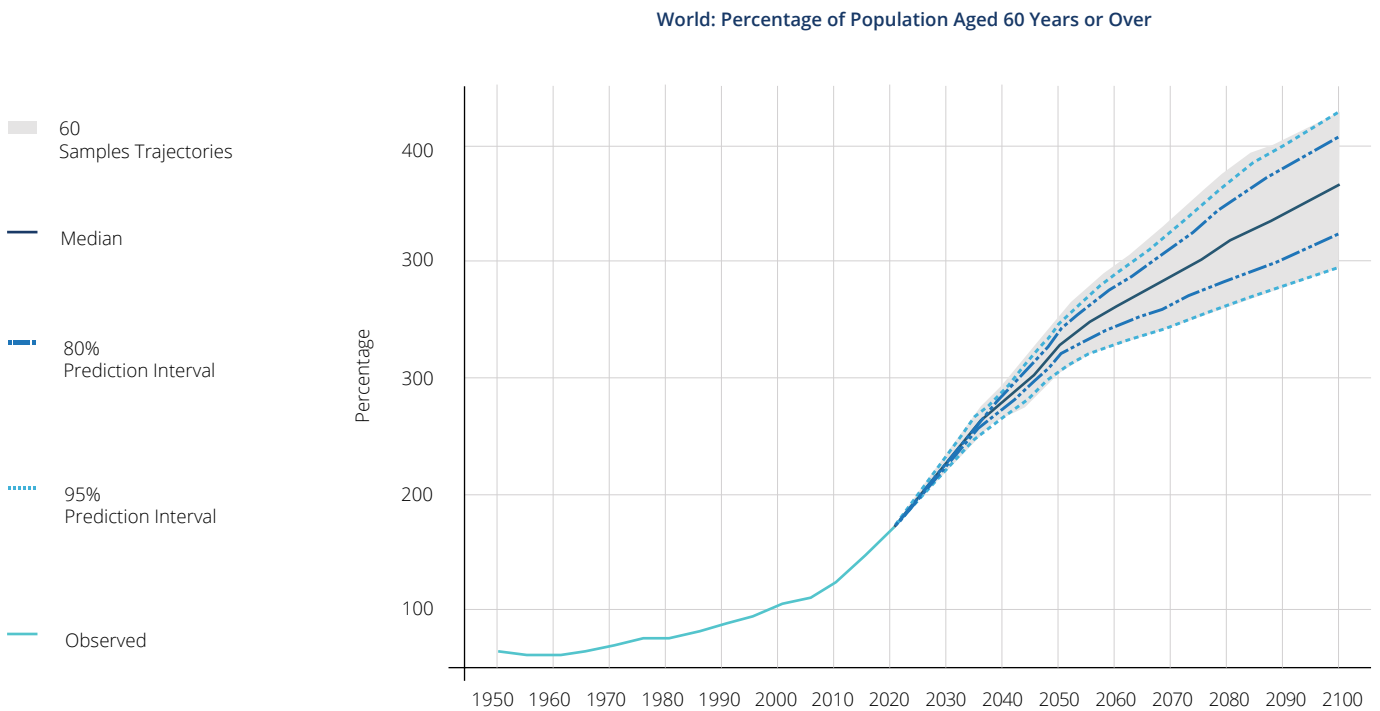
# The global population is ageing and will increasingly be affected by fragility fractures

The rapid growth of ageing populations is a global concern with significant implications for healthcare spending.

*Figure*

United Nations probabilistic projection for percentage of global population aged 60 and over (<https://population.un.org/wpp/Graphs/Probabilistic/Pop-Perc/60plus/900>).

According to the *United Nations*, the global percentage of individuals aged over 60 is set to rise from 13% to almost a quarter of the world population. As a result, health expenditure will continue to increase. In this context, the number hip fractures alone is expected to increase by 310% in men and 240% in women, by 2050 compared to rates in 1990 [27].



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## Changes in the proportion of elderly individuals will have a significant impact on fragility-fracture related healthcare costs.

In Europe, healthcare costs associated with fragility fractures are expected to rise by 22% between 2010 and 2025. This will vary by country, ranging from an increase in healthcare costs due to fragility fractures of between 5% in Bulgaria and 44% in Ireland [1].

*Figure*

Fragility fracture costs in the EU.

In New Zealand, costs are expected to rise by over 30% (over 13 years up to 2020) [28].

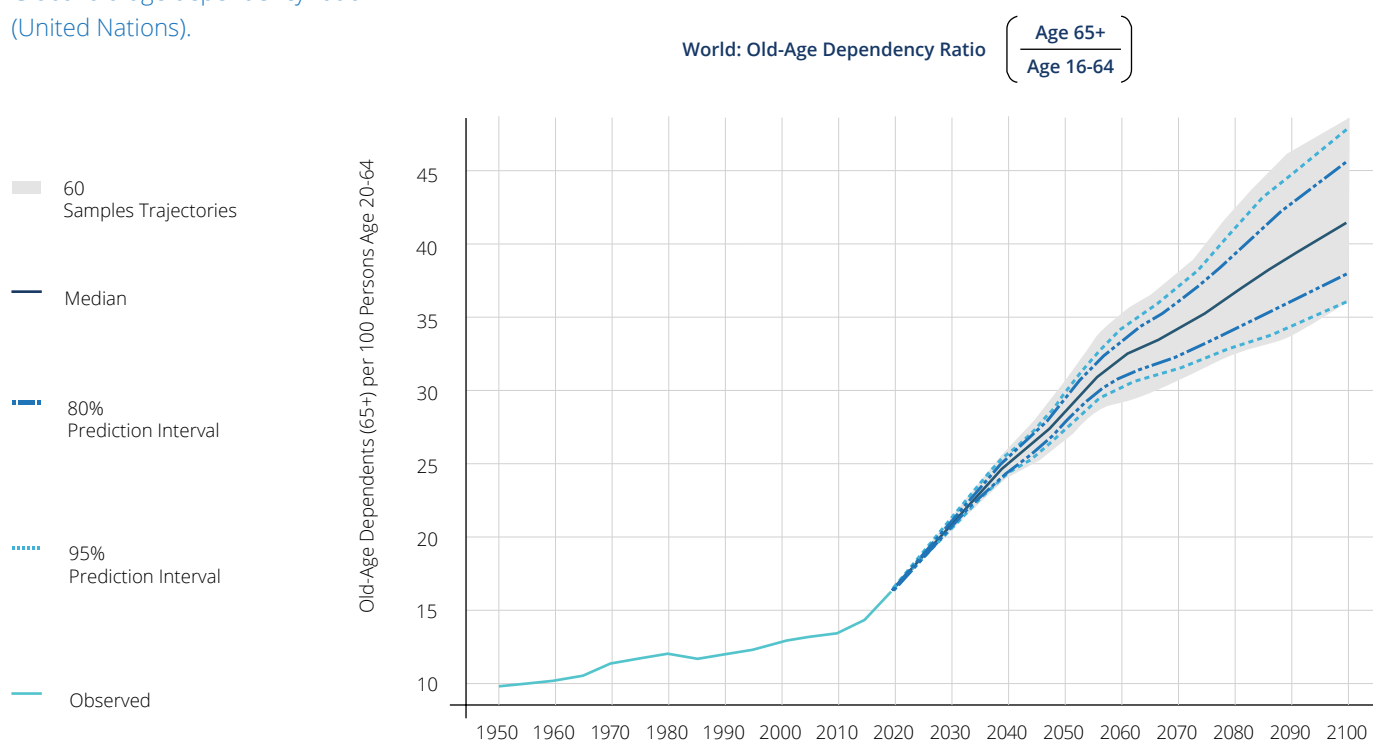


# In an ageing population with an ageing workforce, fragility fractures have a significant and growing impact on workforce productivity

As the global population ages, the proportion who are of working age and paying taxes is shrinking, increasing financial pressure on health and social care services to cover the increasing costs of osteoporosis and fragility fractures.

At present, there are approximately 15 persons aged 65+ for every 100 people aged 16-64. By 2050, this will have approximately doubled and by 2100 could be nearing 50 (persons aged 65+ for every 100 people aged 16-64).

Figure  
Global old-age dependency ratio  
(United Nations).



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United Nations, DESA, Population Division. *World Population Prospects 2019*. <http://population.un.org/wpp/>

**At the same time, the workforce is ageing, as a growing number of older people remain in work beyond the age of 65.**

While this will, to some extent, mitigate the financial pressure on health services noted above, it will also increase the prevalence of chronic conditions – including osteoporosis and fragility fractures – among the working population. Unless action is taken to prevent fragility fractures, this will have a significant impact on workforce productivity as sickness absence rates are highest among workers aged 65 and over.

**In addition, individuals who have experienced a fracture may rely on informal care from friends and family [3,29].**

Many of these carers may need to cut down their working hours or cease any form of paid work due to difficulties in balancing paid employment and care responsibilities [3,29].

# Cost-effective ways to prevent fragility fractures and improve patient outcomes include osteoporosis medication and integrated post-fracture care

Benefits of implementing a nationwide FLS model in the UK, and how it impacts the increase in savings and the decrease in fractures.

**Responding to the fragility fracture crisis requires more consistent implementation of cost-effective and cost-saving screening, treatments and services** <sup>[30,31]</sup>.

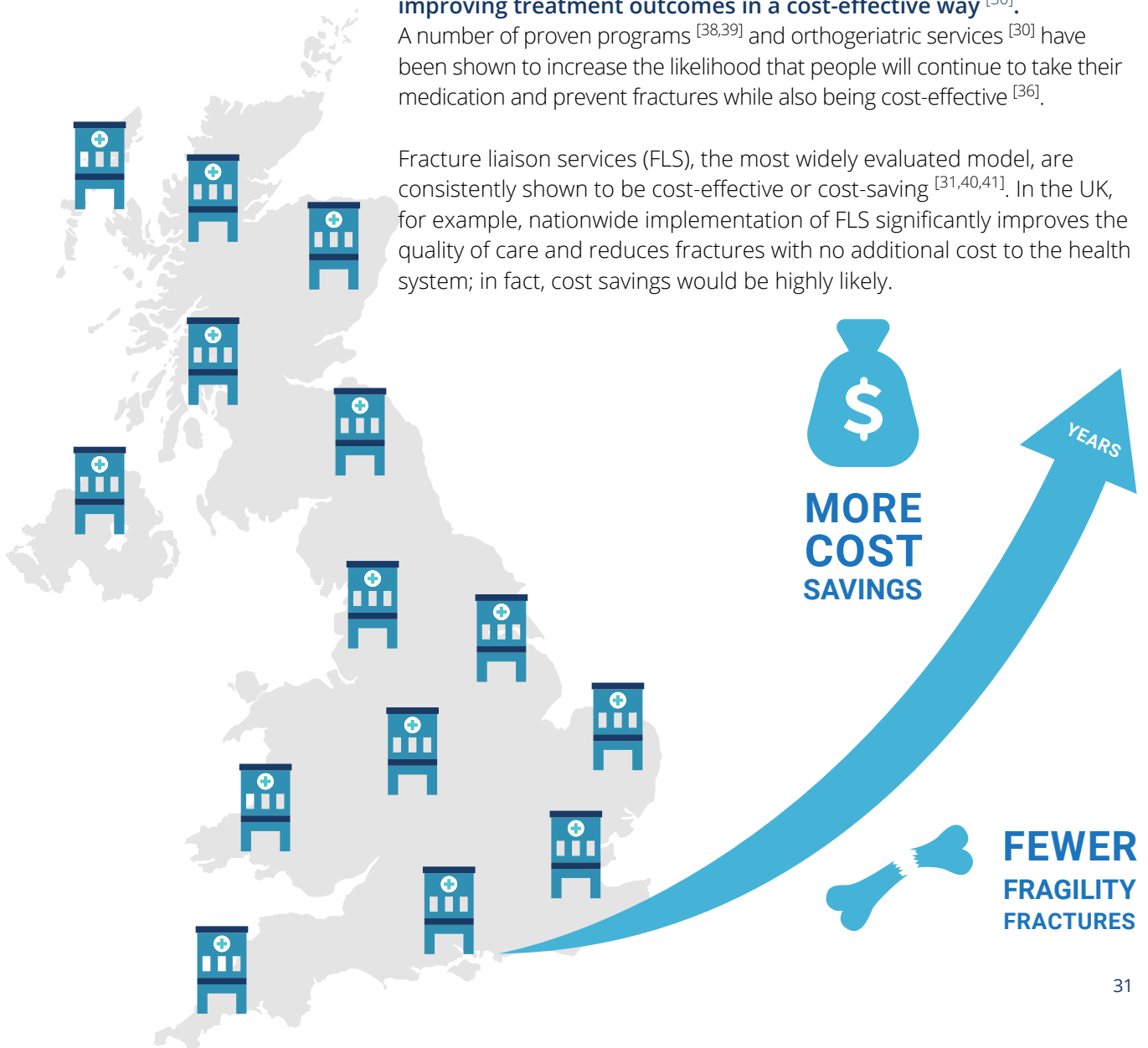
In general, osteoporosis medication is cost-effective (and even cost-saving) when given to individuals at high risk of fracture and taken consistently <sup>[30,32,33]</sup>. However, cost-effectiveness relies on treatment being continued <sup>[33-35]</sup>, so implementing services that support people to take their medication regularly is cost-effective (and even cost-saving), when drug compliance is maintained in individuals at high risk of fracture <sup>[36]</sup>.

A simulation model in Sweden, for example, showed that if people who were prescribed osteoporosis medication stayed on treatment for 50% longer, a total of €3.3 million would be saved over 10 years <sup>[37]</sup>.

**Implementing models of integrated post-fracture care is vital to improving treatment outcomes in a cost-effective way** <sup>[30]</sup>.

A number of proven programs <sup>[38,39]</sup> and orthogeriatric services <sup>[30]</sup> have been shown to increase the likelihood that people will continue to take their medication and prevent fractures while also being cost-effective <sup>[36]</sup>.

Fracture liaison services (FLS), the most widely evaluated model, are consistently shown to be cost-effective or cost-saving <sup>[31,40,41]</sup>. In the UK, for example, nationwide implementation of FLS significantly improves the quality of care and reduces fractures with no additional cost to the health system; in fact, cost savings would be highly likely.





**THE BUILDING BLOCKS  
OF AN EFFECTIVE  
POLICY RESPONSE**





# A SYSTEM THAT WORKS

To safeguard an effective global response to the expanding burden of subsequent fragility fractures, health and social care services must respond with robust identification and swift management of those at risk.

To address these aims, a trio of cross-cutting themes is required to optimise patient care:

**a.** Integrate international fragility fracture policy:

Strong strategic leadership in policy development is vital to ensure long-term accountability and investment, as is accurate measurement and prediction of the current and future demands on the healthcare system, and the setting of justifiable and measurable targets to navigate the journey to achieve long-term goals.

**b.** Establish comprehensive registries and audits:

The creation and curation of high-quality data on subsequent fragility fractures will allow accurate benchmarking of performance and pave the way for feedback and improvement both locally and nationally. This will allow services to deliver on their expected benefits through established organizational and patient level Quality Improvement Indicators.

**c.** Adequate reimbursement structures:

Requisite reimbursement must be mobilized to ensure access to best-practice care throughout the patient journey. This should be considered against the backdrop of the costs ensuing from failure to prevent subsequent fragility fractures within the healthcare system.

## Integrate international policy

**Fragility fractures and secondary fracture prevention are highly relevant for global policy initiatives and strategies concerned with non-communicable disease, healthy ageing, women's health, health inequalities and social care.**

Too often, however, these initiatives have not adequately contained or prioritized secondary fracture prevention <sup>[5]</sup>.

**Recognizing secondary fracture prevention as an important component of national policy will support the development and implementation of vital PFC Coordination Programs.**

National strategies and action plans often support implementation of population-wide programs such as education and awareness campaigns <sup>[23]</sup>. The recognition which comes with national level policy initiatives will also garner greater investment in PFC Coordination Programs, registries, diagnostic tools such as *DXA* scanning <sup>[42]</sup> and preventative strategies including medication and lifestyle interventions <sup>[23]</sup>.

**Secondary fracture prevention is rarely featured in national policies for chronic disease, healthy ageing and women's health.**

Health strategies worldwide have recognized the critical role of reducing frailty and maintaining mobility as part of healthy ageing and prevention. Yet osteoporosis, let alone secondary fracture prevention, seldom materializes in national prevention strategies. A recent analysis showed that musculo-skeletal health, including osteoporosis and fragility fractures, was only included in half of non-communicable disease strategies for *OECD* countries <sup>[5]</sup>.

Secondary fracture prevention has received limited attention in global health policy to date and has not been marked as a priority in most countries <sup>[23]</sup>.

Osteoporosis and fragility fracture are not viewed as an urgent priority despite the significant burden they impose on every healthcare system <sup>[23,42,43]</sup>.

Most countries have not identified secondary fracture prevention as a policy priority <sup>[23]</sup>.



MUSCULO-SKELETAL  
**HEALTH  
IS INCLUDED**



**IN ONLY 1/2**  
OF NON/COMMUNICABLE  
**DISEASE**  
STRATEGIES IN



**OECD**

**Governments should encourage national consensus on secondary fracture prevention to provide a clear unified perspective on the required policy changes and how different sectors can work together.** The formation of alliances encourages greater dialogue between different stakeholders including policymakers, health professional societies, the private sector and non-governmental organizations <sup>[41,44]</sup>.

This alliance formation is already underway, spearheaded by the *Fragility Fracture Network (FFN)* and the *International Osteoporosis Foundation (IOF)*.

## Comprehensive registries

**Policymakers require quality data on secondary fracture identification and prevention which they can use to plan and assess services. These data, however, tend not to be comprehensive, comparable or evenly spread within countries or across the globe.**

Fracture registries are hugely helpful in this regard, but while they tend to be well established in some countries (including northern Europe, Australia and New Zealand <sup>[45]</sup>, Hong Kong <sup>[46]</sup>, Mexico <sup>[47]</sup>, US <sup>[48]</sup>) they are not in other geographic regions.

Additionally, most countries do not collect data on all types of fracture <sup>[23]</sup> with the majority focusing on hip fractures, meaning that vertebral or forearm fractures remain under-reported <sup>[49,1]</sup>.



**Regular clinical audit can act as a driver to rapidly improve secondary fracture prevention <sup>[49]</sup>. This has been amply demonstrated as a result of regular hip fracture audits in the UK and Spain <sup>[50-53]</sup>.**

Introducing such audits for secondary fracture prevention (encompassing all fracture types) could result in similar improvements, as observed in a comparison between China and the UK <sup>[54]</sup>.

**Across the globe, there is great variation in terms of how data on secondary fracture prevention is collected and analyzed. This limits the ability of policymakers to compare performance between countries.**

National reports vary in the quality, granularity and extent of the data they capture, for example regarding inclusion criteria or case definitions <sup>[50,49]</sup>. In order to homogenize the approach recent initiatives have developed standard indicators including the *IOF Capture the Fracture Best Practice Framework* and the *FFN Minimum Common Dataset* which have been adopted by several countries <sup>[50,55]</sup>.

## Adequate reimbursement structures

**Availability of adequate funding and reimbursement structures is essential in supporting high-quality delivery of secondary fracture prevention.**

Due to a paucity in secondary fracture prevention focused policies the current services are limited in scope and are underfunded. However, strategies which are contextualized to a national outlook (and adequately resourced) can allow for the cost-effective delivery of secondary fracture prevention best practice.

**Reimbursement for diagnosis of osteoporosis is often lacking or restricted** <sup>[30]</sup>.

DXA scanning is a key step to diagnosing osteoporosis and identifying those at substantial risk of fractures <sup>[23]</sup>, however, reimbursement for the use of this tool is insufficient in many countries <sup>[1]</sup>.

**Reimbursement for osteoporosis medication is also often restricted, likely contributing to the concerningly low treatment rates for osteoporosis across the globe** <sup>[1]</sup>.

The proportion of osteoporosis care costs associated with medication is minimal, amounting to less than 5% in many countries <sup>[24]</sup>. Limited reimbursement can move treatment beyond the realm of affordability for most patients leading to restricted access for those above a certain age or other risk factor profiles <sup>[23]</sup>.



AGE



**The blocks required to build an effective secondary fracture prevention policy include measures to identify those at risk as soon as possible, manage and treat them effectively, ensure that the population does everything possible to reduce fractures from cradle to grave, and that public and patient engagement is maximized.**

*These steps are described on the following page.*

# CATCH IT EARLY: DETECTION AND MANAGEMENT OF SUBSEQUENT FRACTURES

## 5 Things to Know

- 1 Fractures beget fractures**

People who have sustained a fragility fracture, compared to people who have not fractured, are at five times greater risk of having a second fracture <sup>[56]</sup>. It is crucial to identify these people and prevent subsequent fractures.
- 2 Time = Avoidable fractures**

Fractures occur in clusters, with the risk highest in the two years following the index fracture. Urgent intervention is therefore required to halt the march towards further fractures <sup>[57]</sup>.
- 3 PFC Coordination Programs are effective at identifying individuals with index fragility fractures;**

These can work effectively in either secondary or primary care.
- 4 PFC Coordination Programs services pay for themselves, and more.**

PFC Coordination Programs are cost-effective in locations and healthcare systems across the globe <sup>[36,37,41]</sup>.
- 5 Automated processing of routine medical images is experimental;**

Although experimental at present, in the future this may deliver efficiencies in fracture identification and secondary prevention and slow the march towards further fractures <sup>[57]</sup>.



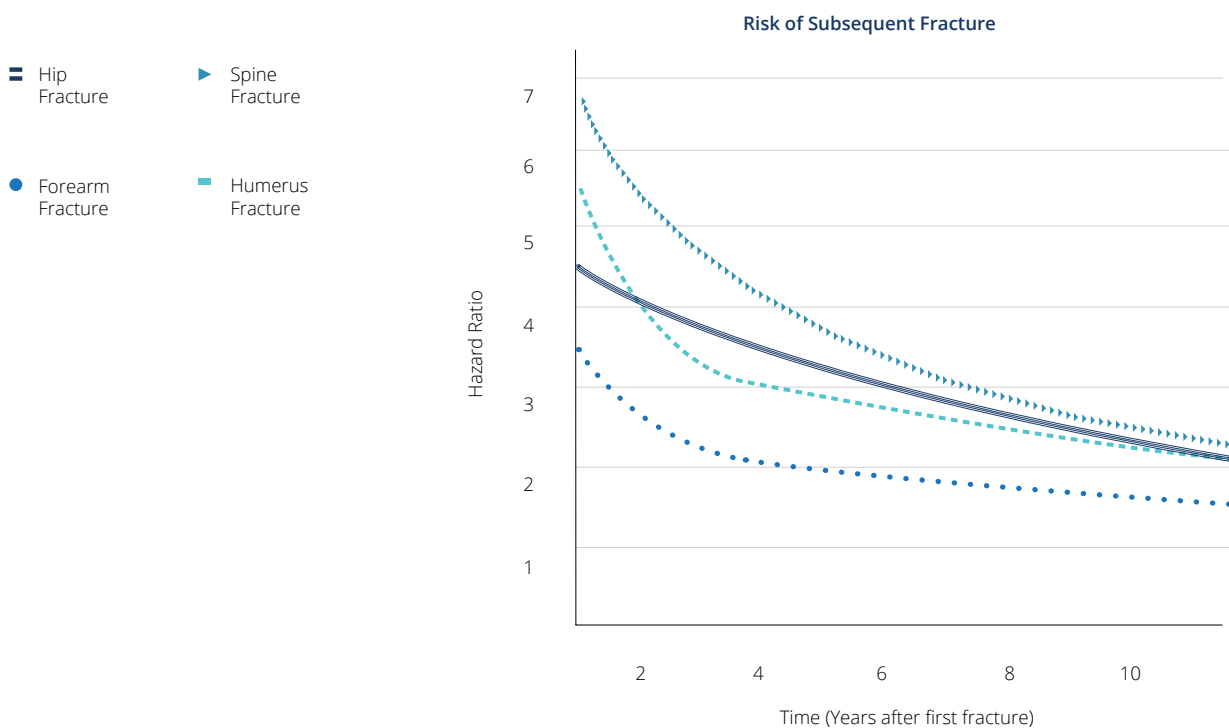
# What is it and why is it important?

**Identifying people at high risk is vital to prevent fractures and enable individuals to maintain independence and quality of life** [3].

A fracture often leads to a substantial loss of independence which may prohibit a patient from regaining their pre-fracture quality of life [58]. An initial fracture is also a herald for future fractures [6], especially in the imminent short term [59]. Thus, identifying and treating those who have sustained fractures in the past is an important step toward tackling the downstream effects of osteoporosis. Once people at high risk are identified, a raft of often simple, low-cost interventions can contribute to improved bone health and reduce fracture risk. Osteoporosis medications alone can reduce the risk of future fractures by 30-70% [60].

## Figure

After an initial fracture, the risk of subsequent fracture is particularly high for approximately the next 2 years [61].



**Time is bone. Rapid identification of an index fragility fracture is important as subsequent fractures often occur soon after the first broken bone.**

There is an urgency to the identification and treatment of those who have fractured as 80% of subsequent fractures occur within a year of initial fracture [57].

**Secondary care professionals can play a crucial role in identifying people who have sustained a fragility fracture and in commencing treatment.**

Initial fragility fractures, particularly hip and forearm fractures, present to a secondary care setting for emergency treatment and care providers in hospitals are well-placed to recognize the occurrence of fragility fractures and kick-start treatment, for example through the initial prescription of osteoporosis medication. Vertebral fractures may be identified through routine imaging and should be highlighted to primary or secondary care providers to further assess the patient for treatment.



### Primary care professionals can play a supporting role in detecting and managing people at high risk of fragility fractures <sup>[62]</sup>.

As the first point of contact for community healthcare and providers of routine care, primary care professionals often have the opportunity to detect osteoporosis. In many countries, they can also play a critical role in prescribing and monitoring treatments which reduce the risk of sustaining a fragility fracture <sup>[23,63]</sup>. Models for primary care positioned PFC Coordination Programs can be effective and have been proven to be so in the UK <sup>[64,65]</sup>.

## How do we know it works?

### Implementing targeted identification of index fragility fractures offers the opportunity to effectively prevent further fragility fractures from occurring.

Introducing initiatives to identify index fractures and prevent subsequent fractures are known to result in significant reductions in fracture rates and mortality <sup>[66]</sup>.

### PFC Coordination Programs have a proven, cost-effective track record in mediating future fracture risk and reducing the burden of subsequent fractures across the globe.

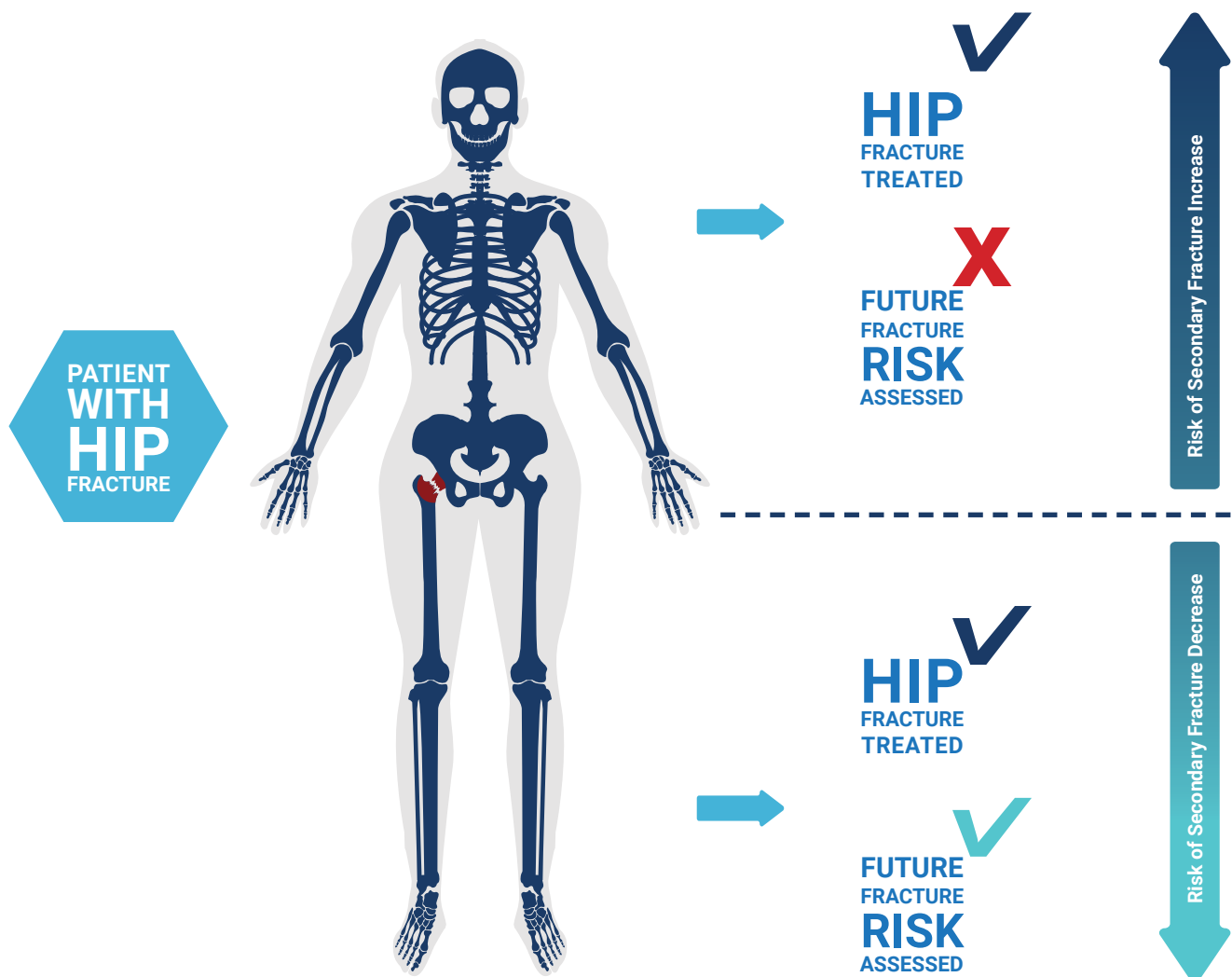
Health economic models vary depending on the geography and comparisons used but there is clear evidence of the cost-saving ability of PFC Coordination Programs worldwide. In Sweden <sup>[37]</sup>, Canada <sup>[36]</sup> and Japan <sup>[67]</sup> the cost-effective and financial benefits of PFC Coordination Programs and secondary fracture prevention have been demonstrated, and these benefits appear to increase with age <sup>[67]</sup>.



## What is the current situation?

Worldwide, the opportunity to treat individuals who have sustained fragility fractures is squandered. This is due to fragility fractures being unidentified when patients present with acute fractures in a hospital setting.

The focus of treatment for a patient arriving with a fractured hip is the management of the hip. This addresses the present issue but not the future fracture risk. In healthcare systems which do not directly address secondary fracture prevention the assessments of bone health and falls risk are less than 4% [54]. This rises to over 90% in healthcare settings with secondary fracture prevention in place.



**Too often vertebral fractures are overlooked on medical images representing a substantial missed opportunity for index fracture identification.**

Some vertebral fragility fractures have very slight symptoms which are barely noticed by the patient, but which massively increase the risk of further fractures. Routine imaging can include views of bones (especially the spine) even when they are not the focus of the test. Incidental fractures are missed, with an estimated 85% of vertebral fractures unrecorded in radiology reports [68-70].

# What needs to be done?

It is crucial that policymakers support the development of clear national guidance on identifying subsequent fragility fractures and treating osteoporosis, which is informed by national scientific consensus.

In countries which have applied this approach the rates of osteoporosis and falls assessments are over 90%. In those which have not followed this approach, the rates are below 4% <sup>[54]</sup>.

**PFC Coordination Programs should receive priority funding in order to address the epidemic of subsequent fragility fractures.**

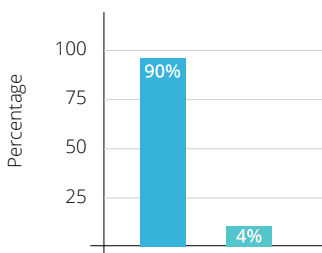
Numerous studies have demonstrated significant cost-effectiveness through the adoption of PFC Coordination Programs <sup>[36,67,71]</sup>.

**Automated methods of fracture identification on routine medical imaging should be the subject of further research.**

Deep learning and computer vision are areas of great interest and are having some success in the automated identification of vertebral fractures on CT scans <sup>[72-74]</sup>.

Figure

Rates of osteoporosis and falls assessment across the world.



- Countries with clear national guidances on identification and treatment
- Countries without clear national guidances on identification and treatment



# TREAT IT WELL: FACILITATING MULTI-DISCIPLINARY POST-FRACTURE CARE

## 5 Things to Know

- 1** Fractures are dangerous.  
Up to 10% of people with hip fractures die whilst in hospital and only half will regain the same function that they had before the fracture. This can be reduced by best-practice care.
- 2** Health systems have so far failed to close the osteoporosis treatment gap.  
Most people who are eligible do not receive the risk-reducing treatment they need <sup>[23,1]</sup>.
- 3** Excellent care and rehabilitation following a fracture involves a multidisciplinary team of orthopedists, traumatologists, geriatricians, primary care doctors, nurses, physiotherapists and other health professionals,  
This is the first step to ensuring positive outcomes <sup>[3,75]</sup>.
- 4** There is an effective framework for multidisciplinary, co-ordinated post-discharge care to reduce long-term fracture risk.  
This is effective, efficient and provides a good patient experience.
- 5** Investment in proven best-practice models is needed globally to increase access to high-quality post-discharge care;  
This will improve long-term patient outcomes.

## What is it and why is it important?

**The care people receive in hospital following a fragility fracture will impact on their recovery and their independence after discharge** [76].

Among people with hip fractures, up to 10% are likely to die while in hospital, and only half will regain the same function that they had before the fracture [77]. This can, in part, be remedied through the implementation of best-practice in-hospital care [76].

**Following treatment of a fragility fracture, it is vital that patients have access to services which can prevent subsequent fractures.**

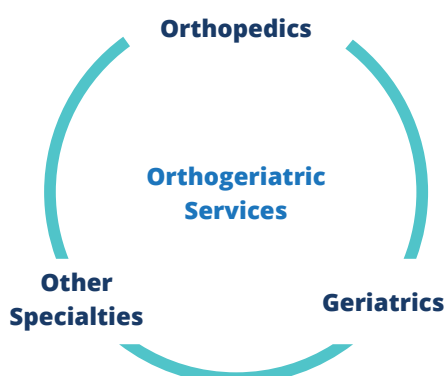
People who have sustained a first fragility fracture are at a significantly higher risk of a subsequent fracture once they have been discharged, including more severe fractures in other parts of the body [3]. Services to prevent subsequent fractures may involve osteoporosis screening, initiation of treatment and referral to specialist services such as rehabilitation and falls prevention programs. In addition to specialist services, primary care should be involved in the long-term management of fracture risk [78].

**Existing and proven models of integrated care seek to assess fracture patients in hospital settings and support the coordination of their care and prevention, both before and after they have been discharged.**

PFC Coordination Programs are a widely implemented coordinator-based model of care aiming to identify people at risk of subsequent fractures and signposting them to preventive follow-up care services [55]. While there is considerable variation in the services delivered by PFC Coordination Programs, they generally include at least one of three key components: identification, investigation and initiation of interventions [30]. Not surprisingly, PFC Coordination Programs models that deliver more of the key components result in a greater proportion of people being investigated for osteoporosis and giving treatment [79].

## How do we know it works?

Delivery of orthogeriatric services [80,81].

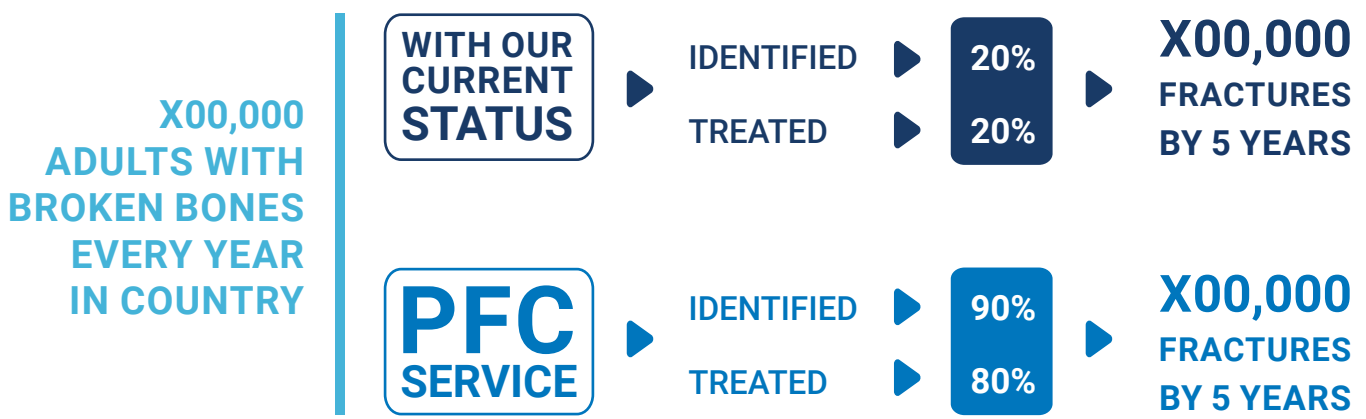


**There are various components of in-hospital care that have a significant impact on outcomes including the risk of subsequent fractures and death** [3,75].

International guidelines for the management of fragility fractures in hospitals include standards for 'time to surgery', assessment of future risk and early introduction of post-fracture rehabilitation [76]. In addition, a crucial component of in-hospital post-fracture care is the delivery of orthogeriatric services, which involve orthopedics, geriatrics and other specialties working together to care for fracture patients [80,81]. For example, timely surgery and coordinated treatment plans led by orthogeriatricians have been shown to significantly reduce the risk of death in the short- and long-term and the likelihood of complications and prolonged hospital stays [76]. In addition, orthogeriatric services can reduce the length of hospital stay and the need for rehabilitation services, resulting in considerable cost savings [82].

PFC Coordination Programs are consistently shown to be cost-effective and sometimes cost-saving<sup>[31]</sup>. Substantial initial investment is required<sup>[71]</sup>, which may deter some policymakers from making investment decisions in a climate of increasing pressure on healthcare budgets.

## EXPECTED IMPACT AFTER IMPLEMENTING POST FRACTURE CARE (PFC) SERVICES\*



### COSTS AND FRACTURES AVOIDED OVER 5 YEARS WITH PFC SERVICES

<b>FRACTURES (TOTAL)</b> = X0,000	Hospital = \$X.X billion Comms/Social Care = \$X.X billion
Bed Days = X00,000 Operations = X,000 Clinical Appointments = X0,000 Care Home = X00 Patient Years	<b>TOTAL COSTS AVOIDED</b> = \$X,X000

**PFC COSTS**  
Staff = \$X.X billion  
Investigations = \$X.X billion  
**Total Cost**  
\$X.X billion

**NET SAVING  
AFTER  
5 YEARS  
\$X.X billion**

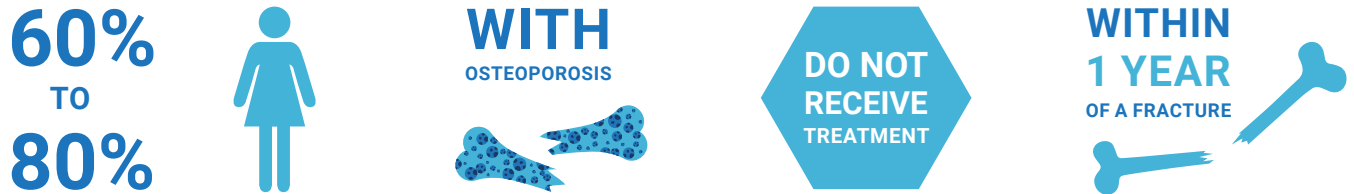
5 year medication costs = \$X00 billion  
NET Cost over 5 years including medication = \$X00 billion

\* Dedicated clinical service that identifies tests and treats adults over 50 years with broken bones

## What is the current situation?

**Alarming, most people do not receive risk-reducing treatment after a first fracture. This significantly increases the likelihood of sustaining a subsequent fracture.**

An estimated 60-80% of women with osteoporosis do not receive treatment within one year of a fracture <sup>[3]</sup>.



**The implementation of multidisciplinary, integrated models of care varies both within and between countries. Very few hospitals appear to have structured services in place to prevent future fractures.**

This is because responsibility for preventing subsequent fractures can easily fall through the gaps between medical specialties and primary/secondary care.

Differences in practice are observed regionally across the European continent. Finland has developed nurse-led post-fracture services, which are recommended in national guidelines. In Germany, however, only a minority of hospitals have a referral pathway for post-fracture patients in place, leaving up to 88% of patients discharged without clear treatment recommendations. In Romania, post-fracture follow-up investigation and treatment is usually not carried out in the hospital where the fracture was treated, but must be initiated in primary care and then undertaken by a specialist, contributing to a significant gap in treatment <sup>[1]</sup>. In 2013, only eight EU countries (Austria, Cyprus, Czech Republic, Estonia, Finland, Hungary, the Netherlands and Sweden) had PFC services in over 10% of hospitals, while six countries (Greece, Latvia, Luxembourg, Portugal, Romania and Slovakia) had PFC services in under 1% of hospitals <sup>[23]</sup>.

This is an active issue globally with new recommendations emanating from the United States in 2020 <sup>[83]</sup> and PFC Coordination Programs actively encouraged through initiatives in other countries, for example via the *Osteoporosis Canada 'FLS Hub'*.



\* AUSTRIA, CYPRUS, CZECH REPUBLIC, ESTONIA, FINLAND, HUNGARY, THE NETHERLANDS, SWEDEN

\*\* GREECE, LATVIA, LUXEMBOURG, PORTUGAL, ROMANIA, SLOVAKIA

# What needs to be done?

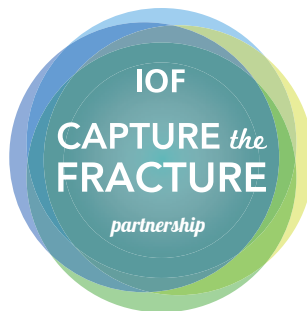
**There are several best-practice case studies at the national level from which other countries can learn.**

The UK has been at the helm of PFC Coordination Programs development and provides valuable lessons in terms of driving best-practice delivery of orthogeriatric care of hip fracture patients. The *UK FLS Database*, which is used to audit hospital performance in fracture care and prevention of a subsequent fracture [53], has been instrumental in improving management of hip fractures in hospital. The *Best Practice Tariff* has been instrumental in improving the management of hip fractures in hospital, as have financial incentives [77].

Orthogeriatric models of care have been established in various countries, including Spain, Germany, the Netherlands [84], and China [85] although practice and outcomes vary significantly between hospitals.

**Important efforts are also underway to promote the establishment of PFC Coordination Programs globally and to ensure greater adherence to best-practice standards.**

To this end, a global recognition scheme, *IOF Capture the Fracture*®, has been developed [66].



## NATIONALLY REFINED SERVICE DELIVERY MODEL

EFFECTIVE LOCAL CARE PATHWAYS



PLANNING & IMPLEMENTATION



REAL-TIME QUALITY IMPROVEMENT



ONGOING CLINICAL SUPPORT AND MENTORSHIP



EMBEDDED QUALITY ASSURANCE



PROFESSIONAL AND PATIENT RESOURCES



EMBEDDED HEALTH ECONOMIC IMPACT



FOR PATIENTS AND FAMILIES

FOR DOCTORS AND HEALTHCARE INSTITUTIONS

FOR HEALTH ECONOMY





Capture the Fracture®'s Best-Practice Framework sets out quality standards to prevent subsequent fractures and provides a suite of resources to support their implementation in different healthcare settings <sup>[55]</sup>. Within the first year, 60 hospitals signed up for the scheme, of which 27 achieved a gold rating, the highest level of recognition <sup>[86]</sup>.

Member organizations are offered mentorship, a financial benefit calculator, suitable scalable solutions, a benefit calculator, FLS digital comparative tool and FLS management digital tool and expertise in order to accelerate the closure of the care gap.



1<sup>ST</sup> YEAR  
**60**



OF WHICH  
**27**



**ACHIEVED  
GOLD  
HIGHEST LEVEL  
RECOGNITION**

**Policymakers should ensure the implementation of best-practice in-hospital care for fracture patients so that people can quickly regain their independence and mobility.**

All options for encouraging widespread implementation of best-practice care should be considered, including the use of incentives to encourage clinicians to deliver specific components of high-quality care.

**Policymakers need to support coordination between existing services, to ensure more patients have access to multidisciplinary care models such as PFC Coordination Programs <sup>[30]</sup>.**

This will ensure patients at high risk of a fracture benefit from the seamless transition to follow-up care and receive all necessary services. This will require consistent collaboration between primary care, orthopedics, rheumatologists, geriatrics and other services <sup>[30]</sup>.

**Policymakers need to embed organizational and patient level indicators to ensure implemented services deliver the expected benefits <sup>[55,86]</sup>.**

These resources and support with implementation are available through the *International Osteoporosis Foundation's Capture the Fracture®* program.

# HEALTHY ACTIVE AGEING: PREVENTING FALLS AND FRACTURES IN LATER LIFE THROUGH GOOD HEALTH EARLIER IN LIFE

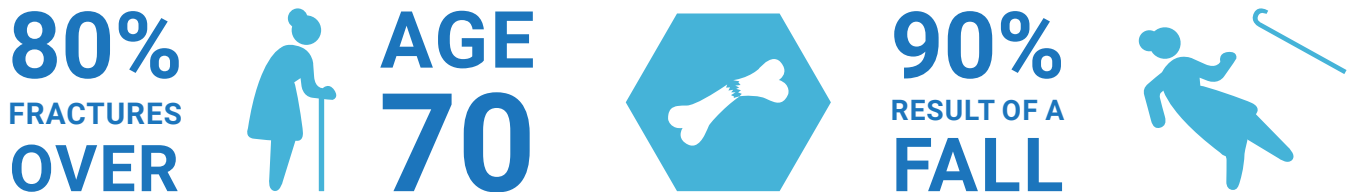
## 5 Things to know

- 1** The consequences of fragility fractures are more severe in older people;  
Fragility fractures in older people result in reduced independence, immobility or transition into long-term care <sup>[77,12]</sup>.
- 2** Maintaining quality of life, supporting mobility and safe-guarding the independence of older people must be a priority;  
Care planning and health promotion in this population is vital to maintaining quality of life.
- 3** Services that aim to prevent falls must be coordinated with multidisciplinary and comprehensive fracture prevention services.  
They should consider the complex needs of the older population and reflect other personal risk factors, such as balance and potential trip hazards in the home.
- 4** Simple interventions – such as modifications at home or in a long-term care setting – can prevent falls and therefore reduce the risk of fracture.  
All too often, however, these needs are not identified or adequately addressed.
- 5** Innovative falls prevention programs have been established in various countries;  
These should be made available to all older people at risk of falls and associated fractures <sup>[87]</sup>.

## What is it and why is it important?

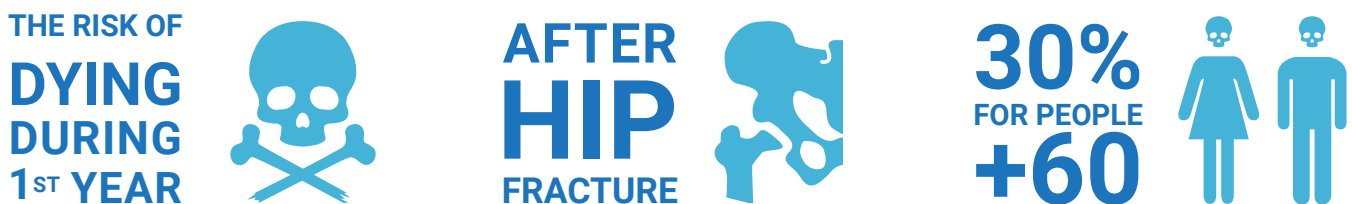
In the older population, falls are an important risk factor for major fractures and often mark a watershed moment in rapid deterioration of health and functioning <sup>[12]</sup>.

Among women, 80% of fractures occur over the age of 70 and, of these, 90% are the result of a fall <sup>[77]</sup>.



After the first fall, people often become afraid of falling again, leading to reduced strength and mobility and further increasing the risk of subsequent falls. For older people, major fragility fractures can result in rapid physical decline even with best-practice care in hospital. In many cases, a major fragility fracture marks the end of independent living <sup>[77]</sup>: one in four hip fracture patients who were previously independent are discharged to a care home.

The risk of dying in the first year after a hip fracture can be as high as 30% for people over the age of 60 <sup>[88]</sup>.



**Integrating falls prevention and promotion of bone health into health and social care services could help older people maintain their independence and enhance their quality of life <sup>[76]</sup>.**

Given the high costs of falls and care for associated fractures, often in expensive residential care settings, prevention provides an opportunity to save costs for health and social care <sup>[89]</sup>.

**This involves a comprehensive assessment including the risk of falls and interventions to adequately respond to a person's care needs <sup>[76,90]</sup>.**

Key measures to prevent falls and fractures comprise: multimodal exercise, including strength resistance training; a critical review of current medication; and initiation of treatment for osteoporosis and other conditions. These may reduce the risk of falls and the muscle wasting condition, sarcopenia <sup>[91]</sup>.

The assessment should also include an analysis of behavioural and environmental aspects which have led to the fall, and the removal of potential hazards that could cause the fall such as inadequate handrails, poor lighting and inappropriate footwear <sup>[91]</sup>.

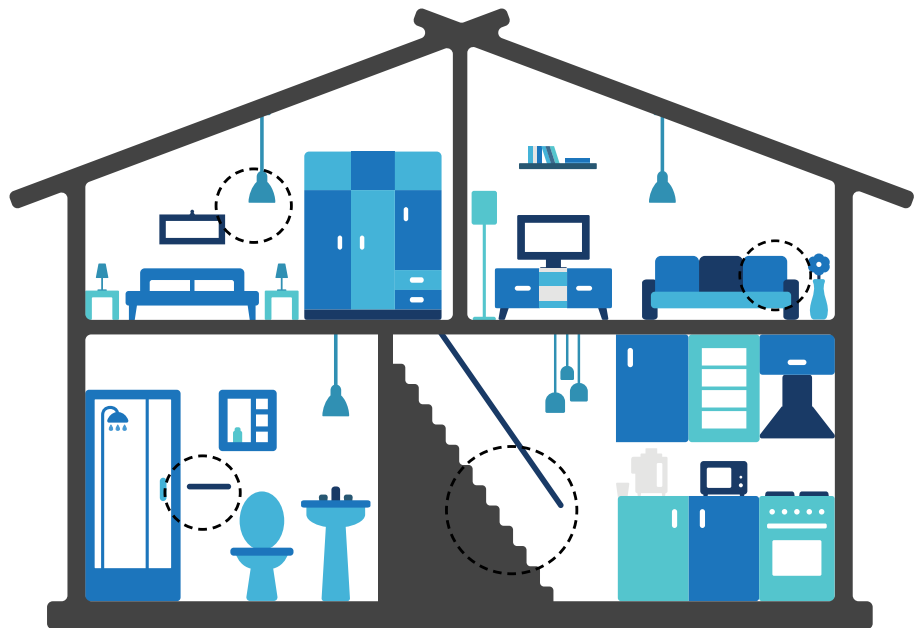
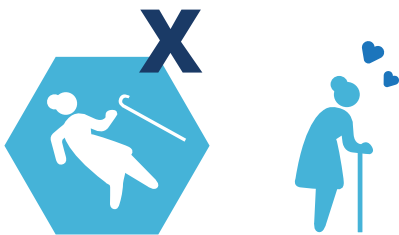
## How do we know it works?

A safer living environment, including home adaptations and the use of aids and supportive devices, has been demonstrated to further reduce the risk of falls [90].

**Multidisciplinary care – including early comprehensive rehabilitation, adaptation of the living environment and ongoing support to promote functioning and independent living – has been shown to be key to preventing future falls.**

Measures which have been shown to reduce falls risk include muscle strengthening, improving balance, reducing the burden of polypharmacotherapy and psychotic drugs [92], addressing psychological factors such as depression and improving safety of the living environment.

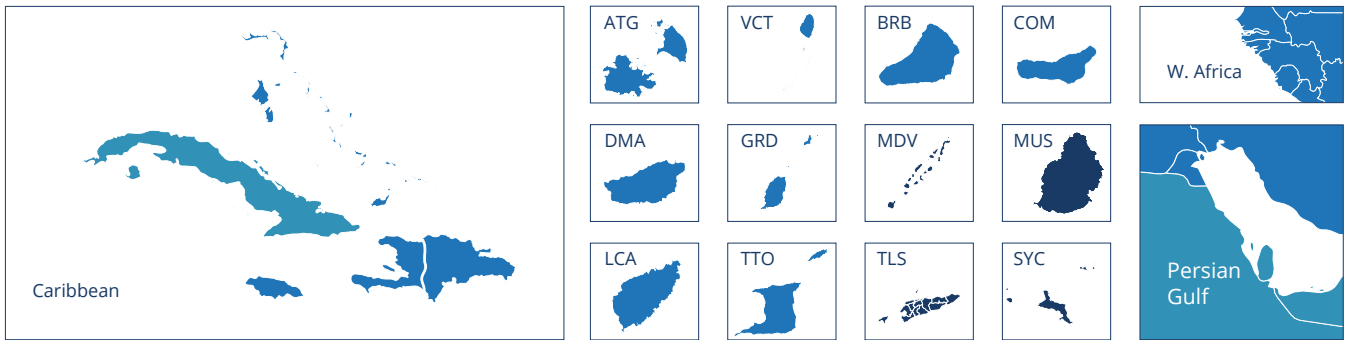
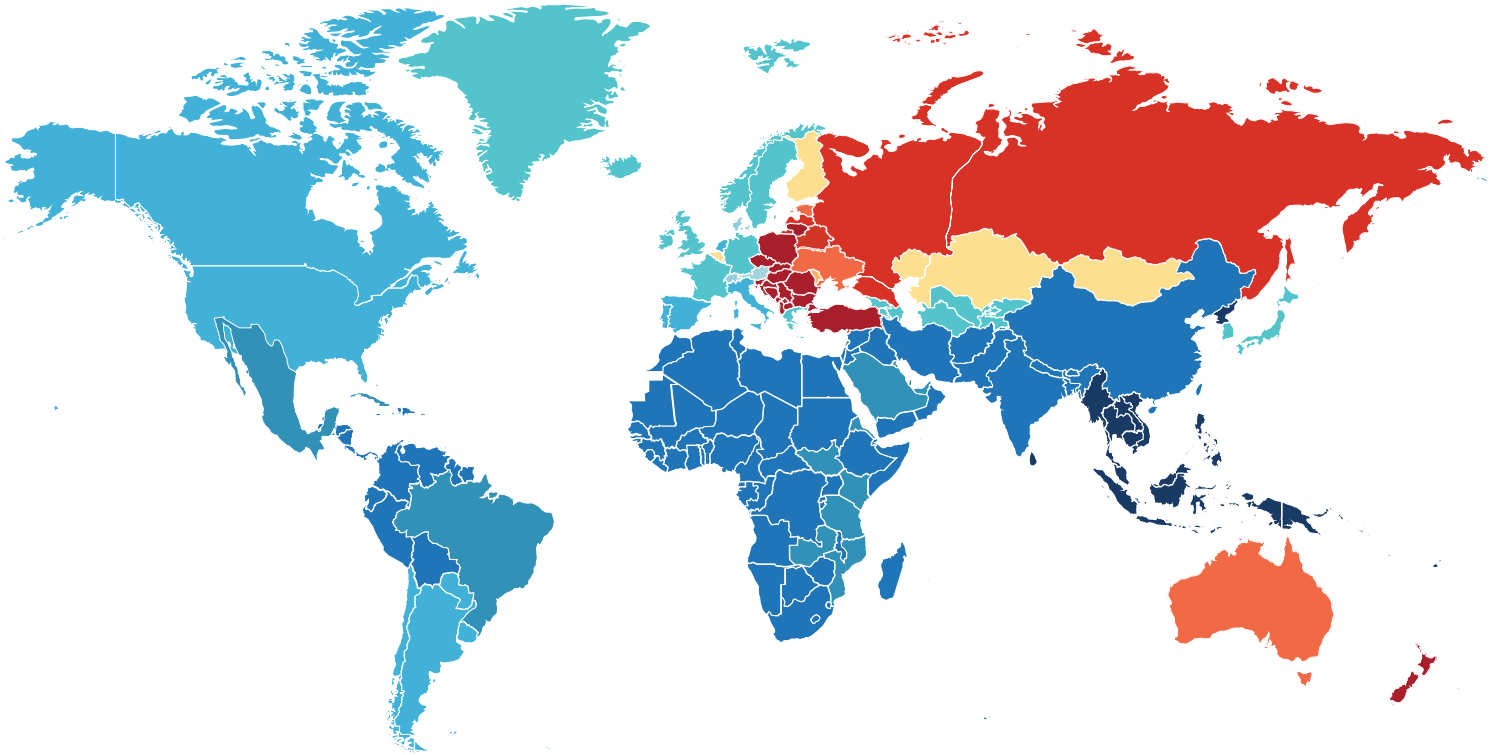
## ENSURE A SAFE HOME



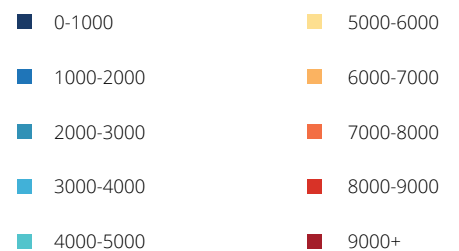
## What is the current situation?

**In recent years, falls prevention has received increasing attention as part of a global drive for healthy ageing policy.**

Various falls and fracture prevention programs have contributed to the development of new models of care and monitoring for older people. The *European Innovation Partnership on Active and Healthy Ageing (EIP on AHA)* was launched in 2012 to respond to the demographic challenges Europe is facing. Several programs have been launched as part of its Action Group on personalised health management and prevention of falls, such as *ProFouND*, an initiative promoting exercise and adaptation of the physical environment. *ADVANTAGE*, a European Joint Action of 22 Member States and more than 33 organizations, is developing a common approach to manage frailty in health and social care in Member States. It encompasses a range of activities, including the use of technology to enable the detection of frailty-related symptoms and events such as falls. Similarly, the European long-term study *FrailSafe* is assessing the use of wearables, sensors and telemedicine to foster self-management and prevent falls.



Global burden of disease for falls  
(Age-standardized incidence rates per  
100 000 of falls in 2017) <sup>[93]</sup>.

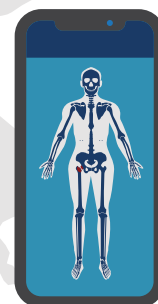


MULTIFACTORIAL  
**RISK**  
ASSESSMENT  
TO IMPROVE  
**BONE**  
HEALTH  
IN CARE HOMES



**SERVICES  
& TOOLS  
TO MANAGE  
FRAGILITY AND  
PREVENT  
FALLS**

SMARTPHONE  
**BASED**  
GERIATRIC  
ASSESSMENTS &  
**FALLS**  
PREVENTION  
PROGRAMS



FIVE-WEEK  
EXERCISE  
PROGRAM  
FOR PEOPLE  
**RISK**  
FALLING



**At a national level, some countries have spearheaded services and tools to support healthcare professionals and patients in managing frailty and preventing falls, but access is often limited.**

Best-practice examples include the use of smartphone-based *Comprehensive Geriatric Assessment* and falls prevention programs in Germany, though they are not yet widely implemented. In Scotland, a multifactorial risk assessment and action plan to improve bone health in care homes improved outcomes significantly where it was used and, in some cases, falls were reduced by around 36%. The ongoing Dutch *Nijmegen Falls Prevention Program*, a five-week exercise program for people at high risk of falls, has reduced falls by 46%. Innovative technologies, such as a wearable device to assess falls risk in real time, are also being developed. These include video machine learning and the integration of *The Internet of Things*, which is garnering great interest.

## What needs to be done?

**Policymakers must ensure comprehensive falls risk assessment and management is widely available and easily accessible to the public and healthcare professionals.**

The complex health status of older people often requires a range of care needs to be addressed. Tools to assess mobility along with other health needs should be integrated in clinical practice but can also be used by older people for self-assessment, freeing-up healthcare resources and extending access to more people at risk of falls.

**Policymakers must enable and adequately fund collaboration between health and social care services.**

Falls and fracture prevention requires an integrated and person-centered model of care supported by a multidisciplinary team, involving each member as and when necessary. Geriatricians and specialist nurses must coordinate with physiotherapists and occupational therapists to improve the person's mobility through exercise programs and assistive devices, with primary care professionals and pharmacists for medication review and continuous monitoring, and with social care to adapt the physical environment. Patients and their informal carers should be considered equal partners in planning and implementing this multi-component approach. Public awareness of falls must also be increased to encourage engagement with preventive measures before the first fall.



# ENHANCE ENGAGEMENT: AWARENESS, ACTIVATION AND SELF-MANAGEMENT

## 5 Things to know

- 1** The public need to comprehend their risk of osteoporosis and fragility fractures;  
To ensure they are able to seek early diagnosis and care.
- 2** Misconceptions about osteoporosis are common;  
And even those at high risk often underestimate the seriousness of the disease and the danger of sustaining a fragility fracture <sup>[42,94,95]</sup>.
- 3** Lack of knowledge significantly contributes to a large proportion of people with osteoporosis discontinuing their treatment;  
Which is one of the main barriers to improving bone health <sup>[11]</sup>.
- 4** Globally, public awareness campaigns and patient/professional associations have been formed;  
For the recognition of osteoporosis as a serious condition <sup>[30]</sup>.
- 5** Policymakers need to make sure people are given clear information about fragility fracture prevention;  
This enables them to take an active role in maintaining their bone health and reducing their risk of sustaining a fracture <sup>[60]</sup>.



## What is it and why is it important?

### Public awareness of osteoporosis and fragility fractures is key to ensuring people recognize their risk of fracture and seek advice.

Unless a fracture has already occurred, proactive investigation of fracture risk is often undertaken only when key risk factors are noted by health and social care practitioners or by people themselves. By improving awareness of the risk factors for osteoporosis and related fractures, as well as increasing understanding of the potential consequences of leaving osteoporosis untreated, more people may be empowered to seek early diagnosis and treatment <sup>[96]</sup>. This may be particularly important for men as their risk of osteoporosis is often underestimated [97], contributing to a situation whereby men who sustain a hip fracture are less likely to receive osteoporosis medication to prevent subsequent fractures <sup>[98]</sup>.

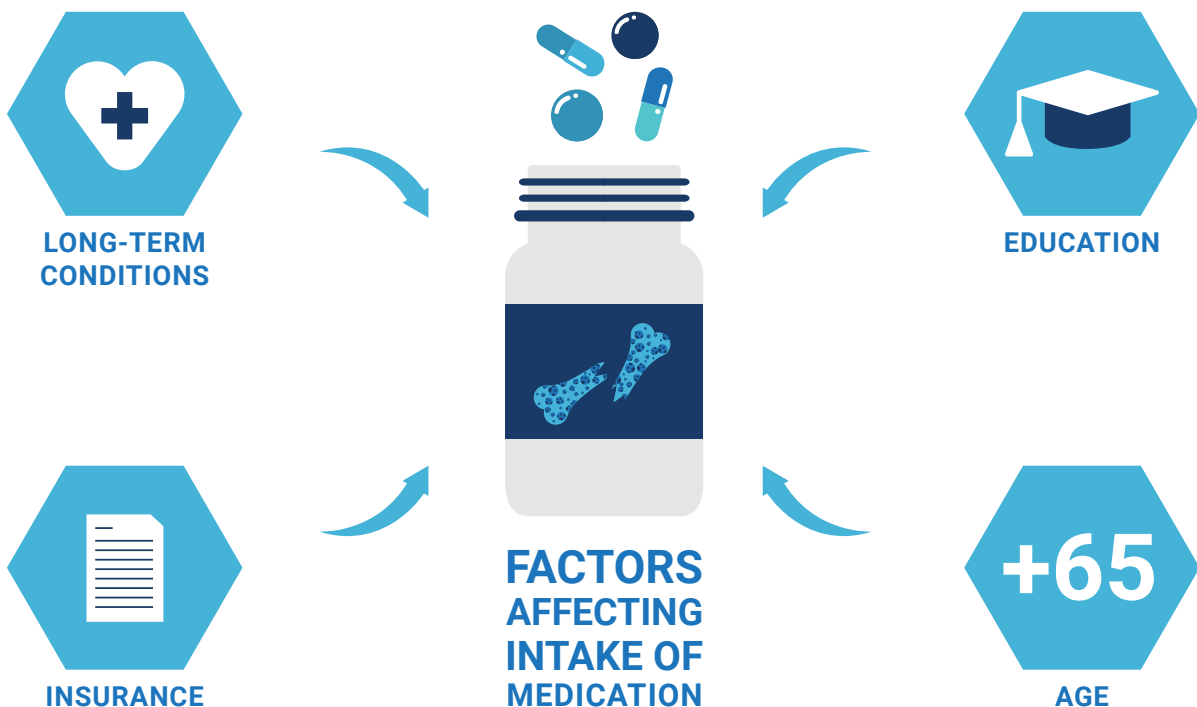
### People with osteoporosis can reduce their risk of fracture when they actively engage with their own care.

This can involve changes to lifestyle and the living environment and continuing to take the medications prescribed for them <sup>[60]</sup>. To achieve this, people need information on osteoporosis and fracture risk, the risks and benefits of medication, self-management and the role of *DXA* scanning and follow-up <sup>[96]</sup>. In addition, providing care that responds to people's preferences is essential to improving outcomes. It is therefore important that therapy is adapted to individual care needs <sup>[30]</sup>.

### The population at risk of fracture is diverse, and inequalities in medication use are apparent.

An international review found that personal factors such as age, education and the presence of other long-term conditions, as well as systemic factors such as national insurance and co-payments, contribute to variation in the likelihood of patients continuing to take their medication <sup>[99]</sup>.

Various factors contribute to inequalities in medication use.



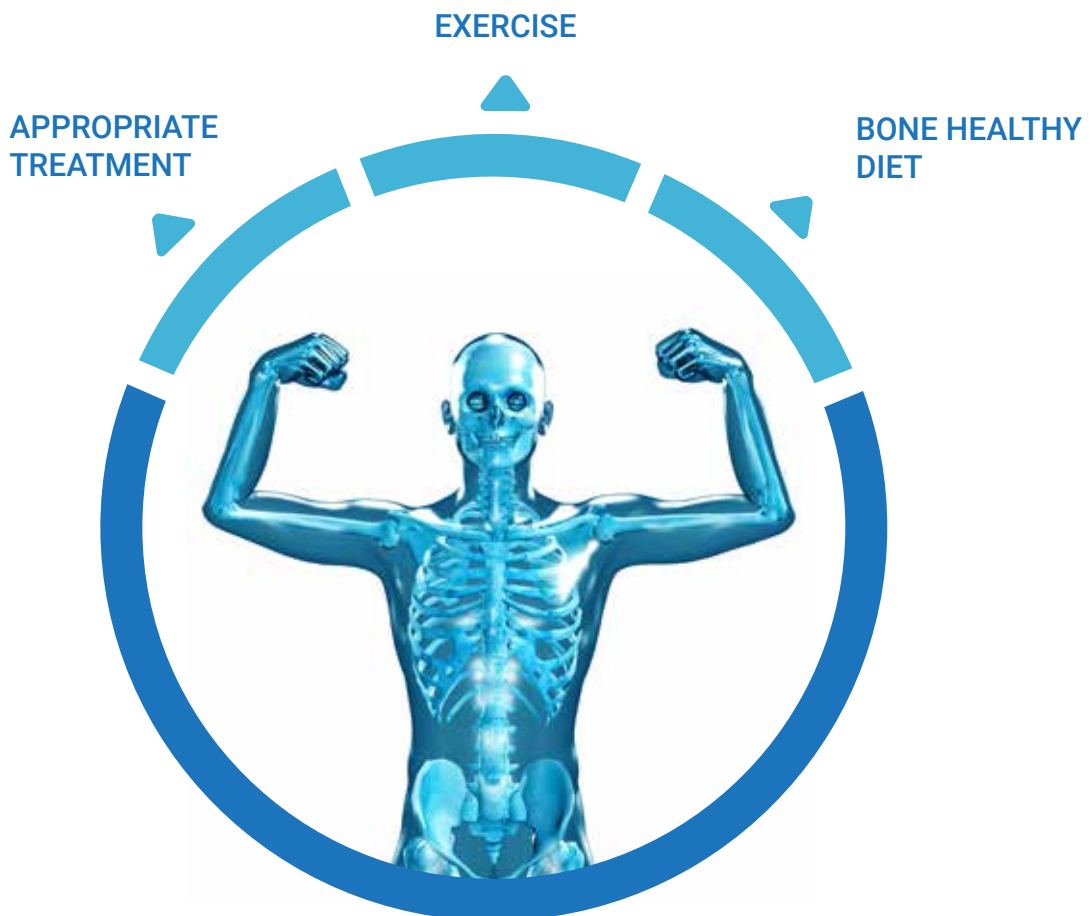
## How do we know it works?

**Improved public education and awareness can help support both identification and management of osteoporosis** <sup>[99,96]</sup>.

Comprehensive management programs which include education can support increased investigation of osteoporosis, leading to a reduction in hip fractures among older women <sup>[100]</sup>. Following diagnosis, patient education programs may also encourage more people to stay on treatment <sup>[101]</sup>.

**To support people to continue taking their medication and maintain lifestyle changes in the long term, it is necessary to tailor their treatment plan as much as possible.**

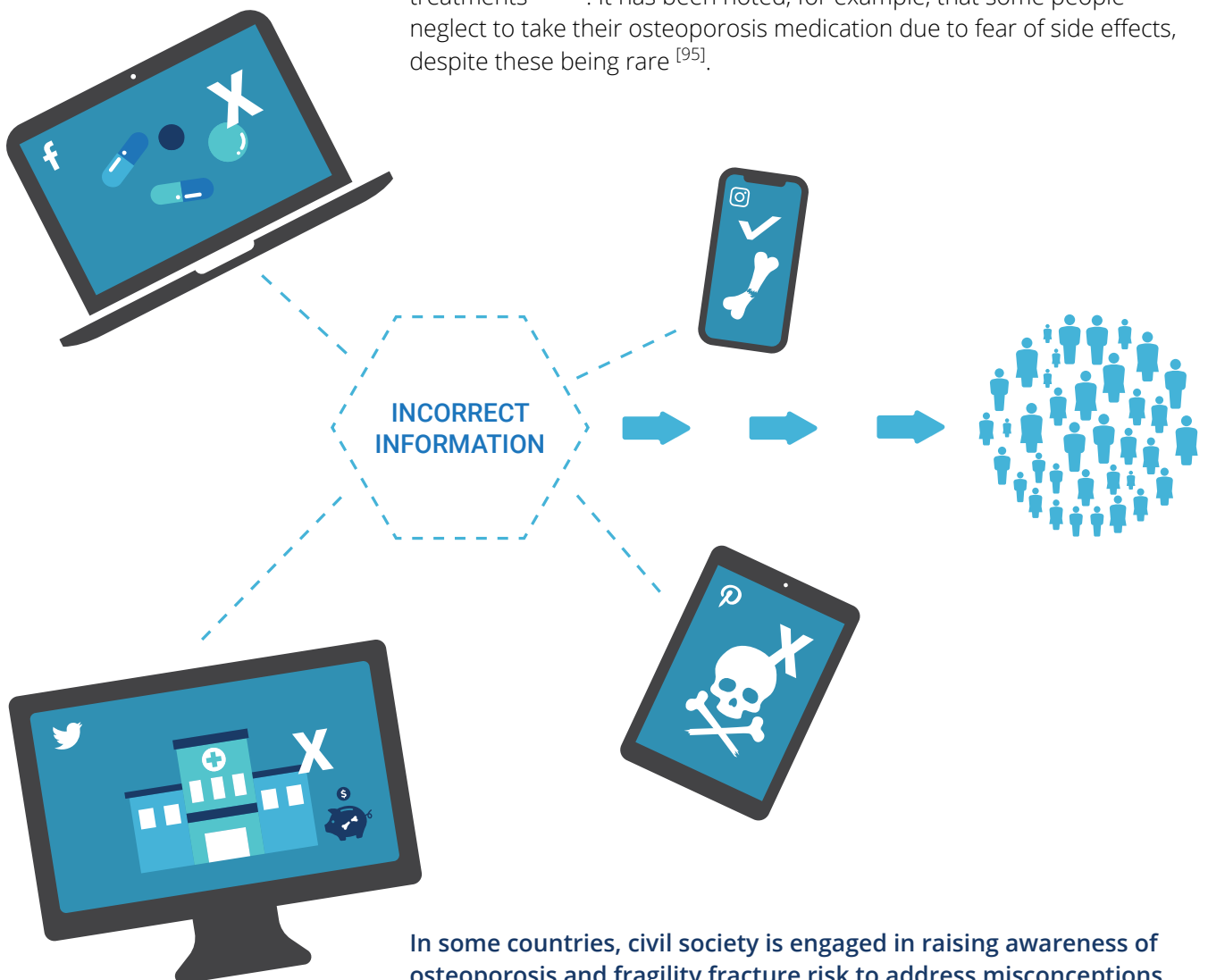
In addition to a bone healthy diet and exercise, there are numerous pharmacological treatment options for osteoporosis, ranging from daily tablets to annual injections, and it has been shown that less frequent dosing improves the likelihood that people will continue to take their medication <sup>[30,99]</sup>. A systematic review found that age and the presence of other chronic conditions impacted on the extent to which people continued to take their medication as prescribed by their clinician <sup>[96]</sup>. It is important that people are prescribed the most appropriate option and that this is determined based on shared decision-making <sup>[30]</sup>.



**Treatment plans should be tailored to each patient's needs, which can be impacted by the presence of other chronic conditions and age.**

## What is the current situation?

Worldwide, much of the general population appears to be either **misinformed or unaware of osteoporosis and its associated fracture risk**. Osteoporosis is often wrongly viewed as a natural consequence of ageing that cannot be averted<sup>[11]</sup>. Even those at high risk – including people already diagnosed with osteoporosis – often underestimate the danger of sustaining a fracture<sup>[11]</sup>. As a result, people at risk of fracture may not be detected or begin treatment until they have sustained a fracture. Incorrect information in the media may have contributed to low prioritisation of osteoporosis and misconceptions about the safety of treatments<sup>[42,94]</sup>. It has been noted, for example, that some people neglect to take their osteoporosis medication due to fear of side effects, despite these being rare<sup>[95]</sup>.



In some countries, civil society is engaged in raising awareness of osteoporosis and fragility fracture risk to address misconceptions and general low levels of understanding around osteoporosis<sup>[30]</sup>. Organizations such as the *Research and Information Group on Osteoporosis (Groupe de recherche et d'information sur les osteoporosis)* in France, the *Spanish Association for Osteoporosis and Osteoarthritis (Asociación Española con la Osteoporosis y la Artrosis)* in Spain, *Osteoporosis Canada*, *Japan Osteoporosis Society*, the *Royal Osteoporosis Society* in the UK and others aim to increase public awareness and produce resources for patients and the public such as posters and leaflets. *IOF* operates a dedicated website with resources including patient stories and an osteoporosis risk check for self-assessment. Related events and campaigns, including *World Osteoporosis Day*, are also featured on the website.



## What needs to be done?

**Awareness of osteoporosis and fragility fractures as a serious health concern must be improved.**

The reach and impact of existing awareness efforts, which are primarily operated by civil society organizations, should be expanded and supported by governments. Campaigns should be used to debunk myths and clearly outline the personal cost of inaction.

**Policymakers must prioritize the delivery of person-centered care.**

Such care should tailor risk-reducing treatment to an individual's circumstances, to ensure patient satisfaction and facilitate continuation of treatment and maintenance of lifestyle changes in the long term.



# GLOSSARY





<b>DXA</b>	Dual X-ray Absorptiometry (DXA) - an imaging modality used in both clinical practice and research for the assessment of bone mineral density.
<b>Falls</b>	An event which leads to a person coming to rest on the ground or floor. Individuals who fall are at an increased risk of fractures.
<b>Fracture</b>	A broken bone.
<b>Fracture Cascade</b>	When an individual experiences a fracture, they are at an increased risk of further fractures. Without intervention, this could lead to a domino effect of fracture followed by fracture followed by fracture...
<b>Fragility Fracture</b>	A broken bone which occurs due to minor force, such as a fall from standing height.
<b>Fracture Liaison Service (FLS)</b>	See Post-Fracture Care Coordination Programme.
<b>Geriatricians</b>	Physicians specializing in medicine for older persons.
<b>Hyperaging</b>	The rapid growth of the ageing population.
<b>Hypertension</b>	High blood pressure, a chronic disease.
<b>Imminent Fracture Risk</b>	After a person has sustained a fracture they are at particularly high risk of another fracture in the immediate short term.
<b>Incidence</b>	The number of people who experience a health event/disease over a particular time period.
<b>Index Fracture</b>	The first fragility fracture sustained by an individual.
<b>Multidisciplinary</b>	An approach which incorporates individuals from different disciplines who contribute to a shared goal. In healthcare, this goal is patient care and the team might incorporate doctors, surgeons, nurses, physiotherapists, occupational therapist and managerial coordinators.
<b>Musculoskeletal</b>	Referring to muscles, bones, joints and interconnecting tissues.
<b>Non-Communicable Disease</b>	A disease or medical condition which is not infectious or transmissible to other individuals. It encompasses a broad range of diseases including many chronic, long-term conditions.
<b>Orthogeriatrics</b>	The medical care of patients who have fractured. In the context of hip fractures this is often provided by a physician who specializes in medicine for older persons.
<b>Orthopedics</b>	A surgical specialty specializing in musculoskeletal interventions.
<b>Osteoporosis</b>	Osteoporosis is a disease in which the mass, density and strength of bone are reduced. As bones become more porous and fragile, the risk of fracture is greatly increased. The loss of bone occurs silently and progressively.



**Post-Fracture Care (PFC) Coordination Programme** A model of care which seeks to rehabilitate individuals after they have had a fracture and reduce the risk of them fracturing again in the future. The term is interchangeable with Fracture Liaison Service (FLS).

**Prevalence** The number of people who have a particular health characteristic at a particular point in time.

**Primary Care** Healthcare provided in the community which is often the first stop on a patient's journey. This level of care is usually provided by 'General Practitioners' or 'Family Doctors' in community 'surgeries'.

**Primary Prevention of Fractures** Initiatives to prevent a first/sentinel/initial fracture occurring.

**Secondary Care** Healthcare provided by organizations which are usually not the first contact with a patient on their journey. It often refers to care provided in a hospital setting.

**Secondary Prevention of Fractures** Initiatives to prevent second/subsequent/further fractures occurring after the first fracture has occurred

**Subsequent Fracture** Any fragility fracture sustained by an individual after the index (or first) fracture.

**Traumatologists** Clinicians who specialize in trauma surgery, including fracture repair

**Vertebral Fractures** Fractures of the vertebrae, the bones which are the building blocks of the spine





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*Our vision is a world without  
fragility fractures in which healthy mobility  
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