



# SOLUTIONS FOR FRACTURE PREVENTION

 IN FRANCE



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### **France experts:**

Prof. Thierry Thomas, Prof. Bernard Cortet, Prof. Karine Briot,  
Prof. Julien Paccou

### **IOF-CTF policy group:**

Ass. Prof. Nicholas Fuggle, Prof. Cyrus Cooper (University of Southampton); Prof. Kassim Javaid, Ass. Prof Rafael Pinedo-Villanueva (University of Oxford); Ass. Prof Mickael Hiligsmann (Maastricht University); Anastasia Soulié-Mlotek (International Osteoporosis Foundation), Dr Philippe Halbout (International Osteoporosis Foundation)

Report compiled by the International Osteoporosis Foundation (IOF) under the umbrella of Capture the Fracture® initiative (CTF), in collaboration with France bone health experts.



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# SUMMARY

This document provides an assessment of the current policy and post-fracture care landscape in France, and provides recommendations which are aligned with the needs and opportunities identified by the Capture the Fracture Partnership in collaboration with a panel of French experts.

## This document aims to:

### **SECTION 1 - A Problem on the Rise**

Summarize the increasing burden of fragility fractures in France

### **SECTION 2 - Successes and Failures Observed**

Map out successful post-fracture care initiatives in France, and identify areas for improvement

### **SECTION 3 - Solutions Exist: Policy Recommendations**

Provide health policy recommendations to address the burden of osteoporosis and fragility fractures and drive their implementation

### **SECTION 4 - Build your Response**

Support local stakeholders in prioritising osteoporosis and fragility fractures

### **SECTION 5 - Expected Benefit of FLS**

Provide a detailed report on the benefits of Fracture Liaison Services (FLS) and improvements in patient outcomes

## Key Messages

*The increasing burden of osteoporosis, treatment gap and importance of secondary fracture prevention*

- a. Fragility fractures are a major concern for public health in France** and are associated with a substantial (and escalating) health and financial burden. About 500,000 fragility fractures occurred in the year 2019 and the osteoporosis-related costs were estimated at €7 billion in the same year. With an ageing population and no change in policy, the number of fragility fractures is expected to increase by 26% in the years from 2019-2034.
- b. Osteoporosis remains largely underdiagnosed and undertreated.** Today, more than 2 million French women at high risk of fracture remain untreated for osteoporosis, despite the existence of safe and effective medications. Poor treatment initiation is especially marked in high-risk patients with more than three-quarters of French women (aged 50 years and above) not currently receiving effective secondary fracture prevention after an initial fragility fracture, despite this population being most likely to sustain a further fracture.
- c. The French population is underserved with Post Fracture Care (PFC) services.** Despite the recognized benefits of fracture liaison services (FLS), a model of Post Fracture Care, in reducing the risk of fractures, less than 10% of French hospitals have an FLS. This represents a substantial missed opportunity, as it is a well-known fact that those who have had one fracture are vastly more likely to have another, and that targeting treatment in this group through FLS is a viable, and high-yield place to start.

## Key Recommendations

Although several initiatives are already in place and need to be reinforced, specific recommendations include:

- 1. The development of a common voice** for osteoporosis stakeholders, the integration of bone fragility in the loss of autonomy prevention plan and obtaining concrete changes from the authorities
- 2. Placing fragility fractures as a priority** of healthcare management and improving public awareness of osteoporosis
- 3. The roll-out of a larger number of FLS** or other equivalent structured pathways for osteoporotic patient management to increase post-fracture screening, diagnosis and treatment rates

#### **4.** Identification and sharing of best practices at a local level leading to the publication of an optimal patient pathway

### Expected outcomes from the France Benefits Calculator

Increasing uptake of FLS will lead to:

**About 3,132 fragility fractures prevented over the next 5 years** leading to substantial improvements in patient health and outcomes. Concurrent reductions in hospitalisations and costs of treating osteoporosis will lead to far greater savings than interventions instigated for other chronic diseases.

**Highly beneficial, cost-effective solutions** to reduce the increasing burden imposed by osteoporosis on patients and society at large.

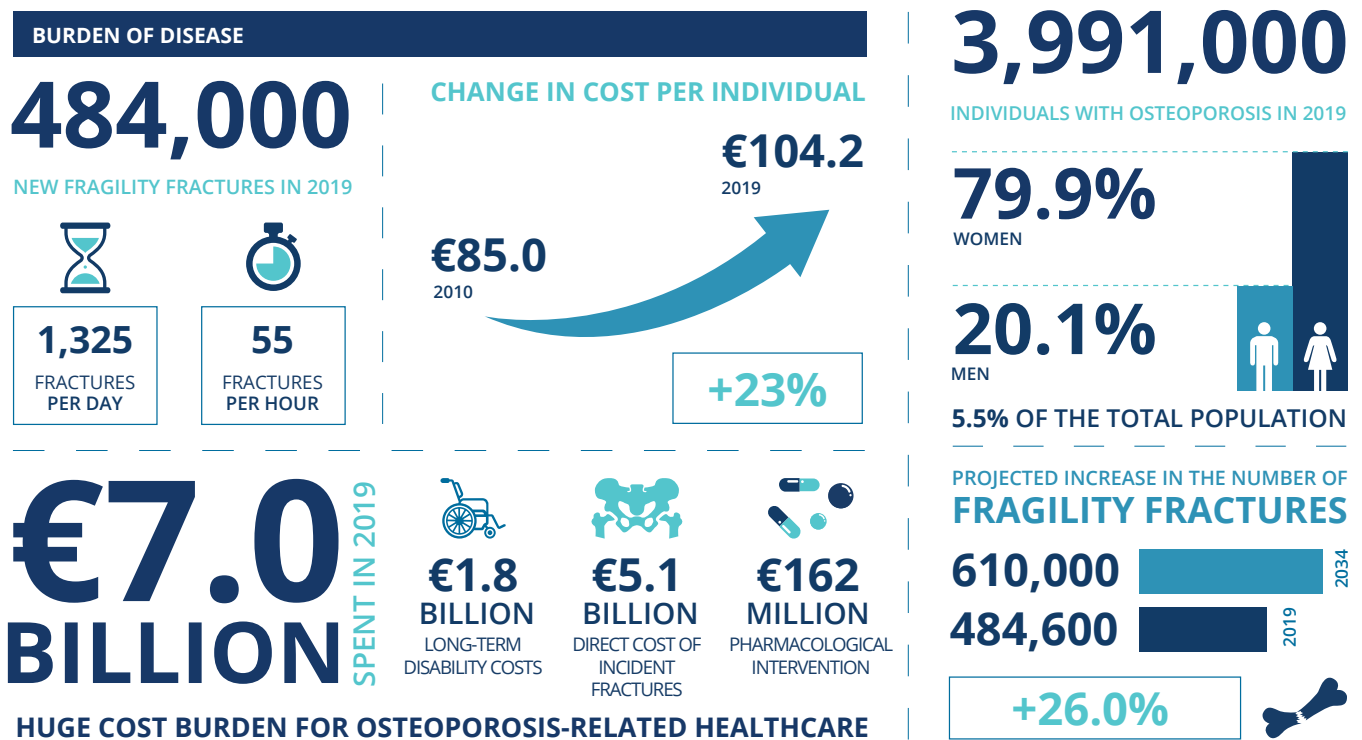


# A PROBLEM ON THE RISE

Osteoporosis is a disease which makes bones weak and fragile. This greatly increases the risk of breaking a bone even after a minor fall or bump. The disease has no obvious symptoms, and many people do not know they have osteoporosis until they suffer a fracture.

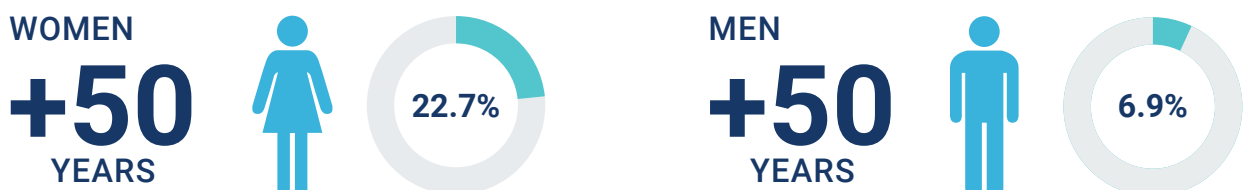
Figure 1  
Burden of osteoporosis-related fractures in France (ScoreCard for Osteoporosis in Europe, 2021)

These, osteoporotic 'fragility fractures' are common, particularly in older adults, are increasing in prevalence, can be life-altering, causing pain, disability and loss of independence, and are associated with a substantial direct and indirect financial burden. Figure 1 summarizes key data regarding the burden of osteoporosis and fractures in France.



## Fractures are common with dramatic consequences for patients

Osteoporosis affects about one in four women aged over 50 years. The prevalence of osteoporosis is high in those over the age of 50 years affecting 22.7% of women and 6.9% of men.





**Fragility fractures are a substantial public health issue.** In 2019, about 500,000 fractures occurred in France (about 1 fracture per minute) and there are currently estimated to be 4 million individuals living with osteoporosis (5.5% of the general population).

**Fragility fractures are on the rise.** With life expectancy continuing to increase, fragility fracture incidence in France is predicted to increase by 26% in the years from 2019-2034.

**Fragility fractures substantially increase (almost double) the risk of experiencing a new fracture,** especially in the first 24 months following a fracture. In a French study including more than 350,000 patients with fractures between 2009 and 2014 (the FRACTOS study), the 12-month refracture rate was estimated at 6.3%.

**Fragility fractures increase the risks of re-hospitalization and are associated with higher mortality.** In the year immediately following hospitalization for an initial fracture, there is a 12.5% re-hospitalization. The FRACTOS study estimated the twelve-month all-cause mortality following fractures at 12.8%, ranging from 5.0% for vertebral fractures to 16.6% for hip fractures.

TWELVE-MONTH  
ALL-CAUSE  
MORTALITY  
FOLLOWING  
FRACTURES



5.0%

VERTEBRAL  
FRACTURES



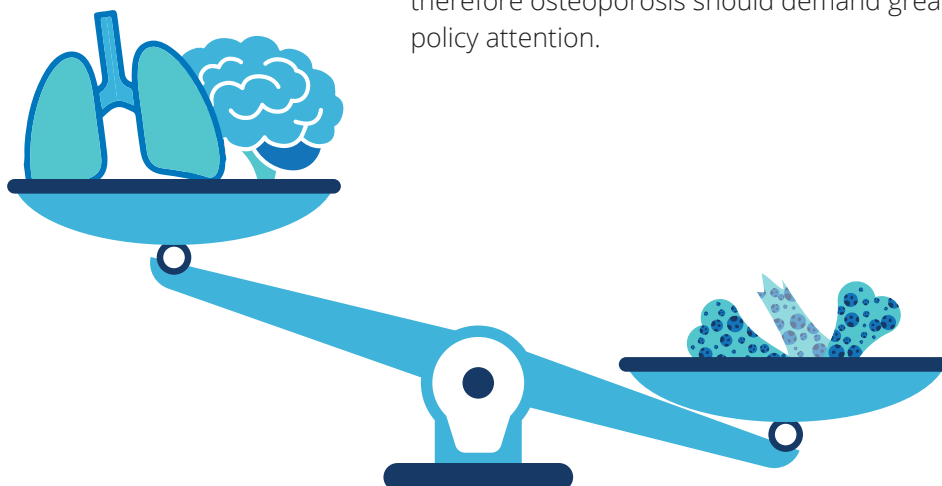
16.6%

HIP  
FRACTURES



**Fragility fractures cause pain, disability, loss of independence, and significantly impact quality of life.** In France, due to fragility fractures, per 1,000 individuals aged over 50 years, an estimated 17 years are lost due to disability (disability-adjusted life years). For France (as a whole), a total of 137,000 years in perfect health were lost in France due to fragility fractures.

**Fragility fractures are among the top 5 highest health burdens for chronic disease.** The toll of fragility fractures in France exceeds that for chronic obstructive pulmonary disease and ischemic stroke, and therefore osteoporosis should demand greater financial investment and policy attention.



**HIGHER  
BURDEN THAN  
PULMONARY  
HEART  
DISEASE  
STROKE**

## Financial impact

### Substantial costs of the four main osteoporotic fractures in France.

Recently, in a study that for the first time prospectively assessed total costs related to fractures over 18 months, total costs (including initial fracture-related and follow-up costs) were estimated at €23,926, €14,561 €, and €6,905 for the hip, clinical vertebral, and distal forearm fracture, respectively. The costs related to a humeral fracture over one year were €10,319.

**Fragility fractures are costly to the healthcare system.** In 2019, the total related burden for osteoporosis was estimated at €7 billion (more than €100 per inhabitant!), including about €5 billion for direct costs of incident fractures, €1.8 billion for long-term disability costs and €162 million for pharmacological treatment.



**Financial burden is on the rise.** The direct costs of incidence fractures are predicted to increase by more than one-quarter (26%), to nearly €9 billion, by 2030 due to aging population. This will be compounded by a 26% increase in fragility fractures from 2019-2034.

**Fragility fractures do not just affect national finances directly, but also indirectly through fractures in the workforce and the additional care required from family and relatives of working age.** Although the majority of fragility fractures affect those in later life, 20% of fractures occur prior to retirement. In 2017, a total of 1.5 million sick days were taken among individuals in France due to fragility fractures. The impact on family and caregivers of individuals who have suffered a hip fracture is an average of 138 hours a year per 1,000 individuals.



# SUCCESSES AND FAILURES OBSERVED

We have identified positive initiatives for reinforcement and particular failures have been observed.

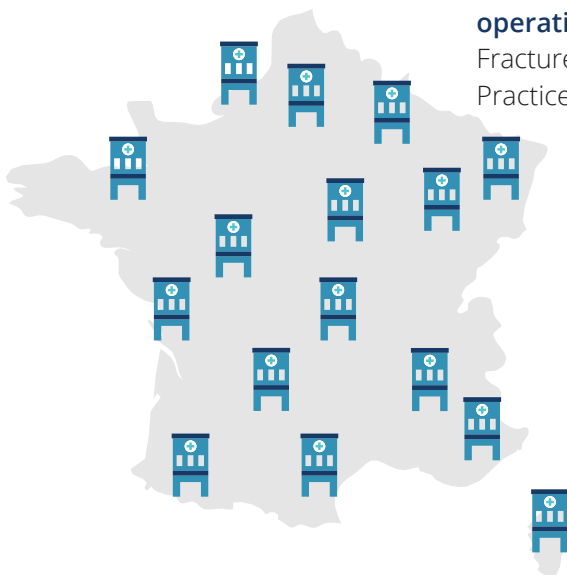
## Positive foundations that need to be built upon

**Ma Santé 2022 maps out an impressive strategy for osteoporosis policy** aiming to provide an overall vision and global responses to the challenges facing the French health system. However, details relating to post-fracture care are absent and osteoporosis, in general, has not received the attention it deserves and was hampered by the impact of the COVID-19 pandemic.

**Existing “PRADO” program** (developed by the social health insurance) for **“Return home program”** which seeks to rehabilitate patients after discharge from hospital (including after a fracture).

**There are established stakeholders in place who can work in tandem.** There are impressive societies such as the Research Group on Information on Osteoporosis (GRIO), and the French Society of Rheumatology (SFR) which can work in harmony via the CTF-P coalition initiative.

**France has a well-established FLS network, with over 50 FLS operating across the country**, 29 of which are part of the Capture the Fracture® network and following the international standards of the Best Practice Framework, including 5 assessed as Silver and 15 Bronze.



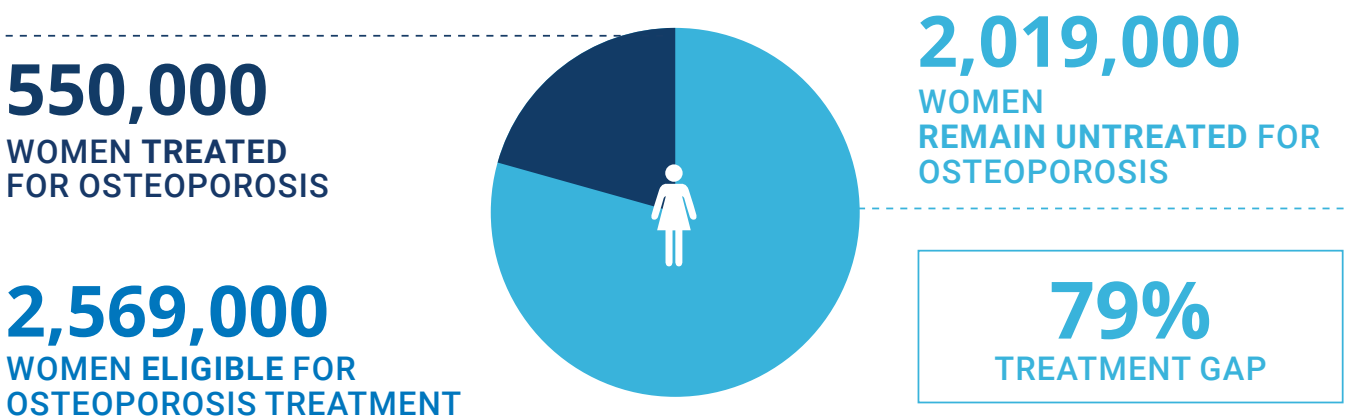
**29**  **CENTERS** AS OF AUGUST 2024



**French patient representation is strong.** In 2017, a White Paper by AFLAR (French League Against Rheumatism Association) suggested seven propositions for the fight against osteoporosis (see below).

The 7 priority intentions to improve osteoporosis care in France	
Priority n°1	From osteoporosis to fracture: changing the paradigm for more effective Awareness campaigns
Priority n°2	Developing primary prevention strategies for fragility fractures
Priority n°3	Developing secondary prevention strategies for fragility fractures “for the first fracture to be the last!”
Priority n°4	Promoting incentives for general practitioners in the management of osteoporosis
Priority n°5	Promoting and supporting a public-private medico-economic research plan to address the cost of the “fracture cascade” and the experimentation of innovative multidisciplinary care networks
Priority n°6	Promoting falls prevention and home care for people at risk of osteoporotic fractures
Priority n°7	Creating a national osteoporosis fracture registry (start with a pilot registry in one or two regions)

## Failures observed and missed opportunities



**More than 2 million French women at high risk remain untreated for osteoporosis,** despite effective and safe medications.

**Substantial treatment gap.** An estimated 79% of French women (aged 50 years and above) eligible for osteoporosis treatment do not currently receive preventative treatment. This gap in treatment has increased markedly since 2010 (when it was estimated at 43%) reflecting the low importance that continues to be given to the escalating issue of fragility fractures.

**Poor treatment initiation following fractures.** Those who have had one fracture are highly likely to sustain another. The FRACTOS study revealed that only 16.7% of fracture patients received a specific osteoporosis treatment in the 12 months following their fracture.

**Poor medication adherence.** About 70% of French patients discontinue anti-osteoporosis treatment after 12 months of follow-up.

Figure 2  
Treatment gap in French women  
(ScoreCard for Osteoporosis in Europe, 2021)

**FLS are missing from current osteoporosis policy.** Despite the previously mentioned strategy planning document at the policy level on osteoporosis, details relating to FLS are absent. This must be addressed if a fragility fracture prevention policy is to succeed.

**Lack of human resources and insufficient budget allowance.** The main hurdle to FLS organization in France is paucity of human resources dedicated to the structure and financial support, as there is currently no policy at the national levels to support these initiatives.

**Too few FLS initiatives are currently operational.** Despite the benefits of fracture liaison service (FLS, a model of post-fracture care) in reducing the risk of fractures and leading in cost-saving in most cases, less than 10% of French hospitals have FLS.

LESS THAN  
**10%**  
OF FRENCH  
HOSPITALS



**HAVE A  
SERVICE  
FRACTURE  
LIAISON**



**Suboptimal use of DXA.** Despite good availability of DXA resources for assessing bone mineral density, the usage of and access to these scanners is not optimised.

**Poor coordination of care leads to missed treatment opportunities.** A lack of adequate, systemic coordination between primary and secondary care and between clinical disciplines leads to reduced rates of treatment initiation and persistence.

**Patient education on osteoporosis is yet to be optimised.** A recent finding of the EFFEL (“Etude Fracture Freins et Leviers”) study highlighted the need for improved patient education on osteoporosis and fragility fractures.

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# SOLUTIONS EXIST: POLICY RECOMMENDATIONS

Specific recommendations for policy include:

- 1** Develop a common voice for osteoporosis stakeholders, integrate bone fragility in the National Plan on Aging & Loss of Autonomy and obtain concrete changes from the authorities, in line with the commitments of Ma Santé 2022. The following are recommended:
  - Ensure inclusion of osteoporosis in the National Plan on Aging & Loss of Autonomy
  - Extend DXA prescription to all patients aged 50+ that have previously sustained a fracture
  - Promote incentives and adequate remuneration to treat osteoporosis
  
- 2** Continue to identify and share best practices at a local level leading to the publication of an optimal patient pathway and work at a regional level to improve osteoporosis management policy. This can be achieved via:
  - Organisation of regional roundtables
  - Building a network of osteoporosis allies
  - Monitoring regional experiments of practice (for example PRADO) and encourage implementation of best practice
  - Clinical guidance may be required differentially depending on the healthcare context; major hospitals vs small-scaled clinics.
  - Important role of the following associations to facilitate this recommendation:
    1. **French scientific societies** (GRIO and SFR)
    2. **Patient association** (AFLAR) that has a key role in raising awareness in both lay public and healthcare spheres



### 3 Facilitate greater FLS uptake to increase post-fracture screening, diagnosis and treatment rates

- An important challenge is to increase primary care physician awareness and involvement in PFC management. This could be achieved via financial incentives, a model which already exists for other chronic diseases, for example diabetic care. Furthermore, enhanced interaction between FLS/hospital and primary care physicians is vital.
- Although there is a national policy on osteoporosis, firmer policies on FLS are required on a national basis.



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## BUILD YOUR RESPONSE

### Find and treat your fractures (through the increase of FLS)

- **Upgrade the post-fracture care pathway, especially for vertebral fractures, wrist fractures, and hip fractures.** Build on the existing FLS and initiate new post-fracture care services involving the relevant healthcare professionals.
- **Ensure adequate remuneration and incentives to support best practice.** Adapt the remuneration model for these post-fracture care pathways. Put in place incentives linked to the detection of osteoporosis and fragility fractures in cases where patients have been hospitalized via emergency and orthopaedic surgery services. Engage in discussions with Regional Agencies for Health to develop the necessary budget for broad implementation of FLS.
- **Reinforce your evidence base.** Use the benefit calculator to assess the financial impact of interventions to ensure you stay on track and utilise extensive resources available through the Système National d'Information Inter-régimes de l'Assurance Maladie (SNIIRAM) data (for example electronic healthcare records) and develop fragility fracture registries.

### Make use of available resources

The International Osteoporosis Foundation has developed several tools to facilitate and improve the development of Post Fracture Care/FLS including:

1. **The Policy Toolkit** which is a CTF-P Guidance for Policy Shaping generic narrative and associated resources (slide kit in several languages), Executive Summary, Infographic, webinar, outline video and policy toolkit. <https://www.capturethefracture.org/resource-center/advocating-for-pfc/policy-toolkits>
2. **The Capture the Fracture® Resource Centre** (<https://www.capturethefracture.org/resource-center>) which provides tools and resources to achieve the following:
  - Implementing an FLS
  - Improving an FLS
  - Advocating for the development of FLS



The Capture the Fracture® programme provides tools and resources to optimise post-fracture care:

1. The Best Practice Framework

- Provides guidance for institutions that are implementing FLS
- Sets benchmarking criteria to stimulate quality improvement of post-fracture care services at the organisational level

2. The Mentorship Program which partners experienced partners of FLS with newly formed services

4. The Benefit Calculator: a microsimulation tool to estimate the financial consequences of improving post-fracture care.

## Form a team

- **Many disciplines can assist.** Encourage the training of a broad range of healthcare professionals: rheumatologists, endocrinologists, general physicians, gynaecologists, pharmacists, physiotherapists and dentists. However, it is the primary care physicians who are at the centre of mapping the patient care pathway.
- **Ensure buy-in from primary care.** General Practitioners can ensure the follow-up of patients who have already sustained a fracture to ensure that anti-osteoporosis therapy is commenced and the patient’s fracture risk is ameliorated. This could include the development of osteoporosis-centred consultations (in alignment with the ‘Rémunération sur Objectifs de Santé Publique’ program) with decision-assisting digital tools or financial incentives with incorporation of osteoporosis assessment into GPs’ electronic health record and business software.

- **Start the conversation.** Form a working group under the supervision of the Haute Autorité de Santé (French High Authority for Health) to update the recommendations for the osteoporosis care pathway. This must include all key stakeholders including primary care, secondary care and, most importantly, patient representatives.

## Foster healthy ageing

- **Encourage bone health throughout the lifecourse, starting early.** Carry out prevention campaigns at school: how to build strong bones (bone capital); why it is important to take in 1 g of calcium per day (one dairy product), to do physical activity, to get sufficient levels of protein.
- **Consider the following systematic interventions for the elderly:**
  - a. Healthy Ageing consultations for early identification of chronic diseases – a report from the National Health Insurance Fund identified an alarming drop in the identification of chronic diseases. A routine Healthy Ageing consultation would provide a valuable opportunity to screen for these conditions and improve patient outcomes. A recommended target population is all women over the age of 65 years.
  - b. Annual height measurements to capture vertebral fracture related height loss.
  - c. Screening programmes for falls risk – this is supported by the governmental ‘No Fall Plan’ and should be actioned to reduce both falls and fractures.
  - d. Target additional osteoporosis screening resources at patients suffering from chronic diseases.



**ANNUAL HEIGHT MEASUREMENTS**



**EARLY IDENTIFICATION OF CHRONIC DISEASES**



**FALLS RISK SCREENINGS**

- **Promote falls prevention services and improve the physical capacity of older individuals,** in order to support their physical activities and autonomy. Such programs should be coordinated by physiotherapists or ‘Activité Physique Adaptée’ specialists.

- **Support the two initiatives by the National Health Insurance Fund (Caisse nationale de l'Assurance Maladie - CNAM):** outpatient services (PRADO) 'bone fragility' and PRADO 'post-fracture', which promote patients' return to home after a hip fracture. Consider extending the post-fracture PRADO to patients in geriatric wards. •

## Engage the public

**Focus on Fractures and capture 'osteoporosis'.** There are common misconceptions regarding osteoporosis including "osteoporosis treatments are not effective" or "losing height is normal". Targeting public health awareness campaigns at fractures will be more successful, for example "the first fracture must be the last!". Osteoporosis is a silent condition and primary prevention is also key.

- **Increase awareness of osteoporosis throughout the lifecourse:**
  1. Make 'World Osteoporosis Day' a substantial entity.
  2. Consider engaging initiatives such as free bone mineral density assessments (DXA) for women over 65 years.
  3. Incorporate osteoporosis screening into established health checks (e.g. retirement check).
  4. Start early with prevention campaigns in schools: how to build strong bones, encouraging physical activity, getting sufficient levels of protein.



# EXPECTED BENEFITS OF FLS

This section reports on the expected benefits of improved post fracture care through FLS compared to current practice in France. Additional recommendations and suggestions provided above will reinforce osteoporosis care leading to additional benefits.

The expected benefits summarised here were estimated by employing a microsimulation model (reviewed and validated by French experts) that takes simulated individuals through a care pathway as they would experience it today in France, and compare its expected results to those if FLS were broadly operational throughout the country.

Results are reported in terms of incidence of subsequent fractures, quality-adjusted life years (QALYs), use of health and social care resources, and FLS costs over the first five years. FLS are modelled according to their expected performance in terms of patient identification, assessment, treatment, and monitoring as reported by current FLS already operating in France and the judgement of expert local key opinion leaders.

Through a realistic implementation of FLS in France, we expect to see:

Figure 3  
Expected benefits of a realistic implementation of FLS in France

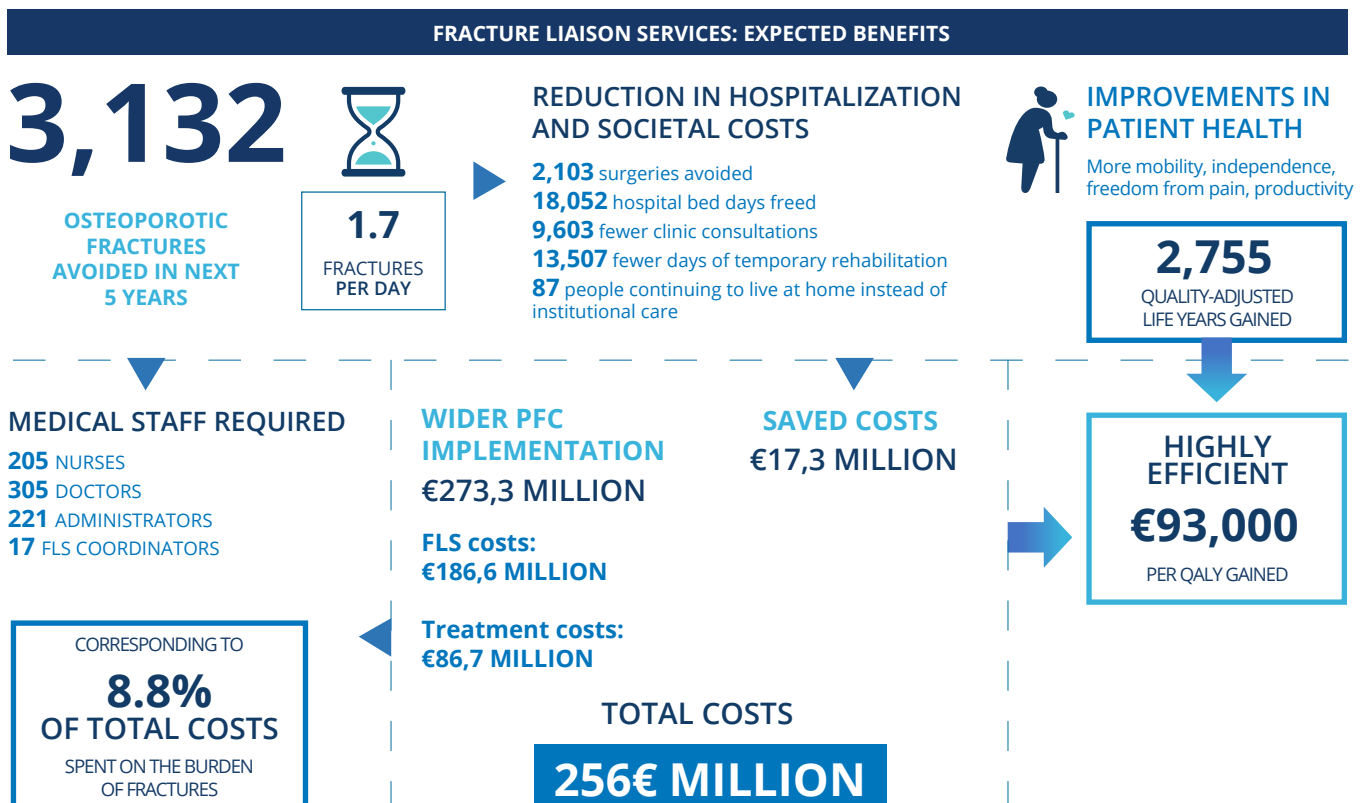


Figure 4 (right)  
Yearly extra costs and QALYs gained by FLS withing 5 years in France

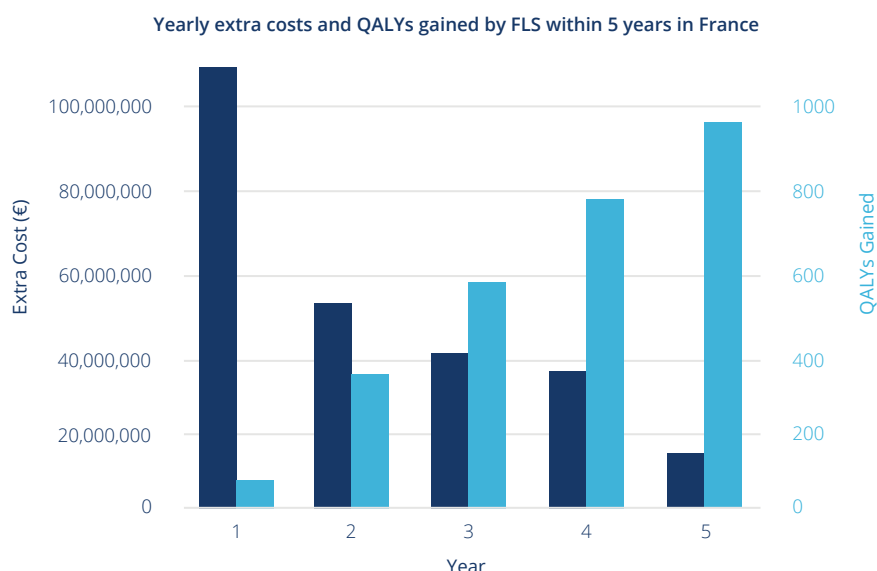


Figure 5 (below)  
Cost per QALY gained by FLS over 5 years

Over Year	Cost per QALY gained
1	€1,447,629
2	€149,159
3	€72,786
4	€47,132
5	€15,915

- **Improvements in quality of care.** There are now clear data to support the notion that the introduction of post-fracture care initiatives, such as FLS, lead to improvements in the quality of care offered to fragility fracture patients.
- **Reductions in fragility fractures.** The Benefit Calculator suggested would reduce the number of osteoporotic subsequent fractures by more than 3,132 (3.6% of the 88,021 expected with current practice) during the first five years of its implementation, with this figure due to substantially increase with continued PFC operation.

**Leading to:**

- **Reductions in hospitalization and societal costs.** In total, during the first five years of FLS implementation, benefits would include:
  - 2,103 surgeries avoided
  - 18,052 hospital bed days freed, and 162,468 hours of patient care released
  - 9,603 fewer clinic consultations
  - 13,507 fewer days of temporary rehabilitation
  - long-term institutional care cut by 171 person years
  - 87 people continuing to live at home who would have otherwise gone into institutional care
- **Improvements in patient health.** Every avoided fracture keeps people from losing mobility, and supports independence, freedom from pain, productivity, and so much more! Over its first five years, the PFC programme would lead to gains in quality of life equivalent to 2,755 years gained in perfect health (QALYs).
- **In a highly cost-effective way.** Extension of FLS would result in a net increase of costs (€256 million), but also a gain of 2,755 QALYs. Although an FLS extension would result in a net increase in healthcare costs, FLS still offer clear cost-effectiveness, as well as the possibility of improved care for the French population.

# Glossary

**FRACTURE** – a broken bone

**FRAGILITY FRACTURE** - A broken bone which occurs due to minor force, such as a fall from standing height. The risk of fragility fractures can be reduced by lifestyle modifications, supplementation of calcium and vitamin D, falls prevention programmes and anti-osteoporosis medication.

**FRACTURE LIAISON SERVICE (FLS)** - See Post-Fracture Care 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 *POST-FRACTURE CARE (PFC) COORDINATION PROGRAMME*.

**OSTEOPOROSIS** - 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. It primarily affects the elderly and is more common in women than in men.

**PRIMARY PREVENTION OF FRACTURES** - Initiatives to prevent a first/sentinel/initial fracture occurring.

**SECONDARY PREVENTION OF FRACTURES** - Initiatives to prevent second/subsequent/further fractures occurring after the first fracture has occurred.

**QALY (QUALITY ADJUSTED LIFE YEARS)** - a generic outcome measure commonly used in economic evaluations that account both quantity and the quality of life. One QALY corresponds to one year of perfect health.

## References

- Borgström, F., L. Karlsson, G. Ortsäter, N. Norton, P. Halbout, C. Cooper, M. Lorentzon, et al. "Fragility Fractures in Europe: Burden, Management and Opportunities." [In eng]. *Arch Osteoporos* 15, no. 1 (Apr 19 2020): 59. <https://doi.org/10.1007/s11657-020-0706-y>.
- Coassy, A., A. Svedbom, H. Locrelle, R. Chapurlat, B. Cortet, P. Fardellone, P. Orcel, et al. "Costs of Patient Management over 18 months Following a Hip, Clinical Vertebral, Distal Forearm, or Proximal Humerus Fragility Fracture in France-Results from the Icuros Study." [In eng]. *Osteoporos Int* 33, no. 3 (Mar 2022): 625-35. <https://doi.org/10.1007/s00198-021-06189-7>.
- Kanis, J. A., C. Cooper, R. Rizzoli, and J. Y. Reginster. "European Guidance for the Diagnosis and Management of Osteoporosis in Postmenopausal Women." [In eng]. *Osteoporos Int* 30, no. 1 (Jan 2019): 3-44. <https://doi.org/10.1007/s00198-018-4704-5>.
- Kanis, John A., Nicholas Norton, Nicholas C. Harvey, Trolle Jacobson, Helena Johansson, Mattias Lorentzon, Eugene V. McCloskey, Carl Willers, and Fredrik Borgström. "Scope 2021: A New Scorecard for Osteoporosis in Europe." [In eng]. *Archives of osteoporosis* 16, no. 1 (2021): 82-82. <https://doi.org/10.1007/s11657-020-00871-9>. <https://pubmed.ncbi.nlm.nih.gov/34080059>.
- Launois, Robert, Elise Cabout, Daniel Benamouzig, Livia Velpy, Karine Briot, Françoise Alliot, Laure Perrin, et al. "Barriers and Expectations for Patients in Post-Osteoporotic Fracture Care in France: The Effel Study." *Value in Health* 25, no. 4 (2022/04/01/ 2022): 571-81. <https://doi.org/https://doi.org/10.1016/j.jval.2021.10.005>.
- Li, N., M. Hiligsmann, A. Boonen, M. M. van Oostwaard, Rtal de Bot, C. E. Wyers, S. P. G. Bours, and J. P. van den Bergh. "The Impact of Fracture Liaison Services on Subsequent Fractures and Mortality: A Systematic Literature Review and Meta-Analysis." [In eng]. *Osteoporos Int* 32, no. 8 (Aug 2021): 1517-30. <https://doi.org/10.1007/s00198-021-05911-9>.
- "Ma Santé 2022 : Un Engagement Collectif." <https://solidarites-sante.gouv.fr/systeme-de-sante-et-medico-social/masante2022/>.
- Roux, C., T. Thomas, J. Paccou, G. Bizouard, A. Crochard, E. Toth, M. Lemaitre, et al. "Refracture and Mortality Following Hospitalization for Severe Osteoporotic Fractures: The Fractos Study." [In eng]. *JBMR Plus* 5, no. 7 (Jul 2021): e10507. <https://doi.org/10.1002/jbm4.10507>.
- Svedbom, A., E. Hernlund, M. Ivergård, J. Compston, C. Cooper, J. Stenmark, E. V. McCloskey, B. Jönsson, and J. A. Kanis. "Osteoporosis in the European Union: A Compendium of Country-Specific Reports." [In eng]. *Arch Osteoporos* 8, no. 1-2 (2013): 137. <https://doi.org/10.1007/s11657-013-0137-0>.
- "Un Plan National Pour L'ostéoporose." 2022, <https://www.theragora.fr/rhumatologie--traumatologie/un-plan-national-pour-l-osteoporose.html>.
- Viprey, Marie, Yufeng Xue, Aurélie Rousseau, Cécile Payet, Roland Chapurlat, Pascal Caillet, Alexandra Dima, and Anne-Marie Schott. "Adherence with Brand Versus Generic Bisphosphonates among Osteoporosis Patients: A New-User Cohort Study in the French National Healthcare Insurance Database." [In eng]. *Scientific reports* 10, no. 1 (2020): 7446-46. <https://doi.org/10.1038/s41598-020-64214-x>. <https://pubmed.ncbi.nlm.nih.gov/32366863> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7198539/>.
- Wu, C. H., I. J. Kao, W. C. Hung, S. C. Lin, H. C. Liu, M. H. Hsieh, S. Bagga, et al. "Economic Impact and Cost-Effectiveness of Fracture Liaison Services: A Systematic Review of the Literature." [In eng]. *Osteoporos Int* 29, no. 6 (Jun 2018): 1227-42. <https://doi.org/10.1007/s00198-018-4411-2>.





*Our vision is a world without fragility fractures,  
in which healthy mobility is a reality for all*



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rue Juste-Olivier, 9 CH-1260 Nyon - Switzerland

T +41 22 994 01 00

Email [info@osteoporosis.foundation](mailto:info@osteoporosis.foundation)

[www.osteoporosis.foundation](http://www.osteoporosis.foundation)

[www.capturethefracture.org](http://www.capturethefracture.org)

[www.worldosteoporosisday.org](http://www.worldosteoporosisday.org)