

**Effective patients monitoring strategies  
(when, who, what, how)**

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# Disclosures

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- **Fees for lectures and consultancy**

- Abbvie, Amgen, Arrow, BMS, Chugai, Expanscience, Gilead, HAC-Pharma, LCA, Lilly, Medac, MSD, Pfizer, Thuasne, TEVA and UCB

- **Research grants or investigator fees**

- Amgen, Bone Therapeutics, Chugai, HAC-Pharma, MSD, Novartis, Pfizer, and UCB

Effective patients monitoring strategies  
(**when\***, who, what, how)

**\*BPF Standards 1 to 4: Identification, Evaluation, Timing and Vertebral Fracture**

# URGENCES



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112  
18

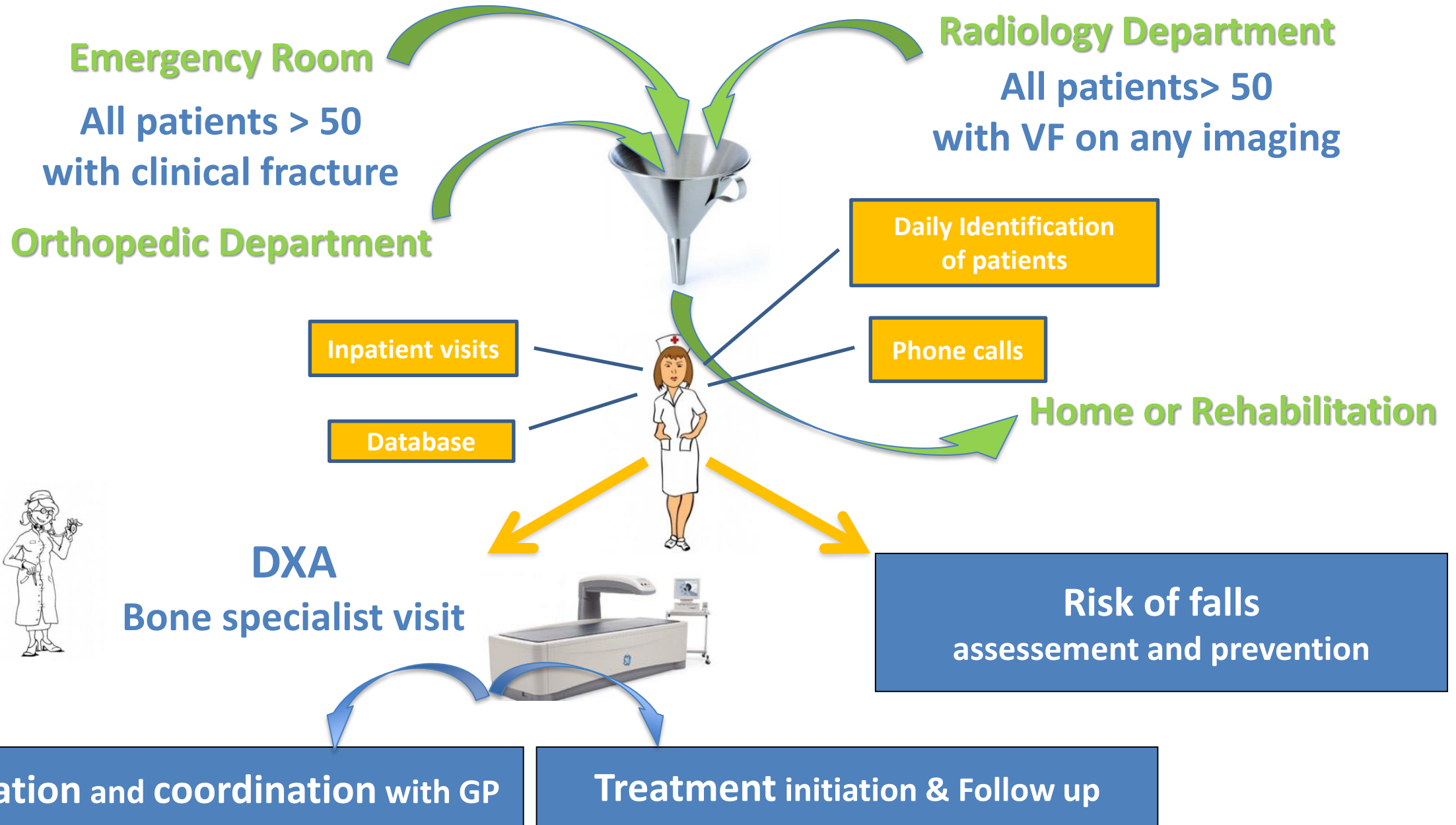
VEHICULE DE SECOURS ET D'ASSISTANCE AUX VICTIMES



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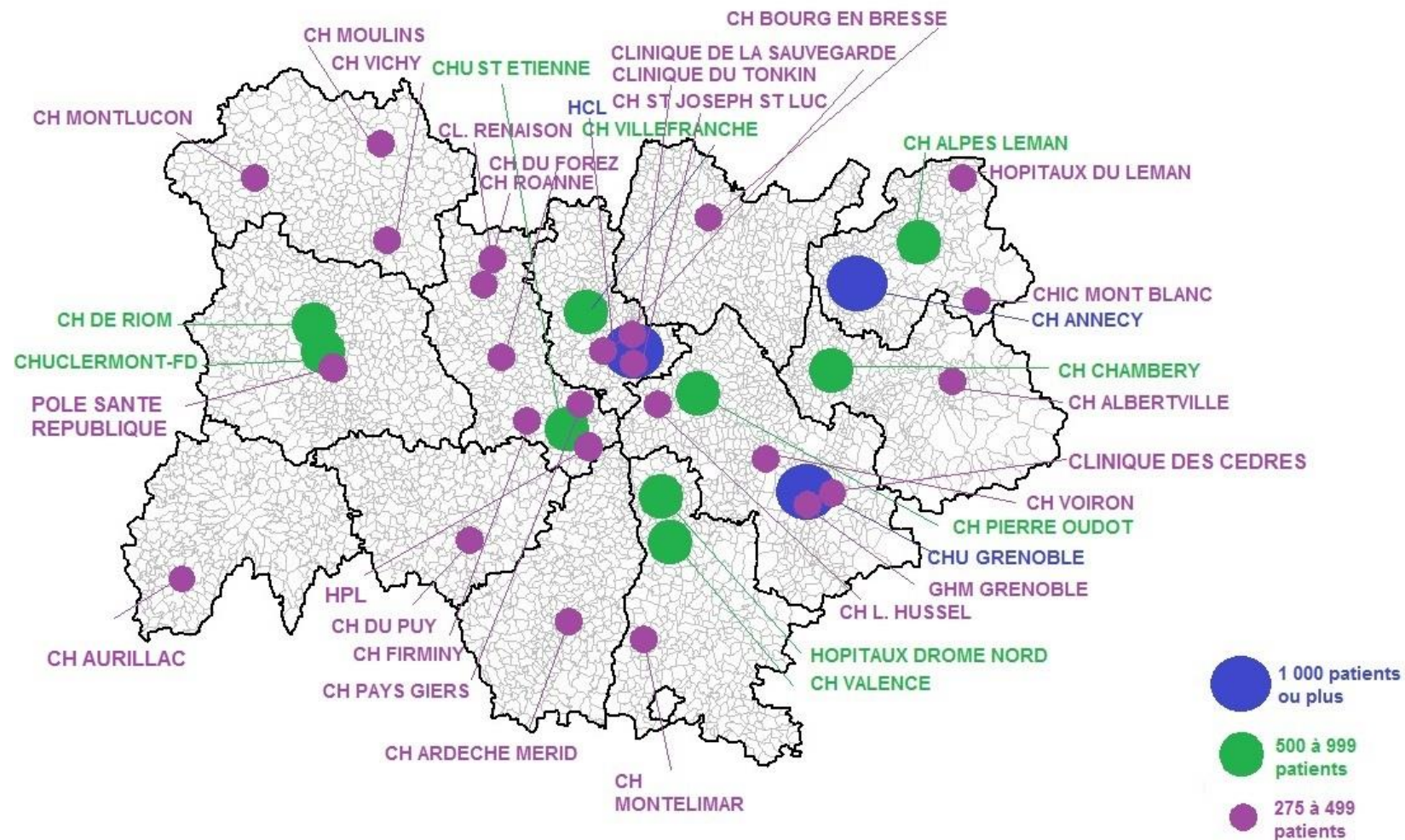
# The optimal fracture liaison service (FLS)





# Hospitalization for fragility fractures in Auvergne-Rhône-Alpes

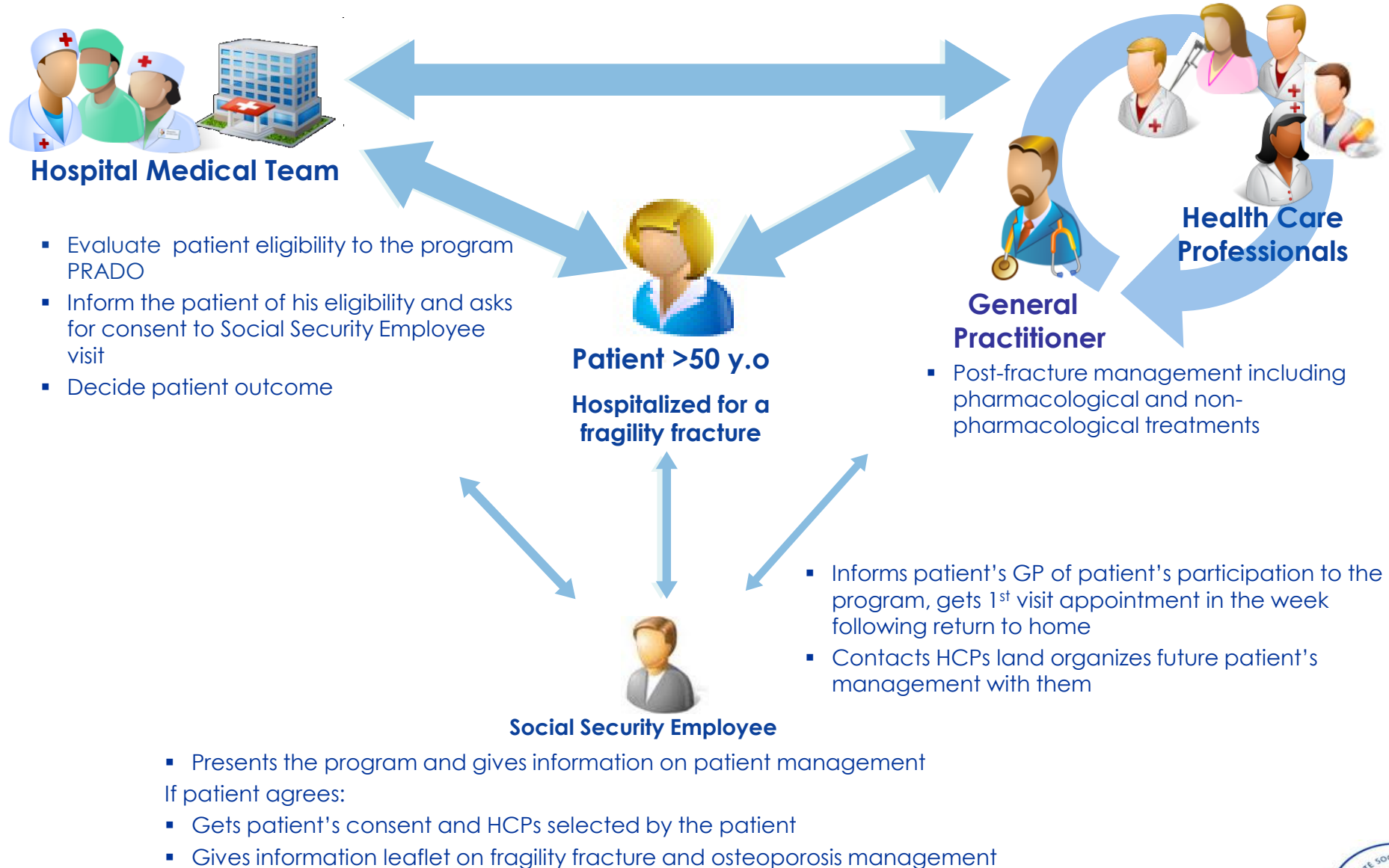
Public and private hospitals managing fragility fracture patients





# Program « PRADO orthopedic / bone fragility »

## Objective : reducing hospitalization rate for next fragility fractures



# Alternative FLS: an open structured network



STRATÉGIE DE TRANSFORMATION  
DU SYSTEME DE SANTÉ

CEMENT DES TRAVAUX

CONFÉRENCE DE PRESSE  
DU VENDREDI 9 MARS 2018



Effective patients monitoring strategies  
(when, **who\***, what, how)

**\*BPF Standards 5 to 7: Assessment guidelines, Secondary causes, Falls prevention**

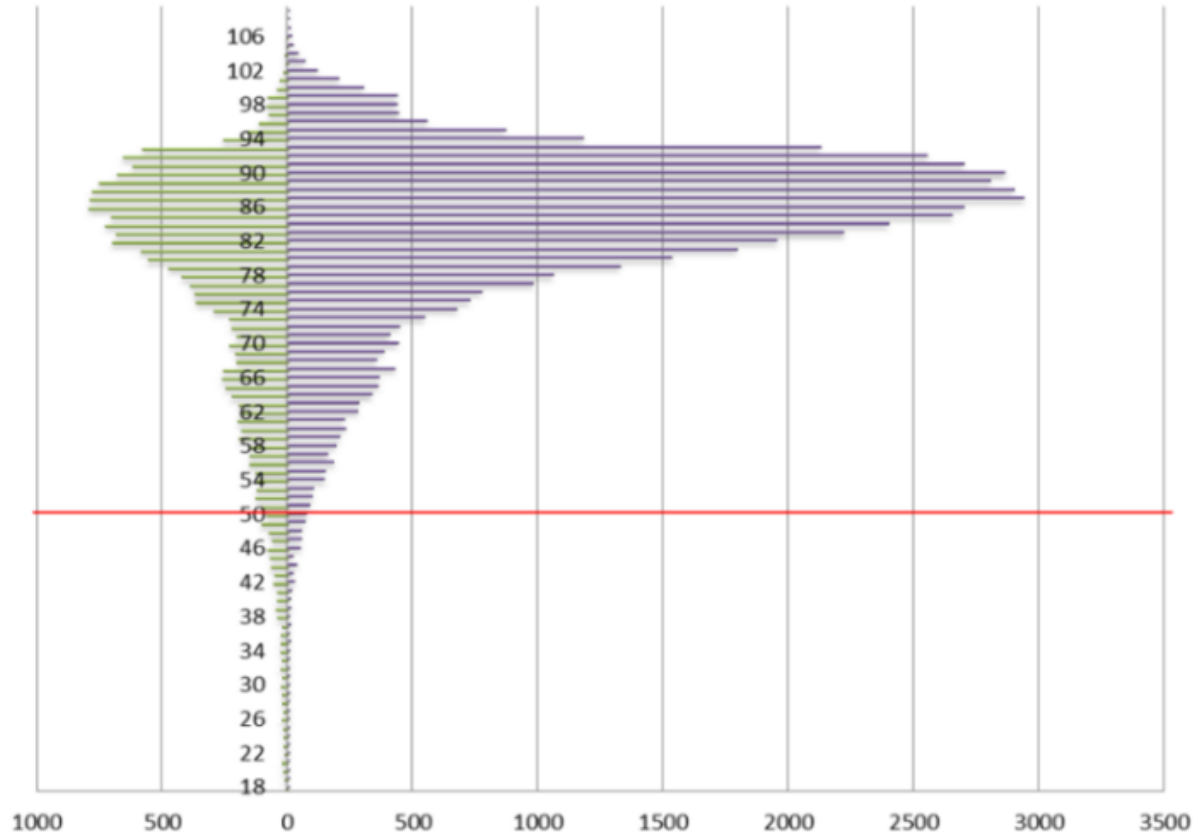
# Evaluating fracture risk

## The key factor risks

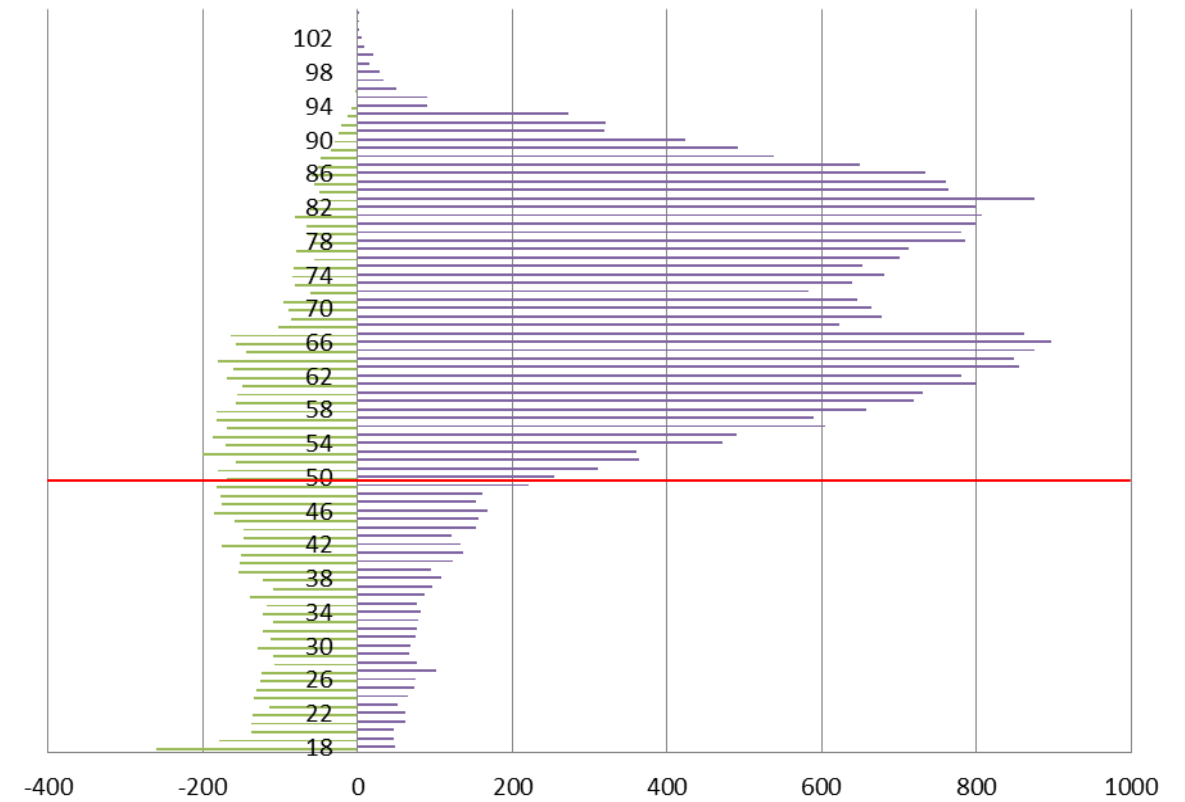
- Age
- Evaluating risk of falls (> **70** ans)
- Previous fracture and its recency
- BMD assessment

# Population pyramid of patients hospitalized in France for fracture

## Hospitalizations for hip fractures



## Hospitalizations for wrist fractures



■ Femmes  
■ Hommes

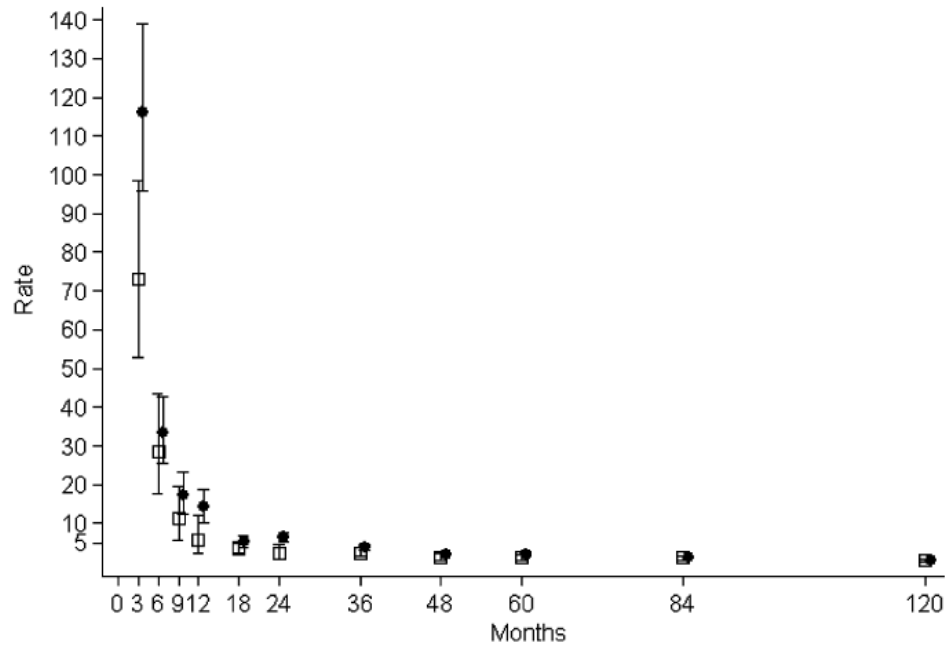
# Evaluating risk of falls

- A previous fall in the last **3** to **6** months
- In the absence of previous fall, easy tests to perform:
  - *Get up and go* test (> 14 sec)
  - **Unipodal test**
  - **Sternal push test**
- Falls prevention service including assessment and intervention program (> **70**)

# Second hip fracture after a 1<sup>st</sup> hip fracture

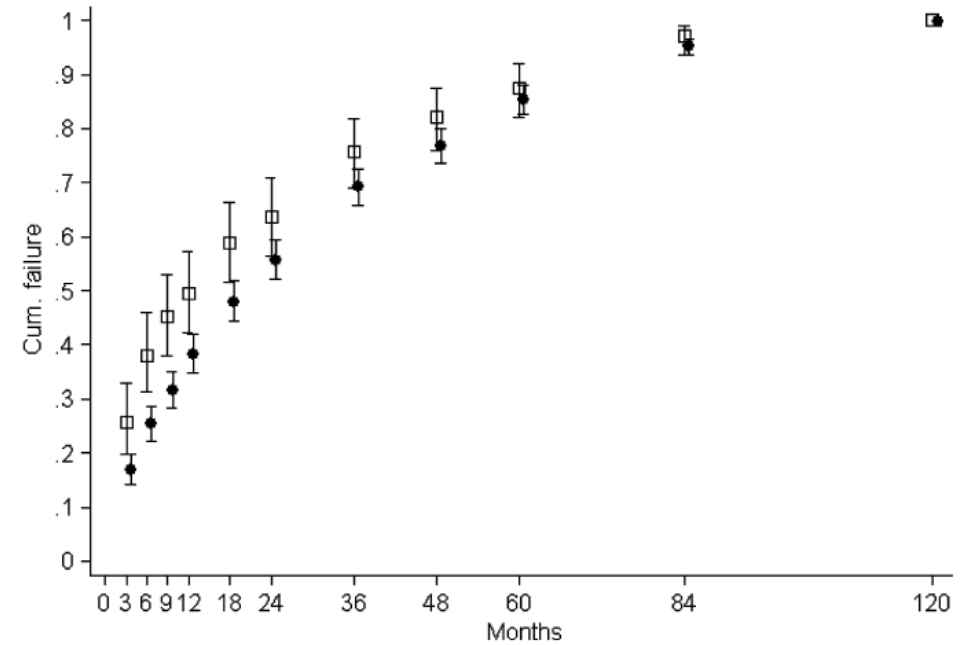
## Time effect

**Period estimates of incidence of second hip fracture by time from first fracture**



**Men (square) and Women (circle)**  
**Values are poisson regression-based estimates and 95%CI of rate per 1000 person years (py)**

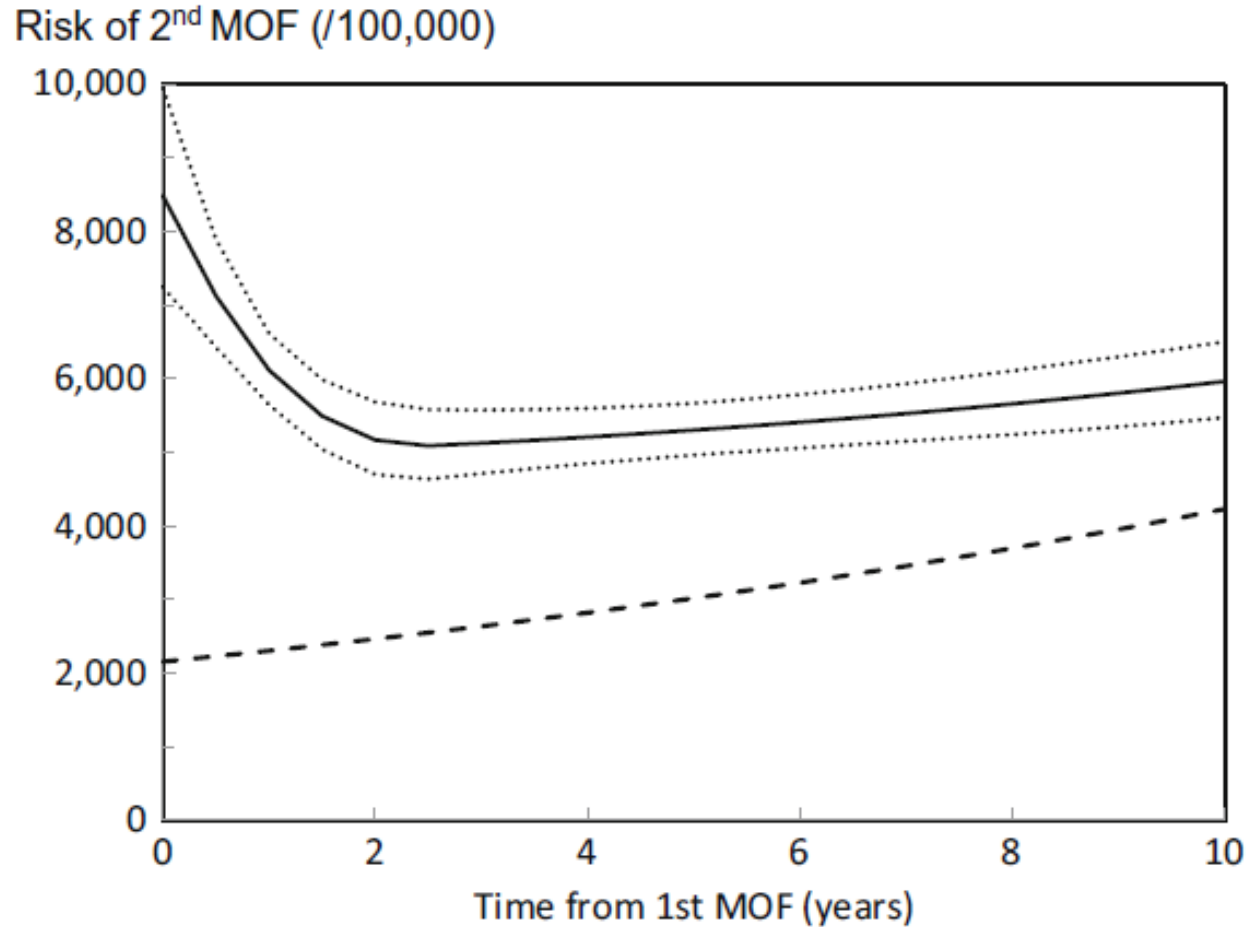
**Cumulative distribution of time from first to second fracture**



**Men (square) and Women (circle)**  
**Point estimates and 95%CI are Kaplan-Meier-based estimations**

# Imminent risk of fracture

Risk of a 2<sup>nd</sup> major osteoporotic fracture after the 1<sup>st</sup> one for a woman aged 75



Population-based cohort of 18,872 men and women born between 1907 and 1935 in Iceland - Fractures were documented over 510,265 person-years  
5038 individuals sustained one or more MOFs, of whom 1919 experienced a second MOF

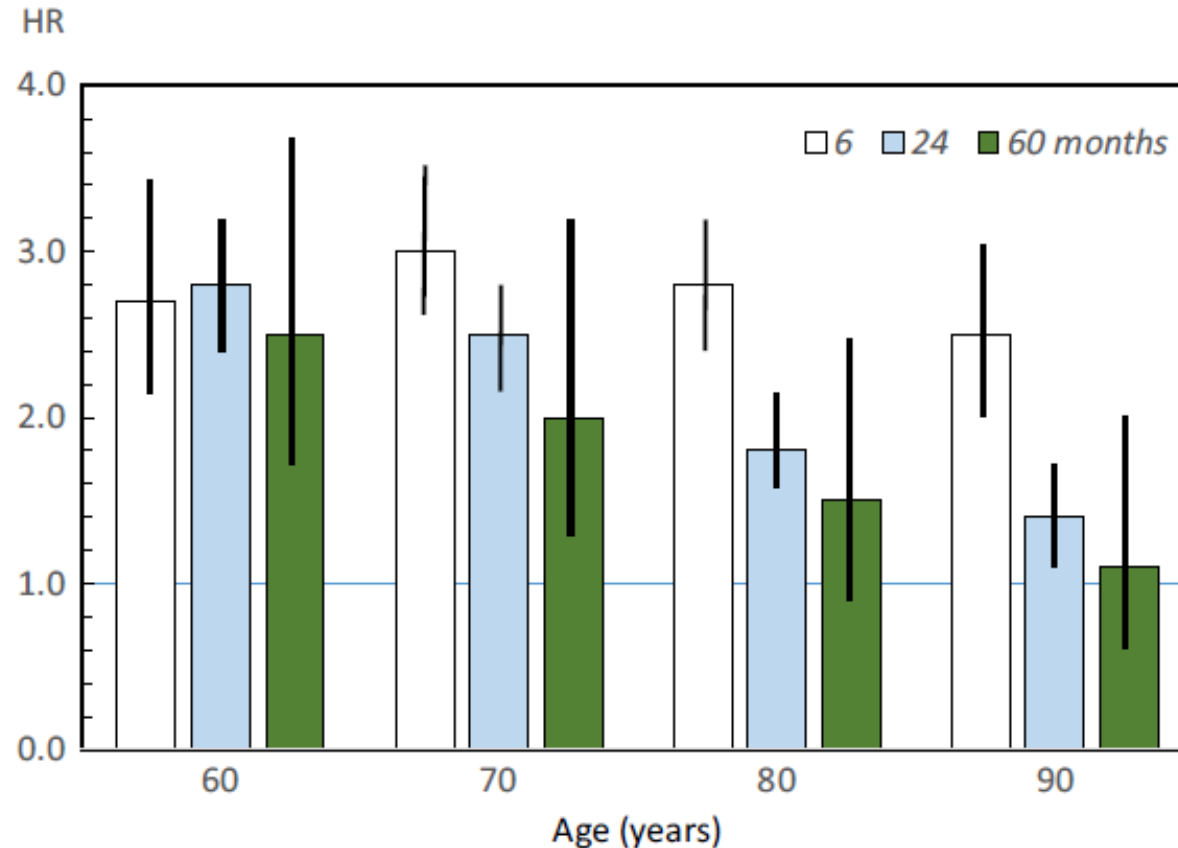
Knots for the spline function are set at 0.5, 2.5 and 15 years of follow-up after the first fracture

The dashed line is the risk of first MOF in whole population (n = 18,872) for a woman 75 years at baseline

Johansson H. Osteoporos Int 2017;28:775-780



# The effect of age on the risk of subsequent major osteoporotic fracture



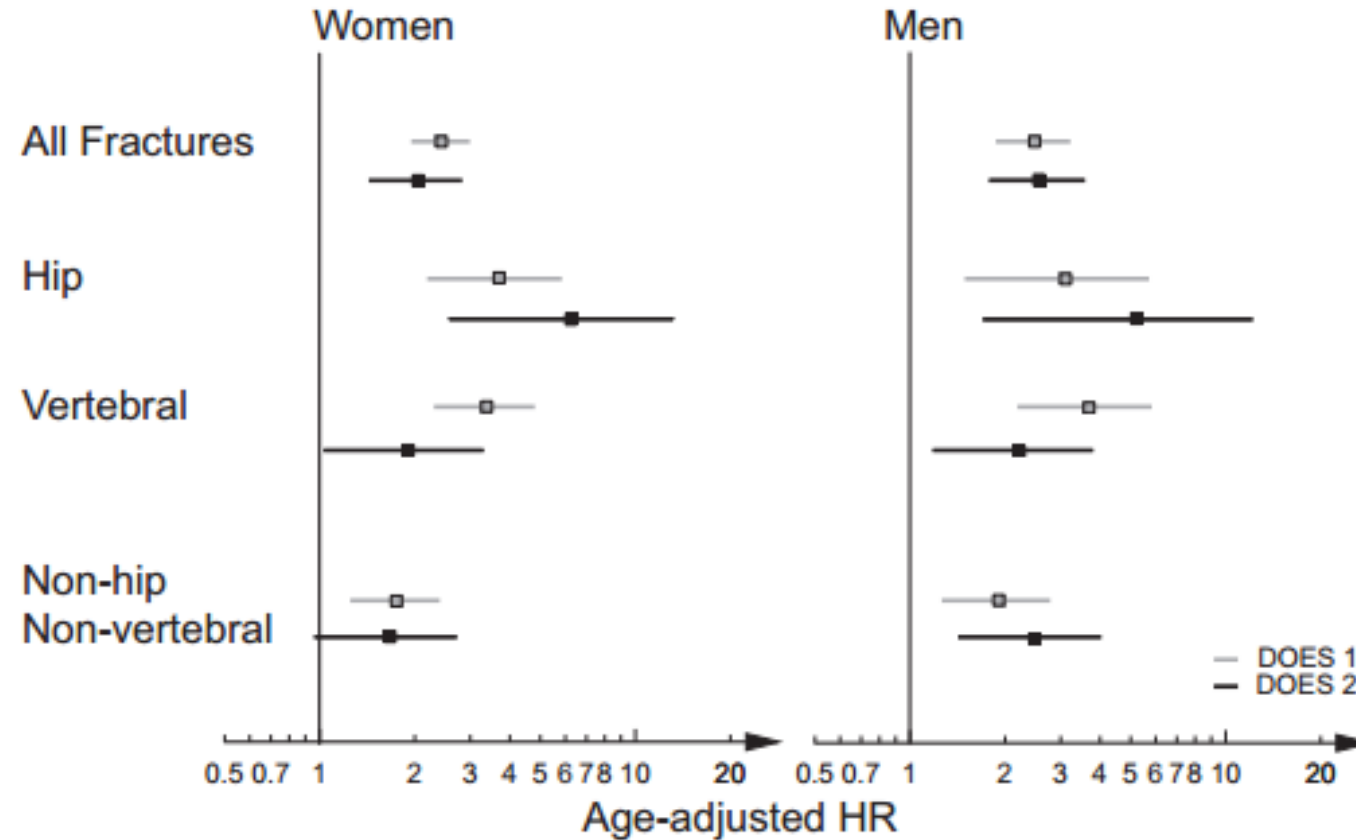
Population-based cohort of **18,872** men and women born between **1907** and **1935**

Fractures were documented over **510,265** person-years

**5038** individuals sustained one or more MOFs, of whom **1919** experienced a second MOF

The hazard ratio (HR with 95%CI) compares the risk against that of the general population when allowing the population to age with time (e.g. the individual aged 80 after 60 months compared with population aged 85)

# No improvement in standardized mortality rate after major fractures over time



Dubbo Osteoporosis Epidemiology Study 1 (DOES 1; born before 1930) : **1989 - 2004**

Dubbo Osteoporosis Epidemiology Study 2 (DOES 2; born after 1930) : **2000 - 2014**

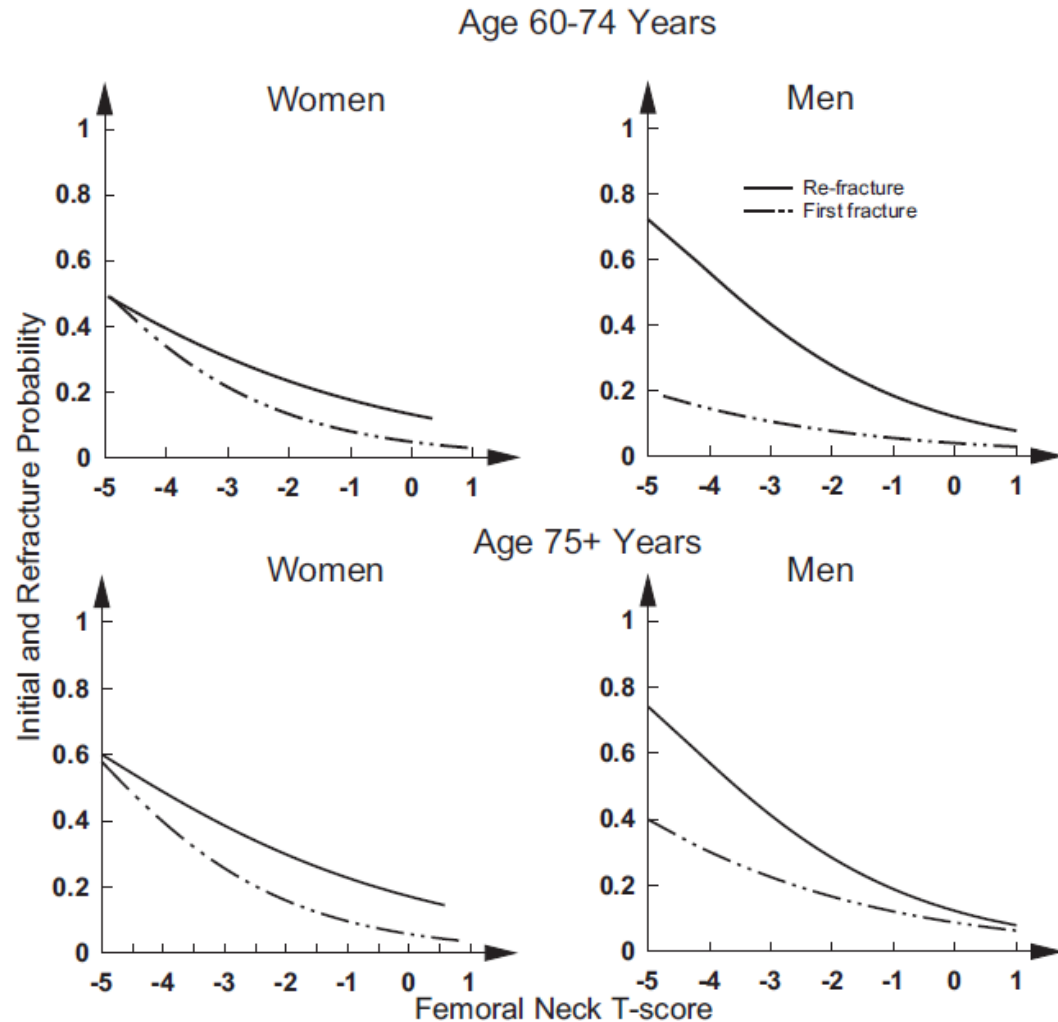
# Assessment of Bone Mineral Density

- Evaluation of bone loss that already occurred
- Help in diagnosis of bone fragility depending on bone fracture location and circumstances of the event
- Useful before therapeutic decision
- VFA: Two fracture risks at once

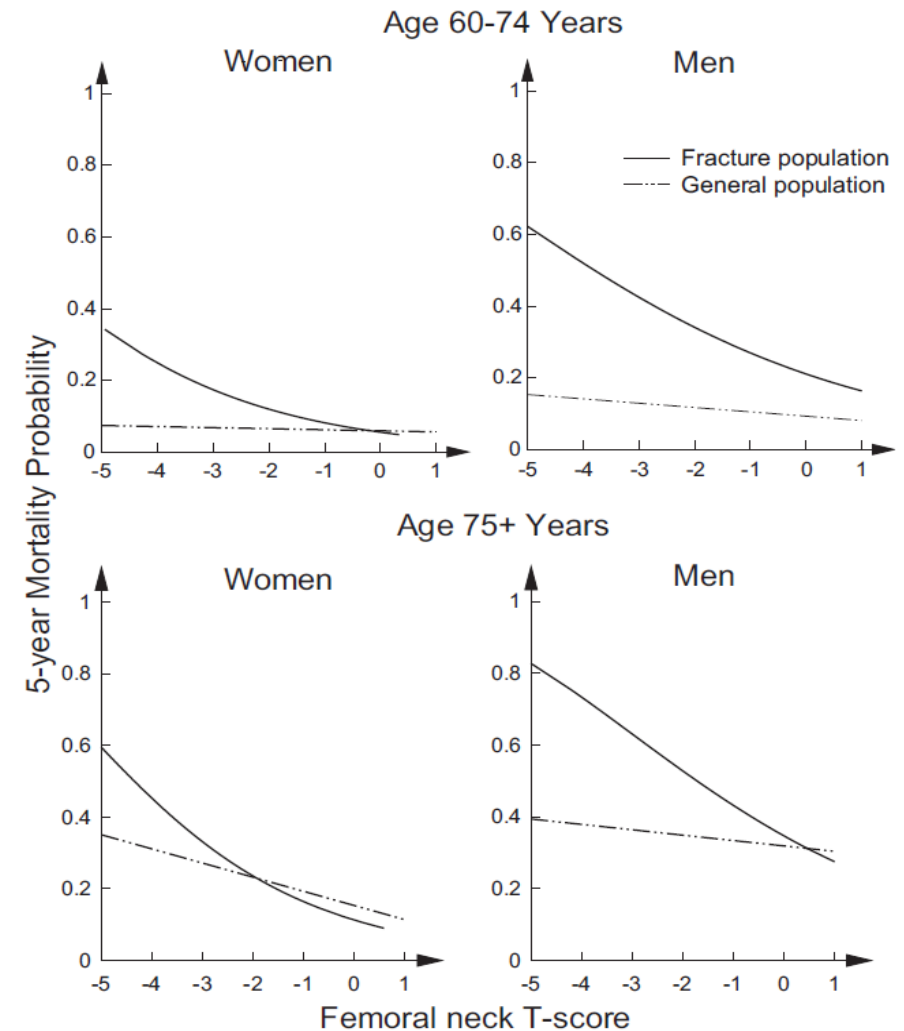


# Prognostic ability of BMD measurement

## Initial and refracture probability



## 5-year mortality probability



## Outil de Calcul

Veuillez répondre aux questions ci-dessous pour calculer la probabilité de fracture sur 10 ans sans ou avec DMO

Pays: **France**

Nom/Identité:

[A propos des facteurs de risques](#)

### Questionnaire:

1. Âge (entre 40 et 90 ans) ou Date de Naissance

Âge:

Date de Naissance:

A:

M:

J:

2. Sexe

Masculin

Féminin

3. Poids (kg)

4. Taille (cm)

5. Fracture antérieure

Non

Oui

6. Parents ayant eu une fracture de la hanche.

Non

Oui

7. Actuellement Fumeur

Non

Oui

8. Glucocorticoïdes

Non

Oui

9. Polyarthrite rhumatoïde

Non

Oui

10. Ostéoporose secondaire

Non

Oui

11. Acool trois unités par jour ou plus

Non

Oui

12. DMO du Col Fémoral (g/cm<sup>2</sup>)

Choisissez BMD




Effacer

Calculer



### Weight Conversion

Pounds kg

Convert

### Height Conversion

Inches cm

Convert

### Weight Conversion

Pounds kg

Convert

### Height Conversion

Inches cm

Convert

**00335312**

Individuals with fracture risk assessed since 1st June 2011

**06250669**

Individuals with fracture risk assessed since 1st June 2011

# 2018 up-date on French guidelines on postmenopausal osteoporosis management

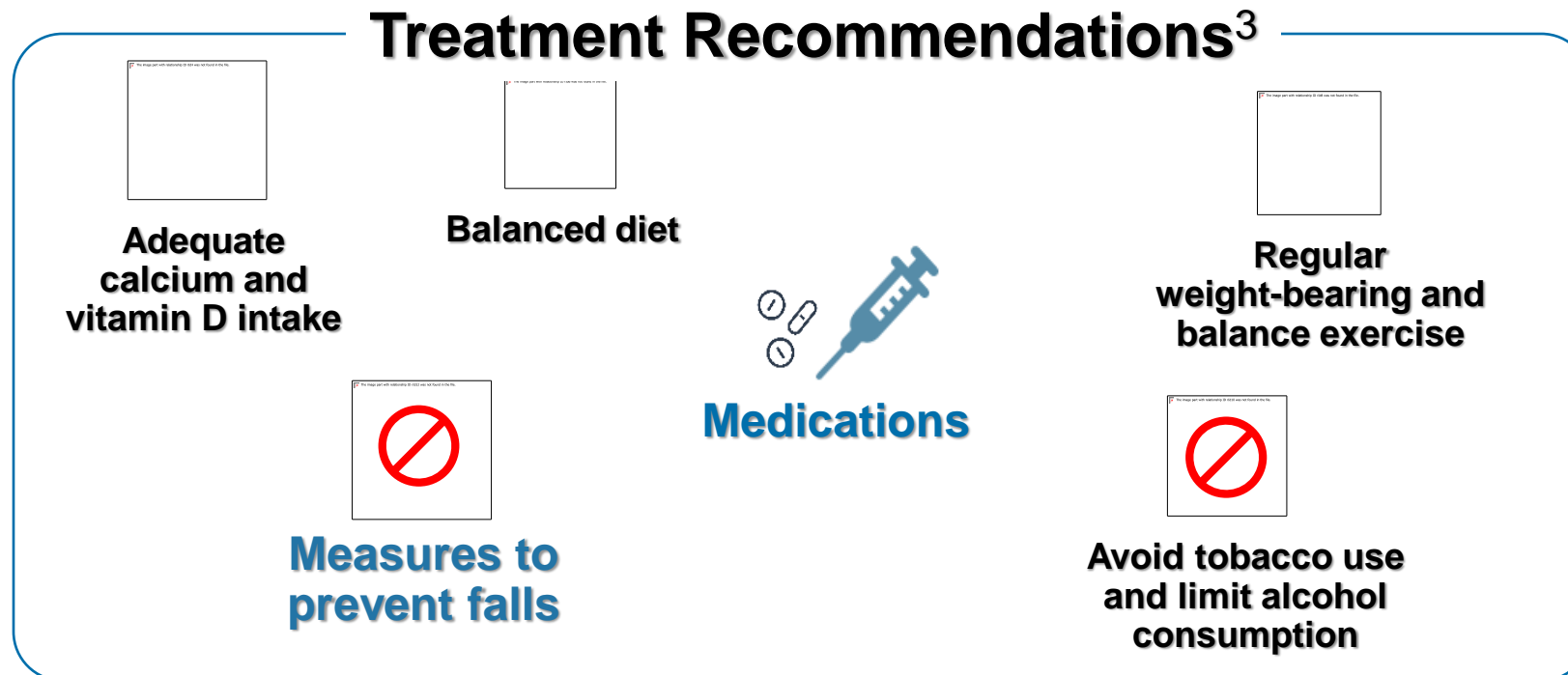
Based on T score (lowest value)	Severe fractures (femur, vertebra, humerus, pelvis)	Non severe fractures	No fracture and risk factors of osteoporosis or falls
<b>T &gt; -1</b>	Specialist opinion	No treatment	No treatment
<b>T ≤ -1 &amp; &gt; -2</b>	<b>Treatment</b>	Specialist opinion	No treatment
<b>T ≤ -2 &amp; &gt; -3</b>	<b>Treatment</b>	<b>Treatment</b>	Specialist opinion
<b>T ≤ -3</b>	<b>Treatment</b>	<b>Treatment</b>	<b>Treatment</b>

Effective patients monitoring strategies  
(when, who, **what\***, how)

**\*BPF Standards 7 to 10: Falls prevention, Health & life-style assessment, Medication**

# Initiating medications is part of a global therapeutic strategy<sup>1</sup>

Help patients to be **proactive** in their treatment  
**rather than reactive**<sup>1,2</sup>



1. Covello VT, et al. Solutions to an Environment in Peril. 2001;164-178. [www.psandman.com/articles/covello.htm](http://www.psandman.com/articles/covello.htm). Accessed February 13, 2018; 2. Besser SJ, et al. Arch Osteoporos. 2012;7:115-124; 3. Camacho PM, et al. Endocr Pract. 2016;22(Suppl 4):1-42; Image adapted with permission from Servier Medical Art. [www.servier.com](http://www.servier.com). Creative Commons CC-BY-3.0.

Images adapted and licensed (royalty-free) from the Noun Project, Inc. [www.thenounproject.com](http://www.thenounproject.com).



Efficacy



Efficacy



Safety...

# Treatment recommendations

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- **In patients with hip fracture**, consider zoledronic acid in first line as it demonstrated its anti-fracture efficacy in these circumstances (Grade A)
- **In patients with two prevalent vertebral fractures**, teriparatide can be prescribed in first line (Grade A)
- **In women below 65 with an indication of AO treatment**, raloxifene can be recommended if non-vertebral risk is low, especially in the absence of the following criteria:
  - Low T-score at the hip
  - Risks of falls
  - Previous non-vertebral fracture (Grade A)

# Treatment recommendations

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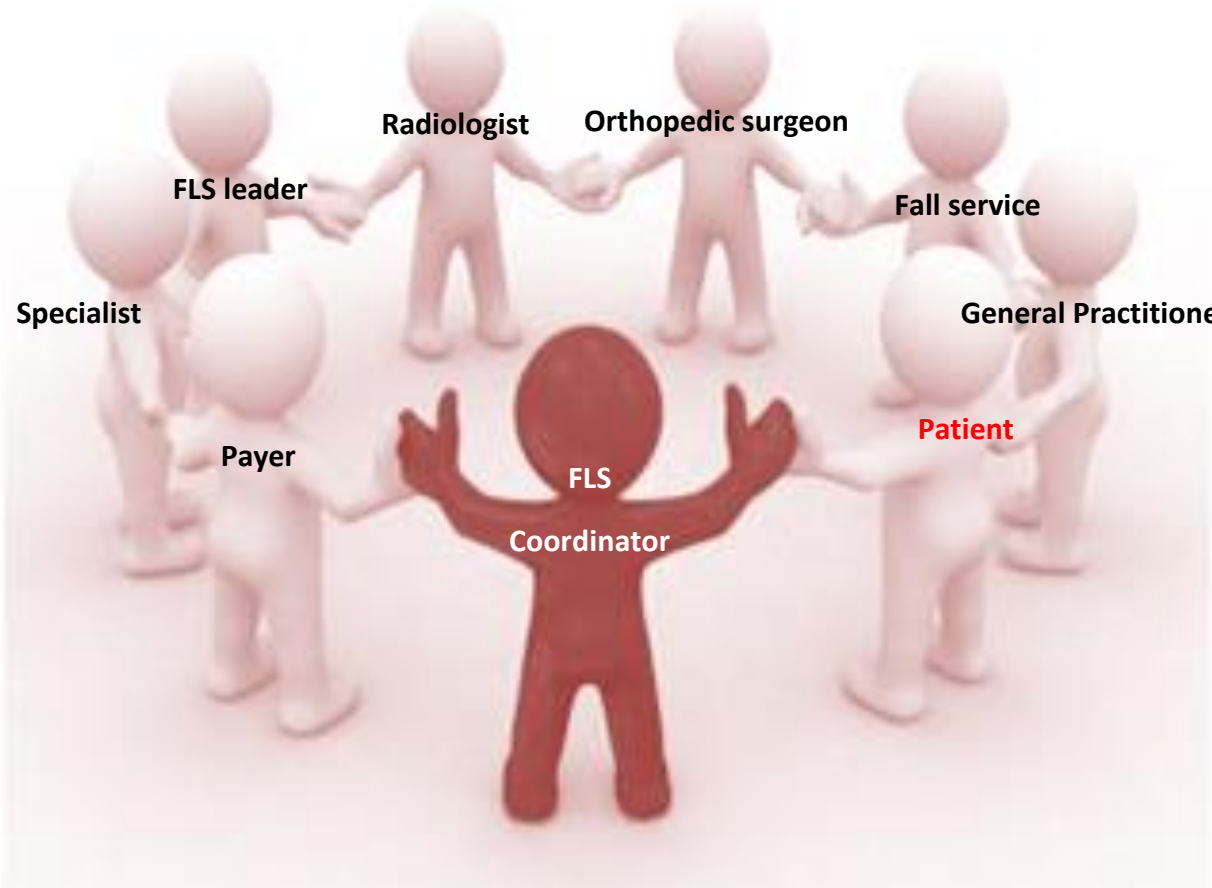
- **In a woman below 60 ans** with climacteric syndrome and osteoporosis without severe fracture, Hormonal treatment can be proposed (Grade A)
- **In case of very low BMD ( $T \leq -3$ )** with or without fracture, therapeutic strategies with the aim of a BMD T-score target above -2 have to be considered:
  - Zoledronic acid
  - Therapeutic sequence of Denosumab followed by a bisphosphonate
  - Therapeutic sequence of Tériparatide followed by antiresorptive drug  
(Professional agreement)

Effective patients monitoring strategies  
(when, who, what, **how\***)

**\*BPF Standards 11 to 13: Communication, Long-term management, Database**

# Long-term management in a FLS

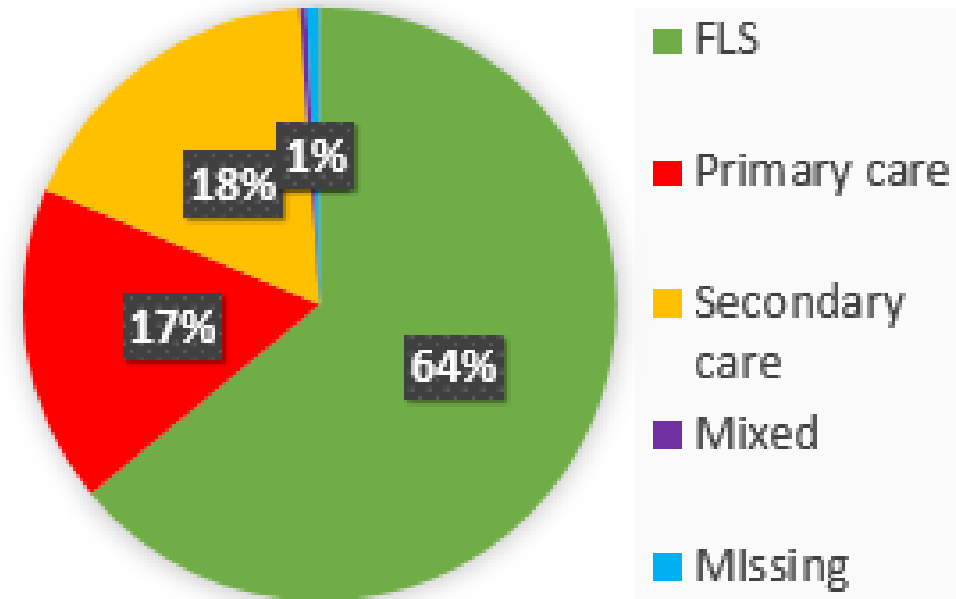
## Defining the respective roles



# Long-term management in a FLS

## Who is responsible for delivering monitoring ?

- **FLS questionnaires to the Capture the Fracture programme**
- **Results**
  - 322 FLS completed section S of questionnaire
  - 278 / 322 (86%) had a monitoring pathway
  - Only 10% FLSs monitored both before 6 months and after 12 months



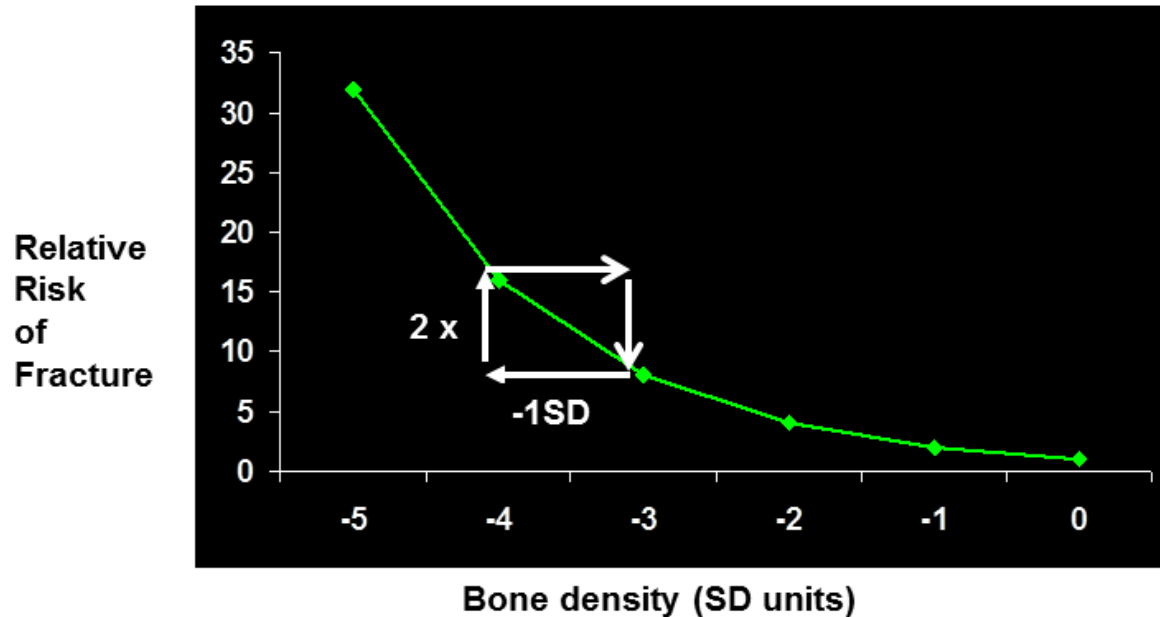
# Patient follow-up under treatment

Briot K. Joint Bone Spine 2018;85:519–30

Treatment	New fracture	New risk factors	Adherence	Tolerance	Height	Spine assessment	BTM	1st BMD
<b>Alendronate</b>	+	+	+	+	1 / year	Height loss / Back pain	3 to 6 months after treatment initiation	2 to 3 years
<b>Denosumab</b>	+	+	+	+	1 / year	Height loss / Back pain	Injection réalisée ?	2 to 3 years
<b>Risedronate</b>	+	+	+	+	1 / year	Height loss / Back pain	3 to 6 months after treatment initiation	2 to 3 years
<b>Teriparatide</b>	+	+	+	+	1 / year	Height loss / Back pain	No	18 months
<b>Raloxifene</b>	+	+	+	+	1 / year	Height loss / Back pain	6 to 12 months after treatment initiation	2 to 3 years
<b>Hormonal Tt</b>	+	+	+	+	1 / year	Height loss / Back pain	3 to 12 months after treatment initiation	2 to 3 years
<b>Zoledronic Ac</b>	+	+	+	+	1 / year	Height loss / Back pain	Perfusion réalisée ?	2 to 3 years



# Treat to target strategy



- **A valid target** is a BMD value above which the fracture risk is down to an acceptable level
- **Absence of bone loss** (BMD change  $\leq 0.03\text{g/cm}^2$ ) is the minimal objective for all patients
- In patients with low femoral BMD before treatment, the target is to bring back **femoral BMD T-score  $>-2$**

Adapted from Faulkner KG. *J Bone Miner Res.* 2000;15:183-187

Bauer DC. *Ann Intern Med.* 2014  
Cosman F. *J Clin Endocrinol Metab.* 2014  
Ferrari S. *Osteoporos Int.* 2015  
Ferrari S. *J Bone Miner Res* 2019  
Briot K. *Joint Bone Spine* 2018;85:519-30

# When stopping the treatment ?

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- A break in the treatment after 3 to 5 years is recommended only if all following conditions are present (professional agreement):
  - **No fracture under treatment,**
  - **No new risk factors,**
  - **No significant decrease in BMD**
  - **Femoral T score above -2**
- Treatment holiday may be at risk and continuing patient follow-up is mandatory with reevaluation within 2 years

# Effective patient monitoring strategies

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- Establish a coordinated pathway for all osteoporotic patients
- Assess the level and the imminence of future fracture risk
- Regularly evaluate needs, benefits and risks of therapies
- Communicate widely and clearly define respective roles
- Keep in mind it is only a part of osteoporosis scope

# Q & A

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# THANK YOU

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On behalf of IOF, we thank you for your participation in this webinar