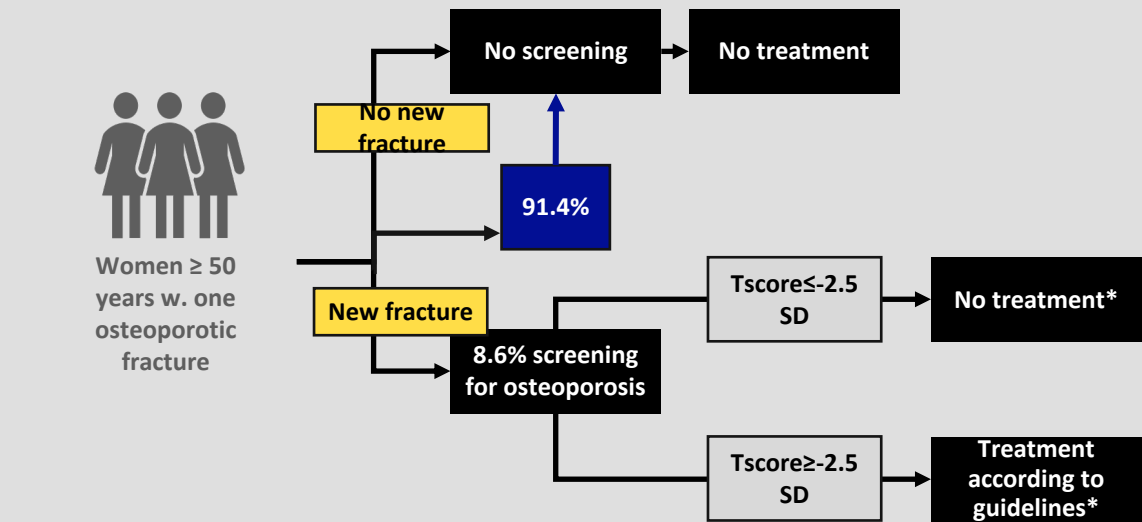


Challenge

Screening and Linkage to Care (SLTC) for post menopausal women with one prior osteoporotic fracture in Greece is suboptimal

Figure 1. Current scenario for SLTC in postmenopausal women with 1 prior fracture



*According to the most recent clinical guidelines in Greece, EEMMO 2020

Objectives

To estimate the impact of adopting a hypothetical scenario, where 100% of postmenopausal women aged ≥50 with one prior fracture are SLTC for osteoporosis, in terms of outcomes (deaths, fractures) and costs for the third-party payer (National Organization for Provision of Health Services, EOPYY)

Table 1. Scenario comparison overview

	Screening and diagnosis	Linkage to care and treatment	Results	Cost
Current scenario	8.6% of postmenopausal women aged ≥50 who suffer a fracture	According to clinical guidelines	Deaths Fractures (per type) Diagnostic tests Treatment initiation	Diagnostic tests Treatment Fractures Rehabilitation
Hypothetical scenario	100% of postmenopausal women aged ≥50 who suffer a fracture			

Methods

- We developed a cohort stochastic model to monitor a hypothetical cohort of 50,000 post-menopausal women aged ≥50 over a horizon of 10 years
- Possibilities of transitioning from a health state to another (without a fracture, with a fracture – per type, death) were derived from published literature
- We modelled expected outcomes (fractures, deaths, screening, treatment initiation and costs) in the current and the hypothetical scenario, and
- We estimated differences between the two scenarios in terms of outcomes (deaths and fractures) and costs for EOPYY

Model inputs

- Population:** Each woman entering the model drew a random number in order to determine her model entering age based on life tables adjusted to the incidence of fractures of women of this age in Greece. Each year, the model followed the cohort while women remain in the same, or transition into new health states (without a fracture, with a fracture, death). Screening and treatment initiation (according to the guidelines) was performed at the start of the model or after each fracture (8.6% in the current and 100% in the hypothetical scenario)

- Costs:** All costs included in the model were estimated from the third-party payer perspective (social insurance organization) – direct health care costs only and included: screening costs, treatment costs (according to actual market shares in the Greek market, assumed constant throughout model time period), fracture management costs (hospitalizations and outpatient care) and rehabilitation costs (inpatient and outpatient physiotherapy sessions)

Results

- In the **current scenario**, over 10 years, the model predicts 9,180 deaths, 21,833.5 fractures, 1,564.9 treatment initiations and 9,598.5 screenings among women in the cohort

- In the **hypothetical scenario**, over 10 years, the model predicts 9,128.8 deaths, 20,885.3 fractures, 11,799.3 treatment initiations and 78,153 screenings among women in the cohort

- Adopting the hypothetical instead of the current scenario would result in a decline in estimated number of deaths and fractures and almost a 10-fold increase in total screenings and treatment initiations compared to the current scenario (Table 2)**

Table 2. Model results (outcomes)

	Current Scenario	Hypothetical Scenario	Difference
Deaths	9,180.1	9,128.8	-51.3 deaths/ - 0.6%
New fractures	21,833.5	20,885.3	-948 fractures /-4.3%
Screenings	8,598.5	78,153	+69,554.5 screenings / +808.9%
Treatment Initiations	1,564.9	11,799.3	+10,234.4 treatment initiations/ +654.0%

- Increasing SLTC leads to a cost increase in the hypothetical scenario, but also to cost savings due to additional averted deaths and fractures.**

- The hypothetical scenario leads to greater reductions in costs associated with vertebral (-8.1% in total costs versus the current scenario) and hip fractures (-5.5% in total costs versus the current scenario), followed by savings in other non-vertebral fractures (-3.0% in total costs versus the current scenario) and forearm fractures (-2.5% in total costs versus the current scenario) (Table 3)

- Adopting the hypothetical scenario (100% SLTC versus 8.6% in the current scenario) would result in an incremental cost of 27.83€ per woman per year in the cohort**

Table 3. Model results (costs)

	Current Scenario			Hypothetical Scenario		
	Mean (€)	Upper Bound (€)	Lower Bound (€)	Mean (€)	Upper Bound (€)	Lower Bound (€)
Hip fx costs	26,304,882.46	27,210,318.39	25,399,446.54	24,865,747.42	25,557,270.99	24,174,223.86
Vertebral fx costs	30,157,767.86	30,989,831.22	29,325,704.50	27,700,997.02	28,576,934.69	26,825,059.34
Forearm fx costs	5,750,212.93	5,915,214.26	5,585,211.60	5,609,018.47	5,765,889.96	5,452,146.98
Other non-vertebral fx costs	10,808,193.91	10,991,269.92	10,625,117.89	10,480,710.01	10,668,705.62	10,292,714.41
Screening costs	846,200.13	870,721.01	821,679.25	7,691,214.51	7,741,279.90	7,641,149.13
Treatment costs	1,538,049.06	1,718,380.07	1,357,718.05	12,974,472.70	13,468,563.13	12,480,382.26
Total costs	26,304,882.46	27,210,318.39	25,399,446.54	24,865,747.42	25,557,270.99	24,174,223.86
Additional Mean Cost	13,916,853.79€					
Number of women / time span	50,000 women / 10 years					
Cost per woman per year	27.83€					

Conclusions

- Applying a 100% screening strategy amongst post-menopausal women aged 50-74, with one prior osteoporotic fracture would result in additional averted deaths and fractures at a manageable incremental cost, from the perspective of the third-party payer
- Adopting the hypothetical scenario over a 10-year horizon was estimated to prevent more than 50 deaths, and approximately 950 fractures, mostly vertebral and hip fractures
- Applying a 100% SLTC strategy does not exceed the incremental cost of 28 euros per woman per year in the cohort
- The estimated cost burden is conservative, considering that treatment costs (especially in the hypothetical scenario) may have been overestimated (considered constant for the duration of the model time), and savings from averted fractures may have been underestimated (model considers direct costs only).

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Declarations - Funding

- This work was supported by an unrestricted research grant from UCB /AMGEN. The funding body had no role in the design of the study, data collection and analysis, interpretation of the data and in writing the poster