

# Trends in Screening and Treatment of Osteoporosis after Hip Fragility Fractures Across High-Risk Patients from 2011-2021

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**INTRODUCTION:** Osteoporosis is a prevalent condition among older adults and a significant contributor to morbidity following fragility fractures, particularly hip fractures. Despite long standing clinical guidelines emphasizing the importance of osteoporosis screening and treatment after fragility fractures, implementation remains inconsistent. It remains unclear whether these calls to action have translated into meaningful changes in clinical practice. Furthermore, while management rates after fragility fractures have historically been recognized as suboptimal, it is unknown whether clinicians are more likely to intervene when additional osteoporosis risk factors are present. This study aims to evaluate the trends in screening and treatment of osteoporosis following fragility fractures of the hip with a specific focus on whether additional risk factors influence clinical decision-making.

**METHODS:** A retrospective cohort analysis was conducted using the PearlDiver database. Patients aged 50 and older who sustained hip fragility fractures from 2011-2021 were included. Additional risk factors associated with osteoporosis were identified as having a history of tobacco use, rheumatoid arthritis, diabetes mellitus, BMI <18.5, alcohol use, and chronic steroid use. Rates of osteoporosis screening and treatment within one year post-fracture for patients were assessed. Trends were evaluated using compound annual growth rate (CAGR) and linear regression was used to determine statistical significance. A level of 0.05 was deemed to be the level of significance in this study.

**RESULTS:** A total of 828,743 patients met inclusion criteria. Across the study period, osteoporosis screening and treatment rates remained consistently low, with overall average rates of 4.6% and 4.4%, respectively. Screening rates did not change significantly over the study period, with 4.5% in 2011 and 4.6% by 2021 (CAGR: 0.003; p = 0.09). Treatment rates also did not change significantly, with 4.8% in 2011 to 4.1% in 2021 (CAGR: -0.01%; p = 0.20).

**DISCUSSION AND CONCLUSION:** Despite increased awareness and longstanding guidelines, rates of osteoporosis screening and treatment following hip fragility fractures in high-risk patients have remained persistently low. These findings highlight a critical gap in secondary fracture prevention. Targeted strategies are therefore needed to improve osteoporosis management in this vulnerable population.

Table 1: Demographic and Clinical Comorbidities Across Hip Fragility Fractures Between 2010-2021

YEAR	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total	106,113	89,561	86,339	88,100	88,916	79,461	55,927	52,918	52,213	55,639	47,499	45,957
<b>Age</b>												
50-59	8,889	7,844	7,712	8,070	8,661	8,051	5,579	5,077	5,025	5,091	4,699	4,290
60-69	16,776	14,282	13,514	14,004	15,020	14,003	10,237	9,765	9,834	10,681	9,476	9,326
70+	80,348	67,435	65,113	66,062	65,235	57,407	40,111	38,076	37,354	39,867	33,324	32,341
<b>Biological Sex</b>												
Female	71,255	57,804	54,688	54,129	53,021	46,665	32,140	30,170	28,719	29,735	24,983	24,025
Male	34,858	31,757	31,651	33,971	35,895	32,796	23,787	22,747	23,492	25,903	22,516	21,932
<b>Risk Factors</b>												
Tobacco Use	2,743	5,735	7,699	10,215	12,860	14,015	12,234	13,160	14,732	17,408	16,557	17,195
Rheumatoid Arthritis	1,132	1,620	1,874	2,168	2,502	2,343	1,895	1,825	1,888	2,105	1,881	1,942
Diabetes Mellitus	14,643	19,596	21,342	23,613	25,070	23,263	17,415	16,426	16,847	18,506	16,273	16,574
BMI <18.5	563	1,183	1,520	1,939	2,360	2,452	1,741	1,629	1,580	1,675	1,517	1,513
Alcohol Use	976	1,719	2,371	2,860	3,609	3,701	3,218	3,299	3,640	4,253	4,257	4,229
Secondary Cause for Osteoporosis	2,763	4,011	4,544	5,271	5,761	5,722	4,338	3,997	4,168	4,649	4,207	4,265
Chronic Steroid Use	107	123	104	140	166	164	80	130	166	178	175	192
<b>Insurance</b>												
Medicare	56,133	47,639	42,725	45,406	44,028	39,265	26,179	24,338	22,437	24,916	20,144	18,758
Medicaid	2,456	2,690	3,255	3,434	3,824	3,788	2,735	2,543	2,373	2,548	2,311	2,187
Commercial	43,720	35,768	36,161	37,509	37,182	32,751	24,688	23,668	25,157	25,605	22,940	22,985

Table 2: Incidence of screening and treatment for each year

	Screening		Treatment	
	N	%	N	%
2011	4,048	4.5	4,416	4.9
2012	3,521	4.1	3,677	4.3
2013	3,753	4.3	3,545	4.0
2014	3,923	4.4	3,873	4.4
2015	3,607	4.5	3,425	4.3
2016	2,877	5.1	2,616	4.7
2017	2,661	5.0	2,531	4.8
2018	2,589	5.0	2,336	4.5
2019	2,570	4.6	2,246	4.0
2020	2,141	4.5	1,906	4.0
2021	2,192	4.8	1,874	4.1
Total	33,882	4.6	32,445	4.4
CAGR	-	0.003	-	-0.01
P-value	-	0.09	-	0.20