

IMMINENT FRACTURE RISK AMONGST NEW USERS OF ORAL BISPHOSPHONATES IN ACTUAL PRACTICE SETTINGS: A MULTI-NATIONAL EUROPEAN COHORT STUDY FROM DENMARK, SPAIN, AND THE UK

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Objective: Non-vertebral fracture efficacy for bisphosphonates is not rapidly accomplished. Patients who fracture despite treatment face a high risk for re-fracture. We calculated imminent (1 an 2-year) fracture risk (IFR) amongst incident users of oral bisphosphonates from three European countries; and after a fracture while on treatment.

Material and methods: Patients aged 50+ starting oral bisphosphonates (12-month wash-out) were identified from Danish, Spanish and UK electronic medical records. Participants were followed from therapy initiation to the earlier of a fracture, death, migration, or end of study. A cohort of patients who fractured while on treatment were identified and analysed separately from then onwards. Incidence rates (per 1,000 person-years) and 95% confidence intervals of fracture in the 1 and 2 years following index were calculated after stratification by fracture history.

Results: A total of 209,670 patients who started bisphosphonates and 32,235 who fractured while on treatment were included from Denmark, compared to 53,549 and 1,880 from Spain, and 148,507 and 28,930 from the UK. Average age at treatment initiation ranged from 68.9 (ES) to 74.2 (UK), and previous fracture prevalence from 12.0% (ES) to 33.3% (DK). IFR is high (2.5% to 5.6%) in the first year amongst treatment initiators, and higher in patients with a previous fracture history (4.0% to 8.7%). Risk is even higher (5% to 9.2%) in those followed from a fracture while on treatment [Table 1]. Rates in the second year were similar but slightly reduced.

Conclusion: IFR risk is high in the first 2 years of bisphosphonate therapy, particularly for those on secondary fracture prevention. Fracture while on treatment is a marker of subsequent higher short-term re-fracture risk.

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Table. One-year IFR in the first year of bisphosphonate therapy, and in the year after a fracture while on treatment with oral bisphosphonates.

	1-year IFR following bisphosphonate initiation		1-year IFR following fracture while on treatment
	With prior Fx	Without prior Fx	
	IR (/1,000)	IR (/1,000)	IR (/1,000)

DENMARK	py)	95CI		py)	95CI		py)	95CI	
Hip	28.172	27.115	29.230	12.605	11.901	13.308	34.06	31.93	36.20
Clinical spine	6.988	6.464	7.512	4.689	4.261	5.118	7.21	6.23	8.18
Non-hip non-spine	46.037	44.679	47.394	27.529	26.485	28.573	69.12	66.05	72.19
Hip/shoulder/wrist	52.689	51.234	54.145	28.066	27.012	29.120	39.95	37.64	42.26
SPAIN	IR (/1,000 py)	95CI		IR (/1,000 py)	95CI		IR (/1,000 py)	95CI	
Hip	7.289	5.951	8.628	3.890	3.257	4.524	7.61	4.56	12.08
Clinical spine	5.364	4.217	6.511	3.676	3.061	4.292	12.01	6.99	17.03
Non-hip non-spine	28.818	26.140	31.495	18.795	17.397	20.194	77.31	64.27	90.35
Hip/shoulder/wrist	22.327	19.975	24.680	13.989	12.784	15.193	28.66	20.87	36.44
UNITED KINGDOM	IR (/1,000 py)	95CI		IR (/1,000 py)	95CI		IR (/1,000 py)	95CI	
Hip	27.514	25.664	29.363	13.263	12.582	13.945	28.88	26.78	30.98
Clinical spine	6.436	5.547	7.326	3.750	3.388	4.112	8.01	6.92	9.11
Non-hip non-spine	59.485	56.740	62.231	26.556	25.588	27.524	55.30	52.37	58.22
Hip/shoulder/wrist	45.826	43.427	48.226	21.790	20.914	22.665	43.89	41.29	46.49