## Hospital Resource Utilisation and Costs of Imminent Subsequent Fractures in Postmenopausal Women: A Distributed Network Analysis using data from the UK and Spain mapped to OMOP Common Data Model

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## Objective

To describe hospital resource utilisation and costs of index and imminent subsequent fragility fractures in postmenopausal women using electronic health records from administrative datasets in the UK and Spain mapped to the OMOP common data model.

## Methods

**Participants**: postmenopausal women (>50 years old) divided into three cohorts:

Target cohort **Comparator cohort 1 (C1) Comparator cohort 2 (C2) Setting**: primary care medical PS PS Patients who had an imminent Patients with an index **fracture** and record data linked with hospital Patients with **no** history of matching matching subsequent fracture within 2 no history of other fracture in the records mapped to the OMOPfracture ever years of their initial fracture prior 2 years common data model Comparison 2 **Comparison 1 CPRD\_Aurum-HES** Study period: 01 April 2010 to 31 March 2018, divided into 6-month periods to account for seasonality of fracture occurrence **OMOP Outcomes SIDIAP-CMBD Healthcare Resource Utilisation (HCRU):** Cost: Inpatient: diagnoses, procedures, length of Fracture-related hospitalisations(UK & Spain) stay (LoS) All-cause hospitalisations (Spain) Outpatient appointments by specialty (UK) Country-specific, bespoke simplified local Emergency care visits (UK) HRG/DRG algorithms and national cost tariffs



Cohort	UK				Spain			
	Users of secondary care (% of cohort)	Mean number of hospitalisations per entry/year	Mean LoS in days	Mean cost of fracture-related hospitalisation per entry/year	Users of secondary care (% of cohort)	Mean number of hospitalisations per entry/year (SD)	Mean LoS in days	Mean cost of fracture-related hospitalisation per entry/year
Target	54.6%	1.5	6.4	£6,499	32.2%	0.31	8.5	€1,085
Matched-C1	66.9%	1.5	7.1	£6,683	36.1%	0.33	8.6	€1,171
C1	63.5%	1.3	7.1	£5,717	36.1%	0.32	8.6	€1,136
Matched-C2	41.0%	0.7	4.2	£0	18.1%	0.15	7.7	€523

Table 1: Inpatient HCRU and costs, all entries.

- In UK and Spain, a greater proportion of women with a single fracture (C1) used hospital services compared to those with no fracture (matched-C2) (ratios 1.55 and 1.99, respectively). For women with an imminent subsequent fracture (Target), the % was slightly lower than for matched-C1 (Table 1).
- Women in C1 had a higher mean number of hospitalisations per year than those in matched-C2 (ratios UK=1.86 and Spain=2.13) with levels for women in Target similar to those in matched-C1. LoS was also higher for C1 vs matched-C2 (ratios UK=1.69 and Spain=1.12) (Table 1).
- Cost of fracture-related hospitalisation per entry per year jumped significantly from having no fracture (matched-C2) to having one (C1), whilst for imminent subsequent fractures (Target) it dropped slightly compared to matched-C1 (Table 1).



In the UK, women with fractures (C1) reported **much higher yearly costs** in emergency care (150%) and outpatient care (72%) than women without a fracture history (C2) (Figure 1).

Figure 1: Emergency Care and Outpatient HCRU and cost, all entries - UK.

Women with an imminent subsequent fracture reported slightly lower costs: emergency care = -13% and outpatient care = -18%. (Figure 1).

## Conclusions

Osteoporotic fractures place a significant burden on health care systems, with the first fracture having a significant impact on levels of **resource use and costs**, and imminent subsequent ones reporting a generally sustained effect compared to the first fracture.

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