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Aim: To describe clinical fractures (Fx), health-related quality of life (HRQoL) and back pain of postmenopausal women with osteoporosis and glucocorticoids (GC) use, who were treated with teriparatide (TPTD) in EFOS.

Methods: Observational study in 8 European countries. Treatment with TPTD was for up to 18 months. Clinical vertebral and non-vertebral fragility fractures were collected at follow-up visits. HRQoL was measured using EQ-5D, and back pain using a 100 mm Visual Analogue Scale (VAS) and a questionnaire.

Results: 1648 patients were enrolled for a total of 1924.7 women-years follow-up. Mean (SD) age was 71.5 (8.4) years. 274 women (16.6%) took GC during the study, of these 50% had rheumatoid arthritis and 25.5% chronic bronchopneumopathies. 78.6% of GC users had a history of past bisphosphonate use. At least one new incident fracture was reported by 25 women (9.2%) in the GC group, and by 111 patients (8.8%) in the non-GC group. In non-GC users, Fx risk in the last 6-month period was significantly lower than in the first 6-month period of treatment (odds ratio: 0.57, $p = 0.017$). Although the risk of Fx was reduced in GC users (Fx rates in the 1st, 2nd and 3rd 6-month periods were 1328, 1014 and 697 Fx/10,000 women-yrs, respectively), the change was not significant. In GC users, observed median EQ-5D Health State Values (HSV) were lower than in the non-GC group ($p < 0.001$), but showed statistically significant increases at all visits compared to baseline ($p < 0.001$) (Table 1). A statistically significant reduction in the frequency and severity of back pain was observed over time ($p < 0.001$) (Table 1).

Conclusion: Patients with severe postmenopausal osteoporosis receiving GC in EFOS showed a significant reduction in back pain and improvements in HRQoL. Differences in fracture rates between the GC and non-GC treated patients were not demonstrated. These results should be interpreted in the context of the uncontrolled observational study.

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Table 1

	GC treated patients (n = 274)			
	EQ-5DHSV (median)	Back pain (% patients)	Severe back pain (%)	Back pain VAS (mm) (mean)
Baseline	0.52	67.8	45.3	58.3
3 months	0.62	41.5	18.2	41.9
6 months	0.69	34.4	15.6	37.7
12 months	0.69	37.4	16.1	34.9
18 months	0.69	30.8	11.3	32.3

^a Every day or almost every day.

Conflict of interest: FM, CB and AB are employees of Lilly.

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P510

Case finding strategy with FRAX – Polish experiences with intervention thresholds

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Background: Identification of individuals at the highest risk of fragility fracture is crucial for management of osteoporosis. The assessment of individual fracture probability with FRAX algorithm

can select the patients eligible for treatment according to accepted intervention thresholds. The aim of this study was to assess how FRAX with and without BMD can identify women for therapy regarding intervention thresholds proposed for Poland.

Methods: Among postmenopausal female patients without previous diagnosed osteoporosis clinical risk factors (CRFs) were assessed. Women with at least 1 risk factor were referred to BMD test. The study group comprised 293 women without prior fragility fracture and with T-score under -0.5 . Women were categorized in 4 age subgroups: 50–59 ($n = 44$), 60–69 ($n = 89$), 70–79 ($n = 138$) and over 80 ($n = 22$) year olds. FRAX with and without BMD were calculated, compared and then referred to proposed intervention threshold: 10%, 15%, 20%, 25% respectively to age category.

Results: In each subgroup from 1 to 3 CRFs (age > 65 /parental history of hip fracture/current smoking) were found. The T-scores ranged from -0.5 to -4.0 (mean: -1.94 for 50–59 year olds; -2.04 for 60–69; -2.29 for 70–79; -2.36 for > 80). 10-year probability of a major fracture for the ages of 50–79 years was higher when T-score was included, while in the oldest women DPX test did not significantly change the FRAX value (23.1 vs 22.1; $p > 0.05$). For the proposed intervention thresholds, FRAX computed on the basis of CRFs alone did not identified any women of 50–69 years for treatment while among 70–79 year olds – 10% and among over 80 females – 27% was selected for therapy. BMD testing permitted to reclassify fracture risk and start therapy in: 6.8% of patients between the ages of 50 and 59 years, 3.4% of women in their 60–69 years; 19.6% of 70–79 year-olds and 30% of 80+.

Conclusions: 1. Intervention thresholds proposed in Poland cannot be reached by women aged 50–69 when fracture probability is assessed on the basis of CRFs alone. 2. In 80+ females FRAX based only on CRFs is sufficient to start therapy. 3. BMD test was valuable particularly in 50–59 and 70–79 year olds to identify the substantial proportion of women eligible for treatment.

Conflict of interest: None declared.

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P511

Switching from branded alendronate or risedronate to generic alendronate: Effect on persistence with bisphosphonate therapy in Germany

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Objectives: After the launch of generic alendronate, market share increased significantly over few months. However, since many osteoporotic patients are of higher age, some of them will be less willing to take a different drug. Switching might therefore cause non-compliance, which is in its turn an important factor of fracture risk. We, therefore, estimated the impact on persistence when patients using branded alendronate or risedronate are switched to generic alendronate.

Methods: Data were extracted from the DAPI data warehouse, a resource that contains prescription claims for about 60 million statutory health insurance recipients in Germany. Patients with a

pretreatment period of at least 6 months with branded alendronate or branded risedronate and switching to treatment with generic alendronate between October 1, 2005 and March 31, 2006 were included. Patients who received a prescription other than weekly alendronate or weekly risedronate within 6 months prior and 12 months after index prescription were excluded. Claims data on selected patients were studied for 12 months from the date of their index prescription. Persistence was evaluated based on a gap in coverage of 30 days for weekly bisphosphonates.

Results: A total of 122,016 patients were included (48,491 receiving branded risedronate and 73,525 receiving branded alendronate). 5628 patients switched from branded risedronate and 38,589 patients switched from branded alendronate to generic alendronate. The median number of days until the occurrence of a first gap was larger ($p < 0.001$) for patients who continued with branded risedronate (228 days) than for patients who switched from branded risedronate to generic alendronate (200 days). At 12 months, more patients receiving branded risedronate (33.2%) were persistent compared to patients switching to generic alendronate (28.5%).

Conclusion: Switching patients from branded risedronate to generic alendronate might negatively affect medication persistence.

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P512

The effect of angiotensin II type I receptor blocker (ARB) on bone loss in orchietomized male hypertensive and normotensive rats

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Background and aims: An epidemiological study showed that angiotensin converting enzyme inhibitor use is associated with high bone mineral density in elder Chinese, especially in male subjects. In this study, we set to investigate the effect of angiotensin II type I receptor blocker on bone loss in a male osteoporosis model induced by orchietomy in hypertensive (spontaneously hypertensive rat, SHR) and normotensive rats (Wistar Kyoto rat, WKY).

Methods: 6-month-old male SHR and WKY rats were used. Each of them was divided into following 4 groups: Group 1: SHAM operation with vehicle; Group 2: orchietomy (ORX) with vehicle; Group 3: ORX with low dose losartan (10 mg/kg/day); Group 4: ORX with high dose losartan (25 mg/kg/day). SHAM and ORX operation were performed at 6-month old, losartan and vehicles were given from 4th post operation for sixteen weeks. Blood pressure was followed weekly, 24-hour urine and serum samples were collected for measurement of bone turn-over markers before euthanasia, after euthanasia, left femur was collected for micro-CT bone mineral density measurement and mechanical testing.

Results: Blood pressure dropped after ORX. ORX with high dose losartan decreased blood pressure of SHR to nearly normal range and WKY to a very low level. Serum osteocalcin dropped and urine DPD increased significantly after ORX. No significant differences have been seen between losartan and placebo groups. Cortical and trabecular bone mineral density significantly decreased after ORX both in SHR

and WKY. Cortical bone thickness also dropped significantly after ORX both in SHR and WKY. In SHR, Conn.D and Tb.N decreased significantly after ORX, Tb.Sp increased significantly after ORX, in WKY, BV/TV, Tb.N and Tb.Th dropped significantly after ORX, Tb.Sp increased significantly after ORX. There were also no any protective effects of losartan had been seen both in SHR and WKY. Both maximum load and energy decreased after ORX in SHR and WKY. Again no any protective effect of losartan had been seen.

Conclusion: The angiotensin II type I receptor blocker had no significant effect on ORX-induced bone loss in hypertensive and normotensive rats.

Conflict of interest: None declared.

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P513

Low dose teriparatide [RHPH (1–34)] is more efficacious than strontium ranelate in osteopenic ovariectomized rats

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Teriparatide (TPTD) and strontium ranelate (SR) were evaluated in a dose-dependent manner in a rat model of postmenopausal osteoporosis. Eight month old rats were ovariectomized (Ovx) at age 6 months and permitted to lose bone for 2 months before treatment for 3 months with TPTD (5 or 15 µg/kg/d sc) or SR (150 or 450 mg/kg/d po). There were 8–11 rats per group. Skeletal efficacy was assessed using high resolution micro-CT, biomechanical test, and histomorphometry. Statistically significant ($p < 0.05$) changes vs. Ovx are reported here. Lumbar vertebral BMD (27%, 35%), BMC (32%, 49%), strength (121%, 180%), and stiffness (56%, 68%) were increased for TPTD5 and 15, respectively. SR150 increased vertebral BMC (17%), but not BMD. SR450 increased BMD (13%), BMC (20%), and stiffness (27%), but neither dose of SR had significant effects on vertebral strength. There were dose-dependent effects of TPTD5 and 15 on strength (36%, 57%) at the proximal femur, but not for SR at either dose. At the femoral midshaft, there were dose-dependent effects of TPTD5 and 15 on BMD (10%, 16%) and BMC (11%, 21%). TPTD15 increased strength (22%). SR150 increased midshaft BMC (9%) and SR450 increased BMD (7%) and BMC (11%), but neither dose of SR significantly affected strength. Volumetric high resolution CT analyses at the proximal tibial metaphysis showed dose-dependent effects of TPTD5 and 15 on BV/TV (94%, 230%), Tb.Th (45%, 91%), Tb.N (34%, 74%). Dynamic histomorphometry demonstrated that TPTD stimulated bone mineral acquisition (119%, 145%) and bone formation rates (117%, 146%). There was no effect of SR on histomorphometric parameters. SR BMD and BMC efficacy could be explained by incorporation of SR into bone, but neither dose stimulated an anabolic bone response and did not significantly improve the bone biomechanical properties of OVX rats. These findings in osteopenic ovariectomized rats demonstrated that the skeletal efficacy of the low dose of TPTD exceeded efficacy at either dose of SR, especially in inducing bone formation activity.

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