

# A Retrospective Cohort Study of Persistence & Compliance to Treatment for Osteoporotic Men in Hungary

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## INTRODUCTION

- Osteoporosis is a condition characterized by low bone mass and microarchitectural deterioration of bone tissue and thus an increase in bone fragility and the risk of fractures.
- Several therapies are available for the prevention and treatment of osteoporosis, including bisphosphonates and other interventions such as calcium & Vitamin D (1).
- Low persistence and poor compliance with prescribed medication are important factors in treatment failure.
- Studies have shown that up to 50% of patients drop out of osteoporosis treatment during the first year (2,3) & 30-50% of patients fail to take their medication as recommended (4).

## OBJECTIVES

- Describe the Hungarian male osteoporotic population.
- Estimate the persistence rate in the Hungarian population by male osteoporosis (MOP) treatment administration interval and active substance.
- Estimate the level of compliance with all MOP treatments by administration interval and active substance in the Hungarian population

## RESULTS

- 19,905 patients matched inclusion criteria. The characteristics of these patients at index date (i.e. the start of the analysis period) are described in Table 1.
- 47.7% of these patients were older than 70 years and 12.6% had prior fractures at index date.
- 99.0% of these patients were on oral bisphosphonates (OBPs), 0.9% on intravenous (IV) BPs and 0.1% on other therapies.
- Almost all patients were on a weekly administered drug with most of those patients on alendronate.

Table 1. Patient characteristics at their first index date

	N (%)
<b>Age</b>	
Total	19,905 (100.0)
50-59 yrs old	4,213 (21.2)
60-69 yrs old	6,219 (31.2)
70-79 yrs old	6,164 (31.0)
80-89 yrs old	3,080 (15.5)
≥90 yrs old	229 (1.2)
<b>Previous fractures</b>	
No fractures	17,806 (89.5)
≥1 fracture	2,498 (12.6)
1 fracture	1,847 (9.3)
2 fractures	441 (2.2)
≥3 fractures	210 (1.1)
<b>Administration interval</b>	
Daily	12 (0.1)
Weekly	19,716 (99.0)
Yearly	177 (0.9)
<b>Treatment</b>	
Alendronate (Weekly)	17,156 (86.2)
Risedronate (Weekly)	2,560 (12.8)
Zoledronate (Yearly)	177 (0.9)
Parathormone (Daily)	12 (0.1)

- Study size is the number of index dates in the analysis and population size is the number of patients included in the analysis (with ≥1 index date).
- In the persistence analysis, the study size was 24,143 and the population size was 19,905.
- In the compliance analysis, the study and population sizes were 20,386 and 19,863, respectively.

## REFERENCES

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2. Cramer JA, et al. *Curr Med Res Opin* 2005;21:1453-60.
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4. Kolhawal P, et al. *Mayo Clin Proc* 2007;82:1493-501.

## METHODS

### Study Population

- This retrospective analysis used patients' attendance data from the National Health Insurance Fund Administration (NHIFA), which contains detailed provision data (medicine, out- and inpatient services) from the entire Hungarian population.
- Subjects were males, ≥50 years old with a diagnosis of osteoporosis (ICD-10 codes, M80 or 81), who started an osteoporosis drug prescription (see Table 1 for the therapies included in the study) between Jan 2004 and Jan 2011.

### Outcome measures

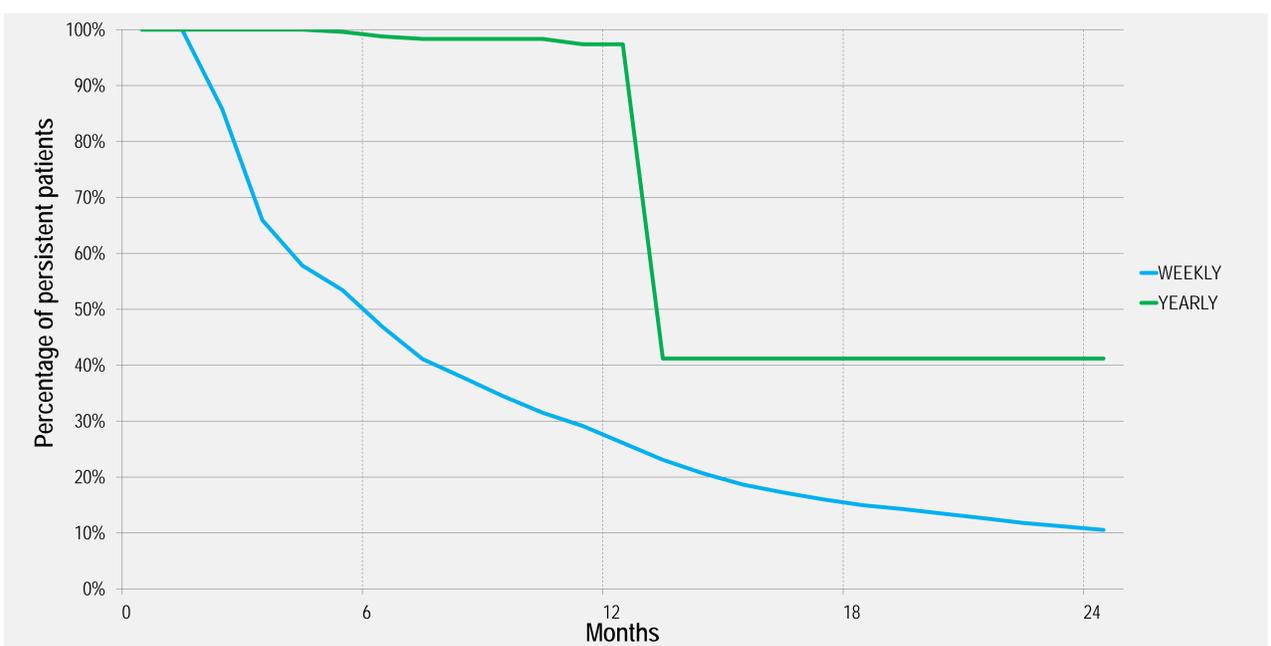
**Persistence** measures the accumulation of time from treatment initiation to discontinuation of therapy.

- Persistence was quantified with the Estimated Level of Persistence with Therapy (ELPT) method which determines the percentage of individuals remaining on therapy, i.e. refilling each subsequent prescription within the grace period (independent of the treatment regimen) at a given time.
- Treatment persistence was estimated per active substance and treatment regimen for 12 and 24 months with a 4-week grace period. Sensitivity analysis with grace periods of 8 and 12 weeks was performed.
- In this study, a patient was defined as persistent when:
  1. Refill prescription of the same drug regimen was available within a permissible grace period from the end of the previous supply.
  2. The regimen interval (daily, weekly, monthly, etc) did not change for the follow-up prescription.

**Compliance** is the extent to which a patient acts in accordance with the prescribed interval and dosing regimen.

- Compliance was quantified with Medical Possession Ratio (MPR) for a fixed time period (365 days) and was calculated as the number of days covered by the prescriptions during the year divided by 365.
- A patient was considered compliant with treatment at 1 year if MPR ≥80%.

Figure 1. Persistence with a 4-week grace period per administration interval



Note: Information about groups with <10 patients is not available due to patients' rights, so no persistence data are available for daily administered drugs

- The lowest persistence after 12 months was observed with weekly (26%) compared to yearly drugs (97%) with a 4-week grace period.
- The persistence declined further at 24 months to 11% and 41% for weekly and yearly drugs, respectively.
- Persistence analysis with 4-, 8- and 12-week grace periods showed that patients were more persistent after 1 year for injectable than oral drugs (Table 2).
- After 2 years, more patients were persistent with injectable vs oral drugs, however persistence rates declined to 11% and 35% for oral drugs and to 16% and 56% for injectable drugs with a 4-week and 12-week grace period, respectively.

Table 2. Persistence after 1 year for different grace periods

	4 weeks	8 weeks	12 weeks
Oral	26%	42%	61%
Injectable	97%	97%	97%

- Only 28% of the Hungarian osteoporotic males were compliant with treatment (i.e. MPR ≥80%) after 1 year (Table 3).
- However, compliance was higher with less frequent drugs, with an average MPR of 100% for yearly drugs.
- Compliance was higher with injectable drugs (100%) than oral drugs (27%).

Table 3. Compliance by administration interval at 1 year

	No. patients	Compliant patients (%)	Average MPR
<b>Total population</b>	20,386	5,666 (28%)	49%
<b>Administration type</b>			
Weekly	20,308	5,593 (27%)	49%
Daily	<10	n.a.*	n.a.*
Yearly	72	72 (100%)	100%

\* Information about groups with <10 patients is not available due to patients' rights, so no persistence data are available for daily administered drugs

## DISCLOSURE

- This study was sponsored by Amgen (Europe) GmbH and GlaxoSmithKline.
- M. Intorcía and E. Psachoulia are employees and shareholders of Amgen; P. Lakatos has received consulting, research and speaker fees and grants from many companies with drugs for bone diseases, including Amgen; E. Kovács, Z. Lang and E. Tóth are employees of Healthware Ltd and conducted this research under contract to Amgen.

## CONCLUSIONS

- Persistence and compliance with oral osteoporosis treatments are very low in male patients in Hungary.
- However, injectable yearly drugs have higher persistence & better compliance at 1 year than weekly oral drugs.
- Main limitations of this study are: i) patients were considered to be non-persistent if switching treatment & ii) it was not possible to adjust for some important confounding factors, e.g. BMD T-scores, as this information was not available.