# « The clinical and economic burden of nonadherence with oral bisphosphonates in osteoporotic patients »

SAT0381

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## INTRODUCTION

Poor compliance and failure to persist with osteoporosis medications are common, but the clinical and economic consequences have not been well described.

This study aims to estimate the clinical and economic burden of nonadherence with oral bisphosphonates in osteoporotic patients.

## METHODS

A validated microsimulation model [1] estimated costs and outcomes (the number of fractures and the quality-adjusted life-year (QALY) gained) for three adherence scenarios: no treatment, real-world adherence and full adherence over 3 years. The real-world adherence scenario employed adherence data from a published Belgian study [2]. Adherence was divided into persistence and compliance. Real-world persistence assumed that 42% of patients go off within the first six months of therapy and that 18.1% and 13.9% stop therapy after 1 and 2 years respectively [2]. Patients with low compliance (medical possession ratio (MPR) less than 80%) were associated with a 35% increase in hip fracture rate [2] and with a 17% increase in other fracture rates [3]. The relative risks from clinical trials were applicable to the population with high compliance (MPR of 80% or greater). The target population, including 29,167 women, was assumed to be uniformly distributed between 55 and 85 years of age and to have a bone mineral density T-score below –2.5 SD or a prevalent vertebral fracture. The incremental cost per QALY gained was estimated comparing the three adherence scenarios. We also examined the clinical and economic implications of adherence-enhancing interventions assuming that adherence failure would be reduced by 10%, 20% or 30%.

## RESULTS

The estimated number of fractures prevented and the lifetime QALY gained in the real-world adherence scenario represents only 42.0% and 41.9% to that obtained under full adherence scenario, respectively (Figure 1). Lifetime costs under full adherence scenario were lower than in the real-world scenario because of money saved by preventing fractures (Table 1). The cost per QALY gained of real-world adherence versus no treatment was estimated at €11,175, and full adherence scenario was found to be cost-saving compared to real-world adherence. Interventions that decrease adherence failure by 10%, 20% and 30% were associated with an increase in the number of fractures prevented of 15%, 28% and 42%, respectively.

**Table 1: Lifetime costs, QALYs and ICER between alternative scenarios**

| Scenarios | Costs | QALYs | ICER |
|---|---|---|---|
| No treatment | 10,208 | 10.5888 | --- |
| Real-World Adherence | 10,363 | 10.6027 | 11,175 |
| Full Adherence | 10,287 | 10.6220 | Cost-saving |

**Figure 1: Prediction of the number of fracture over a 6-year period within the target population (29,167 women)**

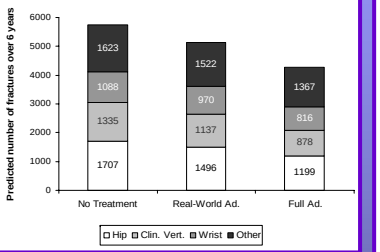
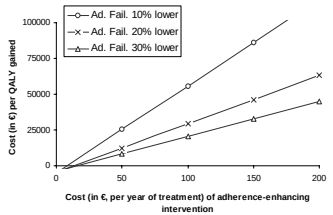



**Figure 2: The cost-effectiveness of adherence-enhancing interventions**




## CONCLUSIONS

- More than half of the potential benefits from oral bisphosphonates in patients with osteoporosis are lost due to poor compliance and failure to persist.
- Depending on its cost, interventions that improve adherence to therapy have the potential to be an attractive use of resources.
- So, therapies that optimize adherence should remain cost-effective compared to oral bisphosphonates even if they cost up to €150 more, per year, and may therefore represent a promising approach to reduce clinical and economic consequences of osteoporosis.

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## REFERENCES

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[3] Siris et al. Mayo Clin Proc 2006;81:1013-22.

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