ESTIMATED CLINICAL & ECONOMIC IMPACT OF POOR PATIENT PERSISTENCE WITH OSTEOPOROSIS MEDICATIONS IN BRAZIL

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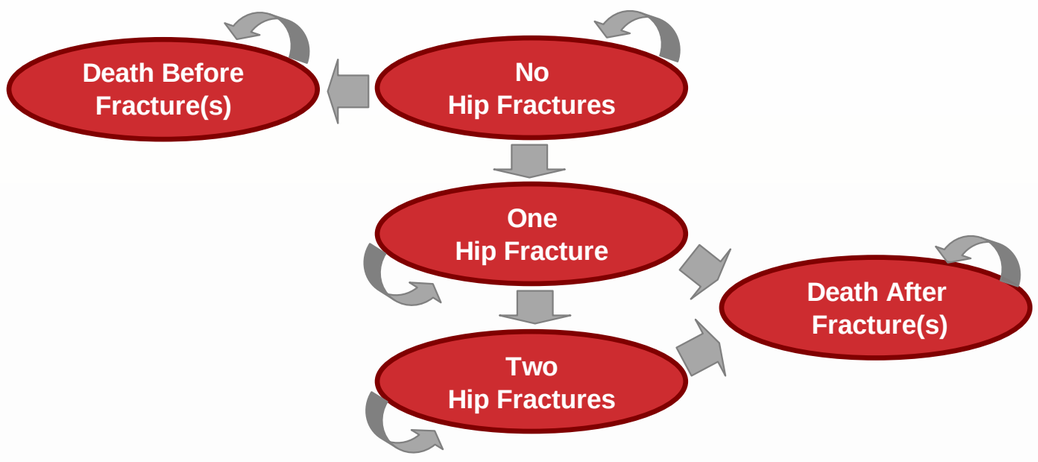
BACKGROUND

- Osteoporosis-related fractures impose a significant clinical and economic burden on society
- As with many chronic diseases, persistence with osteoporosis medications is a significant clinical issue
- A sizeable proportion of patients with osteoporosis discontinue therapy after just one year[a]
- This study generates estimates of the lifetime clinical and economic impact of poor persistence with bisphosphonate therapy among patients with osteoporosis in Brazil

METHODS

- Adaptation of Markov model of osteoporosis to quantify the impact of poor persistence with bisphosphonate treatment on risks, costs, & consequences of hip fracture
- Patients entering the model assumed to be 65-year-old postmenopausal women, recently diagnosed with osteoporosis, newly initiated on alendronate
- Model calculates risk of hip fracture as well as fracture-attributable life-years lost & health-care costs (acute and follow-up)

Figure 1. Overview of Markov States and Transitions



- Model estimated first assuming “perfect compliance” by all patients over remaining years of life (up to 35 years)
- Model then estimated assuming “premature discontinuation” from therapy by all patients after one year
- Clinical & economic benefits of increased persistence estimated as difference in results between “perfect compliance” & “premature discontinuation” scenarios
- Analyses performed for all patients and for subgroup with more severe disease (t-score < -2.5); all costs expressed in 2008 Brazilian Reais (R$) and discounted at 5% per annum

Table 1. Parameter Estimates

Description	Estimate
Epidemiology	
Incidence of Hip Fracture[b]	
60-69 Years	6.9%
>70 Years	14.3%
Relative Risk of Hip Fracture Recurrence[c]	2.3
Relative Risk of Mortality after Hip Fracture[d]	
Year of Fracture	10.4
1 Year after Fracture	9.1
2 Years after Fracture	8.0
3 Years after Fracture	7.0
4 Years after Fracture	6.2
5 Years after Fracture	5.4
Efficacy of Alendronate[e]	
Relative Risk of Hip Fracture	
All Patients	45.0%
Severe Osteoporosis (t-score<-2.5)	55.0%
Fracture-related Costs	
Acute Care[b,f]	R$ 31,434
Follow-up Care (per year)[g]	R$ 570
Population Estimates	
Cohort of 65-Year-Old Women in Brazil[h]	294,000
Prevalence of Severe Osteoporosis[i]	16.9%

RESULTS

Base-Case Analysis

Over a lifetime, Brazilian patients who discontinue bisphosphonate therapy for osteoporosis after one year are estimated to experience: additional 27 fractures per 100 patients; loss of 0.97 fracture-attributable life years; and additional R$ 4,500 in fracture-related care, compared with patients with perfect compliance

Figure 2. Clinical Benefit of Continuous Treatment (Lifetime fractures)

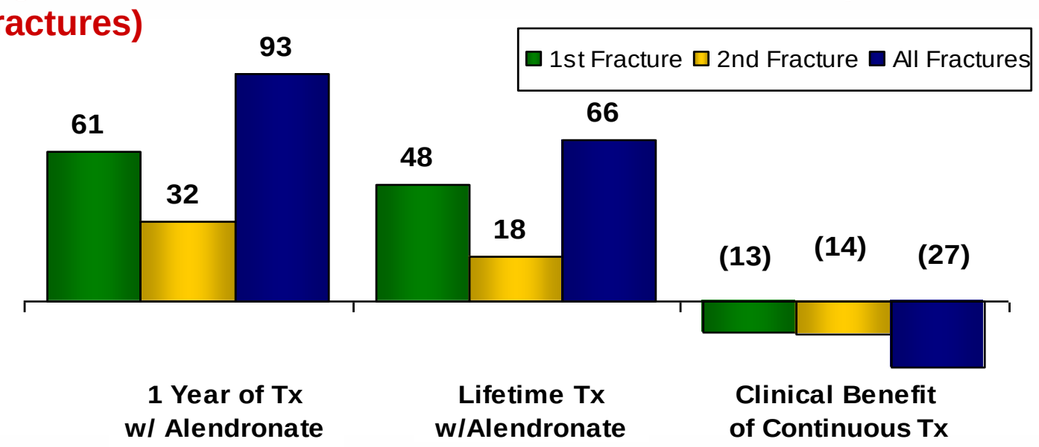
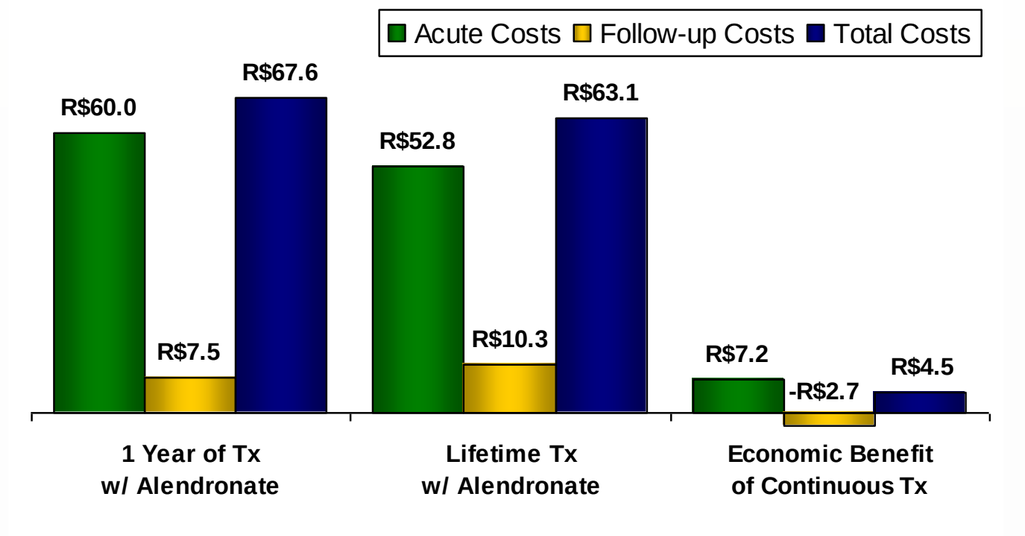


Figure 3. Clinical Benefit of Continuous Treatment (Life years)

Figure 4. Economic Benefit of Continuous Treatment



Alternate Analysis: Patients with Severe Osteoporosis

Greater clinical and economic benefits of improved persistence in patients with severe osteoporosis (t-score<-2.5)

Table 2. Lifetime Fractures, Life Years & Fracture-Related Health-Care Costs in Patients with Severe Osteoporosis (t-score<-2.5)

	1 Year of Tx w/ Alendronate	Lifetime Tx w/ Alendronate	Benefit of Continuous Tx
Lifetime Fractures per 100 Patients	92.7	57.2	(35.5)
Life Years	6.3	7.6	1.3
Fracture-Related Costs	R$ 67,647	R$ 60,710	(R$ 6,937)

CONCLUSIONS

- The lifetime clinical and economic consequences of poor persistence among osteoporosis patients in Brazil may be considerable
- Programs to improve persistence with osteoporosis medications have the potential to reduce the risks of fracture and the costs of fracture-related care; for example, we project up to 17,600 fewer fractures for the cohort of 65-year-old Brazilian women estimated to have severe osteoporosis
- Future research on the cost-effectiveness of persistence programs should balance these fracture-related risk & cost reductions against higher osteoporosis medication costs

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