



Instituto
de Salud
Carlos III

Spanish Science &
Innovation Ministry

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t | **S** de Tecnologías Sanitarias
Health Technology Assessment Agency

Economic Evaluation of Pharmacological Treatments for the Prevention of Osteoporotic Fractures in Spanish Women

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- **Not high** osteoporotic hip fractures incidence:

6.9 / 1,000 inhab / year ¹

- However, **high** osteoporosis drugs consumption

– The first among 14 developed countries in 2010 ²

- 1) Herrera A, Martinez AA, Ferrandez L, et al (2006) Epidemiology of osteoporotic hip fractures in Spain. Int Orthop; 30: 11-4.
- 2) Richards M. Extent and causes of international variations in drug usage. London. Report for the Secretary of State for Health, July 2010.

Extent and causes of international variations in drug usage

Table A26: Summary of country ranking

Rank	Country
1	Spain
2	France
3	USA
4	Switzerland
5	Italy
6	UK
7	Denmark
8	Germany
9	Australia
10	Canada
11	Norway
12	Austria
13	Sweden
14	New Zealand

A report for the Secretary of State for Health by Professor Sir Mike Richards CBE
July 2010

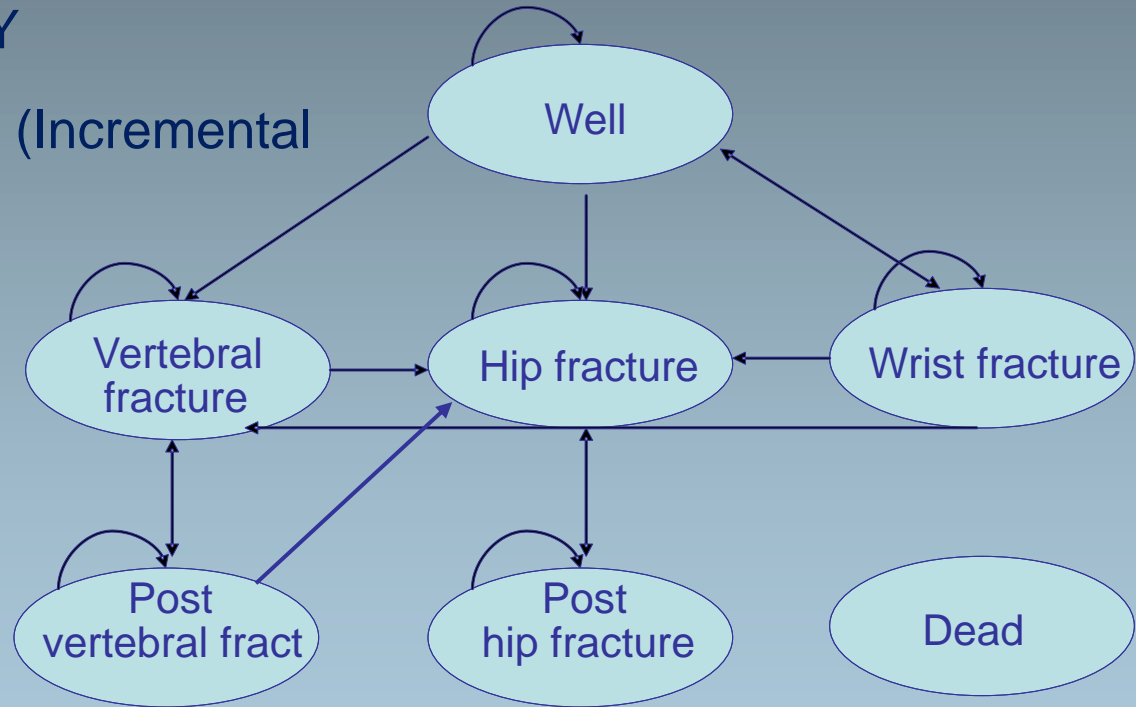
- **Spanish Clinical Practice Guideline on osteoporosis ¹:**
 - **Indication: Postmenopausal women with low BMD and risk factors**
 - **First line of treatment:**
Alendronate, Risedronate, Ibandronate, strontium ranelate or raloxifene

1) Grupo de trabajo de la Guía de Práctica Clínica sobre Osteoporosis. Guía de Práctica Clínica sobre Osteoporosis y Prevención de Fracturas por Fragilidad. Guías de Práctica Clínica en el SNS, nº AATRM Nº 2007/02. Plan de Calidad para el Sistema Nacional de Salud del Mº de Sanidad; Agència d´Avaluació de Tecnologia i Recerca Mèdiques de Catalunya (AATRM).

- **Objective:** **Cost-utility** assessment of the first line anti-osteoporotic drugs in the Spanish context
- **Population:** Osteoporotic post-menopausal Spanish women
- **Interventions:**
 - Alendronate (10mg/d)
 - Risedronate (5 mg/d)
 - Ibandronate (150 mg/m)
 - Raloxifene (60 mg/d)
 - Strontium ranelate (2g/d)
- **Comparator:** Calcium + Vit D or placebo

Methods (2/3)

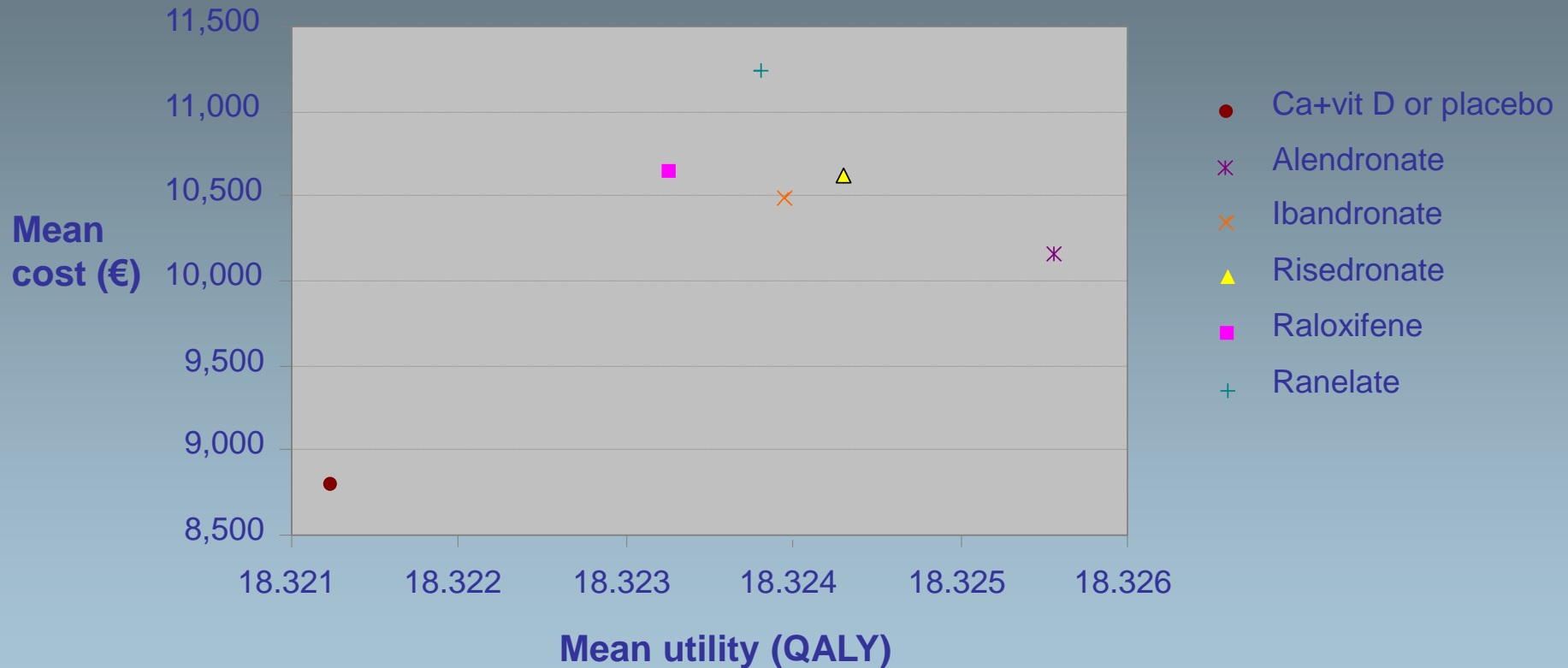
- **Markov model:** Time horizon 50 to 100 years old
- **Societal perspective**
- **Outcome:** QALY
- **Indicator:** ICUR (Incremental Cost-Utility Ratio)



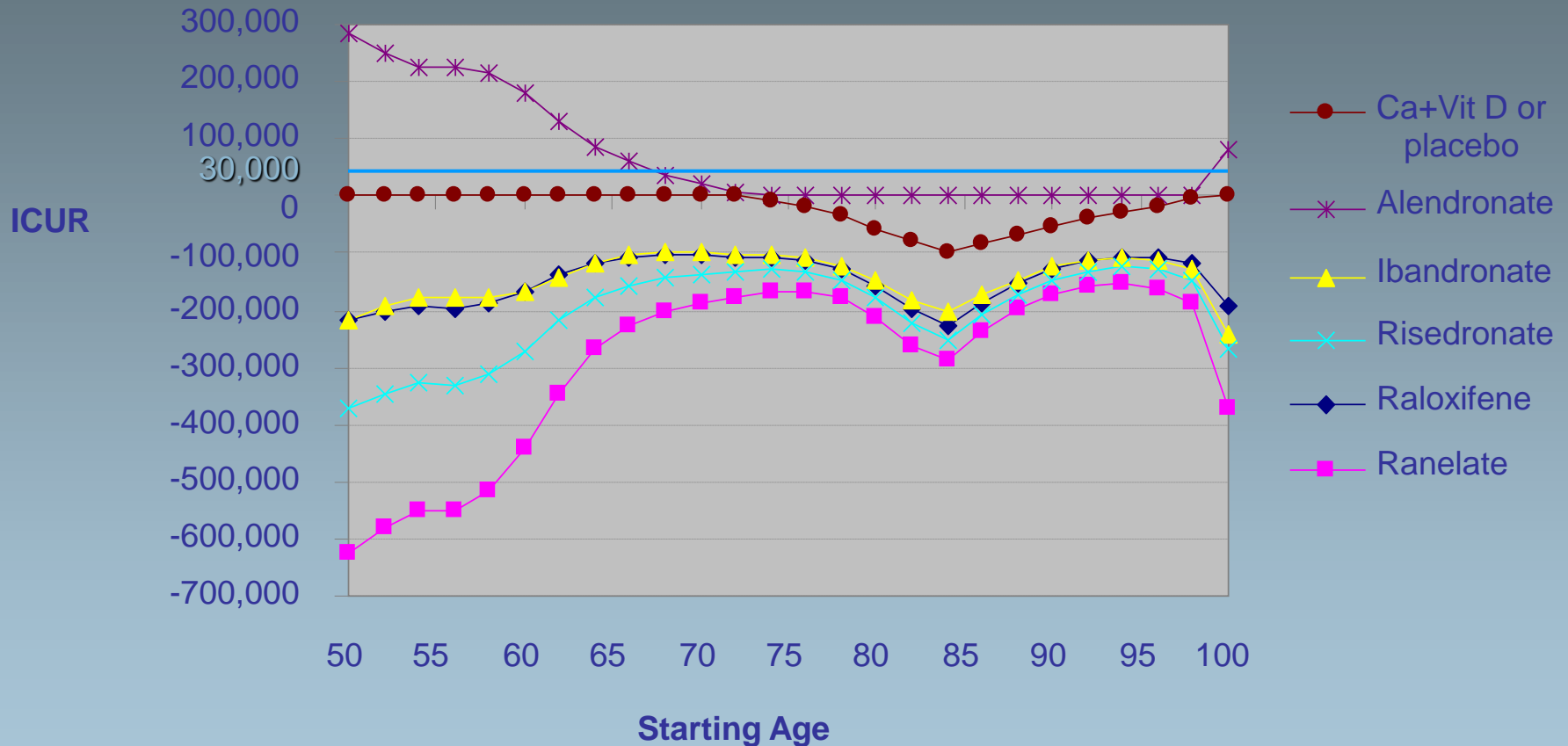
- **Efficacy data:**
 - Randomized double-blind controlled trials
 - Outcomes after 3 years follow-up
 - Mean treatment duration: 5 years
- **Effectiveness data:**
 - **Low adherence** reduces osteoporotic drugs preventive effects (Meta-analysis based on 234,737 patients) ¹
- **Sensitivity analysis:**
 - Treatment starting age (50 to 100 years old)
 - Treatment adherence (full vs. partial)

1) Imaz I, Zegarra P, González-Enríquez J, Rubio B, Alcazar R, Amate JM. Poor bisphosphonate adherence for treatment of osteoporosis increases fracture risk: systematic review and meta-analysis. *Osteoporos Int*, 2010; 21 (11): 1943-51.

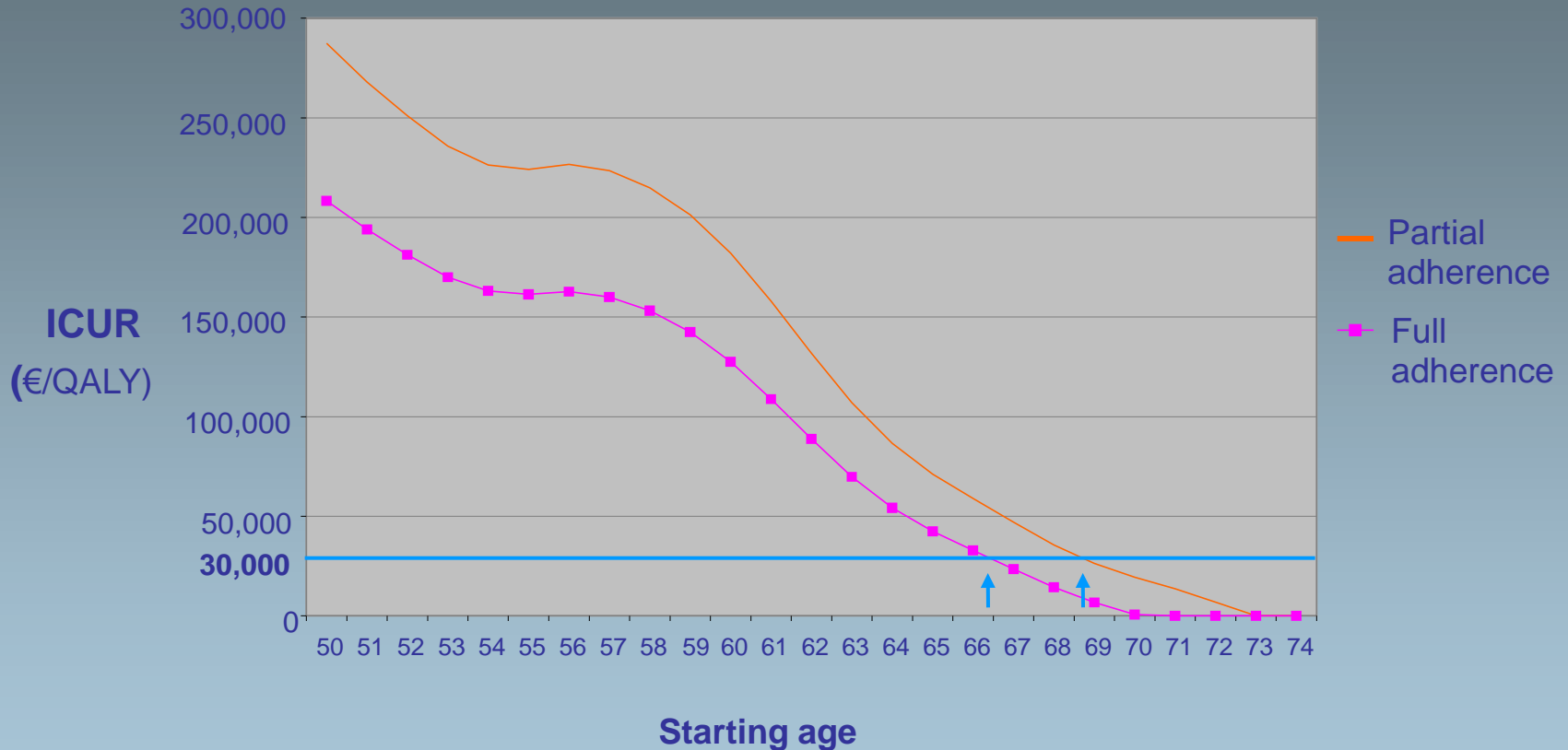
Cost-utility for Spanish women starting treatment at 50 years age & partial adherence



Sensitivity analysis according to starting age for partial adherence scenario



Sensitivity analysis for alendronate vs control according to starting age and adherence levels



Budget impact in Spain

	2010 expenses (M €)	2010 expenses adopting alendronate's price (M €)	2010 Expenses delaying treatment (M €)
The five assessed drugs	425.76	323.30	219.07

Source: Drugs Consumption Data. Pharmacy General Directorate.
Spanish Health Ministry and Consumer Affairs, 2010.

51.5%

- **Limitations:**
 - Efficacy data came from indirect comparisons (drug vs placebo)
 - Heterogeneity across the studies:
 - Age
 - BMD
 - Previous fractures

- Variations in **starting age** and treatment **adherence** modify the cost-utility relationship of the evaluated drugs.
- In comparison with Ca + vit D or placebo, treating with any of these drugs **would not be efficient** for women starting treatment in ages into the fifties or sixties.
- Assuming partial adherence, **alendronate would be** the only efficient option for women starting treatment at an age of 69 or over.

- Recommendations:
 - Treatment starting age at late sixties or over
 - Alendronate as the first option
- Adopt these two recommendations would reduce the Spanish pharmaceutical expenses **by half**

PUBLICATION: Imaz I, Rubio B, López-Delgado ME, Amate JM, Gómez P, González J. Análisis coste-utilidad de los tratamientos farmacológicos para la prevención de fracturas en mujeres con osteoporosis en España. Madrid: AETS-ISCI III, Dec 2010.