NOT ALL PATIENTS ARE AVERAGE: THE IMPORTANCE OF RECOGNISING PATIENT HETEROGENEITY

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OBJECTIVES: Cost-effectiveness analyses are routinely based on data from group averages, restricting its generalisability to those with below- or above-average risk. A pharmaeco-economic model was developed that used individualised risks, taking as example bisphosphonates and prevention of fractures. METHODS: Data were obtained from a research database of general practitioners, comprising a sample of the UK general population of women >50 years (N=330,000). Individual mortality and hip, vertebral, and other osteoporotic fracture risks were estimated by age, sex, body mass index, smoking and other clinical risk factors. Estimates on costs, EQ5D utilities and treatment efficacy were obtained from a UK national report (NICE) and outcomes were simulated over a ten-year period. RESULTS: There was a large variability in the cost-effectiveness with clinical risk factors. At age 60–69, the cost per QALY gained was ≤36k in women with low fracture risk but ≥36k with high fracture risk (data for women without fracture history). Patients with low body mass index (<20) had considerable better cost-effectiveness than patients with high BMI (≥26) (≤23k versus ≥71k at age 60–79 in women without fracture history). The same was found for different diseases such as rheumatoid arthritis or inflammatory bowel disease. Using a cost-acceptability ratio of ≤30k per QALY gained, bisphosphonates became cost-effective for patients with a 5-year risk of 9.3% (95% CI 8.0–10.5%) for osteoporotic fractures and of 2.1% (95% CI 1.5–2.7%) for hip fractures. Including bone mineral density in the risk assessment, the cost per QALY gained was ≤35k in women at age 60 with a fracture history and a 1-score of ≥2.5 (at age 80, this was ≤3k). CONCLUSIONS: A pharmaeco-economic model based on individual long-term risks (as derived from a health care database) can improve the targeting in a cost-effective manner of therapy to patients.