POPULATION SCREENING TO RISK STRATIFY AND TARGET PRIMARY PREVENTION MEASURES FOR OSTEOPOROSIS IN PRIMARY CARE IN UK- A FEASABILITY STUDY

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INTRODUCTION

Computerised GP patient records are a source of comprehensive health data. Not many studies have looked into effective use of electronic patient records for population screening of patients at risk of fragility fractures and osteoporosis. This feasibility study establishes that screening patient populations at the highest risk is entirely feasible using information from electronic patient records. Moreover, it is an efficient way of targeting patients for primary prevention of osteoporosis resulting in effective utilization of healthcare resources

AIMS AND OBJECTIVES

- Screening patient populations at risk of osteoporosis and fragility fractures using electronic patient records.
- Risk-stratify these patients and categorise them into cohorts based on their risk profile.
- Target the most 'at risk' group with primary prevention measures.

METHODS AND MATERIALS

47988 primary care electronic patient records were analysed using standard computerised algorithms compatible with the EMIS© electronic patient records **(Figure1)**. Search was carried out for patient cohorts at risk of osteoporosis including those who had fragility fractures. Fracture risk assessment was done using the FRAX© fracture probability tool without Bone Mineral Density values **(Figure 2)**. Patients with a high risk of osteoporosis and fragility fractures who met the NOGG criteria for treatment without the need for bone mineral density measurement (2) were identified **(Figure 3)**.

FIGURE 1- IDENTIFICATION OF PATIENT COHORTS

FIGURE 2

FIGURE 3
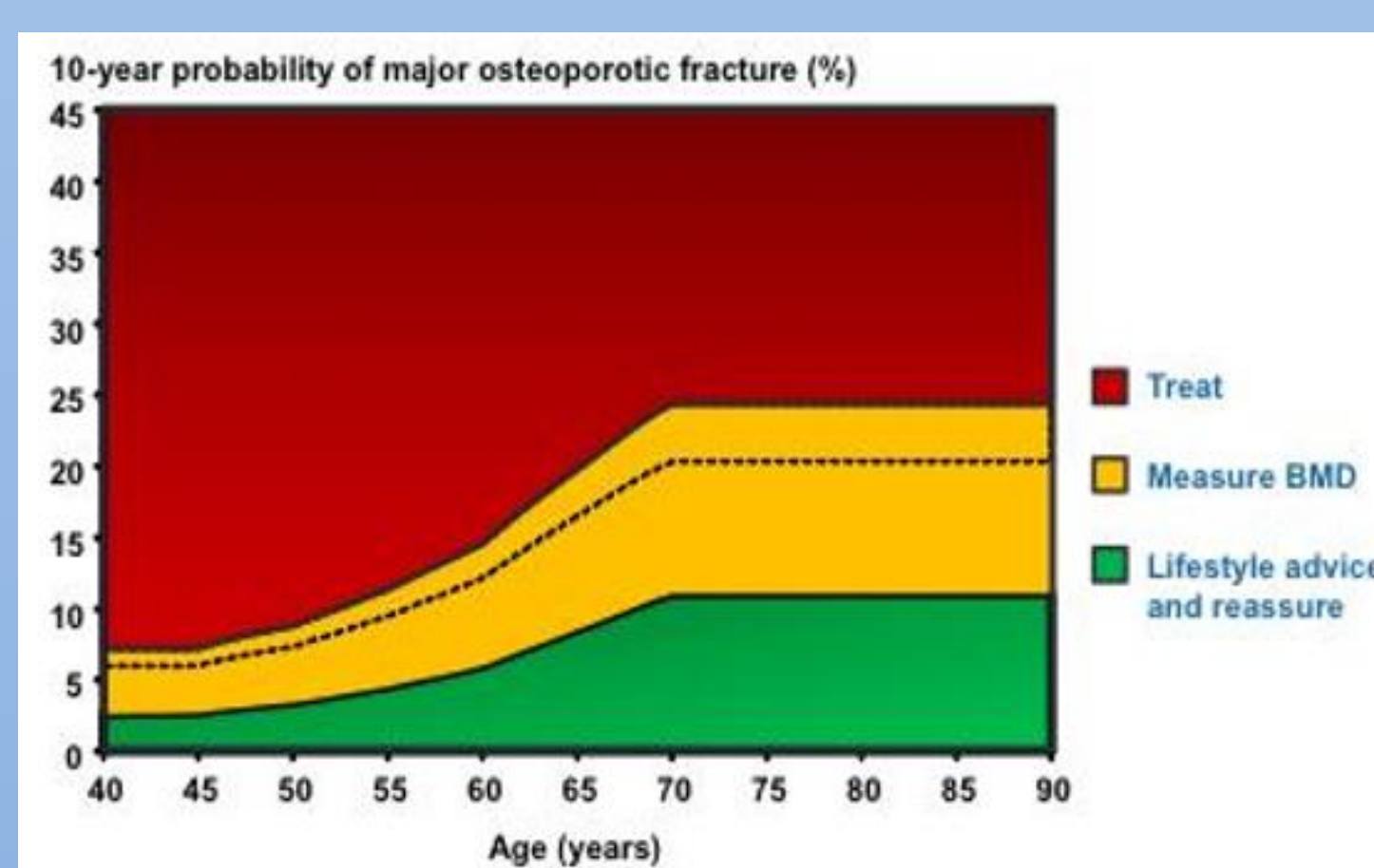
RESULTS

15201 (31.68%) patients met the criteria for the risk group of osteoporosis as detailed in the NICE guidance CG 146 (4) and NICE Quality Statement QS 149 (5). Based on the fracture risk assessment, which was done remotely without the need for individual patient contact, 977 (6.4%) patients met the 'treat' criteria. 6363 (41.9%) patients fell into the 'assess' and 7727 (47.9%) were in the 'reassure' categories of NOGG guidance respectively. 3.8% of patients had incomplete records **(Figure 4)**. 545 (3.58%) patients of the 'treat' group, at an average of 133 per practice (113/10000 population), were identified as the high-risk cohorts for targeting primary prevention. The remaining (432) were already undergoing interventions for osteoporosis **(Figure 5)**. Using scientific modelling (3) this approach estimates prevention of 31 hip fractures over four years **(Figure 6)**.
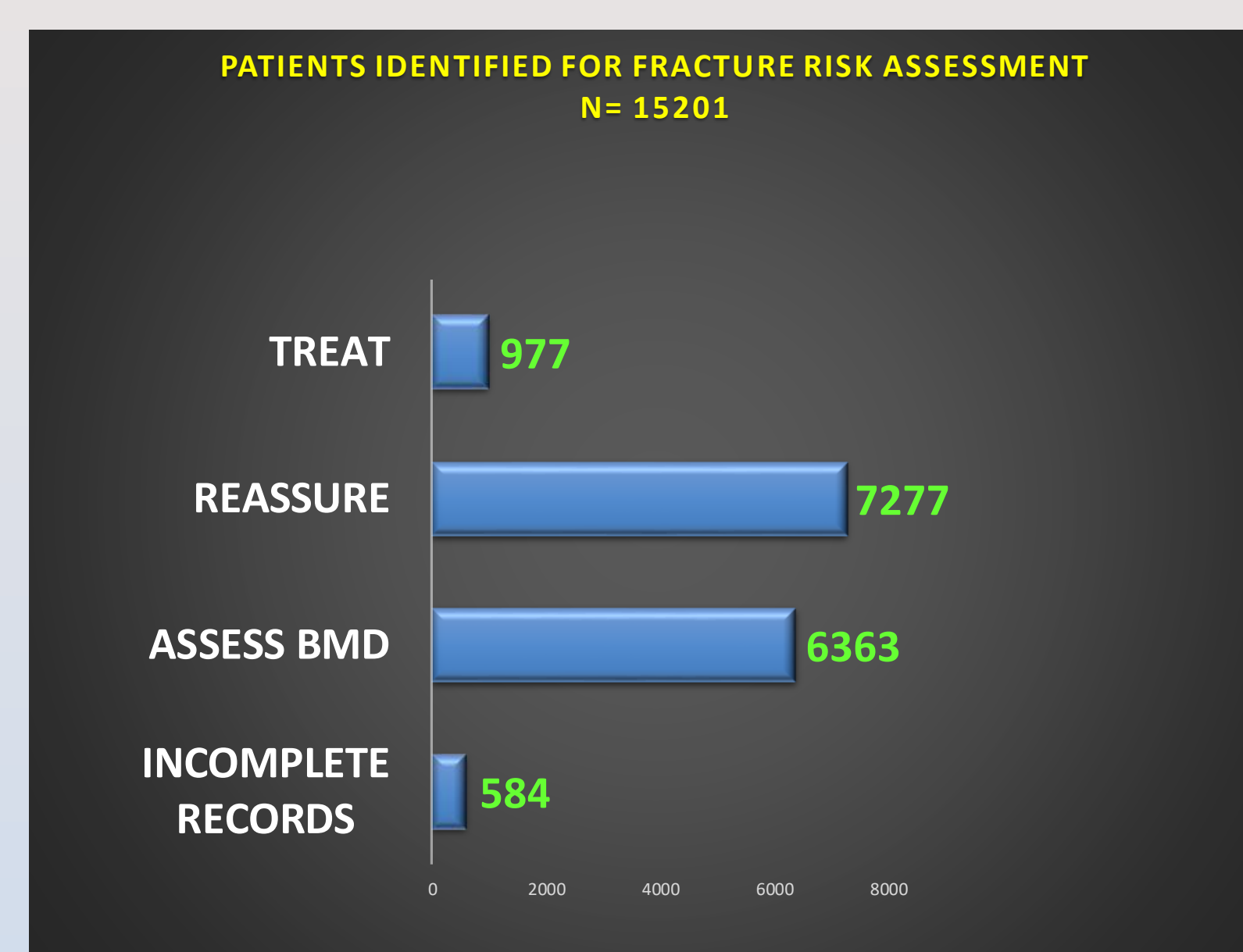
FIGURE 4- RESULTS

PATIENTS IDENTIFIED FOR FRACTURE RISK ASSESSMENT N= 15201

FIGURE 5- PATIENTS IN THE NOGG 'TREAT' CATEGORY N= 977

FIGURE 6
ESTIMATED REDUCTION IN HIP FRACTURES

Using the FRAX 10 year probability of hip fracture- 77 hip fractures in this cohort of patients over a 10 year period → Relative reduction in hip fracture incidence following 4 years bone sparing therapy (6) → 31 Hip fractures avoided
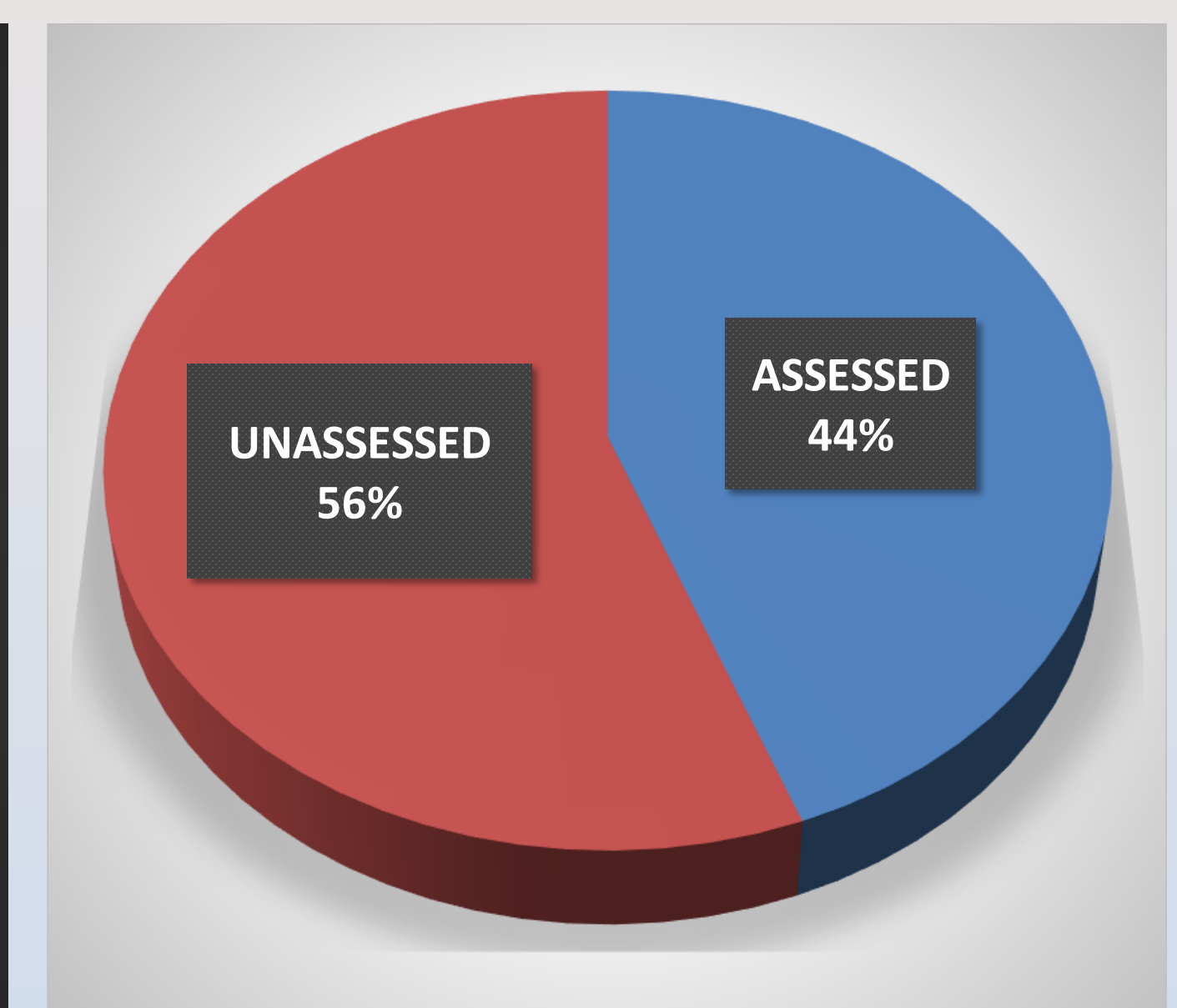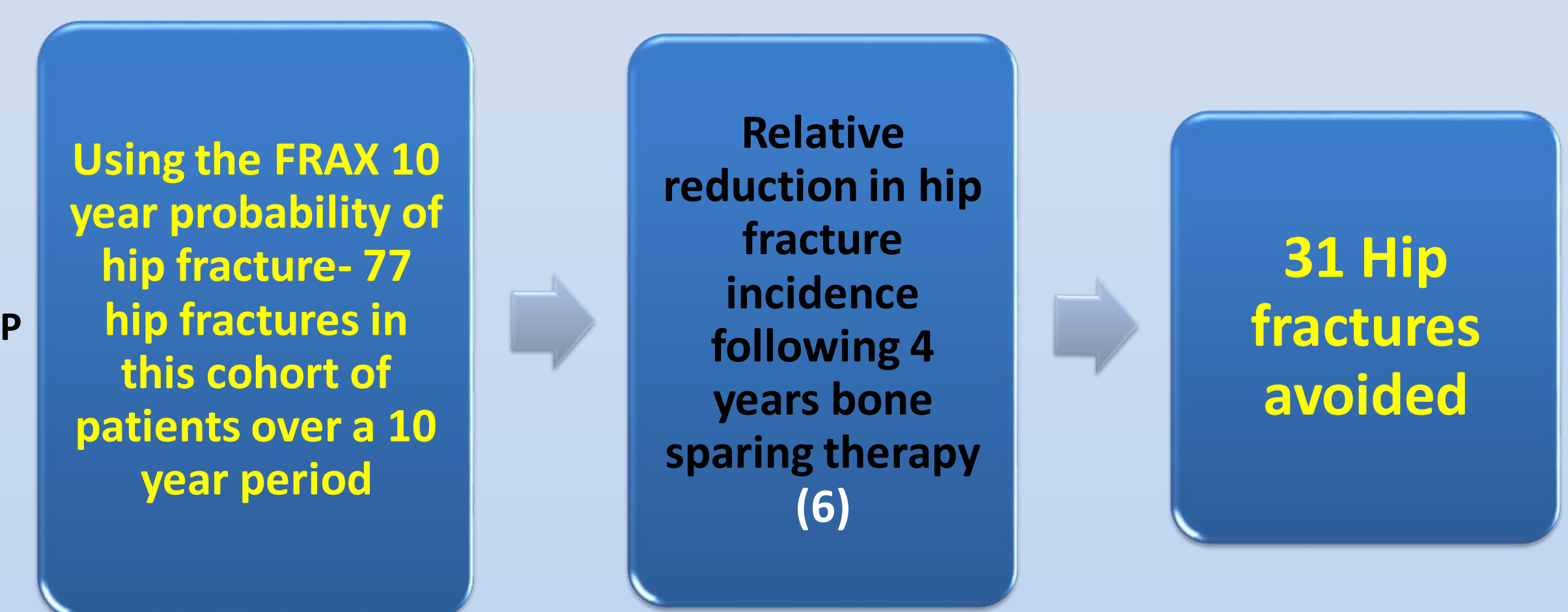
DISCUSSION

Applying multiple search algorithms that incorporate the clinical risk factors for osteoporosis, is a good way of identifying patients 'at risk' from the electronic patient records. Having identified these risk groups, the second step of fracture risk assessment (FRAX©), further stratifies the patient population into those in the 'treat', 'assess' and 'reassure' cohorts as per the NOGG Criteria (2).

Patients in the 'treat' criteria group should be prioritised for management. Their numbers are manageable and unlikely to put significant pressures on manpower or time resources for the practices. By targeting this group with primary prevention measures, which include lifestyle advice and treatment with bisphosphonates, it has been estimated, that, about 31 hip fractures could be prevented over a four year period.

The patient in the 'assess' risk-group provide a challenge to the health authorities. This group of patients will require Bone mineral density estimation (DEXA scanning). It will add pressure on resources within the health economy both financial and manpower. An effective plan needs to be drawn up to manage this group specifically.

The patients in the reassure group can be targeted through self-management measures which will increase their awareness of this condition and motivate them to take charge of their well-being.

This feasibility study has established that by prioritising the care to patients at the highest risk of fractures, reduction in fracture rates, optimising treatment and cost saving to the health and social care budgets in the medium and long term is achievable without significant pressures on manpower and material resources.

CONCLUSIONS

- Identifying patients in the 'treat' category for osteoporosis by using the FRAX tool is a cost-effective way of targeting primary prevention.
- Data can be captured, without physical screening of patients. The software is compatible across all Electronic Patient records.
- Risk-stratification in this manner creates manageable cohorts whose can be prioritised according to capacity.
- This approach would optimise treatment, reduce future fractures, not put additional pressures on manpower or material resources, and deliver cost-savings for health and social care budgets.

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