

Northern Bone Health Project – Falls related fracture prevention:

A population approach to primary and secondary prevention of fragility fractures

P906
Oct 2021-
RCGP
Liverpool

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INTRODUCTION

Falls related Osteoporosis and fragility fractures are underdiagnosed and undertreated in primary care^{1,3}. Systematic identification of patients with fragility fractures and managing their risk factors are paramount. A previous smaller project established the feasibility and demonstrable improvement in patient identification and management through primary and secondary prevention measures at a population level². This is a joint working project between NHTA and AMGEN UK. It demonstrates that the results could be replicated on a larger, supra-regional footprint.

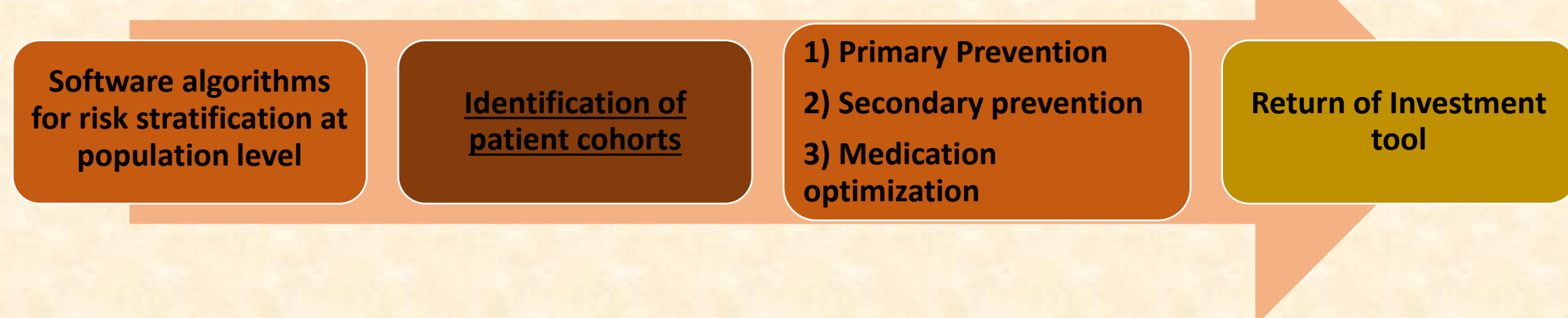
AIMS AND OBJECTIVES

- To provide a blueprint for a sustainable model for prevention of falls related fragility fractures in primary care.
- Build an operational template to identify and manage patients with or at risk of fragility fracture in primary care through primary and secondary prevention methods.
- Encourage local participation to develop whole system approach to falls and fracture prevention.
- Develop resources to support dissemination and adoption.

METHODOLOGY

551550 electronic patient records in 59 participating GP practices were analysed using bespoke computerised software algorithms to identify cohorts of patients with and at risk of fragility fractures and osteoporosis. Fracture risk assessment was done using the FRAX[®] fracture probability tool without bone mineral density values. Cohorts of patients with a high risk of osteoporosis and fragility fractures who met the NOGG criteria for treatment (primary prevention) and patients with fragility fractures and osteoporosis for secondary prevention were identified. Medication optimization, patient education measures, non-pharmacological interventions were initiated. A return of investment tool was developed (Fig 1). This work was carried out by trained pharmacist in conjunction with the practice team.

Figure 1



RESULTS

Primary Prevention- Out of 27212 high risk patients, 7096 (26%) patients whose fracture risks could be substantially reduced by initiating primary prevention measures, without need for any further investigations were identified. (Fig 2)

Secondary prevention- 14076 patients with fragility fractures were identified but a sizable number were neither formally identified nor were on the right treatment resulting in an increased risk of further fractures (Fig 3)

Osteoporosis- 12719 patients with osteoporosis were identified but less than half of them were on optimum treatment. (Fig 4)

Medication optimization- Poor compliance, poor dialogue with patients regarding their medications were identified as the most common cause of lack of appropriate treatment. Medication optimization led to a better and safe prescribing. (Fig 5)

Return of investment tool- A ROI tool has been developed based on all the data from this project. (Fig 6)

Figure 2

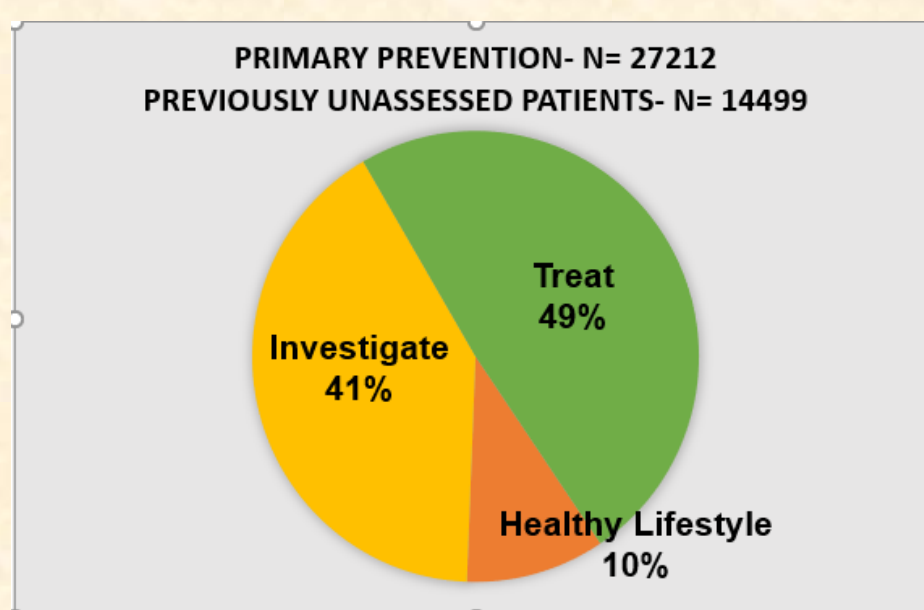


Figure 3

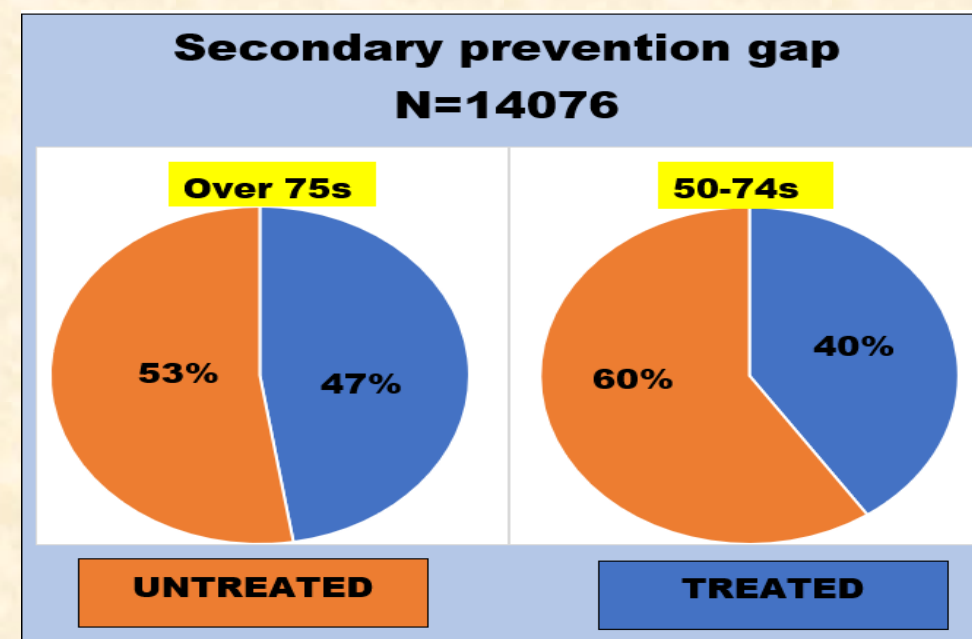


Figure 4

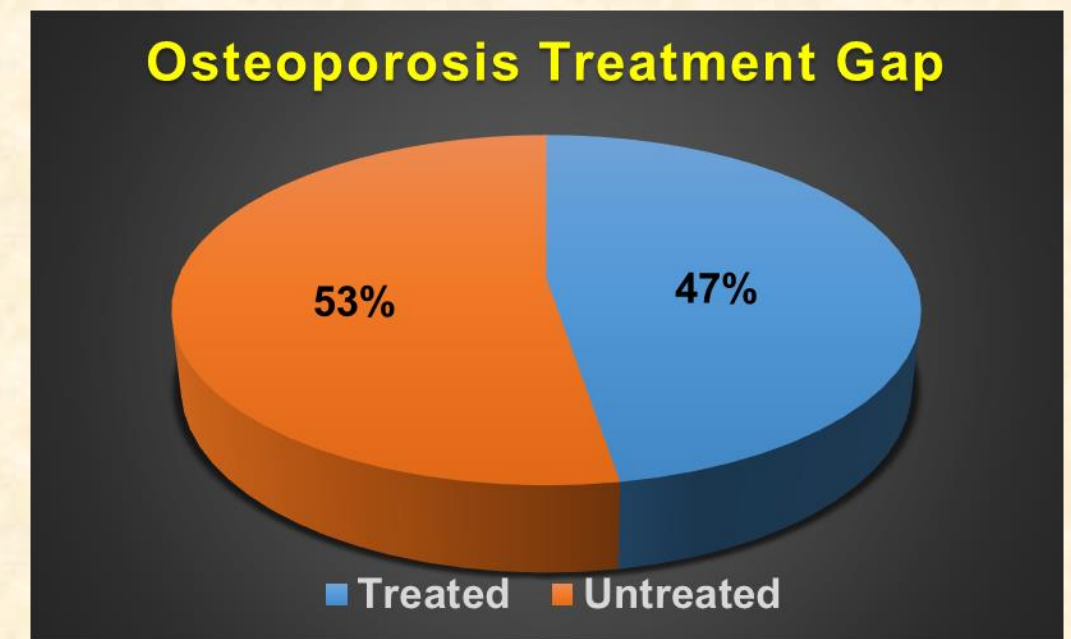


Figure 5

MEDICATION OPTIMIZATION	
Records reviewed	6866
New medication initiations	3478
Medications stopped due to safety concerns	97
Addressing poor compliance	1178
Treatment holidays	524

Figure 6
ROI
Toolkit

Northern Bone Health Project - Cost-Benefit Analysis Model			
Financial Summary		Ten Year Net Financial Position	
Number of GP practices	100	£612,015	3.53
Number of patients within NICE CG146 criteria	223,868		
Time taken to complete search (hours per practice)	2		
Time taken to complete reviews (minutes per review)	7		
Staff member completing medication reviews	Pharmacist Specialist (Band 7)		
Proportion of those contacted actioned	54		
Apply optimism bias correction?	No		
Search Breakdown			
Please input the proportion of searches being completed by each role type in the "percentage" column below. This should be entered as a proportion of the overall number of practices above. The total should not be greater than 100%.			
Role Type	Percentage	Practice Count	
General practitioner - per hour of GMS	0%	0	
Practice manager	0%	0	
Healthcare assistant	0%	0	
Pharmacy technician (Band 4)	0%	0	
Pharmacist (Band 5)	100%	100	
Pharmacist specialist (Band 7)	0%	0	
Pharmacist advanced (Band 8a-b)	0%	0	
Pharmacist team manager (Band 8b-c)	0%	0	
Pharmacist consultant (Band 8b-d)	0%	0	
Year of Delivery			
Non-slip fractures avoided	2023/22: 5.82, 2022/23: 8.40, 2023/24: 7.84, 2024/25: 8.33, 2025/26: 8.21		
Hip fractures avoided	2023/22: 1.37, 2022/23: 1.55, 2023/24: 1.75, 2024/25: 1.96, 2025/26: 2.17		
Medication holidays initiated	2023/22: 88.61, 2022/23: 76.55, 2023/24: 67.08, 2024/25: 60.00, 2025/26: 54.00		
Net financial impact	2023/22: -£86,961, 2022/23: £41,201, 2023/24: £22,989, 2024/25: £54,568, 2025/26: £69,810		

DISCUSSION

This study provides the template for operationalising bone health management in primary care. Primary and secondary prevention of fragility fractures and osteoporosis using FRAX-based clinical risk assessment software is an efficient method of categorising patients to make treatment decisions. Using the skills of clinical pharmacists is innovative use of workforce to manage the service. This initiative was well received by patients and clinicians alike.

Primary prevention of fragility fractures has not been attempted previously. The result of this study shows that it's not only feasible but also an effective way to reduce the future burden of these fractures and their effects.

A treatment gap for secondary prevention at 52.56% and 59.3%, in those above 75 years and 50-74 age groups were identified. Only 47.37% of the patients with osteoporosis were being optimally treated. A robust secondary prevention approach will reduce the risks of future fractures even more.

Medication optimization has resulted in patients being put on right evidence based management; compliance, side effects and patient safety events were identified and addressed and a comprehensive bone health review completed in a majority of patients.

The return of investment tool for commissioners helps to plan, staff and manage primary care-based bone health services

CONCLUSIONS

This study provides

- 1) A template for the comprehensive bone health assessment and management of patients in primary care.
- 2) Innovative digital technology for remote assessments and management
- 3) Effective use of Allied health professionals to staff the service.
- 4) Highlights the importance of addressing the treatment gap in primary care, to reduce the burden of future fragility fractures.

REFERENCES

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3. Fracture prevention: a population-based intervention delivered in primary care- Hoggard K et al <https://academic.oup.com/qjmed/article/113/5/313/5610539>

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