Bone Health Assessment in Stroke Rehabilitation

Kambele M, Hosty J, Gaur P, Pratt G - *Sheffield Teaching Hospitals*

Sheffield Teaching Hospitals
NHS Foundation Trust

INTRODUCTION

Why?

The National Clinical Guideline for Stroke recommends bone health assessment for patients at higher risk of falls. Following stroke, patients have reduced bone mineral density, correlated with functional deficit. Stroke can result in reduced mobility, asymmetric weight bearing, poor nutrition and impaired Vitamin D stores. This results in higher risk of fragility fracture.

Challenges in the current care

Bone health is often overlooked. An initial review on a stroke rehabilitation unit in March 2024 found no bone health assessment process or guidance available.

Solution

Local guidance was developed following liaison with stroke physicians and ortho geriatricians. A flowchart was also developed along with adding prompts on the e-handover. Awareness was raised among stroke physicians and resident doctors via departmental teaching.

AIM Patients with stroke and high risk of fragility fracture should undergo bone health assessment and timely treatment or onward referral if indicated.

METHODS

Methodology

Data was collected over two cycles for 1 month (September 2024, November 2024). If high-risk, records were reviewed for serum calcium and Vitamin D measurement, FRAX score and treatment initiation and/or onward referral. Patient records used included discharge summaries, ICE for blood results during the admission, medical notes and e-handover system.

Selection and Recruitment

Patients undergoing stroke rehabilitation were identified as high-risk for fragility fracture based on age, gender, falls history, cognition, visual impairment and post-stroke seizures. Patients with life expectancy <1 year or predicted to be bedbound longer term were excluded.

Data Analysis

Collected information was examined systematically using pie charts to easily visualize compliance to guidance and gaps in assessments. A deeper review of specific cases helped uncover reasons for non-compliance. These insights guided targeted improvements to enhance adherence to guidelines and patient care.

RESULTS

Characteristic	Cycle 1 Patients (N = 27)	Cycle 2 Patients (N=32)
Gender		
Male	12	8
Female	15	24
Mean Age	80.3	81.5
Stroke Type		
Ischaemic	25	28
Haemorrhagic	2	4
Inclusion Criteria		
Female	11	18
Falls	3	3
Seizures	2	0
Cognitive Impairment	2	8
Visual Impairment	4	1
Fracture	1	1
Multifactorial	3	1

Figure 1. Patient demographics

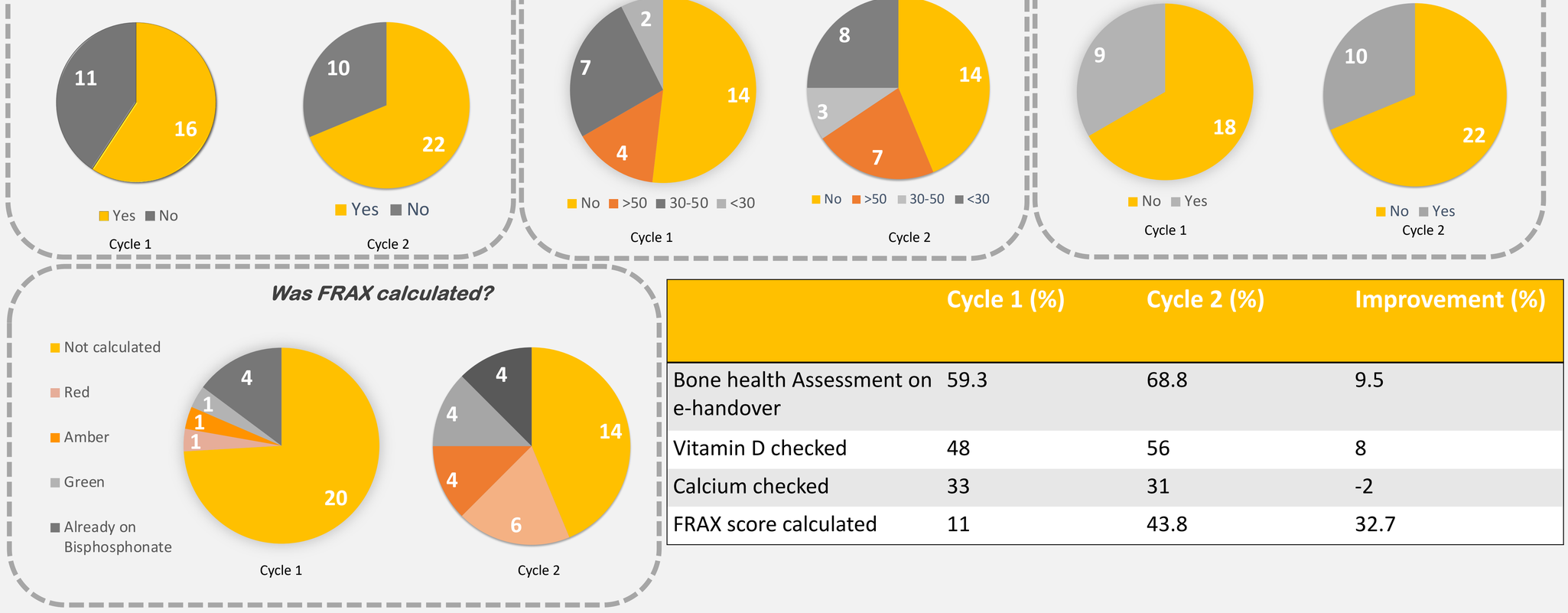

Figure 2. Data Analysis

	Cycle 1 (%)	Cycle 2 (%)	Improvement (%)
Bone health Assessment on e-handover	59.3	68.8	9.5
Vitamin D checked	48	56	8
Calcium checked	33	31	-2
FRAX score calculated	11	43.8	32.7

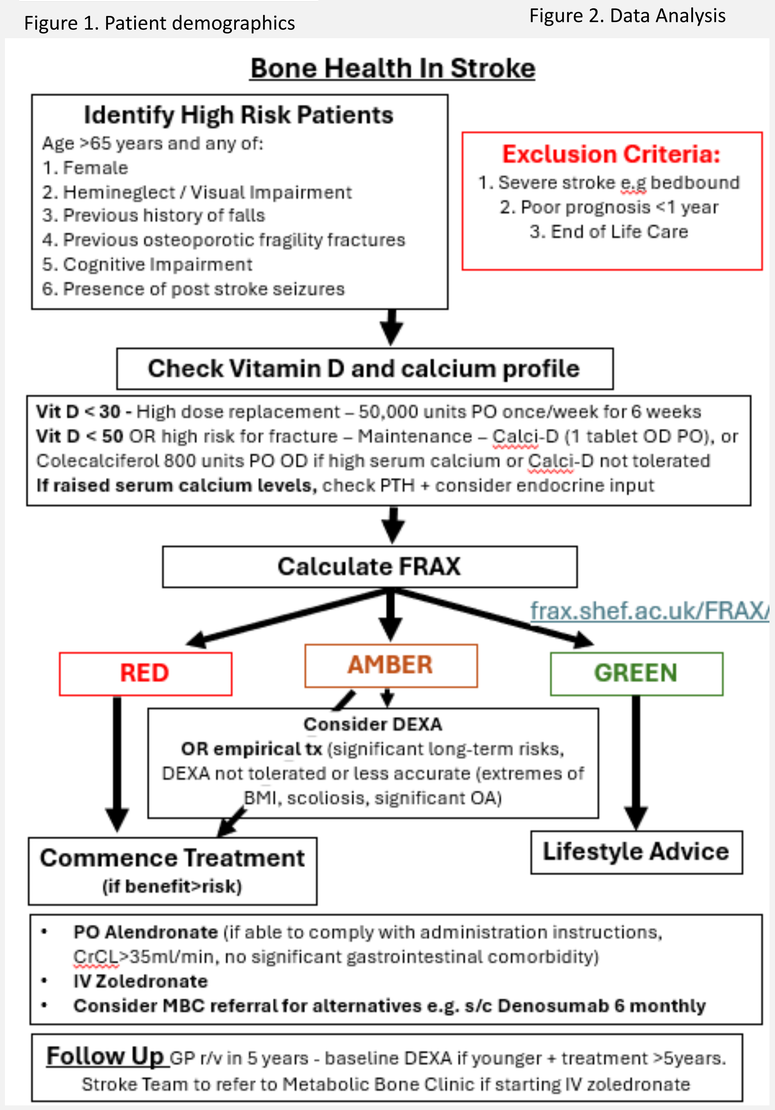

Figure 3. Flowchart developed

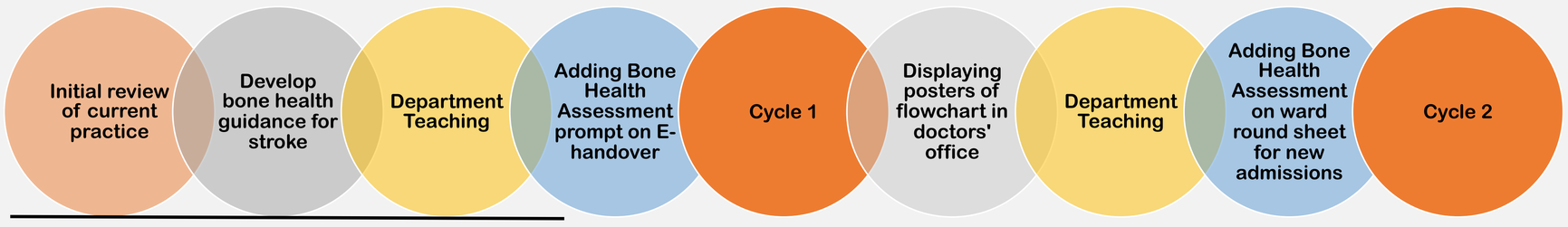

Figure 4. Implementation of change process

DISCUSSION

The first cycle raised awareness of the importance of bone health assessment and identifying patients with relevant risk factors. However, only 11% had a completed FRAX score despite e-handover prompts. Further education and addition of a prompt to a routine 'new to ward checklist' significantly improved compliance, with 44% of high risk patients with a completed FRAX score. In the second cycle, all patients identified with low vitamin D (<50) were prescribed appropriate supplementation. Of 18 patients without a FRAX score, 4 were on bisphosphonates already. High-risk patients received appropriate treatment or DEXA referrals.

CONCLUSION

Patients with stroke are at higher risk of fragility fractures. This field remains under-recognised and undertreated. The initiatives implemented raised awareness in this stroke rehabilitation unit - prior to this project, bone health assessment was not performed as part of routine care. Following development of the local guideline, 44% of high risk patients were assessed and started on treatment or referred for further investigation.
Further education and prompting are needed to ensure full adherence and make bone health assessment a routine part of stroke care.

Reference - National Clinical Guideline for Stroke for the UK and Ireland. London: Intercollegiate Stroke Working Party; 2023 May 4. Available at: www.strokeguideline.org.