

# To Improve BMD Referral Rates in NHG Yishun Polyclinic Teamlet F

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## Mission Statement

To improve the Bone Mineral Density (BMD) test screening referral rate from 5.60% to 100% for women aged 55 years old and older, who are on regular follow-up with Yishun Polyclinic Teamlet F and deemed high risk for osteoporosis by OSTA score (Osteoporosis Self-Assessment Tool for Asians), over a 6-month period from July 2024 to December 2024.

## Team Members

Name	Designation	Department	Project Role
1. Dr Felix Tan Keng Zhe	Family Medicine Resident	Medical	Team Leader
2. Dr Edwin Liang Fueng Chee	Teamlet Lead / Family Physician	Medical	Team Members
3. SSN Wang Li	Care Manager (CM)	Nursing	
4. Aclan Maricel Sanchez	Care Coordinator (CC)	Nursing	
5. Lau Hui Ping Vivien	Senior Operations Executive	Operations	
6. Saraswathy	Patient Care Assistant	Operations	
7. Airene Ocampo Umandap	Senior Radiographer	Diagnostics	Supervisor
8. Dr Chen Tongyuan	Family Physician	Medical	
9. Dr Lim Ziliang	Clinic Head	Medical	

## Evidence for a Problem Worth Solving

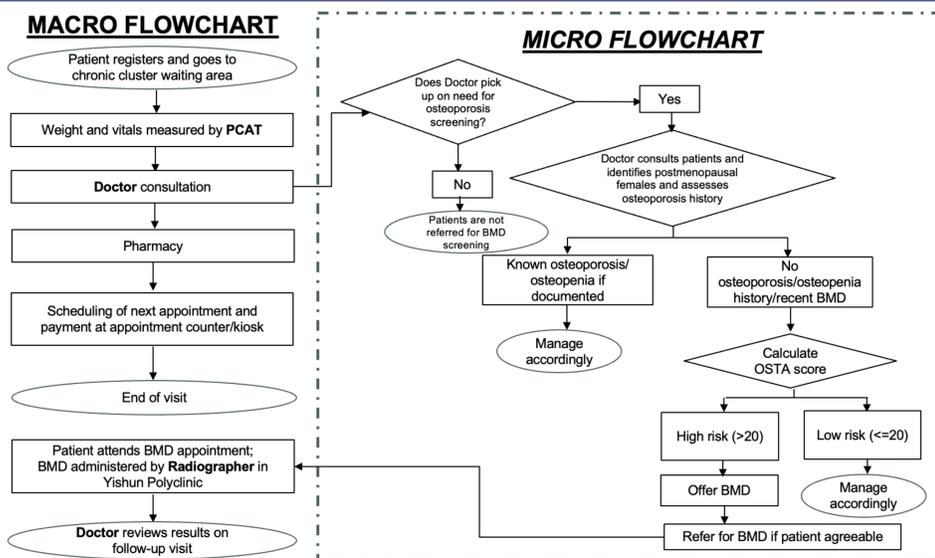
- Osteoporosis, characterised by increased bone fragility and fracture risk, predisposes the affected individual to medical complications, financial costs and social consequences<sup>1</sup>
- Singapore has the highest reported incidence of hip fractures within Asia. The incidence of hip fractures in Singapore has increased by 1.5 times for men and 5 times for women since the 1960s.<sup>2</sup> The International Osteoporosis Foundation Asian Audit showed that one in three Singaporean women over 50 years old has osteoporosis<sup>3</sup>.
  - In particular, hip fractures, commonly associated with osteoporosis have significant morbidity, mortality, financial costs and high social dependency. In Singapore, 30% of survivors are semi- or fully-dependent<sup>2</sup> one-year post-hip fracture.
- BMD screening allows for early detection of osteoporosis and treatment of high-risk patients before complications arise, with cost-effectiveness analyses supporting BMD screening for high-risk patients<sup>4</sup>
  - Studies have also shown that screening for post-menopausal osteoporosis leads to more quality-adjusted life years compared to no screening<sup>5</sup>

## Current Performance of a Process

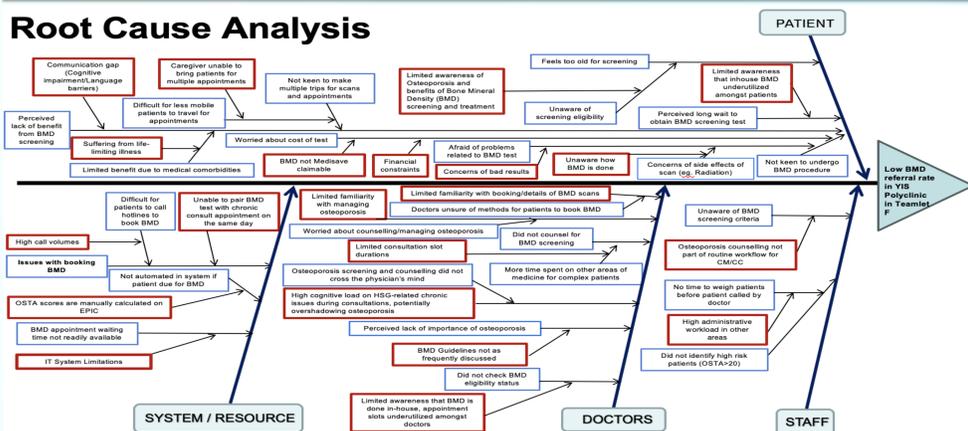
BMD Referral Rates from Teamlet F



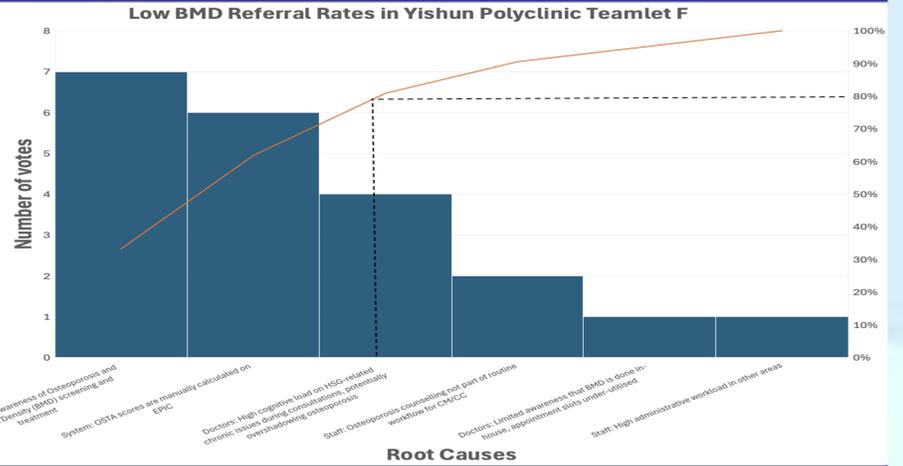
## Flow Chart of Process



## Cause and Effect Diagram



## Pareto Chart

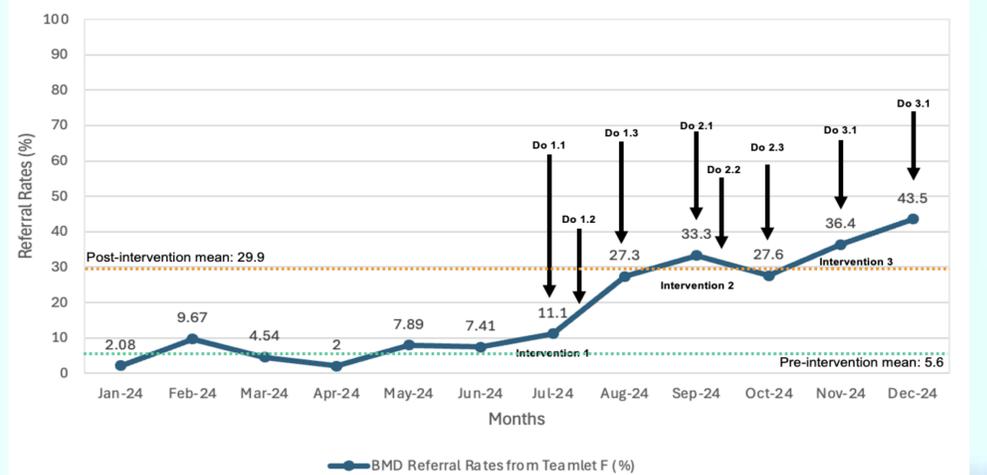


## Implementation

Problem	Intervention	Date of implementation
Root Cause 1: Limited awareness of Osteoporosis and Bone Mineral Density (BMD) screening and treatment amongst patients	Intervention 1: Osteoporosis brochures in English PDSA cycle performed and brochure distribution instructions/locations were modified	1 <sup>st</sup> July 2024 – 31 <sup>st</sup> July 2024
	Multilingual brochures were introduced	1 <sup>st</sup> August 2024 – 31 <sup>st</sup> August 2024
Root Cause 2: OSTA scores are manually calculated on EPIC	OSTA Score Calculation via Questionnaires	1 <sup>st</sup> September 2024 – 30 <sup>th</sup> September 2024
	Patient screening questionnaires were digitalized	1 <sup>st</sup> October 2024 – 31 <sup>st</sup> October 2024
Root Cause 3: High cognitive load on HSG-related chronic issues during consultations, potentially overshadowing osteoporosis	Eye catching table-top reminders introduced in consult rooms	1 <sup>st</sup> November 2024 – 30 <sup>th</sup> November 2024
	Acronym expansion introduced to physician to simplify documentation of counselling process	1 <sup>st</sup> December 2024 – 31 <sup>st</sup> December 2024

## Results

BMD Referral Rates from Teamlet F in 2024



## Cost Savings

By improving early screening rates, the project potentially reduces long-term healthcare costs associated with osteoporosis complications, such as fractures and hospitalizations. Reduced hospitalizations and fractures can potentially bring about significant costs savings for these patients as well. A recent local study showed that the total costs of osteoporotic fractures requiring admissions, with both direct and indirect costs included, were around \$11,400 per patient. In Singapore, the estimated annual incidence of osteoporotic fractures is around 15,267 cases. This number is projected to increase significantly, by about 60% from more than 15,200 in 2017, to more than 24,000 by 2035, primarily due to an aging population.

## Problems Encountered

- With increasingly complex cases and limited consultation time, it is vital for all healthcare team members to actively educate and advocate for patients, each playing a crucial role in early Osteoporosis identification and management.
- The focus on preventive health shifted towards cardiovascular and cancer screening, reducing attention to osteoporosis and BMD screening. Increased administrative tasks further limited physicians' capacity to engage patients on bone health.
- BMD screening was incorporated into the best practice advisory late in the intervention, potentially inflating referral rates. Moreover, referral rates may not reflect actual attendance, as some patients may not complete their appointments, leading to lower actualization rates.
- Recent changes in vitals measurement at Yishun Polyclinic may impact patient education material distribution, while increased administrative load on PCATs raises sustainability concerns.

## Strategies to Sustain

- Comprehensive osteoporosis handouts, presenting clear and succinct information, have been disseminated across multiple touchpoints, including patient waiting areas and consultation rooms utilized by physicians, care managers, and care facilitators. Future enhancements include QR-coded brochures for easy access and self-administered screening via healthcare mobile applications. Patient talks and interactive health education initiatives can be introduced to increase engagement in osteoporosis screening.
- To mitigate cognitive burden and reinforce the importance of osteoporosis screening amid evolving preventive healthcare priorities, innovative reminder systems or medical education initiatives for physicians may be explored. Potential avenues include social media platforms to ensure sustained awareness and engagement.