

Project Title

Increasing the Rate of Osteoporosis Workup Ordered for Patients with Distal Radius Fractures

Project Lead and Members

Project lead: Dr Mala Satkunanantham

Project members:

- NO Fadzleen Johari
- Dr Bernice Heng
- Mr Alfee Ahmad
- NO Chan Sze Huey
- Dr Stephen Siew
- Ms Wang Hui Shan

Organisation(s) Involved

Tan Tock Seng Hospital

Healthcare Family Group(s) Involved in this Project

Medical, Allied Health

Applicable Specialty or Discipline

Orthopaedic Surgery, Hand & Reconstructive Microsurgery, Diagnostic Radiology

Project Period

Start date: 01 Jul 2021

Completed date: 28 Feb 2022

Aims

To increase the rate of Osteoporosis Workup ordered, in distal radius fracture patients aged >50 years old, at the first visit, in Clinic B1A TTSH, from median 3.5% to 80% (stretch goal = 100%), over 6 months.

Project Attachment

See poster attached/below

Background

See poster attached/below

Methods

See poster attached/below

Results

See poster attached/below

Conclusion

See poster attached/below

Additional Information

Accorded the NHG Quality Day 2022 (Category C: Developing a Flexible & Sustainable Workforce) Merit Award

Project Category

Care & Process Redesign

Risk Management, Preventive Approach

Workforce Transformation

Informal Workforce Transformation, Patient

Keywords

Osteoporosis Workup, Bone Mineral Density (BMD)

Name and Email of Project Contact Person(s)

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Dr Mala Satkunanantham

Department of Hand & Reconstructive Microsurgery (HRM)

Mission Statement

To increase the rate of Osteoporosis Workup* ordered, in distal radius fracture patients aged >50 years old, at the first visit, in Clinic B1A# TTSH, from median 3.5% to 80% (stretch goal = 100%), over 6 months.

* Osteoporosis Workup includes (ie. Labs + BMD), at first visit.

4 out of 8 consultant clinics

Cohort of Patients

Inclusion: Patients >50 years old, ambulant, including patients who decline.

Exclusion: Patients with BMD done within 2 years, on follow up elsewhere, low life expectancy.

Team Members

	Name	Designation	Department
Team Leader	Dr Mala Satkunanantham	Consultant	HRM
Team Members	NO Fadzleen Johari	Nursing Officer	Orthopaedic Surgery / FLS
	Dr Bernice Heng	Service Senior Resident	HRM
	Mr Alfee Ahmad	Patient Service Associate	Clinic B1A
	NO Chan Sze Huey	Nursing Officer	HRM
	Dr Stephen Siew	Associate Consultant	HRM
	Ms Wang Hui Shan	Senior Radiographer	Diagnostic Radiology
Sponsor	Adj Asst Prof Sreedharan Sechachalam (Head of HRM)		
Mentors	Dr William Chan & Adj Asst Prof Justina Tan Wei Lynn		

Evidence for a Problem Worth Solving

Singapore Clinical Practice Guidelines: Osteoporosis 2008

Clinical quality improvement parameters - Proportion of patients with prior fragility fracture in adulthood receiving:

1. appropriate evaluation for osteoporosis
2. bone mineral density measurement
3. appropriate treatment for osteoporosis

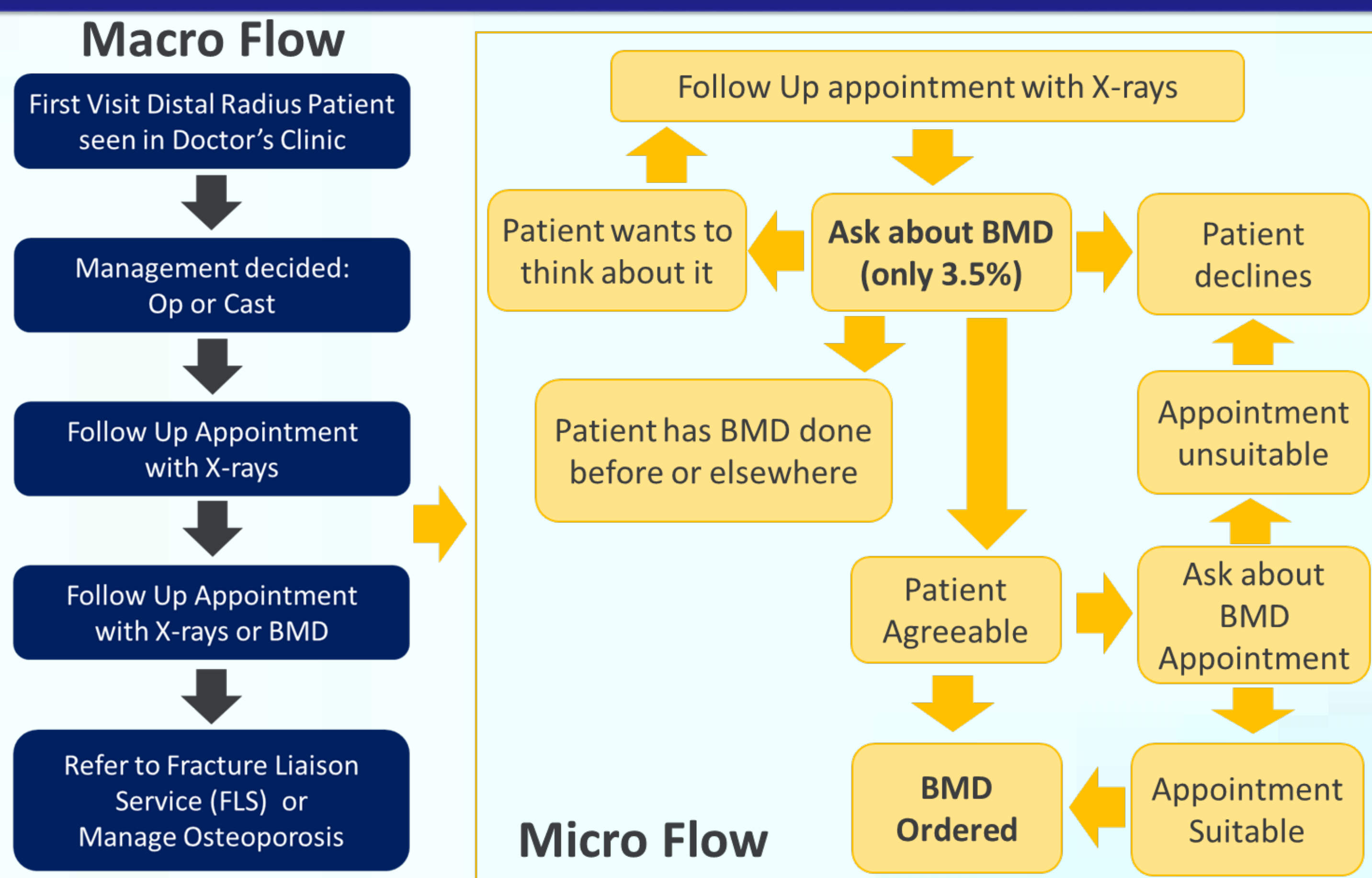
NICE 2017 Quality Statement

Adults who have had a fragility fracture or use systemic glucocorticoids or have a history of falls have an assessment of their fracture risk.

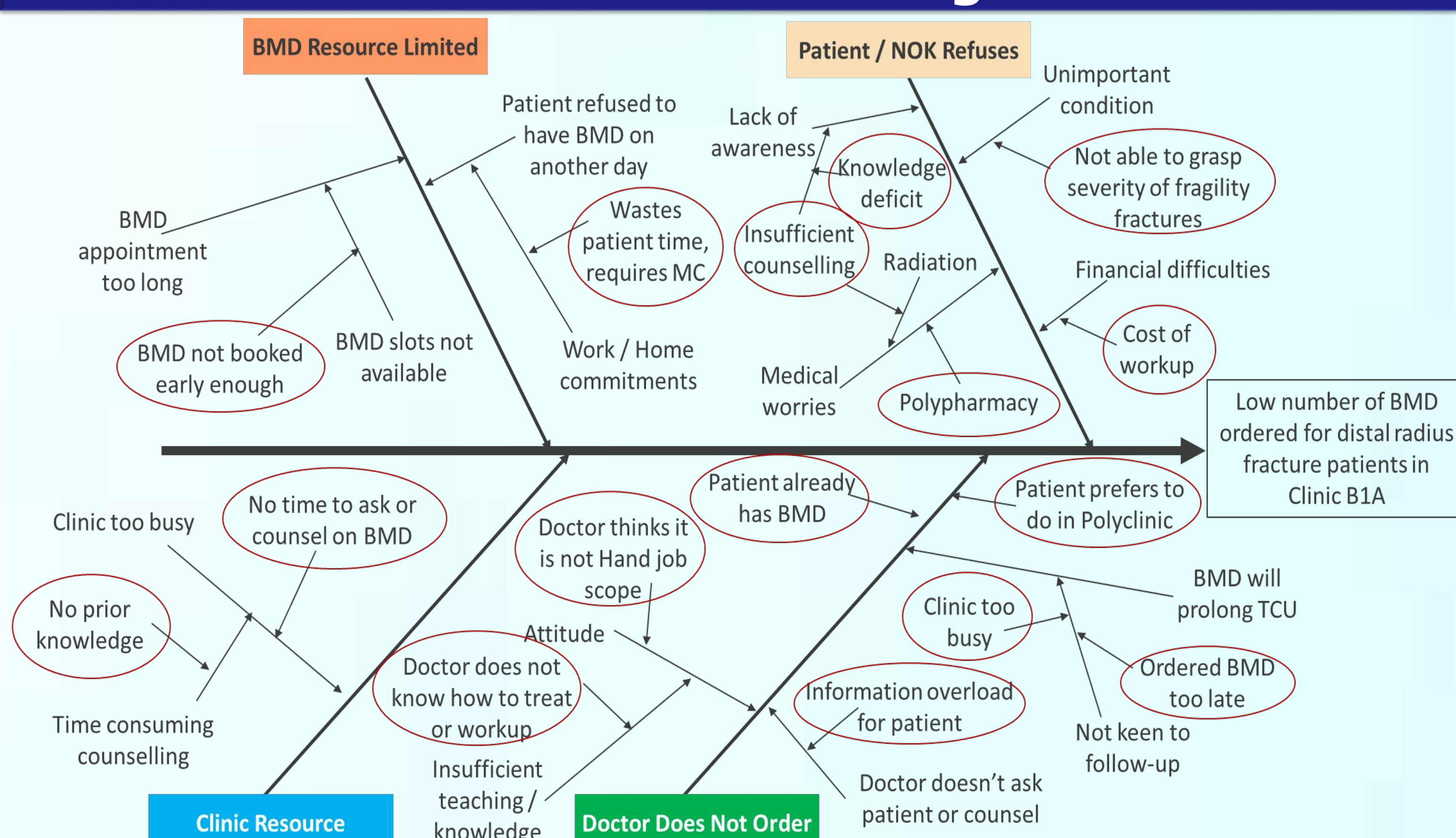
- An assessment of fracture risk should include **estimating absolute fracture risk**
- Either **FRAX** or **QFracture** should be used within their allowed age ranges

Baseline Data for BMD Ordered for Distal Radius Fracture Patients at Clinic B1A from 1 July to 31 August 2021 showed a median of 3.5%

Flow Chart of Process

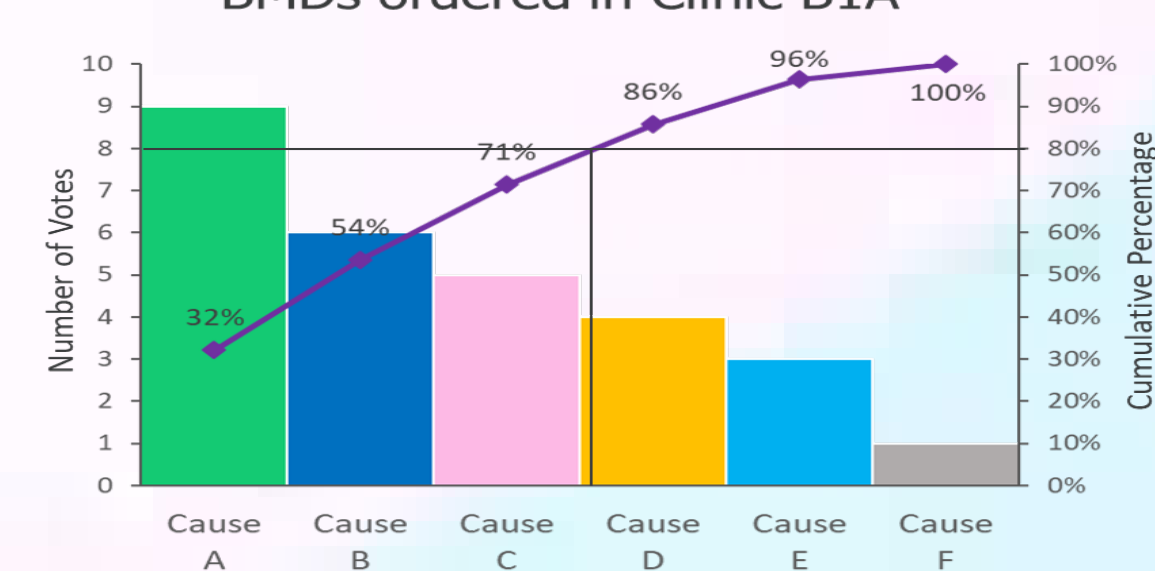


Cause and Effect Diagram



Pareto Chart

Reasons of low number of BMDs ordered in Clinic B1A



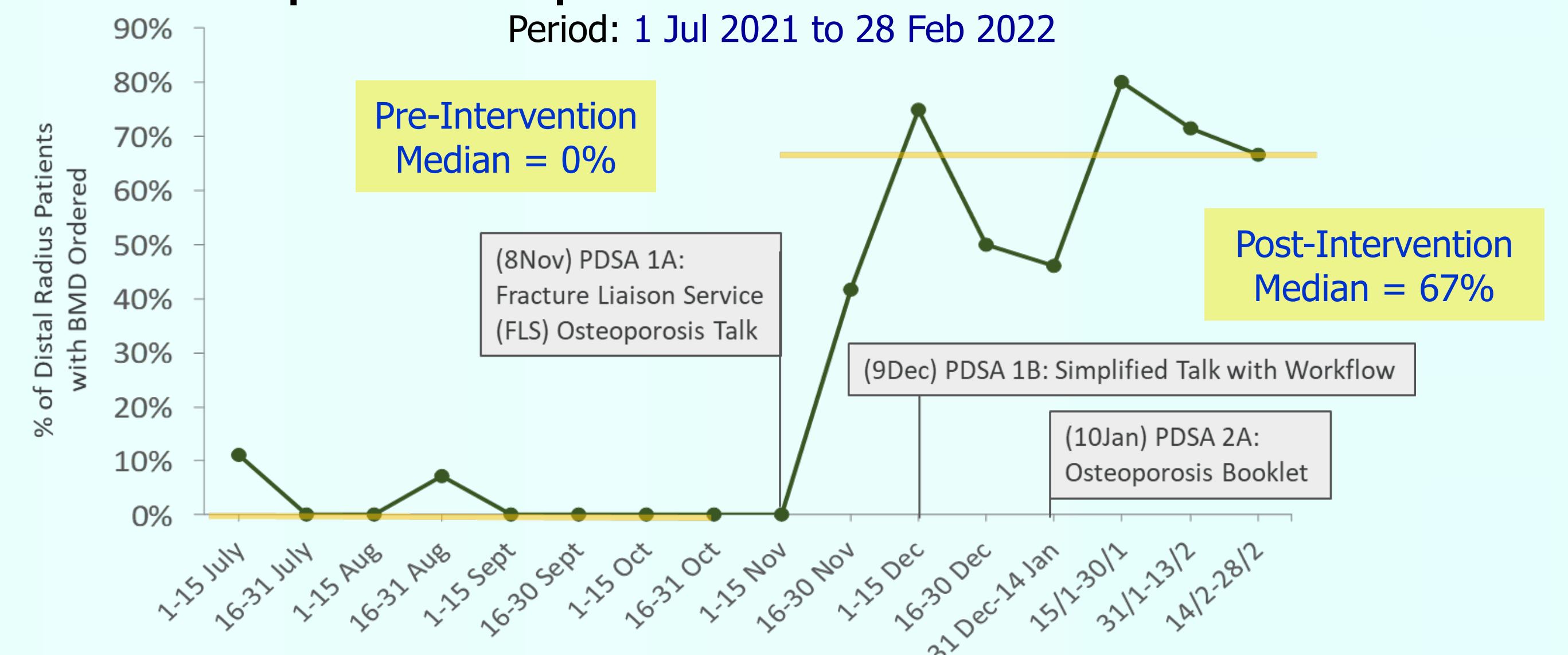
Cause A	Doctor thinks it is not hand job scope
Cause B	Knowledge deficit on part of patient
Cause C	No time to ask or counsel on BMD
Cause D	Doctor does not know how to treat or work up
Cause E	Patient refused to have BMD on another day
Cause F	Information overload for Patients

Implementation

Root Cause	Intervention	Implementation Date
Cause A: Doctor thinks it is not hand job scope	1. Osteoporosis talk by Fracture Liaison Service (FLS) 2. Osteoporosis talk by Project Leader (Simplified Talk with Workflow)	8 Nov 2021 9 Dec 2021
Cause B: Knowledge deficit on part of patient	Osteoporosis Booklet	10 Jan 2022
Cause C: No time to ask or counsel on BMD	Bundle orders, improve automation for test orders in Aurora.	On Hold for NGEMR
Cause D: Doctor does not know how to treat or work up	1. Info card regarding labs, scans & medication. 2. New Joiners Info Talk 3. Incorporate into Distal Radius First Visit protocol	Plan In-Progress

Results

Osteoporosis Workup Ordered for Distal Radius Fracture Patients
Period: 1 Jul 2021 to 28 Feb 2022



	1/7-15/7	16/7-31/7	1/8-15/8	16/8-31/8	1/9-15/9	16/9-30/9	1/10-15/10	16/10-31/10	1/11-15/11	16/11-30/11	1/12-15/12	16/12-31/12	1/1-15/1	16/1-30/1	1/1-13/2	14/2-28/2
No. of Distal Radius Fracture Patients	9	6	2	14	10	8	11	3	6	12	8	6	13	10	7	3
No. of BMD Ordered	1	0	0	1	0	0	0	0	5	6	3	6	8	5	2	

Data Source: 1st visit shortcut on CPSS, e-PORT approved.

Cost Savings

^Osteoporosis workup cost (5 years) per patient	\$1,309 (\$530)
#Osteoporosis treatment cost (5 years) per patient	\$513
*Hip Fracture Inpatient treatment cost per patient	\$20,154 (\$6,720)
Cost Avoidance if Osteoporosis is treated per patient	\$18,332 (\$5,677)
+Cost Avoidance per year (2.5%)	\$174,154 (\$53,928)
+Cost Avoidance per year (17%)	\$1.18m (\$366,713)

Notes:
 Cost in SGD (Subsidised Cost)
 ^ Workup over 5 years: BMD, Labs, Dental clearance
 # Treatment: Alendronate:Denosumab 1:10
 * Jan-Oct 2021 data
 + Projected no. of Distal Radius patients seen per year that go on to have hip fractures based on Shin 2020, Oyen 2020, Shah 2020.

Problems Encountered

1. Unable to implement automation in Aurora - Group tests for easier ordering
 - On hold for NGEMR
 - Labs required put on clinic notice board
2. Doctors sometimes 'forgot' to ask
 - Reminders on clinic notice board and during orientation for new joiners
3. No time to address in clinic - patient very worried about fracture
 - Address at next visit as well, can give booklet for next of kin to read.
4. Patients refused
 - Educate about osteoporosis, TCU FLS if patient open to think about it.

Strategies to Sustain

1. Readily available information in the clinics (pamphlets)
 2. Reminder notice in clinic rooms
 3. Include simplified flowchart for new doctor orientation (presentation CME and document)
- Longer-Term Sustainability (Systemic Incorporation)**
1. Incorporate osteoporosis into assessments eg. In-Training Assessment MCQs and qualifying (exit) exam
 2. Develop distal radius/osteoporosis clinic with grant
 - Hire manpower to screen and activate referral to FLS and BMD bundle workup
 - Follow-up on results and have greater holistic management on all aspects of osteoporosis prevention and treatment