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Implementing an Osteoporosis Screening and Treatment Protocol for Patients with Fragility Fractures

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The University of Texas at El Paso
DNP Program Symposium- Cohort X
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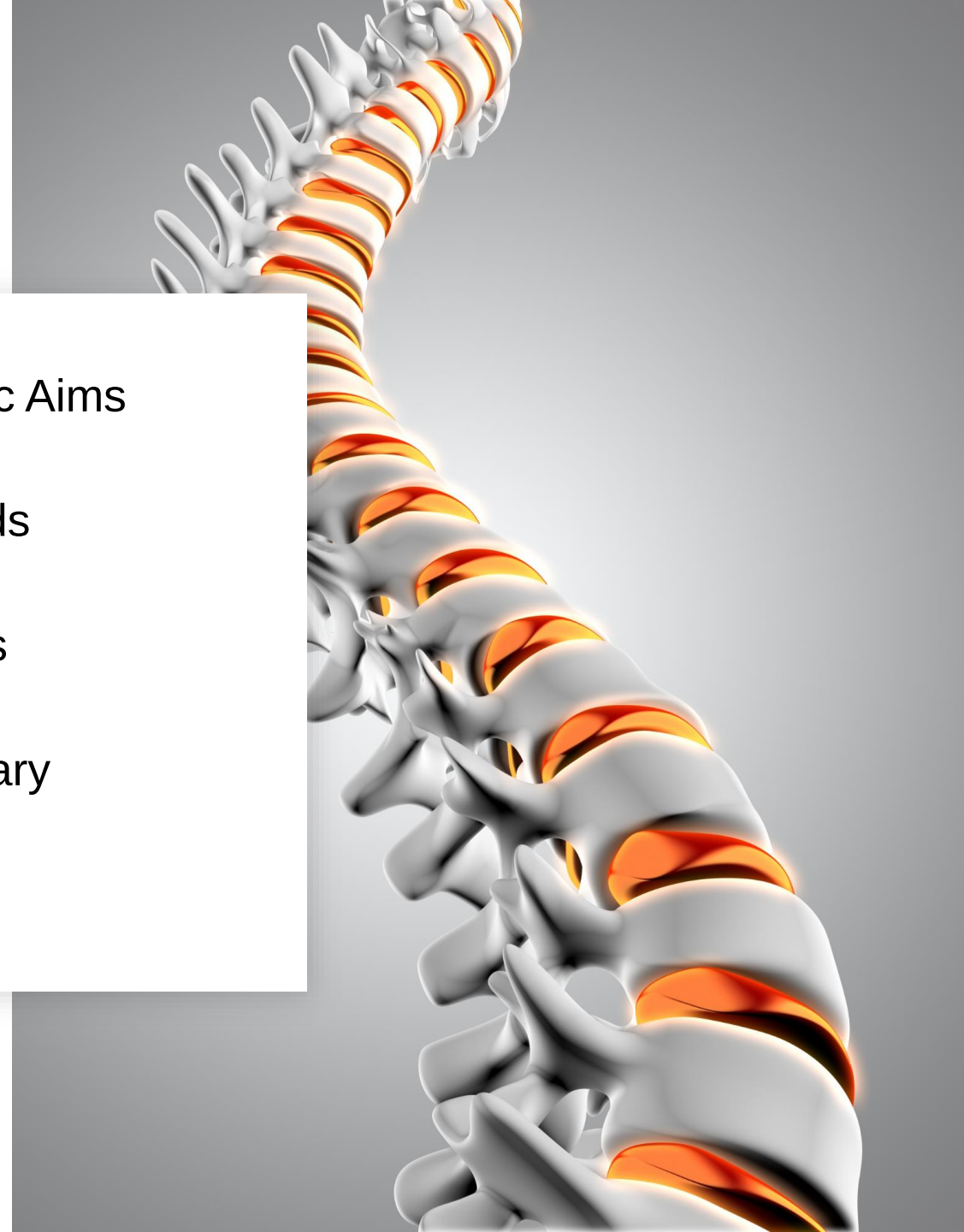
Overview

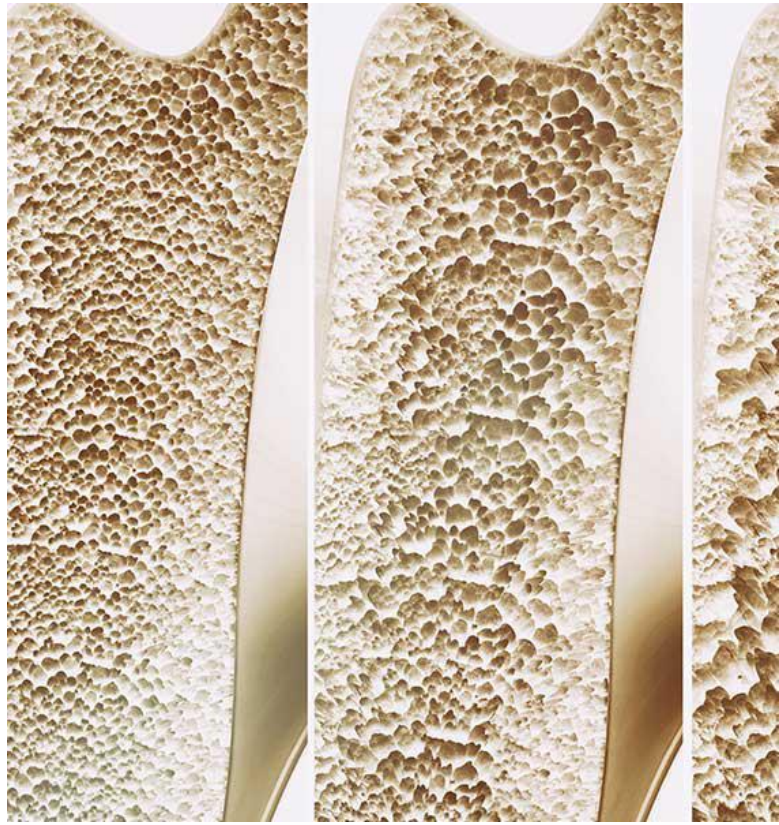


Texas Tech University Health Sciences Center El Paso Orthopedic Clinic Hand Service

Pediatric-Adult Orthopedic Conditions

Population/Demographics:

- U.S.-Mexico Border
- Population: 700,000+
- The only non-profit hospitals: University Medical Center and El Paso Children's Hospital
- Only level one Trauma Center in 280 mile radius
- Undocumented/uninsured/low-income



(TTUHSC El Paso, n.d.)

10-Day Reflective Practice

September 2021: evaluate patients scheduled at TTUHSC EP Orthopedic Clinic Hand Service

Goal: identify trends in practice and areas needing improvement

Reflective Practice Log:

- Age
- Chief complaint
- How assessed (tools used)
- How did you arrive to diagnosis
- Intervention
- Follow-up

Review of Patients

Total patients seen:

94

Categories Of Patients Seen:

Chronic Conditions:

38 patients (trigger finger, carpal tunnel, osteoarthritis)

Acute Closed Injuries:

36 patients (distal radius fractures, ulna fracture, metacarpal fracture)

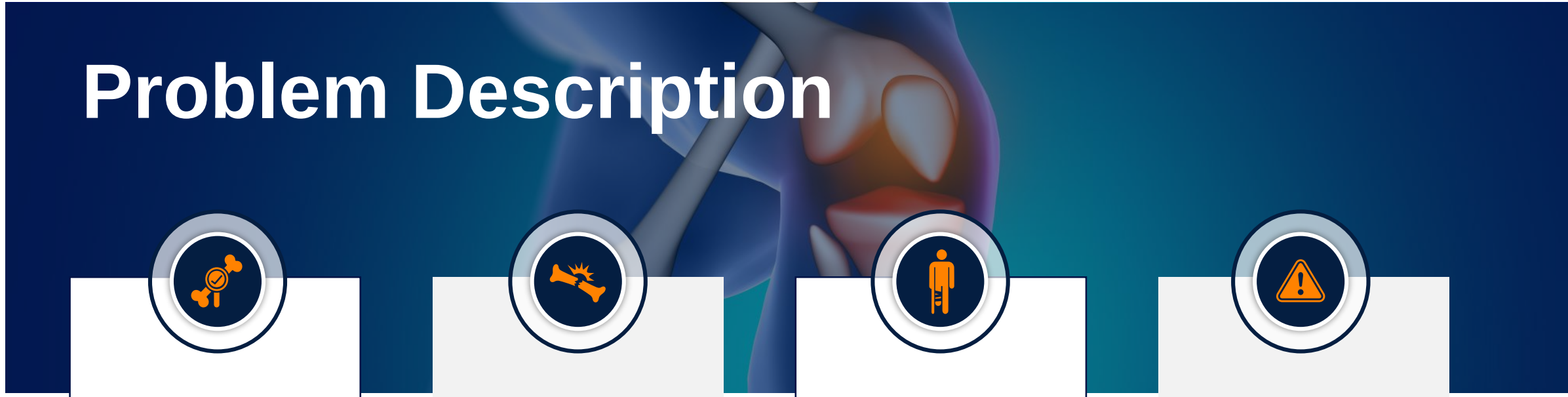
Acute Open Injuries:

20 patients (laceration of extensor muscle, fascia and tendon, high pressure injection injury, gun shot wound)

PICOT Question

P	**Population**	Males and females, 50 years and older, with fragility fractures
I	**Intervention**	Implementation of a bone health protocol
C	**Comparison**	No bone health protocol being performed
O	**Outcome**	Increase osteoporosis identification and treatment rates
T	**Time**	Over a period of 4 weeks

Problem Description



Osteoporosis is a chronic disease that is a global concern and bone health should be prioritized before a fracture occurs.

The most common locations for fragility fractures: the femoral neck, vertebral body, and distal radius (U.S. Department of Health and Human Services, 2004).

Fragility fractures are a significant cause of disability, death, and health-care utilization (Neuman et al., 2011).

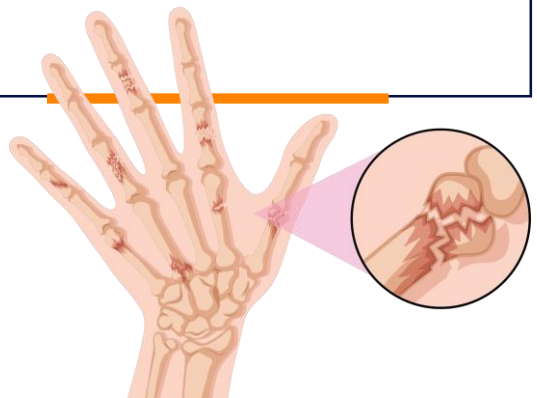
As a result, fragility fractures can have serious physical, emotional, and financial consequences (Kanis et al., 2021).

Problem Description

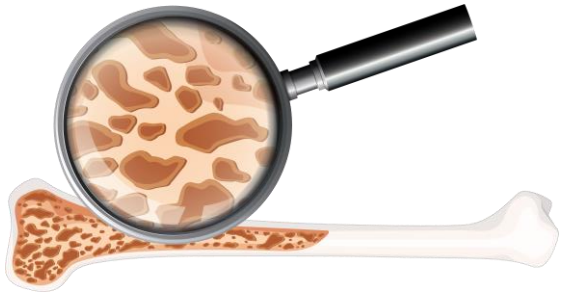
AAOS Position Statement calling for osteoporosis and bone health to become a national public health priority and described osteoporosis as a growing epidemic (AAOS, 2014).

Risk factors: reduced bone mass, the use of oral or systemic glucocorticoids, low body weight, age, sex, previous fracture, a family history of osteoporosis, perimenopausal and postmenopausal women (NICE, 2012).

As average life expectancy increase, incidence of fragility fracture and osteoporosis will increase (NICE, 2012).



Problem Description



Osteoporosis is the most common bone disease in the U.S. (AOA, 2022a).

”Silent condition” until a fracture occurs (AOA, 2022a).

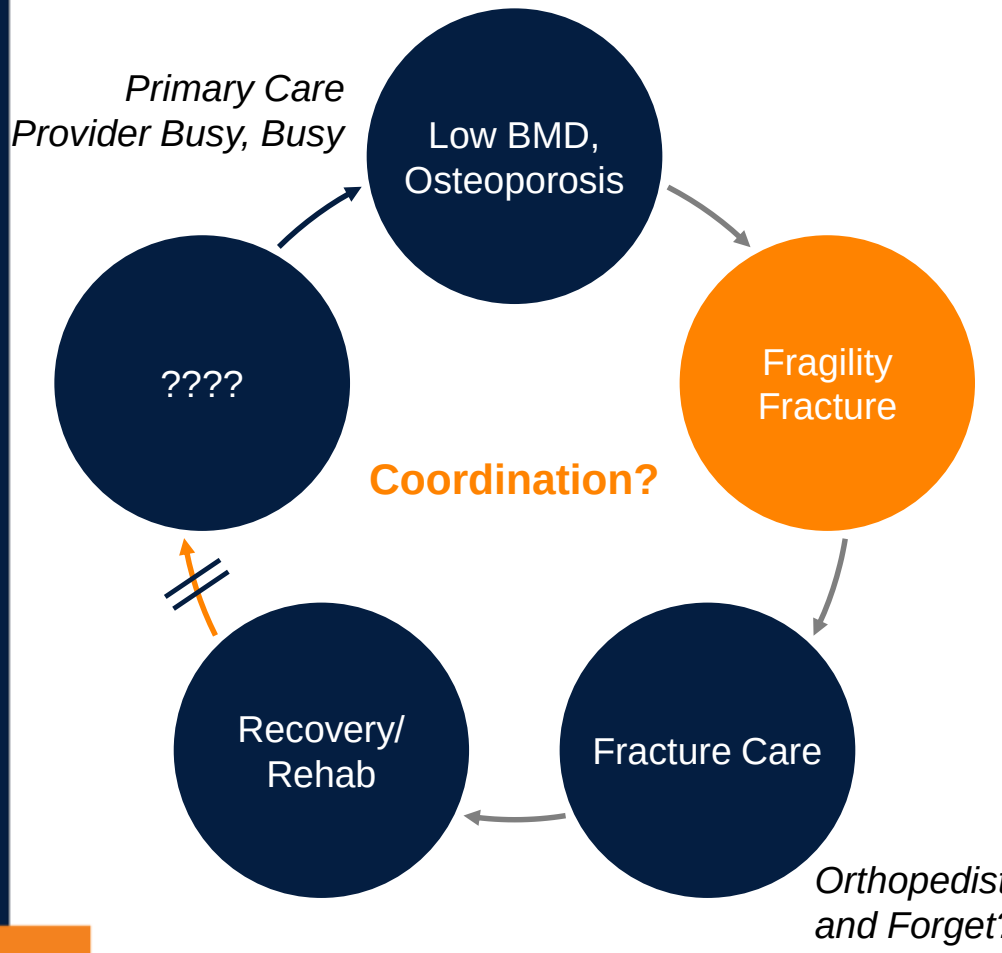
Contributes to >20 million fractures annually

Higher than stroke, MI, and breast cancer combined (U.S. Department of Health and Human Services, 2004)

Direct healthcare costs totaling over $19 billion (AOA, 2022b).

Estimated 80% of patients with fragility fracture in the U.S. will not receive the appropriate post-fracture care for osteoporosis (AOA, 2022b)

Problem Description



Undertreatment of osteoporosis in patients with fragility fractures:

- Lack of knowledge of the disease by patient and primary care physician (PCP)
- Lack of awareness of current practice guidelines by PCPs and orthopedic surgeons
- Perception among orthopedic surgeons that the PCP should manage this condition
- Poor compliance with medications
- Lack of communication among health-care team

(Queally et al., 2013)

Currently at TTUHSC EP Hand Clinic there is no standardized protocol for screening for osteoporosis in patients with a possible fragility fracture.

Literature Review

Search terms used: “osteoporosis,” “fracture,” “fragility fracture,” “secondary fracture prevention,” and “post-fracture health-care gap.”

Databases used: CINHAL, PubMed, Medline, Embase, and Cochrane Library

Level of Evidence:
Guidelines (Level I):

- National Institute for Health and Care Excellence (NICE)
- The European League Against Rheumatism (EULAR) and the European Federation of National Associations of Orthopedics and Traumatology (EFORT)
- United States Preventive Services Task Force (USPSTF)
- American Orthopedic Association (AOA) Own the Bone Initiative

Systematic Reviews/Meta-Analysis (Level I)

Randomized Controlled Trials (Level II)

Literature Review

Orthopedic providers play a crucial role in addressing bone health concerns with patients who have sustained an osteoporotic fracture

(AOA, 2022a; Bunta, 2011; NICE, 2012).

The orthopedic team could initiate the screening process and then refer the patient to the primary care physician or specialists for management of osteoporosis if needed

(NICE, 2012; Rosenwasser & Cuellar, 2016; Solomon et al., 2007).

The recommendation made by the guidelines is that every patient 50 years and older with a recent fracture should be evaluated for osteoporosis to prevent secondary fractures

(Lems et al., 2017; NICE, 2012).

Osteoporosis can be evaluated by using a risk assessment tool such as the FRAX.

(Bone Health and Osteoporosis Foundation [BHOF], 2021; Curry et al., 2018; Kanis et al., 2021; NICE, 2012).

FRAX Tool

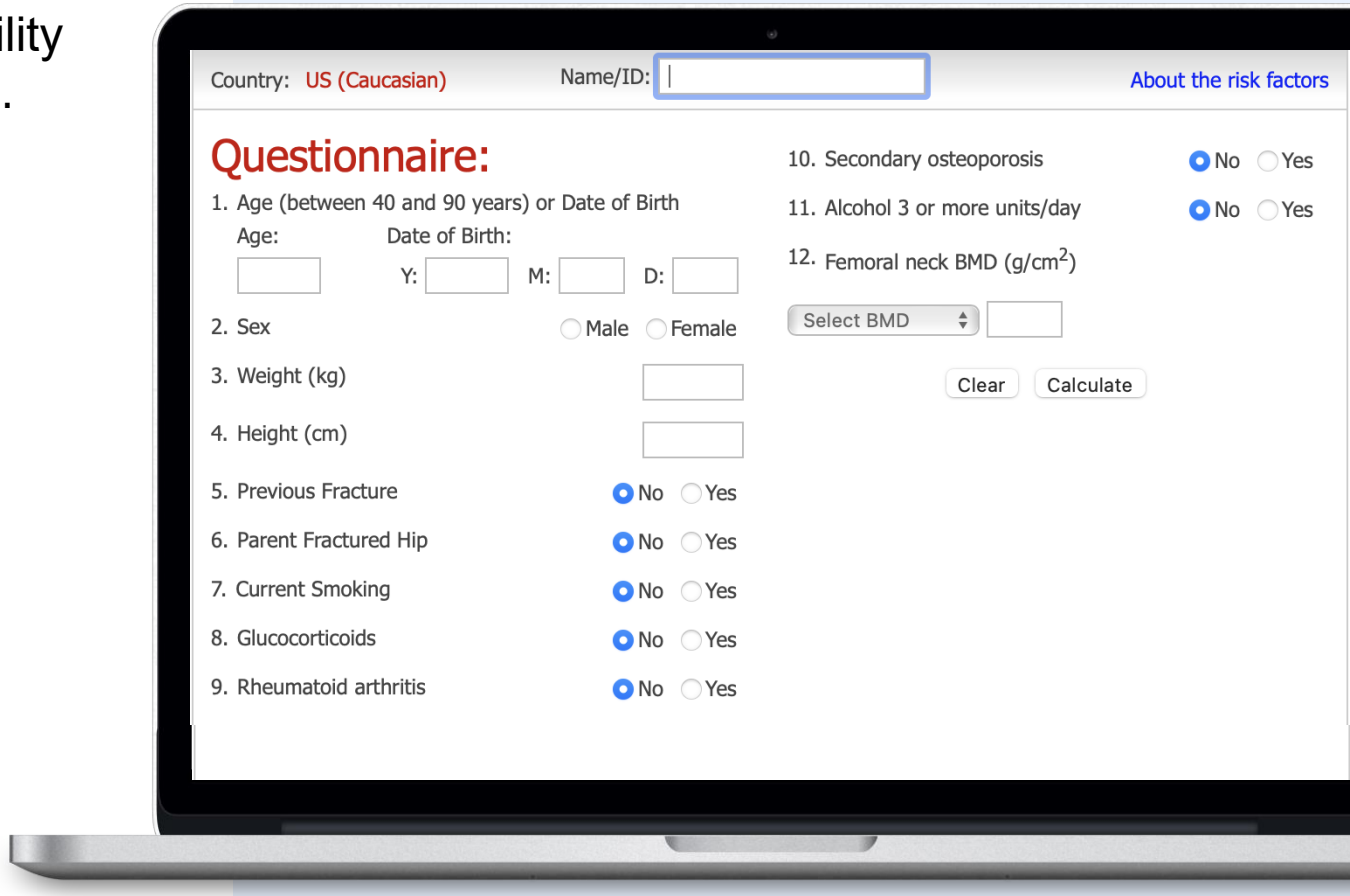
Identifies a person's fracture probability over a 10-year interval (NICE, 2012).

Intervention threshold:

- Hip Fracture: 3% or higher
- Major osteoporotic fracture: 20% or higher

If intervention threshold met:

- Order for bone mineral density (BMD) using dual-energy x-ray absorptiometry (DEXA).



(Bone Health and Osteoporosis Foundation [BHOF], 2021)

DEXA Scan

- DEXA is considered the gold standard when diagnosing osteoporosis (NICE, 2012).
- DEXA T-score: 2.5 or more standard deviations below that of a healthy young adult indicates that a person has osteoporosis (WHO, 2007).
- An order initiated on the first outpatient orthopedic clinic visit for a DEXA scan, after meeting the intervention threshold on the FRAX, have improved osteoporosis diagnosis and treatment rates (Queally et al., 2013).

Specific Aims

Initiate a bone health protocol in patients with suspected fragility fractures:

Current literature and evidence-based guidelines support identifying, evaluating, and treating patients with a recent fragility fracture

Prevent secondary fracture

Methods

- Establish best practice guidelines with supporting evidence
- Support from supervising physician
- IRB approval from the University of Texas at El Paso (UTEP)

  Not a human subject research project

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Office of the Vice President for Research and Sponsored Projects
The University of Texas at El Paso IRB
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P: 915-747-7693 E: irb.orsp@utep.edu

Date:	November 4, 2021
To:	Lyndsey Slape
From:	University of Texas at El Paso IRB
Study Title:	[1811056-1] Implementing an Osteoporosis Screening and Treatment Protocol for Patients with Fragility Fractures
IRB Reference #:	College of Nursing
Submission Type:	New Project
Action:	NOT RESEARCH
Review Type:	Administrative Review
Approval Date:	November 4, 2021

Thank you for your submission of New Project materials for this research study. The University of Texas at El Paso IRB has determined this project does not meet the definition of human subject research under the purview of the IRB according to federal regulations.

We will put a copy of this correspondence on file in our office.

If you have any questions, please contact the IRB Office at irb.orsp@utep.edu or Bernice Caad at (915) 747-6590 or by email at bcaad@utep.edu. Please include your study title and reference number in all correspondence with this office.

Sincerely,

Dr. Lorraine Torres, Ed.D, MT(ASCP)
IRB Chair

Study Of The Interventions

- Men and Women, 50-years and older
- First follow-up appointment at TTUHSC EP Hand Service
- Sustained a suspected fragility fracture
- Complete the FRAX questionnaire: estimate 10-year probability of fracture
- If intervention threshold met: DEXA scan to assess bone density
- All patient given prescription for supplementation:
  - *Calcium 1,200 mg*
  - *Vitamin D 800 mg*
- Education
  - *Oral*
  - *Written Handout*
- Once DEXA results obtained: referral letter with recommended care for the PCP for ongoing management of osteoporosis.

Measures

Number of patients screened with the FRAX questionnaire

Number of patients provided with education

Number of patients started on calcium and vitamin D supplementation

Number of patients who met the criteria for the DEXA scan

Data was placed in an excel spreadsheet for analysis

Translational Framework: Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Model

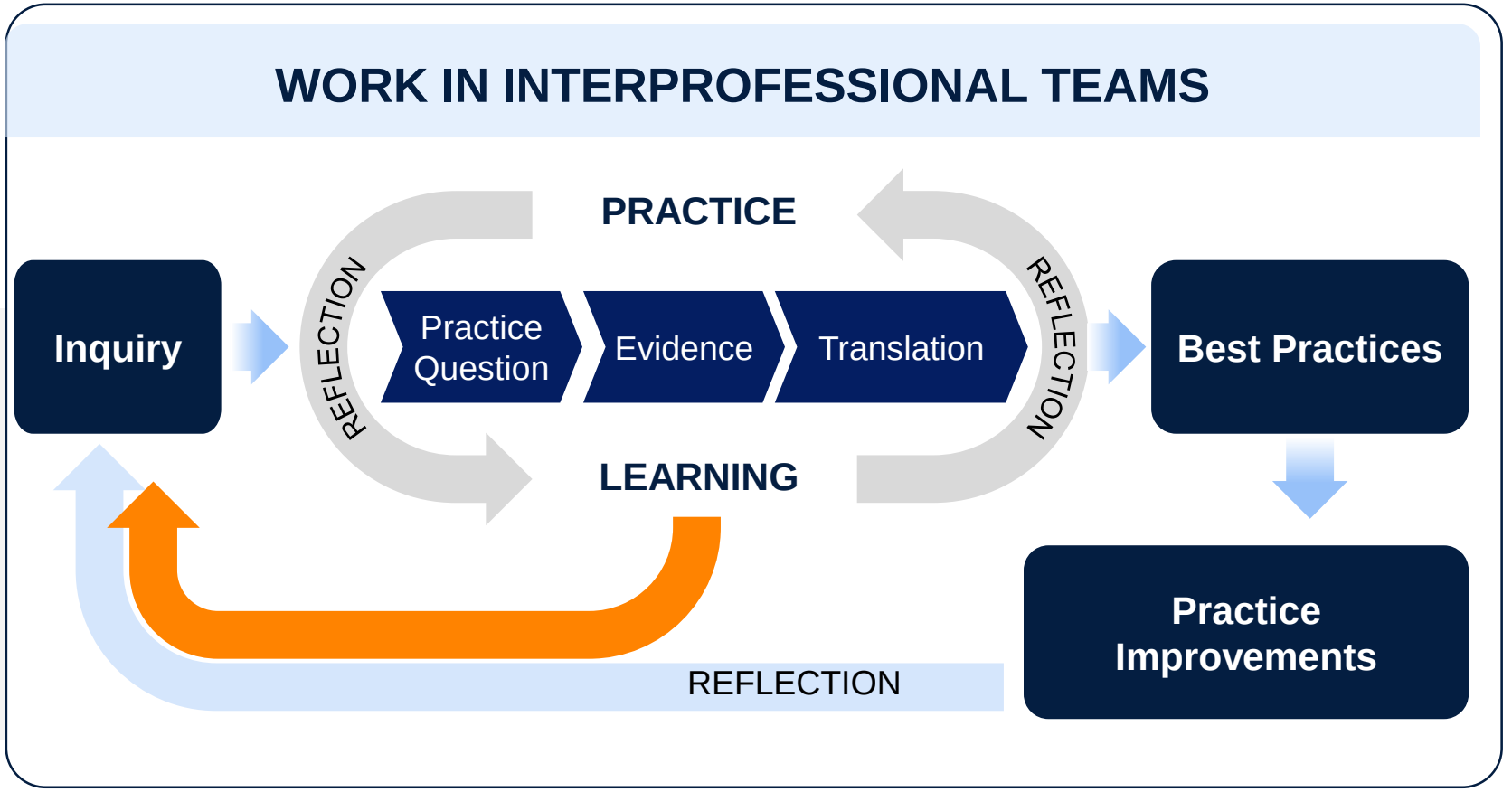
Problem-solving approach

3-Step Process: (PET)

01 Practice Question

02 Evidence

03 Translation



(Johns Hopkins Medicine, 2022)

Translational Framework: Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Model

1 Practice Question

Interprofessional team established: Orthopedic Surgeons, Advanced Practice Providers, Registered Nurses, Occupational Therapists, Medical Assistants.

Key Stakeholders: Orthopedic Department, Patients and Families, Interdisciplinary Colleagues

Evidence-Based question developed:

- Based on 10-day practice log
- PICOT format

2 Evidence

Comprehensive literature review

Evidence placed in matrix tool so synthesis of findings could be conducted.

Best evidence-based recommendations developed.

3 Translation

Developed closely with the supervising orthopedic hand surgeon and the clinic supervisor.

Action plan created:

- Objective developed
- Anticipated start and end dates
- Observable measures identified

Disseminate the findings:

- Internal dissemination through monthly departmental meeting.
- Presented at the DNP scholarly project symposium

(Johns Hopkins Medicine, 2022)

Quality Improvement Model: Plan-Do-Study-Act (PDSA) Cycle

Beneficial when implementing ongoing changes in a short period of time.

Step 1

- Setting a specific and measurable aim
- Establishing measures to determine if the change was effective
- Select change that will result in improvement

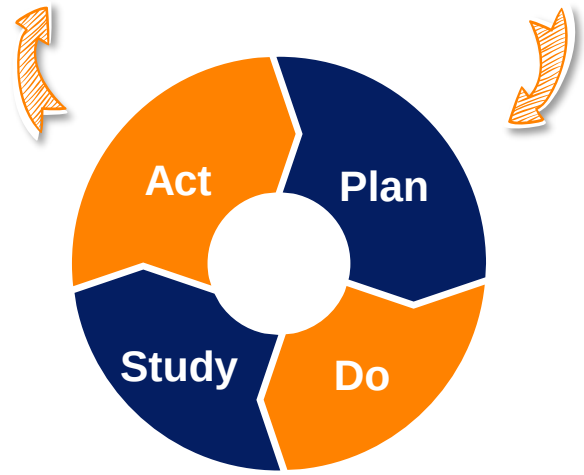
Step 2

Test the change by applying the PDSA cycle

- Planning and carrying out project
- Analyze the data to make changes
- Refine the process
- Incorporate changes in the workflow

Model for Improvement

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What change can we make that will result in improvement?



(IHI, 2022)

Results

17 Patients presented to their first follow-up visit after sustaining a distal radius fracture and were considered at risk for osteopenia or osteoporosis based on their age and history.

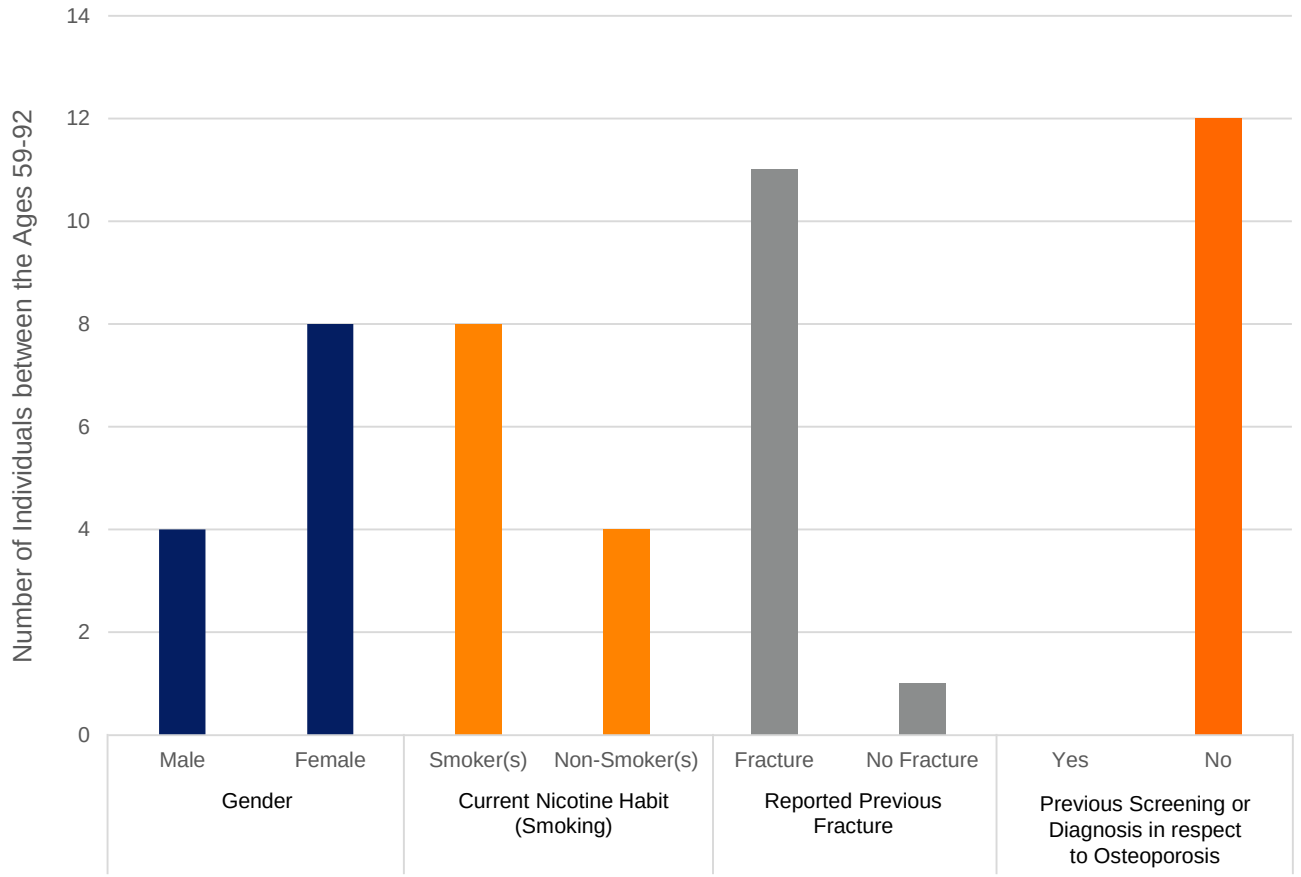
12 met intervention threshold on the FRAX questionnaire.

- Given order for BMD testing by DEXA
- Prescription for calcium and vitamin D supplementation
- Provided oral and written educational materials

Results

- **Age range:** 59-92 years old
- **Female**: 8
- **Male**: 4
- **Average BMI**: 25 (overweight)
- **Previous Fracture**: 11
- **None** of the patients had been screened for osteoporosis
- **Current smokers**: 8

Patients who met the FRAX Questionnaire Threshold



** The average Body Mass Index (BMI) was 25 and falls in the category of overweight for all subjects*

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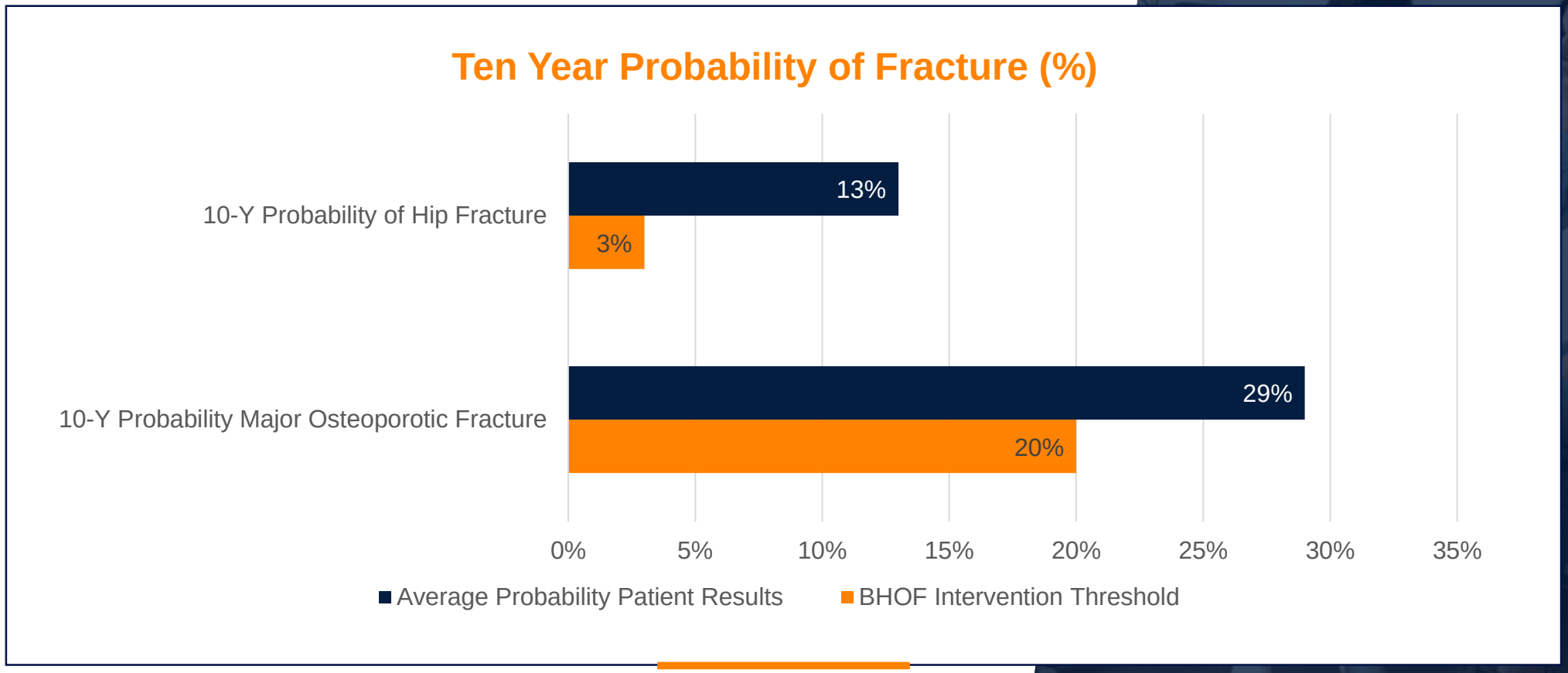
Results


Ten Year Probability of Fracture (%)
10-Y Probability of Hip Fracture
13%
3%
10-Y Probability Major Osteoporotic Fracture
29%
20%
0%
5%
10%
15%
20%
25%
30%
35%
Average Probability Patient Results
BHOF Intervention Threshold

Results

Contacted by telephone for follow-up

Scheduled DEXA appointment

7 out of 12 patients

Started supplementation with calcium and vitamin D

7 out of 12 patients

Not planning to schedule DEXA or start supplementation

2 patients (uninsured)

Planning to schedule DEXA and start supplementation

3 patients

Summary

Osteoporosis is a global health concern

The project identified an opportunity to screen and treat patients with osteoporosis.

Screening helped identify post-fracture patient at high risk

- Promote early intervention and treatment

FRAX questionnaire did not increase clinic time

The orthopedic community can be leaders in closing the the post-fracture treatment gap.

THANK YOU!

Questions?

"Surround yourself with people who challenge you, teach you, and push you to be your best self."

Bill Gates

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