PARADIGM SHIFT IN OSTEOPOROSIS DIAGNOSIS, CARE, AND MANAGEMENT

A TEAM BASED APPROACH

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1

Disclosures

There are no disclosures for this talk.

2

GOALS OF LECTURE

- Osteoporosis WHY DO WE CARE/WHAT MOTIVATES US?
- KEY CLINICAL TERMINOLOGY
- Bone Metabolism and Bone Changes with Age
- HOW DO WE DIAGNOSE – DXA vs CLINICALLY?
- PRIMARY vs SECONDARY FRACTURE RISK REDUCTION
- GOALS OF TREATMENT (FRACTURE vs BMD)
- TEAM BASED APPROACH

3

Osteoporosis Definition:

- Skeletal disorder characterized by reduced bone mass and deterioration of bone structure leading to increased frailty and an INCREASED RISK of LOW TRAUMAFRACTURE
- Bone Resorption > Bone Formation
- BONE STRENGTH
  Bone Density + Bone Quality

4

INCIDENCE and CARE GAP

HOW MANY FRACTURES OCCUR?

- 2.1 MILLION FRAGILITY FRACTURES occur in the US annually
(hip/vertebrae/pelvis/distal forearm)
- Cost is significant 20+ Billion per year (Direct Healthcare costs)
-Up to 60 billion if indirect costs included
- 432,000 hospital admissions
- 180,000 nursing home admissions

NBHA 2012

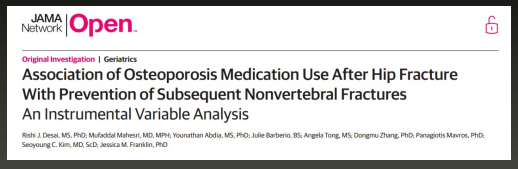
HOW MANY PATIENTS RECEIVE SCREENING AND/OR TREATMENT?

- CURRENTY Less than 25% of patients who sustain a fracture will receive a screening DXA or a prescription drug to protect against future fracture risk.
- AKA SECONDARY FRACTURE PREVENTION!!

5

Morbidity and CARE GAP

In the recent past we have gotten worse, not better!?


JAMA Network Open.

Original Investigation | Geriatrics

Association of Osteoporosis Medication Use After Hip Fracture With Prevention of Subsequent Nonvertebral Fractures
An Instrumental Variable Analysis

Rishi J. Desai, MS, PhD; Mufaddal Mahesri, MD, MPH; Younathan Abdia, MS, PhD; Julie Barberio, BS; Angela Tong, MS; Dongmu Zhang, PhD; Panagiotis Mavros, PhD; Seoyoung C. Kim, MD, ScD; Jessica M. Franklin, PhD

- 9.8% of patients who sustained a hip fracture were placed on a prescription medication for osteoporosis in 2004.
- A mere 3.3% of patients who sustained a hip fracture were started on a medication in 2015.

6

COST TO THE US HEALTHCARE SYSTEM

- Significant increase in morbidity and cost projected from 2018 to 2040.
- Fractures will increase from 1.9 million in 2018 to 3.2 million in 2040 (68% increase)

WHY ARE HOSPITAL SYSTEMS TAKING INTEREST?!

FEE FOR SERVICE VS ACO/HMO?!

Medicare RAF (Risk Adjustment Factor) scores

Lewiecki Et al

7

Morbidity and Mortality

What happens to patients AFTER a fracture occurs?

MORBIDITY
- Reduced quality of life
- Mobility issues including increased pain and disability
- Difficulty with ADL's
- Significant psychological impact (Depression/Anxiety/Fear)

MORTALITY
- All cause mortality after Hip Fracture as high as 20-30% for men within 1 year

8

CLINICAL TERMINOLOGY IS IMPORTANT

- LOW TRAUMA FRACTURE

AKA: **FRAGILITY FRACTURE** =
FALL FROM A STANDING HEIGHT OR LESS!!

This low impact injury could lead to bruising and/or a contusion injury, however you should not break your bone if adequate structure and density is present.

**CRITICAL FOR CLINICAL DOCUMENTATION
Describe specifically the Mechanism of Injury

9

CLINICAL TERMINOLOGY IS IMPORTANT

- RADIOGRAPHIC OSTEOPENIA
  (Total Joint Arthroplasty Implications)

Seen in clinical imaging or on radiology reports…

Bone loss recognized on an Xray, CT scan, or MRI seen as thinning of the cancellous or spongy bone (as seen in the spine or metaphyseal regions of long bones)
OR
thinning of the cortical bone (as seen at the hip typically)

10

TERMINOLOGY IS IMPORTANT

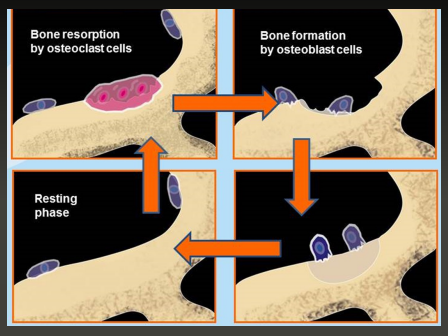
- OCCULT or MORPHOMETRIC COMPRESSION FRACTURE

Fractures typically in the spine which are noted to be structural collapse on imaging but MAY or MAY NOT be currently or historically symptomatic.

Opportunistic Imaging!!

11

Osteoblast vs Osteoclast function



12

BONE REMODELING

OSTEOBLASTS
- Build New Bone
- Target of ANABOLIC medications
  - Forteo (PTH analog)
  - Tymlos (PTH analog)
  - Evenity (sclerostin inhibitor)

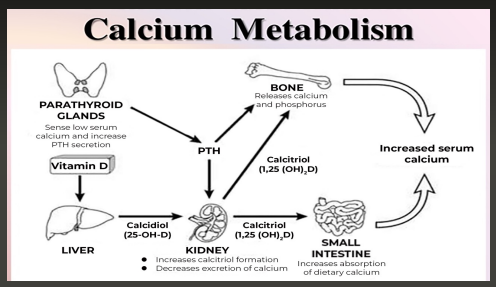
** *FIRST LINE AFTER LOW TRAUMA FRACTURES!!!* **

OSTEOCLASTS
- Breakdown old bone
- Target of ANTIRESORPTIVE medications

- Fosamax (oral bisphosphonate)
- Boniva (oral bisphosphonate)
- Actonel (oral bisphosphonate)
- Reclast (IV bisphosphonate)
- Prolia (RANK ligand inhibitor)

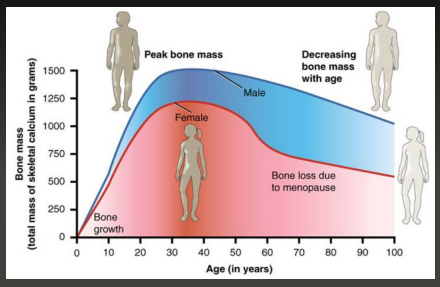
13

Physiology lesson in Bone: Calcium/PTH/vit D



14

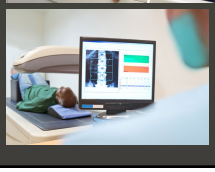
Natural Course of Bone Changes during 100 person years



15

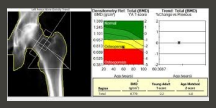
HOW IS OSTEOPOROSIS DIAGNOSED OBECTIVELY?

DEXA SCAN
HOW IS IT PERFORMED?



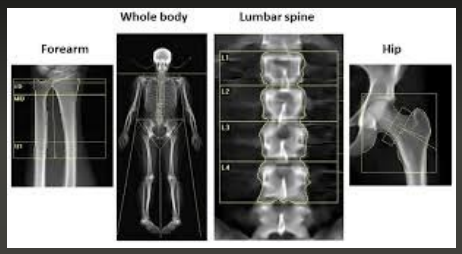
HOW IS IT INTREPRETED?

- A word on QUALITY EXAMS
  - (same machine)
  - (calibration)
  - (technique)
  - (software capture)



16

HOW IS OSTEOPOROSIS DIAGNOSED PRIMARILY ON SCREENING DXA?



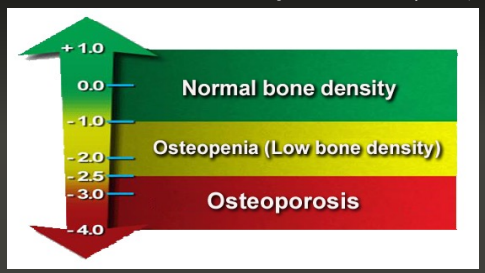
DXA T-score ≤ -2.5 at any ISCD approved skeletal site:
FN, TH, LspineL1-L4 (individually), Radius 33%

17

HOW IS OSTEOPOROSIS DIAGNOSED?

OBJECTIVE T-SCORE ASSESSMENT

Z-score
(used in postmenopausal women and predictor of secondary causes)



18

Who qualifies for a (DXA)

PRIMARY RISK ASSESSMENT
- ALL Women 65 and older

AND

ALL Men 70 years and older

OR

One or more additional personal risk factor for bone loss.
(FRAX questions)
(radiographic osteopenia)
(soft bone noted intraoperatively)
(Secondary causes of bone loss) Red Flags:

Smoking, DM, COPD, Renal disease, COPD, malabsorption syndromes, hormone therapy, RA, early menopause, Liver disease, cushings, thyroid

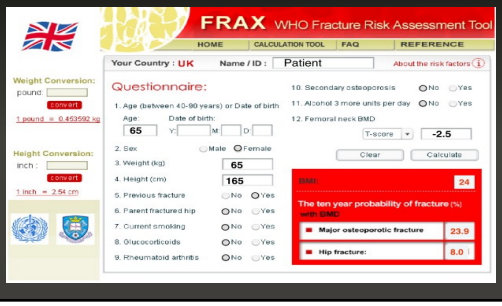
SECONDARY RISK ASSESSMENT
- Women OR Men 50 and older

WITH history of FRAGILITY FRACTURE

19

HOW IS OSTEOPOROSIS DIAGNOSED?

FRAX INDICIES BASES ON CLINICAL QUESTIONS AT TIME OF DXA SCAN



20

HOW IS OSTEOPOROSIS DIAGNOSED?

FRAX (Fracture Risk Assessment Tool)
A Predictor of Risk

- Used as a screening for (Primary Risk Reduction)
- Helps guide clinical risk factor history contributing to bone loss
- >20% Major Osteoporotic Fracture threshold
- >3% Hip Fracture threshold

21

HOW IS OSTEOPOROSIS DIAGNOSED ?
CLINICALLY vs BMD on DXA?

CLINICALLY ESTABLISHED OSTEOPOROSIS

- Postmenopausal female or male greater than 50 WITH LOW TRAUMA FRACTURE of the hip or spine (DXA or NOT)
- Osteopenic DXA BMD associated T-score (-1.0 to -2.4) WITH LOW TRAUMA FRACTURE of the approved sites by the (WHO in 1994) [wrist, hip, spine, proximal humerus, ankle]

SEVERE CLINICALLY ESTABLISHED OSTEOPOROSIS

- OSTEOPOROTIS DXA BMD associated T-score (≤ 2.5) WITH LOW TRAUMA FRACTURE of the approved sites by the (WHO in 1994) [wrist, hip, spine, proximal humerus, ankle]

OR

OBJECTIVE SEVERE OSTEOPOROSIS (AACE GUIDELINES)

T-score ≤ 3.0 at any of the approved ISCD sites

22

HOW IS OSTEOPOROSIS MONITORED?
(THE PARADIGM SHIFT)

CLINICAL STATUS

- Have we PREVENTED SECONDARY interval LOW IMPACT FALLS leading to LOW TRAUMA FRACTURES?!

DEXA SCAN

- INTERVAL COMPARISON BMD (percentage change)
- LSC (statistical significance of a result)

[I use a statistical 3% variability]

CLINICALLY …. HAVE WE FALLEN AND FRACTURED AGAIN OR NOT?! IF NOT – Lets celebrate this!!

THIS IS THE DESIRED TREATMENT OUTCOME!!!

23

THE TRUE SYMPTOMS OF OSTEOPOROSIS

OSTEOPOROSIS IS A SILENT DISEASE =

LOTS OF EDUCATION ON THE LINK!!

LOW TRAUMA FRACTURE = OSTEOPOROSIS

LOW TRAUMA/FRAGILITY FRACTURE IS THE ADVERSE OUTCOME RELATED TO THE DISEASE OF OSTEOPOROSIS

BONE LOSS WITH AGING IS NORMAL… HOWEVER LOW TRAUMA FRACTURES ARE NOT NORMAL!!

24

OSTEOPOROTIC FRACTURE TYPES and Incidence in the US

2.1 MILLION (FRAGILIGY FRACTURES) ANNUALLY

- SPINE (700,000-750,000)
- HIP (300,000-350,000)
- WRIST (250,000-300,000)
- PELVIS (150,000-200,000)
- PROXIMAL HUMERUS (100,000-150,000)
- *ANKLE (187,000-200,000)

25

VERTEBRAL COMPRESSION FRACTURE (Spine)

- Most common osteoporotic related fracture
- Pain, Postural changes, lack of self esteem
- 8 fold increase in age-adjusted mortality
- Women = 16% lifetime risk over 50
- Men = 5% lifetime risk over 50

Im just old

There is nothing I can do

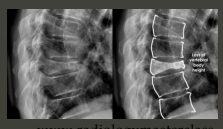
I cant stand up straight

I've lost inches

My clothes don't fit

My ribs are pressing on my pelvis

I can't breathe



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26

Intertrochanteric and Femoral Neck Fractures(Hip)

- More than 10 MILLION GLOBALLY
- Projected 310% increase in men and 240% increase in women by 2050.

POOR PROGNOSIS

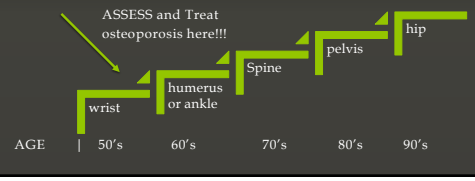
- 1/3 die within 1 year
- 1/3 have permanent dysfunction/pain
- 1/3 lose independence or require SNF/LTC

Women = 80 % of hip fractures
1 in 6 risk for Caucasian women
vs 1 in 8 for breast cancer
Men = greater risk of mortality

27

Distal Radius/Ulna Fractures (Wrist)

- Often first sign of OR Predictor of future FRAGILITY FRACTURE risk
- Loss of function/mobility
- Predictor of Increased Hip Fracture RISK (2-4x)



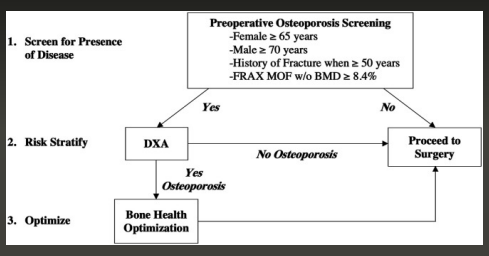
28

Bone Health Applications in an Orthopedic Surgery Practice

- Lower Rates of Knee Arthroplasty and reduced complications
  - Neogi T, Li S, Peloquin C, Misra D, Zhang Y. Effect of bisphosphonates on knee replacement surgery. Ann Rheum Dis. 2018
  - McDonald CL, Lemme NJ, Testa EJ, Aaron R, Hartnett DA, Cohen EM. Bisphosphonates in Total Joint Arthroplasty: A Review of Their Use and Complications. Arthroplast Today. 2022
- Decision Making in shoulder arthroscopy (awl size and anchor placement)
  - Downsizing for postmenopausal females to reduce anchor pullout
- Surgical Fracture Applications and Improved Outcomes (Cellular level augmentation)
  - Stimulbast (osteoinductive)
  - Bone chips (osteocoductive)
  - ACP (autologous conditioned plasma) (cell signaling)
  - PRP
  - Bone Stimulators (LIPUS vs Electromagnetic) Exogen

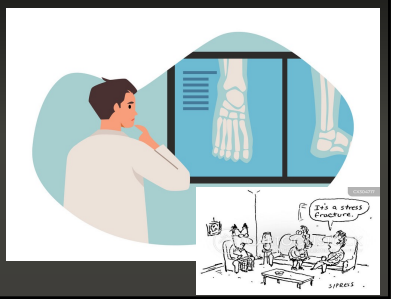
29

RISK STRATIFICATION IN TOTAL JOINT ARTHROPLASTY



30

How does understanding bone physiology on a cellular level make us better orthopedic providers?



31

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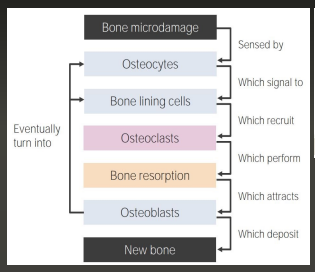

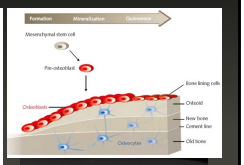

32

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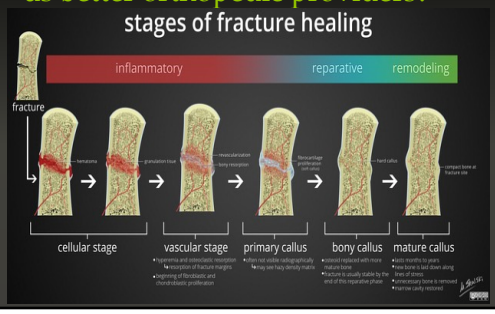

33

Reality is BOTH components are critical to successful fracture outcomes!!

Orthopedic Stabilization:
(Surgery internal vs external immobilization)

- Critical to prevent undue forces at the fracture to reduce risk of non-union/delayed union

Metabolic Resources:
Supplementation/Nutrition

- Vitamin D3, calcium, Protein
- Critical to prevent delayed union/non-union by giving the fracture resources at the cellular level to be able to heal!!!

34

AACE 2020 GUIDELINES

- American College of Endocrinology Highlights
- 2010– consider anabolic therapies in HIGH RISK patients.
- 2020– Osteo**ANABOLIC therapies FIRST LINE** in patients with History of LOW TRAUMA FRACTURE OR T-score < -3.0

  More clear definition of what is considered high risk and who should consider anabolic therapies.
- **BUILD BONE FIRST!! Greater BMD gains when starting with an ANABOLIC medication FOLLOWED by an Antiresorptive medication. (3)

(3) Leder BZ. Optimizing Sequential and Combined Anabolic and Antiresorptive Osteoporosis Therapy. JBMR Plus. 2018

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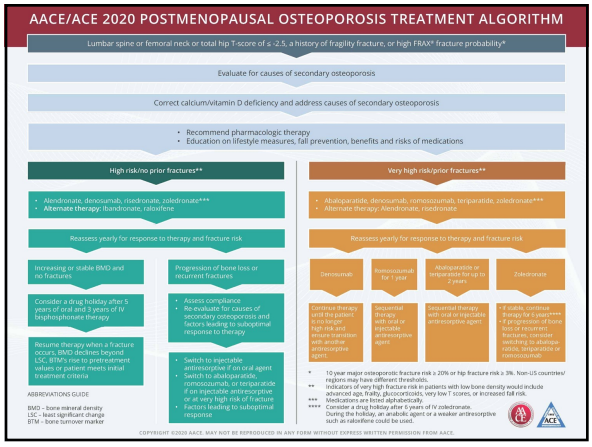


36

Pharmacologic Updates

**ANABOLIC THREAPIES= FIRST LINE FOR POST FRACTURE PATIENTS AT HIGH RISK!!

- **FORTEO (teriparatide)**
  PTH analog
  - Launched in 2002
  - Initially permitted max 2 years of dosing per the FDA, now can redoes if indicated
  - (Oct 2020 Removed black box warning for Osteosarcoma (due to long term post marketing studies >15 years showed no real increased incidence in humans)
  - 65% RRR history of 1 or more new compression fractures
  - 77% RRR history of multiple new compression fractures
  - 53% RRR reduction in NEW non-vertebral fragility fracture patients
  - ARR of 9.3, 3.8%, 2.9% respectively

  - Still caution with patients at higher risk of osteosarcoma development such as history of prior external beam radiation

- **TYMLOS (alobaraparatide)**
  PTHrP analog
  - Launched in 2017
  - 86% RRR in spine
  - 43% RR non-vertebral fractures

- **EVENITY (romozosumab)**
  Sclerostin inhibitor
  - Launched in 2019
  - Medicare B

**ANABOLICS should be followed by an antiresorptive to maintain improvement!

37

Pharmacologic Updates

ANTIRESORPTIVE AGENTS

- **PROLIA (Denosumab)**
  - Launched in 2010
  - Monoclonal antibody
  - RANKL inhibitor
  - More on and off mechanism (Longer term safety?!)

BEST PRACTICES
- Dental Evaluation prior to initiation
- Get injections ON TIME!
- CALCIUM SUPPLEMENT!!
- NO DRUG HOLIDAYS FOR PROLIA!!!

COST/COVERAGE
- Medicare part B

38

Pharmacologic Updates

Antiresorptive Cont. (Bisphosphonates)

- **FOSAMAX (alendronate)**
  - Best data for BMD improvement at all sites and fracture risk reduction at the hip, spine, and non-vertebral sites.
  - Preferred oral bisphosphonate

- **BONIVA (ibandronate)**
  - Does not have fracture risk reduction data in the hip, therefore used for spine cancellous bone loss patients primarily.
  - Secondarily downgraded from recommendations with oral bisphosphonate class (Fosamax or Actonel preferred) ACP 2017 guidelines

- **Reclast (zolendronic acid)**
  - IV bisphosphonate with good efficacy and longer lasting effect.
  - Data that shows fracture risk reduction for up to 2 years.

BISPHOSPHONATES= DRUG HOLIDAYS
EVERY 4-6 YEARS (oral)
Every 3 years (IV)

39

Pharmacologic Updates

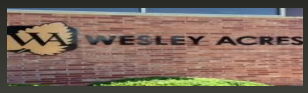
Other agent updates (not as commonly used)

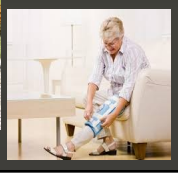
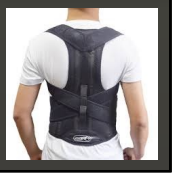
- **Micalcin (procalcitonin)**
  - Initially used to as a treatment option, now removed from treatment guidelines
  - Can be used for acute vertebral compression back pain, initial 2-3 weeks
- **Evista (raloxefine)**
  - SERM –selective estrogen receptor modulator
  - Helpful for postmenopausal women and can reduce risk of breast cancer as well.
- **Estrogen/Testosterone**
  - Beneficial early postmenopausal years and may have other benefits to quality of life/vitality.

40

GOALS OF TREATMENT

- Discuss optimal living situations as care needs change and review external devices to maintain safety and independence and to remind of posture and ergonomics.

41

HOW DO WE ASSESS/REASSESS RISK AT FOLLOWUP?!

- ORTHOPEDIC BONE HEALTH CLINIC

SECONDARY FRACTURE RISK REDUCTION

WHAT DOES THIS LOOK LIKE?!

OBTAIN A Traditional DXA (BMD) [EVERY 2 YEARS]

T-score at or below -2.5 (standard osteoporosis)
T-score ≤ -3.0 (high risk or SEVERE osteoporosis) (*AACE 2020 guidelines)

OBTAIN labs as indicated [YEARLY OR WHATEVER IS INDICATED]

25 OH vit D, CMP, PTH (most commonly in my practice)

- OBTAIN/[REVIEW] CLINICAL HISTORY [YEARLY OR WHATEVER IS INDICATED]

(smoker, diabetes, CKD, alcoholic, breast cancer, prostate cancer, early menopause, hysterectomy with oophorectomy, COPD, chronic prednisone use, parental hip fracture,

- OBJECTIVE EXAM FINDINGS

[LOOK FOR NEW CHANGES OR FINDINGS]

(vitamin D deficiency, calcium deficiency, PTH abnormalities, renal disease, DXA changes/risk)

- SUBJECTIVE EXAM FINDINGS

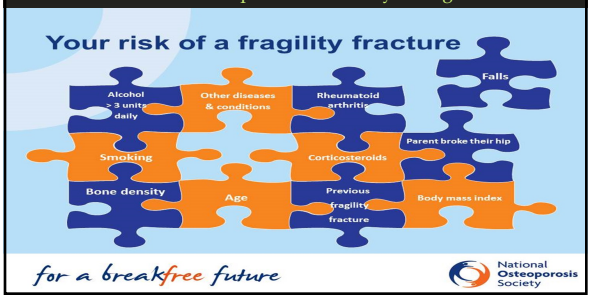
[WHAT ARE THE PATIENT CONCERNS/STRUGGLES]

(poor balance, poor vision, poor nutrition, poor social support (depression, anxiety)

42

PERSONAL RISKS

- Gathered through intake form or during traditional orthopedic care history taking.



43

GOALS OF TREATMENT

- FRACTURE TRUMPS T-SCORE!!!
  - TREAT THE PATEINT'S INDIVIDUAL HISTORY AND RISK FACTORS … NOT JUST THE DEXA(T-score)
- PRIMARY GOAL TO NOT FRACTURE OR REFRACTURE!
- SECONDARY GOAL STABILIZE OR IMPROVE BMD.
  - CONTINUE TO WORK TO OPTOMIZE RESOURCES AND REFERRALS TO HELP THE PATIENT AGE WITH CONFIDENCE AND PHYSICAL PREPARDNESS.

(PT/OT/NUTRITION/OTHER SPECIALISTS AS INDICATED)
Nephrology, Hepatology, Endocrinology, Hematology/Oncology, Pulmonology, Rheumatology, OBGYN, Primary Care

44

USE YOUR RESOURCES
BE A TEAM!

- ORTHOPEDIC SURGEON – Ask them to get involved in initial workup of Vitamin D/PTH and initial patient engagement discussion
- PRIMARY CARE/INTERNAL MED – Ask for support initially and help take bone health off their plate as able! Assist with medication management.
- ENDOCRINOLOGY – Metabolic bone specialists for secondary workup and endocrine disorders
- NEPHROLOGY – Manage Kidney disease and reduce renal osteodystrophy by following vitamin D and PTH abnormalities
- OBGYN – Discuss estrogen candidacy initial decade post menopause and review initial risk factors for bone health in women
- DIETICIANS – Offer nutrition guidance and support for bone health
- PT/OT – Establish Strong Bones PT protocol to design a HEP to build patient confidence and PROTECT against future falls!
- DENTISTS/ORAL SURGEONS – Counsel patients together and understand each others perspectives/practices and concerns to make recommendations for patients.
- OTHERS – Hematology/Oncology, Optometry, Rheumatology, Urology, Hepatology

45

Physical Therapy Program

Avera Osteoporosis Therapy Program Overview

STRONG BONES Physical Therapy Track

- Referral (after INDIVIDUAL patient risk assessed in the orthopedic clinic)(FRACTURE HISTORY and T-score)
- Comprehensive PT PERSONAL Evaluation (see Evaluation Template)
- Session #1 – Evaluation, education regarding PT/OT contribution to Osteoporosis Risk Reduction and initial education regarding Home Exercise Program
- Session #2 – Body mechanics/ergonomics and posture education; HEP review and application.
- Session #3 – Postural support assessment/ review with personalized recommendation, review of body mechanics with ADL's, HEP education
- Session #4 – Core strengthening and Engagement during ADL's
  Diet/Nutrition education review, review of materials from previous sessions
- Session #5 – Proximal Limb and Posterior Chain strengthening/activation.
  Home safety and fall prevention education, review of materials from previous sessions
- Ancillary Referrals as indicated to:
  - Occupational Therapy – Home Safety and ADL's assessment and coaching.
    Big and Loud Program for Parkinsons or other ADL assistance as indicated.
  - Home Medical Supply/Device Review
  - Dietician- Additional counseling and resources on nutrition.
  - Ophthalmology/Optometry- Optimize vision and assess and treat contributing comorbidities Specialist

Session #6 and beyond –

- Optional additional visits **tailored to specific patient needs** and based on the **therapist clinical findings** and functional limitations and impairments and provider recommendation/communication.
- Visits to be timed per patient availability with focus on patient education and program follow through, balance and appropriate strengthening.
- CLINICALLY RECOMMENDED Physical Therapy tracks based on **INDIVIDUAL RISK**:
  - **High Risk – High Precaution**
    - Prevention of all flexion activities. Postural Focus and fall risk reduction. May need to complete core strengthening and pelvic girdle strengthening in supine or sitting to decrease risk of injury.
  - **Moderate Risk – post fracture recovery/standard track**
    - Based on physician recommendations/restrictions when applicable. CKC strengthening and balance work while maintaining a neutral spine.
  - **Low Risk – Preventative Approach**
    - Higher level CKC strengthening, core and pelvic girdle strengthening and higher level balance interventions
- Re-evaluation at 6-12 months as indicated.

- Discharge – Review session
  - Re-eval of clinical performance/objective standardized assessments
  - Review of all HEP and educational concepts
  - Final FOTO patient survey
  - Discussion/patient invited to community education/events (hosted annually or biannually)

Follow Up and Community Programs

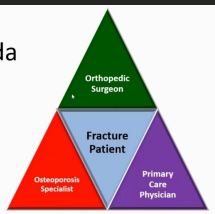
- Annual or Biannual community events focused on bone health awareness, prevention, and management.
- Follow up celebration in May (National Osteoporosis Month) with program graduates.

46

Who is responsible for diagnosis and treatment?

IF NOT YOU….. WHO?!

The "Bermuda Triangle" of osteoporosis fracture care



Harrington J. US Musculoskelet Rev Touch Brief. 2006

47

Movements to IMPROVE BONE HEALTH

(AAOS)
OWN THE BONE

- 2009
- Launched to address the emerging epidemic of osteoporosis related FRAGILITY FRACTURES
- 10 best practice measures to transform fracture care

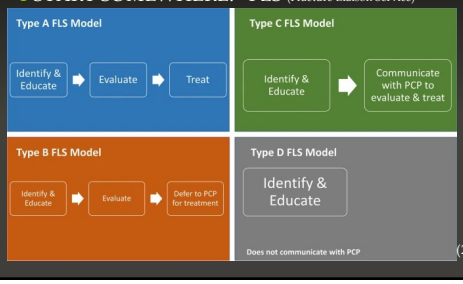
(IOF)
CAPTURE THE FRACTURE

- 2012 IOF and joint collaboration with renewed collaboration in 2020
- 990 registered FLS programs
- 58 countries

48

WANT TO GET INVOLVED IN THE CARE AND CONVERSATION?

- START SOMEWHERE! FLS (Fracture Liaison Service)



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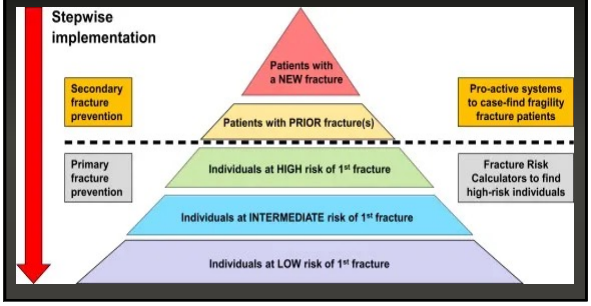
49

WANT TO GET INVOLVED IN THE CARE AND CONVERSATION?



50

WHAT DO WE DO WITH OSTEOPOROSIS PATIENTS?!

- YOU GET TO CHOOSE WHO YOU NEED TO FOLLOW (HIGH RISK)
- YOU GET TO CHOOSE WHO YOU CAN SEND BACK TO PRIMARY CARE FOR TX (oral bisphosphonates)
- YOU CHOOSE/DISCUSS WHO NEEDS TO BE REFERRED ON WITH SECONDARY SCREENING! (Hyperparathyroid)

Default=Send patient back to primary care internal med

FURTHER Referral or Secondary Screening as comfortable or referrals indicated
- Tissue transglutaminase Antibody IGA (celiac disease)
- 24 hr Urine calcium supersaturation (hypercalciuria)
- SPEP, UPEP, serum immunofixation as indicated (multiple myeloma)
- Serum Testosterone, LH and FSH, estradiol (sex hormone disruption)
- TSH/Free T4 (thyroid disorders)
- Hgb A1c (diabetes)
- Serum phosphate, magnesium, homocysteine (misc metabolic dysfunction)

51

Build Awareness/Advocation for Additional Resources

- Review what osteoporosis clinic brings to your practice and to the community (Reinforcing why we do what we do)
- Advocate for support and resources within your health system (provider support, additional CME, staffing)

*BUILD COURAGE!
**PRACTICE WITH INTEGRITY!!
***MAKE AN IMPACT!!!

52

My Story... (If I can you can too)

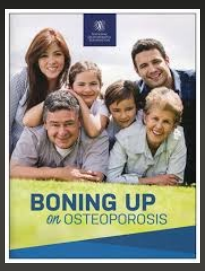
- (2011) Joined general orthopedic surgery/sports medicine practice (with an estimated 30% being fracture care and surgery) Treated 2-3 hip fractures a week with multiple extremity and compression fracture consults as well.
- **(2014) Saw the need Started Post-Fracture Osteoporosis clinic while working full time in
- Quickly met the desperate needs of patients and families and developed a passion and years of experience and eventually have become the local referral for high risk patients (worsened DXA, new fractures, complex cases)
- (2015) Attended NOF, ASBMR, ISCD meetings to further my knowledge and experience in Bone Health
- (2017-18)Advocated to Administration the importance of building clinical support around high risk fracture care
- (2019) MD Bone Health director (DEXA champion) was hired and alongside myself we have became clinical leaders in Bone Health as we Co-chair a committee of now 5 FLS type providers across the Avera footprint meeting monthly to discuss cases and review BEST PRACTICES!
- (2024) Full Time RN was hired to review flagged patient charts and diagnoses (all hip, vertebral and pertinent extremity fractures) Chart review performed.. If low trauma or known bone health risk factors a consult is scheduled with the regional bone health expert.
- (CURRENT) Influencing and Encouraging others..
  MAKE YOUR IMPACT !!

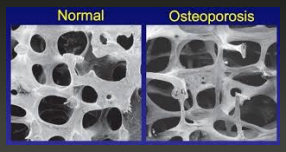
53

ORGANIZATIONS FOR SUPPORT AND EDUCATION

54

GREAT RESOURCE FOR PATIENTS AND PROVIDERS





55

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- 1) Breaking the fragility fracture cycle (2011)
https://link.springer.com/content/pdf/10.1007/s00198-011-1643-9.pdf
- 2) Closing the osteoporosis care gap (2021)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7935825/pdf/11914_2020_Article_644.pdf
- 3) Secondary Fracture prevention: Consensus Recommendations from a Multidisciplinary Expert Group (2021)
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- 4) Fracture liaison service—a multidisciplinary approach to osteoporosis management (2024)
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- 5) Interventions to improve adherence to anti-osteoporosis medications: an updated systematic review (2020)
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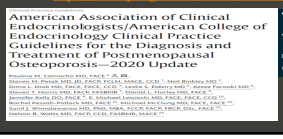
American Association of Clinical Endocrinologists/American College of Endocrinology Clinical Practice Guidelines for the Diagnosis and Treatment of Postmenopausal Osteoporosis—2020 Update


The clinician's guide to prevention and treatment of osteoporosis
Consensus Statement | Open access | Published: 28 April 2022
Volume 33, pages 2049–2102, (2022) Cite this article
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56

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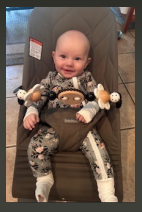
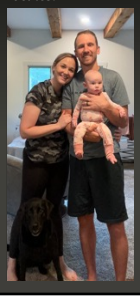
Dana Tuschen CMA
Leah Prestbo MD





57