Secondary Fracture Prevention

Karen Cummings, PAC
University of Michigan Bone Health Clinic

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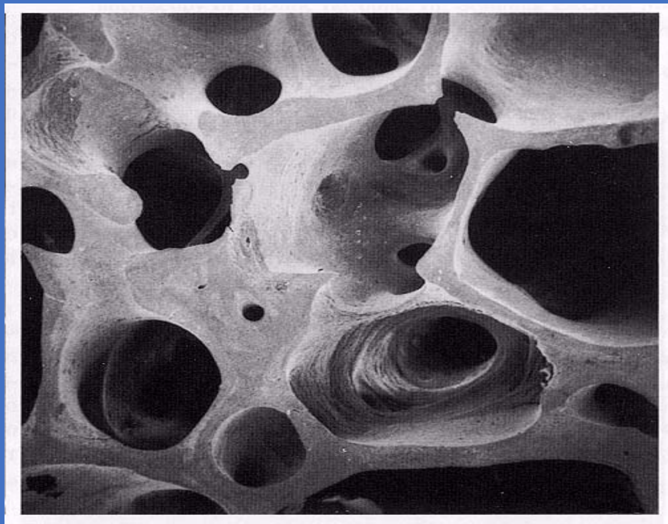
We see the highest risk patient

- 50% of fragility fracture patients will have a second fracture
- 50% of hip fracture patients will have had a prior fragility fracture

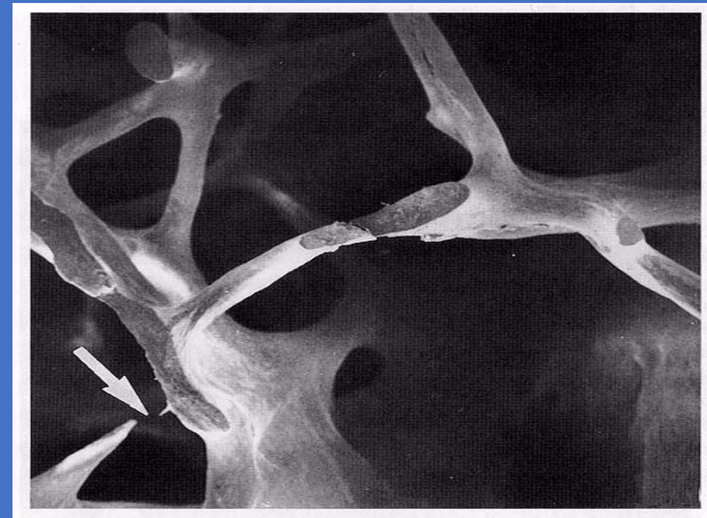
Yet only 16-20% of post fragility fracture patients get placed on therapy for osteoporosis

What is Osteoporosis?

When the skeleton loses mineral density, the structure becomes thin and unable to take normal weight, leaving bones that break easily.



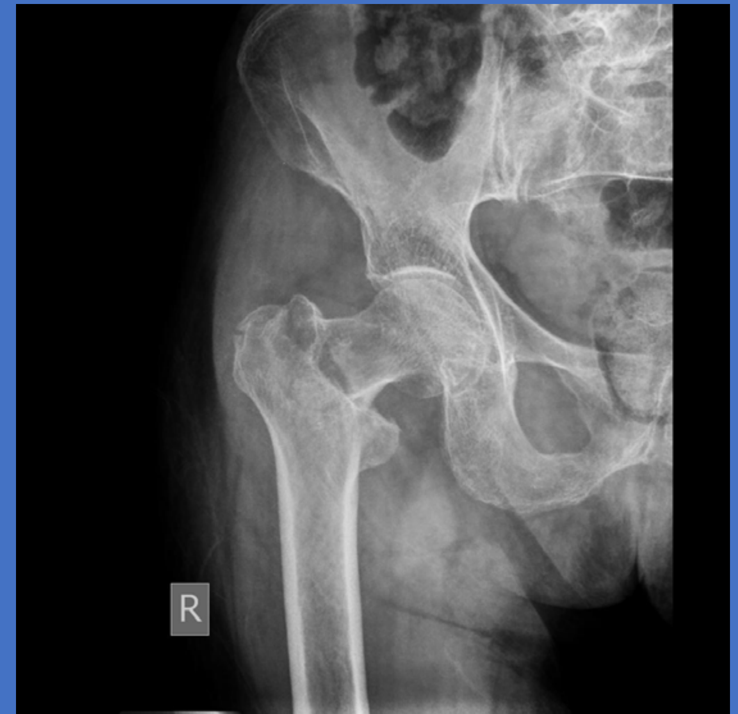
Normal



Osteoporosis

What is a Fragility Fracture?

- Result from low trauma events such as fall from a standing height or less that results in a fracture
- Vertebral, wrist, hip most “traditional”
- All bones susceptible



Identifying Patients at Risk

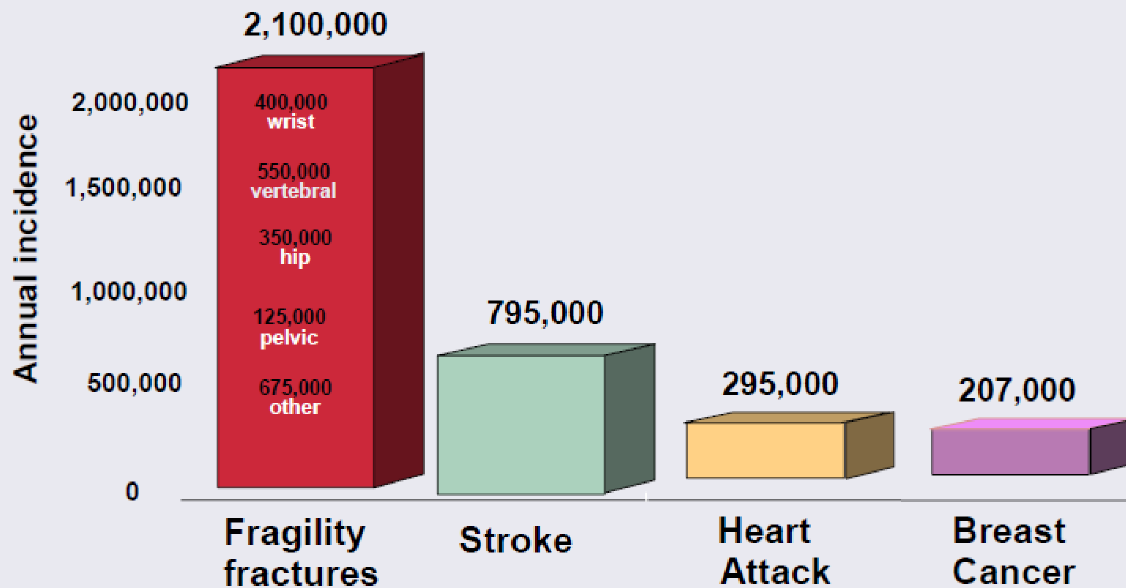
- Advancing age
- **Previous fracture**
- Parental history of hip fracture after the age of 50
- Low body weight /small frame
- Low calcium intake or hypercalciuria
- Vitamin D deficiency
- Lifestyle: alcohol (>2 drinks daily), sedentary life style, smoking
- Meds: Oral glucocorticoid > 5 mg/d of prednisone for > 3 mo (ever), antiepileptic's, excess thyroxin, Aromatase inhibitors, GnRH agonists. Oral anticoagulants, PPI, TZD’s,
- Secondary causes: RA, Endocrine, GI, pancreatic and hepatic disorders, gut surgeries, marrow related disorders and chemo/radiation therapy, transplant, eating disorders, immobility

How Common is Osteoporosis in the U.S.?

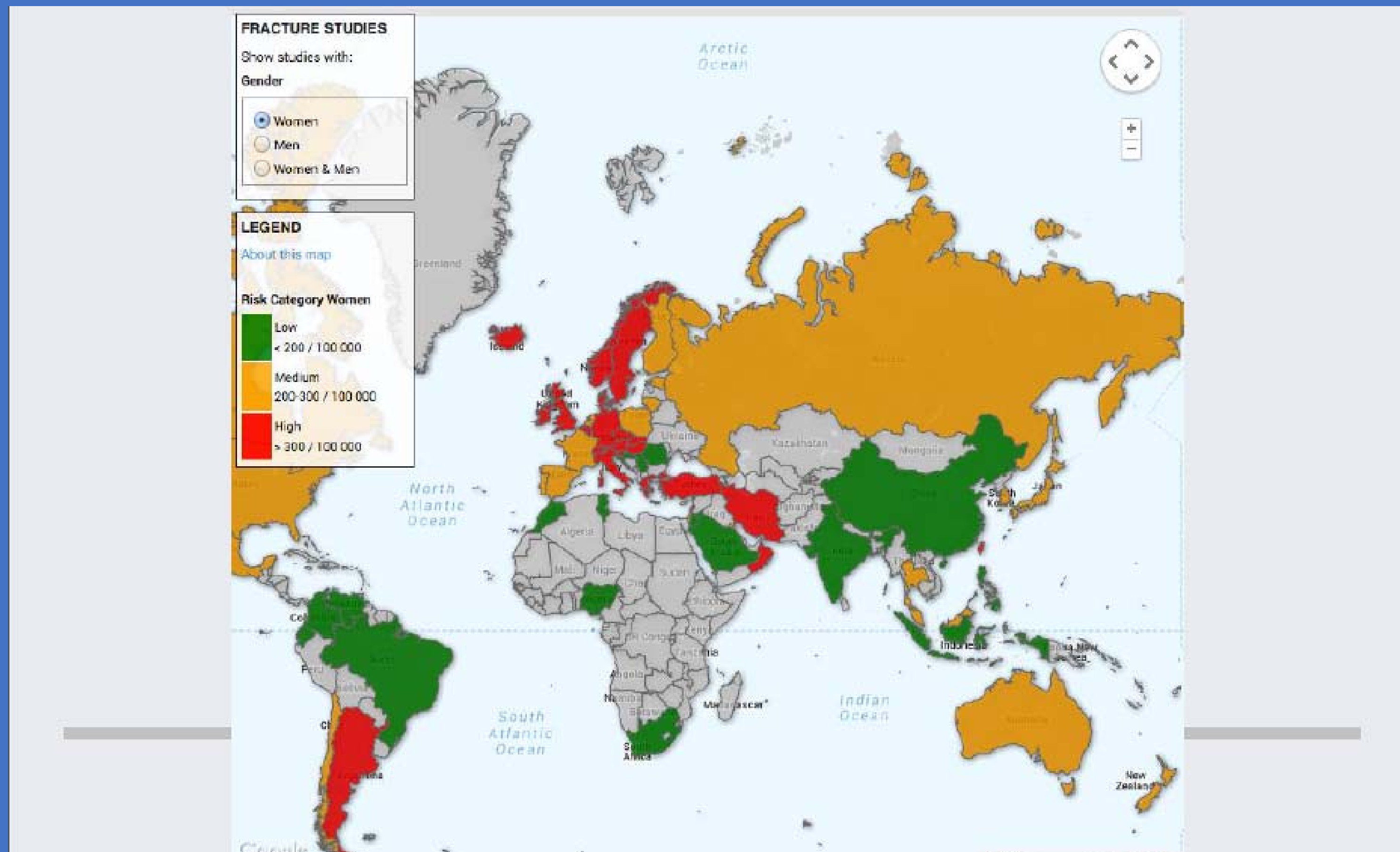
- More than 54 million Americans have osteoporosis or low bone mass
- 1 in 2 women over 50 years old
- 1 in 4 men over 50 years old

$18 Billion dollars annually !!

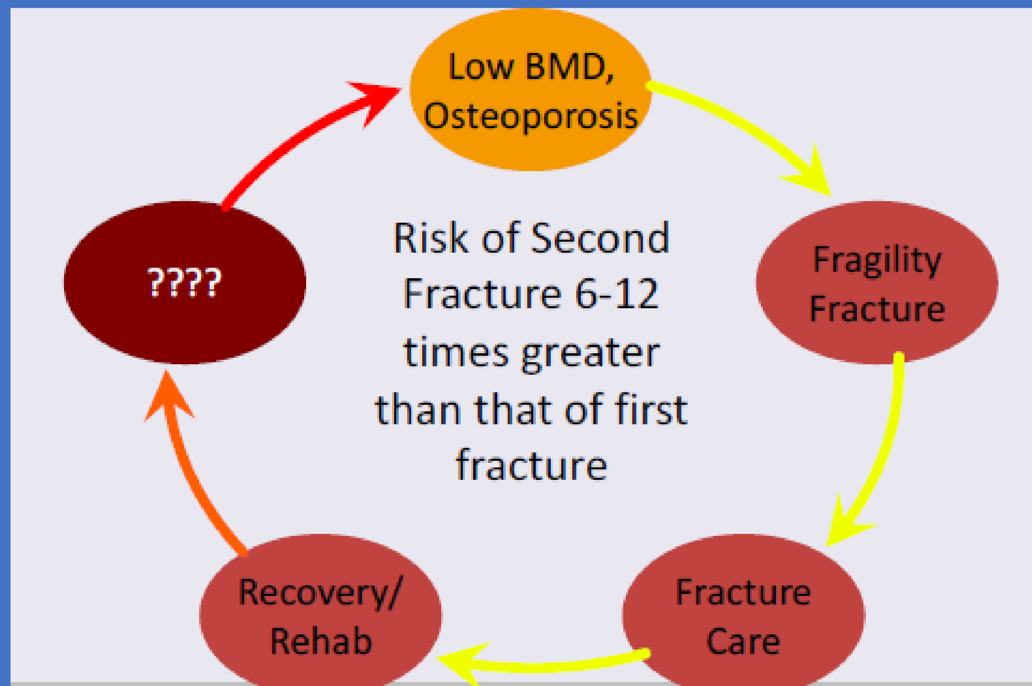
Fact: This is an epidemic



…and a world-wide one at that!



Fragility Fracture Cycle

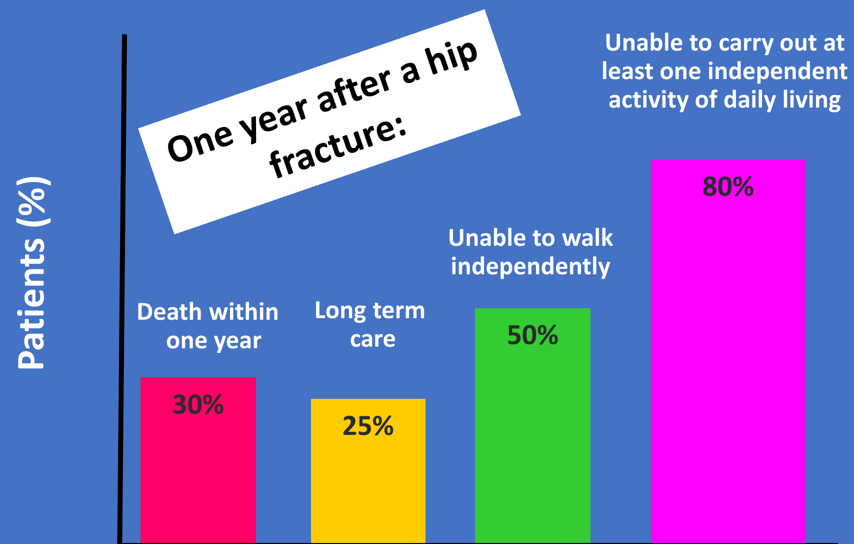


FACT: Poor care beyond fracture care

HEDIS Measure	% Compliance
Beta-blocker after a heart attack	91.4%
Breast cancer screening	82.7%
Colorectal cancer screening	73.8%
Osteoporosis management after a fracture	**20.7%**

NCQA Medical Evaluation 2009- HMO Statistics

All Fractures are Associated with Morbidity



Hip Fracture Data

Hip fracture trends in the US, 2002-2015 Lewiecki et al, Osteo Int 2018

- 2M osteoporotic fx annually
- 432,000 hospital admissions
- 2.5M medical office visits
- 10,000 nursing home visits
- 14% hip fractures
  - 72% fracture related medical expenses
  - 6 month post hip fx expense $34,509- $54,054
- 20-30% mortality within 1 year
- 50% will never ambulate without assistance
- 25% will end up in long term care

The R… Cost -
Patient,Family,health care dollars

THE FINANCIAL COST OF CAREGIVING

Caregiving is expensive. Family caregivers in the U.S. spend considerable amounts out of pocket on caregiving expenses for their aging loved ones.

$1000

Nearly half of caregivers (44%) spend $5,000 or more a year on caregiving costs

1 in 4 spends at least $10,000 per year

15% spend $20,000 or more per year

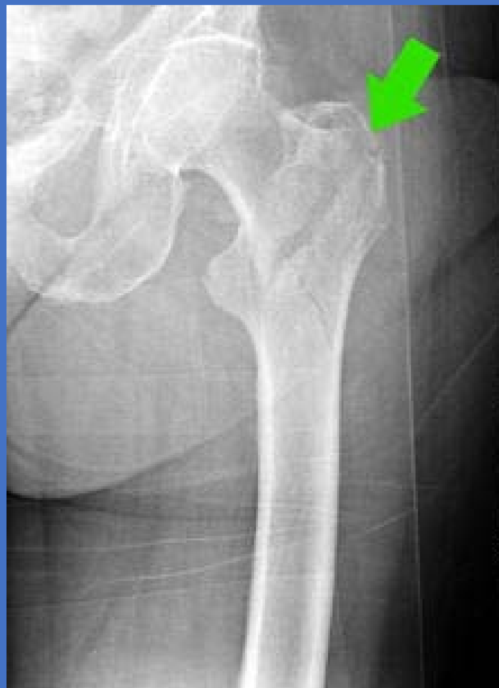
…MOTIONAL WELL-BEING

PHYSICAL WELL-BEING

…ENDENCE

FIGHT THE FRACTURE
TAKE UP THE FIGHT

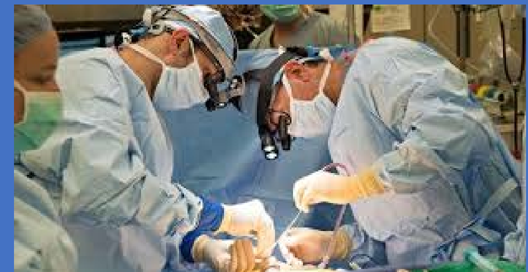
Surgeon Mentality



“FIX IT”

Surgeon *buy in* is difficult !

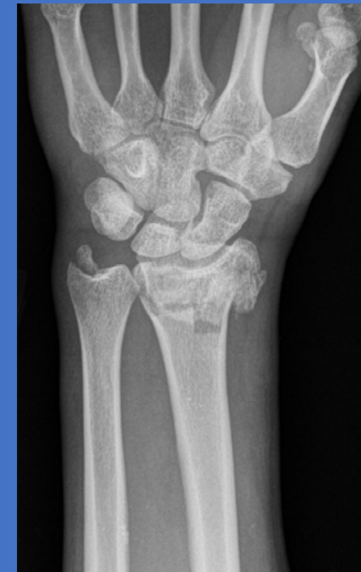
- We *"Fix it and Forget it"*
- Treating Osteoporosis: " Not our expertise!"
- "We are not…
  - Primary Care Provider
  - Rheumatologists
  - Endocrinologists
- Time to change the culture and get involved !



Missed Opportunities

- 111 patients with distal radius fractures
- Approximately only 25 % of the patients were referred to endocrinology or DEXA scan
- About 30% were prescribed an approved medication for treatment of osteoporosis
- Missed opportunities to initiate diagnostic and therapeutic interventions for patients, especially men, presenting with fragility fractures.

Not recognized and undertreated !!



Freedman et al; M*issed opportunities in patients with osteoporosis and distal radius fractures*. Clin Orthop Rel Res 2007 Jan;454:202-6.

What is the Orthopedic Surgeon's Role?

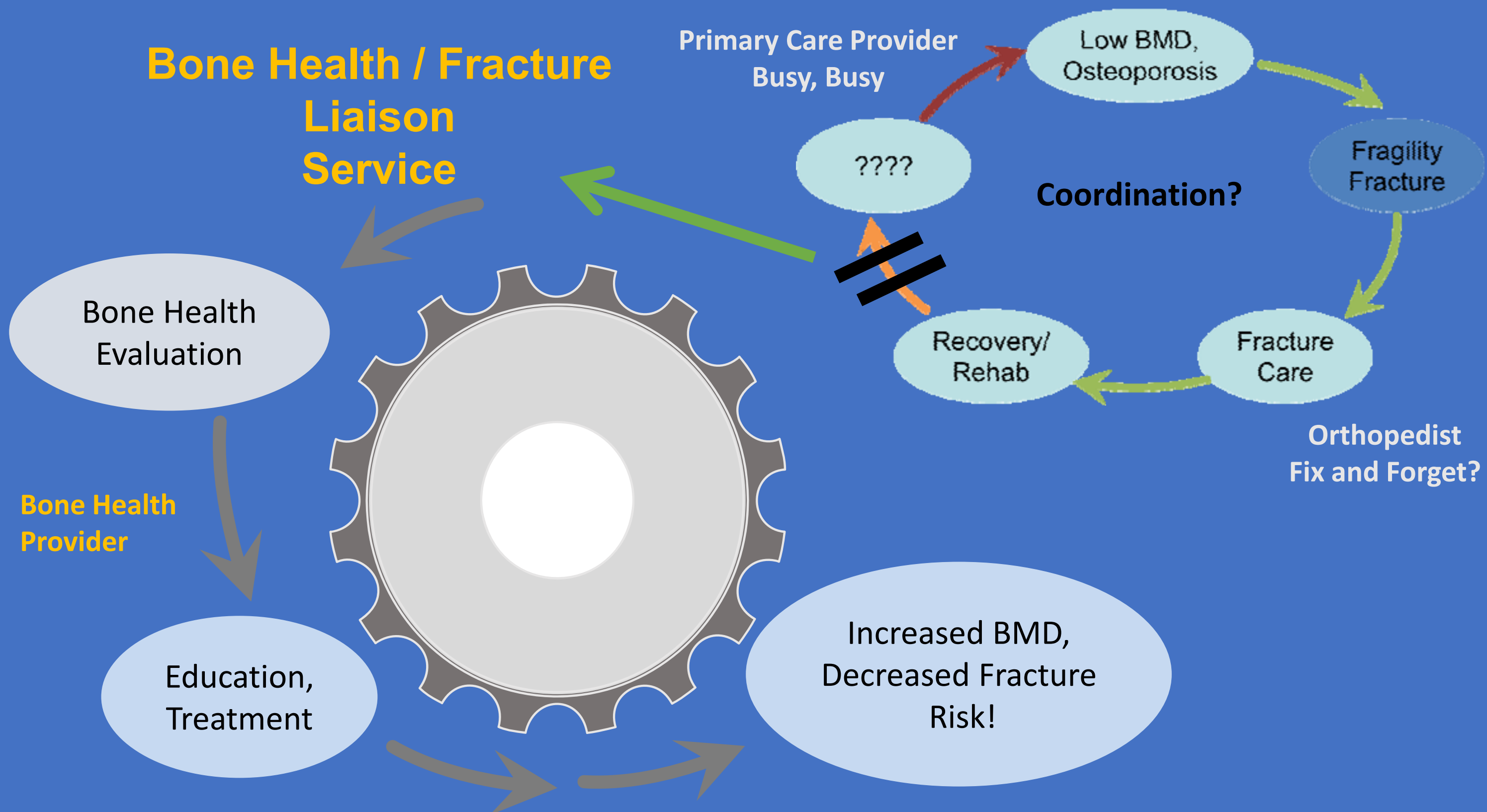
Position Statement

Osteoporosis/Bone Health in Adults as a National Public Health Priority

Every orthopedic surgeon should work diligently to participate in prevention and treatment of osteoporosis and fragility fracture care.

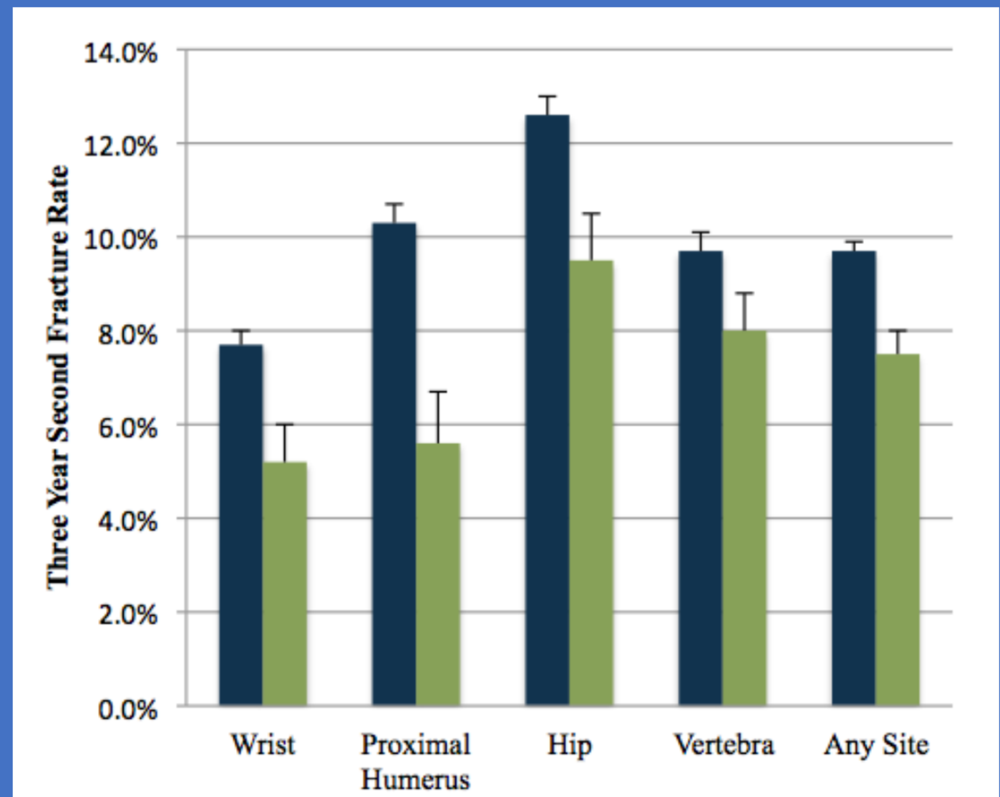
Position Statement 1113

Breaking the Fragility Fracture Cycle



Treatment - Does it Really Matter?

- Large database = 30,988 patients
- Osteoporosis treatment vs none
- OP treatment group (10.6%)
  - 6 mos of therapy within 6 mos of fx
  - Older and more females
- Endpoint - 2nd fracture within 3 yrs



Bawa HS, et al. Anti-Osteoporotic Therapy After Fragility Fracture Lowers Rate of Subsequent Fracture: Analysis of a Large Population Sample. J Bone Jt Surg 2015 97-A, 1555-1562

Treatment - Does it Really Matter?

- Multivariate regression adjusting for age and sex
- 40% reduction in fracture risk for the OP treatment group
- $P < 0.01$ for all

	Odds Ratio	95% CI	Relative Risk Reduction
Any location	**0.600**	**0.523, 0.689**	40.0%
Prox Humerus	0.483	0.312, 0.748	51.7%
Prox Femur	0.662	0.525, 0.836	33.8%
Vertebra	0.569	0.452, 0.717	43.1%
Distal Radius	0.505	0.360, 0.708	49.5%

Bawa HS, et al. Anti-Osteoporotic Therapy After Fragility Fracture Lowers Rate of Subsequent Fracture: Analysis of a Large Population Sample. J Bone Jt Surg 2015 97-A, 1555-1562

Fracture Liaison Services works!

Data showed a high level of persistence with osteoporosis treatment when initiation was performed in an FLS, even on a long-term basis.

- 90.3% had actually started their treatment and 80% were still under treatment after 1 year. After 27.4 ± 11.7 months of follow-up, 67.7% of patients were persistent with their treatment.

Boudout et al. Osteoporos Int (2011) 22: 2099.https://doi.org/10.1007/s00198-011-1638-6

Who Needs Osteoporosis Treatment ?

- The National Osteoporosis Foundation (NOF) **recommendations for initiation of pharmacologic therapy** include anyone of the following:
- History of a **fragility fracture**, i.e. hip or vertebral fracture.
- **Postmenopausal women with T-score >-2.5 (DXA)** at the femoral neck or spine, after appropriate evaluation to exclude secondary causes.
- **High-risk postmenopausal women with osteopenia, i.e. T-score between -1 and -2.5** at the femoral neck or spine and/or high FRAX ® fracture probability.

What can you do?

- **Best practices (**after a fracture has occurred)
- Inform the patient that they have had a fragility fracture and could be at risk for further fractures
- Perform BMD testing ASAP post fracture
- **Prescribe a medication to treat osteoporosis!**
- Ensure appropriate follow up (your clinic or PCP)

Treatments – AACE/ACE

AACE/ACE 2016 Postmenopausal Osteoporosis Treatment Algorithm

Lumbar spine or femoral neck or total hip T-score of ≤ -2.5, a history of fragility fracture, or high FRAX® fracture probability*

Evaluate for causes of secondary osteoporosis

Correct calcium/vitamin D deficiency and address causes of secondary osteoporosis

- Recommend pharmacologic therapy
- Education on lifestyle measures, fall prevention, benefits and risks of medications

No prior fragility fractures or moderate fracture risk**

- Alendronate, denosumab, risedronate, zoledronic acid***
- **Alternate therapy:** Ibandronate, raloxifene

Reassess at least yearly for response to therapy and fracture risk

Increasing or stable BMD and no fractures

Consider a drug holiday after 5 years of oral and 3 years of IV bisphosphonate therapy

Resume therapy when a fracture occurs, BMD declines beyond LSC, BTM's rise to pretreatment values or patient meets initial treatment criteria

Progression of bone loss or recurrent fractures

- Assess compliance
- Re-evaluate for causes of secondary osteoporosis and factors leading to suboptimal response to therapy

- Switch to injectable antiresorptive if on oral agent
- Switch to teriparatide if on injectable antiresorptive or at very high risk of fracture

Prior fragility fractures or indicators of higher fracture risk**

- Denosumab, teriparatide, zoledronic acid***
- **Alternate therapy:** Alendronate, risedronate

Reassess at least yearly for response to therapy and fracture risk

Denosumab

Continue therapy or consider adding teriparatide if progression of bone loss or recurrent fractures

Teriparatide for up to 2 years

Sequential therapy with oral or injectable antiresorptive agent

Zoledronic acid

- If stable, continue therapy for 6 years****
- If progression of bone loss or recurrent fractures, consider switching to teriparatide

* 10 year major osteoporotic fracture risk ≥ 20% or hip fracture risk ≥ 3%. Non-US countries/regions may have different thresholds.

** Indicators of higher fracture risk in patients with low bone density would include advanced age, frailty, glucocorticoids, very low T scores, or increased fall risk.

*** Medications are listed alphabetically.

**** Consider a drug holiday after 6 years of IV zoledronic acid. During the holiday, another agent such as teriparatide or raloxifene could be used.

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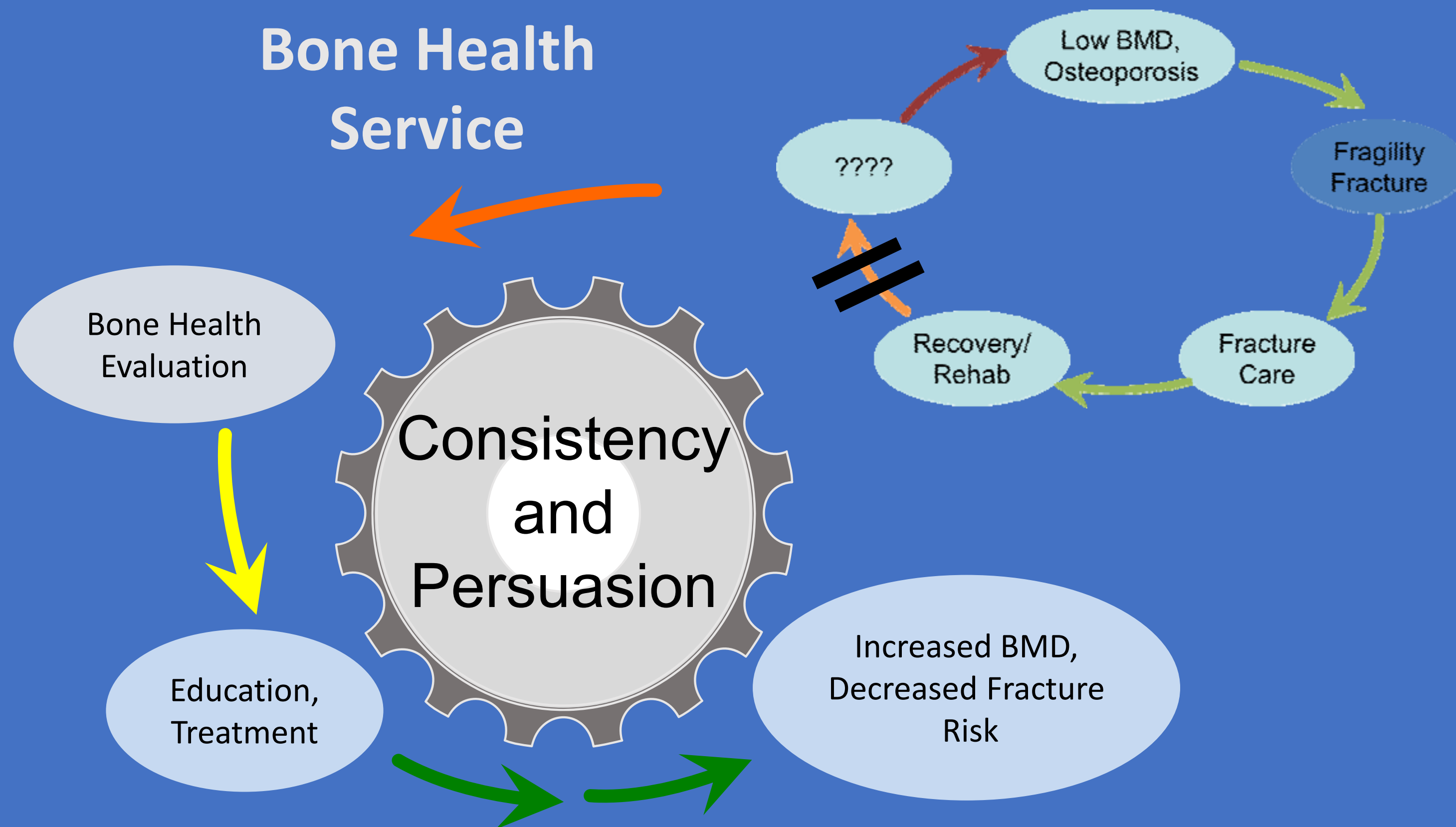
Building Consistent Coordinated Care Leads to Quality Outcomes

- Most patients are in denial! “*I fell really hard, anyone would have fractured…”*
- EVERYONE must persuade to evaluate and initiate treatment!
- If not, NO care will occur

Breaking the Cycle Requires Organization and Persuasion



Use of Scripting

For ALL patients over age 50 with a fracture, do the following:

- Put the patient on the "Bone Health List: " shared patient list in Epic
- Tell the patient the following:
  - Fractures like the one you have often occur because of poor bone health (there are 7 times more of these fractures in the US each year than there are heart attacks, and 11 times more each year than cases of breast cancer)
  - You may have a serious bone condition that will lead you to have a high risk of future fractures
  - You should undergo an evaluation of your bone condition
  - Our bone health and fragility fracture team will be contacting you to talk with you and perform this evaluation, either while you are in the hospital or in our clinics
  - Having this evaluation is like checking your blood pressure or cholesterol – it is easy and doing so can help prevent major problems in the future
- Document in your note (consult or admission) that the patient has a fragility fracture and may have low bone mass or osteoporosis

The Real Challenge

- Support and Funding in absence of a mandate
- Surgeon Champion advocate
- Administrator buy in
- Passionate PA
- COORDINATION/CONSISTENCY
- LEARNING TO PERSUADE

Steve Jobs (2007)

"You need passion (champion) in order to achieve success.

It is so hard and the path so long (successful program), that if you have no passion for it, any rational personal would give up (failure).

You need perseverance when it gets tough"

Conclusions

- Fragility fractures are a major public health problem that, despite over a decade of work, we are not yet making a big enough difference in
- Osteoporosis is a treatable condition!
- FLS leads to an increased response rate, a high persistence to drug treatment, and a low rate of subsequent clinical fractures
- Fracture prevention programs work with up to 40% reduction in secondary fracture when anti-osteoporosis medicines initiated
- You can become a PA leader in secondary fracture prevention!

THANK YOU!

karensc@umich.edu