

To Our Colleagues:

We write to introduce you to the “**Early Intervention for Fracture Prevention and Building Bones for Life**” project: an effort derived from our enthusiasm to improve bone health and prevent fractures in our patients in the community. This project takes advantage of the recently published World Health Organization absolute risk prediction model for fractures. It also contains an educational arm for providers, ancillary staff, and patients. Our intent is to provide a framework for and guidance toward more proactive, effective, and comprehensive care of these patients so that ultimately the incidence major osteoporosis-related fractures are reduced. Please familiarize yourself with the information below as you will be receiving future materials about this project for your patient care.

Early Intervention for Fracture Prevention and Building Bones for Life *Specific Aims:*

1. Increase awareness in the medical community of the importance of clinical risk factors beyond bone mineral density that contribute to the risk of fragility fractures.

The majority of these fractures occur in patients without WHO defined osteoporosis (T-score ≤ -2.5 by DXA scan.) There are a number of clinical risk factors that can be additive to the DXA results to predict fracture risk in a given patient. The new WHO model uses the validated risk factors of age, low body mass index, prior fragility fracture, parental history of hip fracture, current smoking, history of steroid use, alcohol intake > 2 drinks/day, and rheumatoid arthritis in its risk prediction tool in order to more accurately assist the clinician in intervention decisions.

2. Promote the use of the World Health Organization absolute risk prediction model and related website tool “FRAX[™]” to aid in treatment decisions.

This tool can be found at <http://www.shef.ac.uk/FRAX/>. We encourage you to download this to your desktop and begin using it in your clinical decision making with patients. A United States specific cost-effective analysis has shown that treatment was cost effective when the 10-year hip fracture probability reached 3% using the FRAX tool. As always, the decision to treat should be based on your understanding of the individual patient.

3. Improve recognition and reporting of vertebral fractures by radiologists and promote the use of vertebral fracture assessment (VFA) screening by DXA scan so that patients will be accurately risk-stratified.

The majority of vertebral compression fractures go undetected. VFA screening by DXA scan has progressed to become a standard of care for risk assessment. Those interpreting these scans should be trained and certified in both DXA and VFA interpretation. The identification of these fractures may influence treatment decisions significantly.

4. Increase awareness of secondary causes of osteoporosis among providers and patients so that early intervention toward prevention, screening, and treatment will ensue.

Secondary causes include hyperthyroidism, hyperparathyroidism, type I DM, vitamin D deficiency, hypogonadism, malabsorptive syndromes, drugs (phenytoin, phenobarbital, lithium, heparin, leuprolide, steroids,) chronic kidney disease, rheumatoid arthritis, collagen vascular disorders, cancer, multiple sclerosis, liver disease, and other conditions. Minimal laboratory evaluation includes serum calcium, creatinine, and vitamin D 25-OH level. TSH, 24-hr urine calcium, LFTs, and PTH may be considered. Vitamin D 25-OH levels above 30ng/ml must be achieved prior to treatment with anti-resorptive drugs. Patients with stages 4 and 5 CKD should be referred to nephrology for treatment.

5. Develop a clinical pathway that prompts secondary preventative efforts upon hospital presentation for patients with fragility fractures.

Fractures predictive of future fracture risk independent of the DXA result include low-trauma fractures of the vertebrae, hip, wrist, forearm, humerus, shoulder, and rib. The diagnosis of osteoporosis can be made based on the presence of these fractures, regardless of the level of the T-score. The prevalence of vitamin D deficiency in this population approaches 98%. This project will provide a bone health order sheet that will initiate vitamin D therapy and provide patient education. Following the incident patient fracture, the primary care physician will receive a notification letter containing recommendations to facilitate follow-up for ongoing osteoporosis treatment.

6. Recognize that comprehensive treatment includes nutrition intervention, lifestyle counseling, regular exercise, environmental considerations, and the maintenance of adequate vitamin D levels and calcium intake as a foundation upon which appropriate pharmaceuticals may be added.

Strength training, weight bearing exercise, balance training, and other activities can reduce subsequent fracture risk if done on a regular basis. Three or four dairy servings per day can meet calcium needs and improve protein intake which is essential for collagen matrix formation by osteoblasts. A multi-disciplinary approach to patients that also includes assistance of family members may be most successful.

7. Empower patients through education regarding fracture risk and prevention to enable them to be proactive in preventative efforts.

An inpatient educational tool will be administered by nursing staff per the fracture order sheet. There will also be patient handouts for primary and secondary prevention as well as Vitamin D therapy available to providers.

8. Reduce incidence rates of fragility fractures in our communities.

One out of 2 women and one out of 8 men over 50 will have an osteoporosis-related fracture in their lifetimes. We plan to review medical records over time before and after implementation of this project for fracture incidence and compliance with the project.

9. Reduce health care costs through comprehensive primary and secondary prevention efforts.

Annual health care costs for treatment following fragility fractures in the US are quoted at \$17 billion. Both primary and secondary prevention strategies have been shown to be cost-saving in published studies.

Providers are referred to the National Osteoporosis Foundation website for the updated 2008 Osteoporosis Treatment Recommendations and to the WHO derived citations that detail application of the FRAX tool.

These can be found at http://www.nof.org/professionals/Clinicians_Guide.htm

Patient teaching materials and other references will be available through the Good Samaritan website. We are planning a CME talk within the coming months to review this material as well.

This model for fracture risk prediction represents significant advancement in preventative efforts, but also leaves some issues unresolved. We believe the primary care physician is optimally suited to assist patients with individual treatment decisions. Thank you for your excellent care and attention.

Yours truly,

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