

Improving Fracture Risk Assessment by Incorporating Bone Mineral Density and Vertebral Fracture Assessment in the Patient Work-up

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As an orthopedic surgeon, I encountered patients with osteoporosis only after they had suffered serious fractures. I treated problems associated with osteoporosis but wasn't trying to prevent fractures before they occurred. For this reason, we created Cedar Valley Bone Health's unique osteoporosis program. We promote measures for good bone health for individuals of all ages and believe with a passion in improving quality of life through the prevention and treatment of osteoporosis.

The Future of Fracture Risk Assessment

At the Cedar Valley Bone Health Institute, we adopted a model for the care and management of osteoporosis that is slowly gaining acceptance in the medical community. When the issue of osteoporosis is addressed by primary care physicians, it often becomes one of many issues they must address in the same visit with their patients. The same is true if an orthopedic surgeon tries to address osteoporosis in the same visit as fracture care. In contrast, our sole focus is osteoporosis, which gives us the ability to devote the amount of time and attention we believe is necessary to fully evaluate bone health and more accurately determine future fracture risk.

On the initial visit, a patient undergoes a bone mineral density (BMD) evaluation using DXA. We include vertebral fracture assessment (VFA), and a full osteoporosis blood workup: 25-hydroxy vitamin D level, parathyroid hormone level, thyroid stimulating hormone level, complete metabolic profile, complete blood count, and for male patients, testosterone level. Following the tests, I meet with the patient for a consultation. I utilize two screens in the consultation room, which enables me to show patients their DXA and VFA images while we discuss the results. We also discuss their vitamin D and calcium needs and review their intake form, which incorporates questions directly from the World Health Organization FRAX® fracture risk assessment tool.

While the T-score is the traditional standard for diagnosing osteoporosis, the FRAX tool enables us to identify patients with a high risk for future bone fractures. By combining nine of the highest risk factors, including age, personal history of fractures, and family history of fractures, plus country-specific life expectancy and fracture data, the FRAX tool identifies patients who are at high risk for future fracture but would not be candidates for preventive therapy using the traditional T-score alone.



The sole focus of Dr. Ginther and the staff of the Cedar Valley Bone Health Institute is the early detection of osteoporosis and prevention of bone fractures before they occur.

Patients then return for a second visit approximately one week later to discuss the remaining lab results. As a result, we often end up spending more than 45 minutes during two visits on nothing but osteoporosis – far more than most physicians are able to devote to the issue, unless they also insist on a visit dealing only with osteoporosis.

Vertebral Fracture Assessment on Every Patient

Based on traditional standards, bone mineral density from DXA is the primary measurement used to determine a patient's risk of developing osteoporosis, and therefore needing treatment. While BMD is certainly an important component of an overall assessment, it is only 30 percent of the equation when using the FRAX tool for assessing risk of future fractures. As an orthopedic surgeon, risk of future fracture is my concern far more than BMD alone.

At the Cedar Valley Bone Health Institute, we believe a more complete fracture risk assessment incorporates both BMD and Vertebral Fracture Assessment. VFA involves imaging of the spine, assessing the presence of vertebral fractures. Vertebral fractures are an indicator of poor bone quality and a higher risk of future fractures. As many as 20 percent of patients who have vertebral fractures, do not qualify for treatment based on BMD alone. Without VFA, these patients are usually misdiagnosed and left untreated.

In 2010, the practice acquired a Hologic Discovery™ SL bone densitometry system. Not only does the Discovery system allow us to combine VFA with BMD, it enables us to image the spine while the patient remains flat on her (or his) back. This is a more efficient exam and a better overall experience, especially for older patients.

While most DXA machines require patients to lie exactly on their side in order to image the spine, the Discovery SL system has a rotating C-arm that allows the lateral exam to be done without moving the patient from the supine position. The patient is comfortable, not moving – and we're able to get the image right on the first try every time. As a result, we now include VFA for every patient, which is something no other practice in our community currently offers.

With the help of technology, our practice provides a more thorough and efficient assessment. With our previous DXA machine, exams regularly took 30-45 minutes to complete.



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With the rotating C-arm on the Discovery SL, our average exam time has been reduced to 20 minutes, with some taking as little as 10 minutes. By combining VFA with BMD in an efficient way, we can obtain the two strongest risk factors for future fracture in the same time it took us to obtain just BMD with our old machine. Patients appreciate the additional service and more complete evaluation, and we are gradually gaining market share. In a little more than a year, our volume has more than doubled and continues to grow.

As technology advances, I predict great changes in how physicians identify patients with osteoporosis and a high risk of fractures. I believe shifting our focus from relying solely on BMD and putting greater emphasis on VFA and FRAX will enable us to move towards a more preventive model of care that will benefit patients and physicians alike.

Jay Ginther, MD, FAAOS, CCD, is a board certified orthopedic surgeon. He is a Fellow of the American Academy of Orthopedic Surgeons. He holds a BA in biology from Wesleyan University in Connecticut and an MD from the College of Physician's and Surgeons of Columbia University in New York. He completed a surgical internship at the University of Minnesota in Minneapolis. He completed an orthopedic residency at Northwestern University in Chicago. He is a member of the Professional Partners Network of the National Osteoporosis Foundation, active in the International Society for Clinical Densitometry, and a member of the American Society for Bone and Mineral Research.

More information on the Cedar Valley Bone Health Institute can be found on www.cvbonehealth.com.

Dr. Ginther publishes a blog about bone health issues at www.bonedocblog.com.

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