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Osteoporosis Prevention: Narrowing the Gap Between Knowledge and Application

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ABSTRACT

Osteoporosis is the most prevalent bone health issue for the elderly in the United States, creating huge economic, social, and emotional burdens in our older population. Despite proven strategies to prevent osteoporosis, primary care providers do not provide adequate osteoporosis prevention education. To address this problem, an evidence-based osteoporosis prevention intervention project was implemented to increase osteoporosis prevention education by providers at an urban community clinic. A preintervention and 6-month postintervention chart review showed significant improvement in osteoporosis risk assessment with recommendations for calcium/vitamin D as well as small gains in education on lifestyle modification.

Keywords: calcium, geriatric, guideline compliance, osteoporosis, prevention, provider adherence, vitamin D3

Osteoporosis, with its increased risk for fracture, is the most prevalent bone health issue for the elderly in the United States, creating huge economic, social, and emotional burdens for this population. Currently, there are over 44 million adults over 50 years of age who have or are at risk for osteoporosis, and this number continues to climb as our population ages.[1] Jacobs-Kosmin[2] reported that at least 50% of fractures that occur after 50 years of age are caused by osteoporosis. Thus, these high osteoporosis numbers create a significant strain on our health care system. The International Osteoporosis Foundation estimates that, by 2025, the annual rate of osteoporosis-related fractures and subsequent related costs in the US will have increased by an estimated 50%, incurring costs of over $25 billion annually.[3]

The monetary cost of osteoporosis is only part of the problem. The disability caused by an osteoporosis-related fracture can be devastating. With hip fracture, the outcomes are not only pain and physical limitations after fracture, but also a patient's chance of dying in the next 12 months doubles.[4] Only 15% of hip fracture patients can walk across a room unaided after 6 months of healing, and 1 in 5 previously independent patients will need long-term care. It is not surprising that more than 80% of postfracture patients are fearful of repeat falls and depressed about their new physical limitations.[1,5]

PROBLEM STATEMENT

Despite the robust body of evidence on the scope of the osteoporosis problem and access to well-supported national guidelines, many health care providers miss opportunities to promote information about bone health in the elderly. An initial chart review at 1 urban community clinic found less than 50% of charts of patients 50 to 64 years old contained evidence of any information given about osteoporosis prevention (OP) by the provider. Barriers to better OP by providers include a lack of knowledge about the guidelines on OP; a lack of charting and education shortcuts within the electronic medical record (EMR); and few, if any, tools to expedite patient teaching on the topic of OP.

To evaluate and address this problem, the intention of this project was to determine if provider-focused, evidence-based, educational osteoporosis prevention intervention (OPI) would improve provision and charting of OP teaching. The goal of the OPI project was to significantly increase the number of clinic patients aged 50 to 64 years who received

documented OP care as identified in the National Osteoporosis Foundation (NOF) *Clinician's Guidelines for Osteoporosis Prevention and Treatment*.[1]

REVIEW OF LITERATURE

Health care providers recognize that preventing both acute and chronic illness is far less expensive than treating illness after the fact. Sadly, our health care field continues to function on a disease-based rather than a health-based model, which translates into costly medical care with poor health outcomes. As a nation, there have been positive improvements in some areas of cancer screening and immunization rates, but prevention of osteoporosis lags far behind, despite the magnitude of impact on our society.[6]

Because of the widespread confusion on the importance of OP, the NOF released an updated guideline to reflect the latest evidence-based research on OP in 2008, which was last updated in 2013. This guide, *Clinician's Guide to Prevention and Treatment of Osteoporosis,* was the basis for this intervention as it is well accepted as the standard of practice and clearly outlines each component of evidence-based OP.[1]

However, the NOF guidelines are well accepted but are not well utilized. Schrager et al[7] found that only 46% of women had discussed osteoporosis with their family practice provider, and Orces et al[8] found less than 16% reported receiving any OP education. This is unfortunate because all of the NOF recommendations have been shown to decrease fractures. As Jacobs-Kosmin[2] reported, 50% of fractures from osteoporosis are related to falls. In a meta-analysis by Barclay[9] and another study by Pfeif et al,[10] the risk of falls was decreased by about 40% over an 18- to 20-month period with adequate supplementation of vitamin D3 (minimum 700 IU) and calcium.

To design the intervention, once again, the literature gave clear guidance. In a recent study by DeJesus et al,[11] the use of a point-of-care decision support tool not only improved osteoporosis screening rates significantly but also was an independent predictor of screening completion. Even more compelling is a meta-analysis that included 714 primary studies involving 22,523 clinicians on how to increase provider compliance with prevention guidelines.[12] The researchers concluded that a multifaceted approach was needed to remind providers to offer OP information to patients. Lastly, the osteoporosis clinical update from the NOF[1] states that face-to-face education by clinicians leads to the best improvements in patient compliance with OP behaviors.

DEFINITIONS

As defined by the World Health Organization, osteoporosis is defined as a skeletal disease characterized by low bone strength and increased risk of fracture.[13] The key areas of OP according to the NOF guidelines are individual assessment of osteoporosis risk; lifestyle modification, which includes such things as exercise, healthy diet, and decreases in alcohol consumption and smoking; adequate daily intake of both calcium and vitamin D3; and a bone density scan between age 50 and 64 if higher risk is identified in the medical history or examination. Greater details on both calcium and vitamin D3 intake and precautions can be found at www.NOF.org under Clinician Guidelines, 2013.[1]

PROJECT PROCESS

An evidence-based program improvement project was initiated to address the barriers to OP information distribution at an urban community clinic located in a large metropolitan area. Eight clinic nurse practitioners (NPs) and medical doctors (MDs) participated in the planning process and learning activities, with ancillary staff included in an abbreviated training. The initial intervention consisted of a 1-hour interactive provider education class on the NOF OP guidelines, emphasizing the OP education to be given to patients and the scientific underpinnings leading to improved bone health should these health recommendations be implemented by the patients. Additionally, providers received a computerized Fracture Risk Assessment Tool (FRAX) for assessing individual patient risk factors, in-room OP reminder signs, shortcuts in the electronic medical record to increase ease and consistency of charting, and prescription pads with OP instructions for patients. The aim of the project was to provide motivation for health care providers to offer efficient and complete OP education at the time of the patient's clinic visit and to make this provision of OP quick and easy. All educational information, including slides for the