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# Preventative Care in Orthopedics: Treating Injuries Before They Happen

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By 2025, it is estimated that the annual cost of treating osteoporosis-related fractures in the United States will be 25 billion dollars, which is 10 billion dollars more than was spent in 2010.<sup>1</sup> As healthcare costs in the United States continue to skyrocket, it is imperative that orthopedic surgeons take an active role in avoiding preventable injury and disease. For orthopedic surgeons, preventative medicine will include promoting bone health and educating patients on injury prevention. By incorporating these principles into residency and fellowship education, and by leveraging the electronic medical record to support preventive care through systematic reminders, orthopedic surgeons have a critical opportunity to take a leading role in promoting prevention to our patients.

In 2009, the American Orthopaedic Association (AOA) launched a "Own the Bone" campaign, a national quality improvement program designed to optimize the treatment of osteoporosis.<sup>2</sup> This program came about following the Surgeon General's call, in 2004, for orthopedic surgeons to take a more active role in treating osteoporosis. The program primarily aims to improve treatment of osteoporosis after a fragility fracture in an inpatient setting. Early results from a 2010 follow-up study showed that the new emphasis on prevention inspired by this program is effective. As compared with patients who had osteoporosis work-up and treatment initiated during their hospital admission, the group of patients who were referred for osteoporosis treatment after discharge were found to have a significantly lower rate of diagnosis and treatment.<sup>3</sup> The loss of aftercare for patients who do not obtain immediate diagnosis and treatment for osteoporosis can and should be avoided. Many hospitals now have hip fracture services with multidisciplinary input. The successful outcomes of these programs include shorter times to the operating room, shorter hospital stays, decreased readmission, and decreased 30-day mortality.<sup>4-6</sup> These services provide an excellent opportunity to ensure that each patient has initiated management of osteoporosis before discharge. Ideally, patients would be scheduled for bone mineral density testing prior to leaving the hospital, when applicable, and would begin calcium and vitamin D supplementation or bisphosphonate treatment in the hospital, when appropriate. As part of these hip fracture services, a goal of clearly initiating or managing

treatment for osteoporosis should be routinely addressed.

While patients presenting with hip fractures are an easily identifiable high-risk population, other patients present in an outpatient setting following fragility fractures, such as distal radius or vertebral compression fractures. These patients should be considered for osteoporosis work-up and counseled accordingly. A recent study compared the efficacy of the orthopedic surgeon initiating bone mineral density testing after a distal radius fracture, compared with referring the patient back to their primary care physician for testing. The study found a significantly higher rate of patients going on to bone mineral density testing when the surgeon initiated this process.<sup>7</sup> In the era of improved digital communication, the outpatient setting offers an opportunity for clinicians to communicate with patients' primary care physicians and initiate a multidisciplinary approach to bone health and prevention. In the outpatient setting, the orthopedist can address nutritional issues and screening on a repeated basis. Studies have demonstrated that physician counseling can be very effective in changing behavior and helping patients to stop using tobacco.<sup>8</sup> In this vein, efforts by the physician to encourage calcium and vitamin D intake and weight-bearing exercise have the potential to be very effective.

Programs such as "Own the Bone" are crucial to orthopedists' treatment of osteoporosis, but prevention of bone disease and fragility fracture must extend even further. Individual practitioners must be cognizant that many patients may benefit from outpatient diagnosis of osteoporosis and initiation of appropriate treatment, before fragility fractures occur. Moreover, although patients at high risk include post-menopausal women, orthopedists need to be consistently aware of osteoporosis as a disease of both genders. An estimated 2.8 million men in the United States have osteoporosis.<sup>9</sup> A 2012 study published out of Washington, DC found a significant disparity in the rate of osteoporosis screening between men and women. Among the elderly men and women in their patient population, 60% of women underwent screening compared with only 18.4% of men.<sup>10</sup> This gender disparity potentially represents significant physician bias regarding the risk of osteoporosis and offers an important opportunity for orthopedic surgeons to improve preventative care for this population.

Preventative care in terms of advocating for bone health should not be limited to patients presenting with fragility fractures. Education regarding smoking cessation, resistance exercise, and calcium intake are relevant to many orthopedic patients. With the advent of the electronic medical record system, a simple intervention could easily ensure that patients report on their calcium intake. A trial published in 2006 found that a simple reminder from the electronic medical record improved osteoporosis management following a fragility fracture.<sup>11</sup> This type of intervention could certainly be expanded to include counseling on calcium and vitamin D for any orthopedic patient.

Another area in which orthopedic surgeons have an opportunity to practice good preventative care is injury prevention. Several studies examining fall prevention among the elderly have shown that physical therapy or exercise may decrease the rate of falls.<sup>12</sup> Promotion of activity and therapy among high-risk patients by orthopedic surgeons may help to reduce fracture incidence. Injury prevention is also relevant to young, healthy patients. It is well established that neuromuscular training helps to prevent anterior cruciate ligament injuries.<sup>13</sup> Orthopedic surgeons have an opportunity during sports physicals or as team physicians to help promote injury prevention strategies. Discussion of training regimens may prevent overuse injuries among athletes. Moreover, faced with many patients who present with significant musculoskeletal trauma, orthopedic surgeons have the opportunity to offer education regarding motorcycle helmets, seatbelt use, and avoidance of drunk driving.

New orthopedic residency educational goals were recently published to include core competencies in resident education. Among these goals is to educate residents on care of a patient with hip fracture, including counseling

and management of osteoporosis.<sup>14</sup> These milestones could be expanded to include a thorough understanding of bone health. Residents should be able to make nutritional recommendations for any patient seen as an inpatient or outpatient, identify when a referral to an endocrinologist is needed, and educate patients regarding injury and fall prevention.

As healthcare expenditures rise, so does the impetus for physicians to work to improve efficiency in the healthcare system. Furthermore, the best possible care for our patients is to prevent injury and disability before it arises, rather than to depend on our ability to intervene after the fact. Residencies and training programs should work to incorporate preventative strategies into trainee education. Hospitals and outpatient settings should include a basic bone health questionnaire in the electronic medical record. The identification and management of risk factors for injury has the potential to help our patients and to help our healthcare system, but such intervention needs to start with the clinician.

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