Consultations by orthopedic surgeons with an endocrinology center in which an agreement between departments led to a program was developed at an academic medical institution, a program was developed in which all fracture patients were screened.8 Those who had a low-trauma fracture and were not already taking medication were eligible for a randomized study of an osteoporosis intervention or usual care. As expected, many more patients in the intervention group received appropriate osteoporosis management. Using an osteoporosis case manager in a group of Canadian hospitals9 also increased care, at a cost of approximately $50 per patient.10

What prevents patients with fracture from having their underlying osteoporosis diagnosed and treated? Several years ago, the results of a survey of orthopedists and primary care physicians were reported.11 The orthopedists and primary care physicians agreed that primary care should be responsible for evaluation and treatment of osteoporosis, but at that time, the primary care physicians were concerned about evaluation and treatment costs and potential side effects of osteoporosis drugs. A more recent survey suggested that more orthopedists were comfortable about starting osteoporosis treatment, but most still wanted the primary care clinician to be in charge.12 There are perverse incentives to evaluation and treatment in the hospital such that outpatient evaluation is reimbursed, but extra inpatient costs for evaluation and treatment are not. Using a coordinator, an orthopedic surgery department13 established an “Osteoporosis Exemplary Care Program” in concert with a multidisciplinary Metabolic Bone Clinic. The coordinator identified all of the potential patients, and almost all patients received appropriate diagnostic evaluation and osteoporosis treatment. The American Orthopedic Association has established the “Own the Bone” program (http://www.ownthebone.org), with the goals of altering behavior of clinicians and patients, encouraging coordinated care, and reducing subsequent fractures by treating osteoporosis. Some hospitals have made follow-up care of fracture part of their quality assurance program, with the quality improvement office identifying patients with fracture for evaluation and treatment. Thus, there has been some success in several institutions.

As reported by Jennings and colleagues,1 the majority of inpatients have not been identified and managed properly, although an inpatient program will not identify all fracture patients. Older patients with wrist and forearm fractures that are treated in an emergency department or orthopedic office also need evaluation and treatment of underlying osteoporosis. Patients with vertebral fractures treated using vertebroplasty or other augmentation procedures14 may also not be admitted and may “fall through the cracks.” Thus, if any institution invests in an osteoporosis coordinator, it will be necessary to find outpatients as well as inpatients who need osteoporosis evaluation and therapy. Primary care clinicians should be comfortable with the diagnosis and treatment of osteoporosis, but if not, they should be willing to refer patients to osteoporosis experts for evaluation and starting treatment. It should be possible for primary care clinicians to resume management of the osteoporosis once the patient has started therapy. This is of particular importance because long-term persistence with osteoporosis medication is poor, and patients must take 75% to 80% of their doses to have a reduction in fracture risk.

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Jennings and colleagues\textsuperscript{1} state that only 2\% of discharged patients had “ideal therapy, receiving Cal+D and an antiresorptive or bone-forming medication.” It is necessary to look at this statement critically. Is it really ideal for the patient who has just suffered a hip fracture? For vitamin D, the answer is almost always yes. In just about any U.S. population studied, vitamin D insufficiency is extraordinarily common; thus, with rare exceptions such as patients with sarcoidosis, vitamin D can be prescribed without problem. There is some controversy\textsuperscript{16} about the target 25-hydroxyvitamin D level, but most experts would agree with aiming for at least 30 ng/mL (75 nmol/L). What about calcium? There is no doubt that calcium (plus vitamin D) was part of the regimen in all major osteoporosis therapy trials, but in practical terms, if patients with fractures require opiate analgesics, will the constipating calcium supplement be tolerated? Do we want elderly patients with recent hip fractures straining at stool? Thus, we might wait until patients stop opiates and start with low doses of calcium, perhaps adding magnesium to lessen constipation and improve adherence.

Bisphosphonates are the most commonly used agents for osteoporosis, and the landmark recurrent hip fracture study by Lyles and colleagues\textsuperscript{17} demonstrated that patients who received intravenous bisphosphonate zoledronic acid had fewer subsequent fractures and lower mortality. In a follow-up article,\textsuperscript{18} the authors did a post hoc analysis of the interval between the surgical procedure and the bisphosphonate infusion. They found that, when the infusion was administered at least 2 weeks after surgery, they could demonstrate fewer subsequent clinical fractures and lower mortality. Could earlier bisphosphonate therapy actually have detrimental effects? There have been a few studies, mostly in rodents, suggesting that bisphosphonates might delay healing after a fracture. In a review of data from almost 20,000 patients with fractures of the humerus, although nonunion of the fracture was rare (0.4\%), the adjusted odds ratio of nonunion was 2.37 in bisphosphonate users, compared with those not exposed to bisphosphonates.\textsuperscript{19} To this author’s knowledge, there are no reports that teriparatide, the only Food and Drug Administration–approved anabolic agent for bone, has any similar effects.

Thus, in practical terms, what would be the ideal treatment program, and how would it be implemented? Perhaps a fracture coordinator could identify inpatients with fracture and outpatients seen in emergency departments, orthopedic clinics, or offices. A list could be generated from \textit{International Classification of Diseases, Ninth Revision}, codes from the various settings. This can be considered a quality improvement program, hopefully avoiding Health Insurance Portability and Accountability Act problems. The coordinator could arrange replenishment of vitamin D before patients are discharged. Then the coordinator could arrange outpatient bone mineral density testing, calcium enrichment (through diet and supplements), and most importantly communication with the primary care clinician, suggesting that bisphosphonates or teriparatide be considered for the patient. Thus, bone density testing can be done when the patient is over the acute phase after fracture, and if oral or intravenous bisphosphonate therapy is chosen, the chances of delayed or nonunion will be minimized. It was shown some years ago\textsuperscript{20} that installing a person in an orthopedic clinic who interviewed patients with fractures increased the number of bone density tests and specific treatments for osteoporosis. Another potential opportunity for evaluation and treatment is in the rehabilitation phase. Physiatrists can arrange bone densitometry and begin pharmacological therapy, and they can communicate with primary clinicians.

There are several different performance measures for management of osteoporosis after fracture, and most institutions would fail. A small investment in a fracture coordinator can result in appropriate diagnostic and therapeutic management of patients who have suffered fractures. This should result in fewer fractures and perhaps fewer deaths. Surely we can do better.

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