BMD Rescreening and Procedure Overuse

A study published in the January 19 issue of the *New England Journal of Medicine* (*NEJM*; 2012;366:225–233) and picked up by television and Internet media outlets around the world presented data suggesting that bone mineral density (BMD) rescreening intervals of 15 y or more are appropriate for postmenopausal women with normal bone density or mild osteopenia. During the same week, a much-cited consensus-based article carried a list of 37 frequently used screening and diagnostic procedures that were deemed overused and, in many settings, not consistent with "high-value, cost-conscious" care.

The National Institutes of Medicine–funded *NEJM* study, by Gourlay et al. from the University of North Carolina (Chapel Hill), included 4,957 women aged ≥67 y with normal BMD or osteopenia (divided into subgroups of mild, moderate, and advanced), all with no history of hip or clinical vertebral fracture or treatment for osteoporosis. The authors noted that reliable data to guide decisions about intervals between such screenings have been largely unavailable because of a lack of long-term studies. In this study, participants were followed for up to 15 y. The BMD testing interval was defined as "the estimated time for 10% of women to make the transition to osteoporosis before having a hip or clinical vertebral fracture, with adjustment for estrogen use and clinical risk factors." Transitions among all groups were studied, and incident hip and clinical vertebral fractures and interim treatment were assessed as competing risks.

The resulting estimated BMD testing interval was 16.8 y for women with normal BMD, 17.3 y for those with mild osteopenia, 4.7 y for those with moderate osteopenia, and 1.1 y for women with advanced osteopenia. The authors concluded that osteoporosis would develop in <10% of older, postmenopausal women during rescreening intervals of approximately 15 y for women with normal bone density or mild osteopenia, 5 y for women with moderate osteopenia, and 1 y for women with advanced osteopenia.

Extensive media coverage of this article and unfortunate conflation of bone mineral density scanning techniques with other scanning approaches led to reports of patient confusion and hesitancy to undergo referred skeletal screening and diagnostic examinations in nuclear medicine and other imaging facilities in late January.

The situation was compounded during the same period by media coverage of a study in the *Annals of Internal Medicine* (2012;156:147–149) summarizing the results of an American College of Physicians (ACP) workshop poll designed to identify common screening and diagnostic tests, in specified settings, that are "unlikely to be of high value." The ACP defines procedures of high value to be those in which the health benefits of an intervention justify its harms and costs. The study, authored by Qaseem and a consortium of colleagues, provided a table of 37 "clinical situations" in which a test does not reflect high-value care.

More than a third of the cited studies were imaging related. Among these were: repeat screening ultrasonography for abdominal aortic aneurysm after a negative study; coronary angiography in patients with chronic stable angina with well-controlled symptoms on medical therapy or who lack specific high-risk criteria on exercise testing; MR imaging instead of mammography as the breast cancer screening test of choice for average-risk women; follow-up lab studies, chest radiography, or imaging studies other than appropriate breast imaging in asymptomatic women with previously treated breast cancer; dual-energy x-ray absorptiometry screening for osteoporosis in women younger than 65 y in the absence of risk factors; imaging studies in patients with nonspecific low back pain; preoperative chest radiography in the absence of a clinical suspicion for intrathoracic pathology; sinus imaging studies for patients with acute rhinosinusitis in the absence of predisposing factors for atypical microbial causes; imaging studies in patients with recurrent classic migraine headache and normal findings on neurologic examination; brain imaging (CT or MR) to evaluate simple syncope in patients with normal findings on neurologic examination; predischarge chest radiography for hospitalized patients with community-acquired pneumonia who are making a satisfactory clinical recovery; CT scans in patients with pneumonia confirmed by chest radiography in the absence of complicating clinical or radiographic features; imaging studies, rather than a high-sensitivity D-dimer measurement, as the initial diagnostic test in patients with low pretest probability of venous thromboembolism; and follow-up imaging studies for incidentally discovered pulmonary nodules ≤4 mm in low-risk individuals.

The study authors suggested general principles for guiding determination of high value for a screening or diagnostic procedure in specific cases. The first principle is that diagnostic tests "usually should not be performed" if the results will not change management. Second is the importance of remembering that when the pretest probability of disease is low, the likelihood of a false-positive test result is higher than the likelihood of a true-positive result, producing unnecessary health care expenditure, inappropriate treatment, and anxiety.

Anxiety among patients is also likely to be one result of less-than-discriminating media reports on these and other important articles. Nuclear medicine and other practitioners should not only stay up to date on such media coverage but also be prepared to discuss current evidence-based professional guidelines with patients who have questions about the value of or need for specific procedures.