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What should be the interval between bone density screenings?

In 2010, the United States Preventive Services Task Force recommended screening for osteoporosis by measuring bone mineral density in women age 65 and older and also in younger women if their fracture risk is equal to or greater than that of a 65-year-old white woman who has no additional risk factors.

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But what should be the interval between screenings? The Task Force stated that evidence on the optimum screening interval is lacking, that 2 years may be the minimum interval due to precision error, but that longer intervals may be necessary to improve fracture risk prediction.[1] They also cited a study showing that repeating the test up to 8 years after an initial test did not improve the ability of screening to predict fractures.[2] This was recently confirmed in a study from Canada.[3]

The average woman loses a little less than 1% of bone density per year after age 65

GOURLAY ET AL: TEST AGAIN IN 1 TO 15 YEARS

In response to this information void, Gourlay and colleagues[4] analyzed data from the Study of Osteoporotic Fractures. Because these investigators were interested in the interval between screening measurements of bone mineral density, they included only women who did not already have osteoporosis or take medication for osteoporosis. They wanted to know how long it took for 10% of women to develop osteoporosis, and found that this interval varied from 1 to 15 years depending on the initial bone density.

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I did not think these results were surprising. The durations in which osteoporosis developed were similar to what one would predict from cross-sectional reference ranges. The average woman loses a little less than 1% of bone density per year after age 65. A T score of –1.0 is 22% higher than a T score of –2.5, so on average it would take more than 20 years to go from early osteopenia to osteoporosis.

AN ONGOING DEBATE ON SCREENING

The report generated a debate about the value and timing of repeated screening.[5,6]

In their article "More bone density testing is needed, not less,"[5] Lewiecki et al criticized the Gourlay analysis because it did not include spine measurements or screen for asymptomatic vertebral fractures, and because it did not include enough clinical risk factors.[5,6] They claimed that media attention suggested that dual-energy absorptiometry (DXA) was overused and expensive, citing three news reports. One of the news reports did misinterpret the Gourlay study and suggested that fewer women should be screened.[7] The others, however, accurately described the findings that many women did not need to undergo DXA every 2 years.[8,9]

In this issue of the *Cleveland Clinic Journal of Medicine*, Doshi and colleagues express their opinion that the interval between bone mineral density testings should be guided by an assessment of clinical risk factors and not just T scores.[10]

Doshi et al are also concerned about erroneous conclusions drawn by the media. However, when I reviewed the news reports that they cited, I thought the reports were well written and conveyed the results appropriately. One report, by Alice Park,[11] cautioned: "doctors need to re-

main flexible in advising women about when to get tested. A patient who has a normal T score but then develops cancer and loses a lot of weight, for example, may be more vulnerable to developing osteoporosis and therefore may need to get screened before the 15-year interval."[11] The other, by Gina Kolata, also explained that those taking high doses of corticosteroids for another medical condition would lose bone rapidly, but the findings "cover most normal women."[9] Neither report discouraged patients from getting screening in the first place.

Both Lewiecki et al and Doshi et al say that clinical factors should be considered, but do not specify which factors should be included in addition to the ones already evaluated by Gourlay et al (age, body mass index, estrogen use at baseline, any fracture after 50 years of age, current smoking, current or past use of oral glucocorticoids, and self-reported rheumatoid arthritis). These did not change the estimated time to develop osteoporosis for 90% of the study participants.

Furthermore, Gourlay et al had already noted that "clinicians may choose to reevaluate patients before our estimated screening intervals if there is evidence of decreased activity or mobility, weight loss, or other risk factors not considered in our analyses."[4] Thus, patients with serious diseases should undergo DXA not for screening but for monitoring disease progression, and the Gourlay study results do not apply to them.

PATIENTS ON GLUCOCORTICOIDS: A SPECIAL SUBSET

Patients who are treated with glucocorticoids deserve further discussion. Consider the example described by Doshi et al of a woman with rheumatoid arthritis, taking prednisone, with a T score of –1.4. She would have to lose about 17% of her bone density to reach a T score at the osteoporosis level. One clinical trial in patients taking glucocorticoids, most of whom had rheumatoid arthritis, reported a loss of 2% after 2 years in the placebo group,[12] so it is unlikely that this patient would have bone density in the osteoporosis range for at least several years.

However, clinicians know that these patients get fractures, especially in the spine, even with a normal bone density. Therefore, vertebral fracture assessment would be more important than bone density screening in this patient. Currently, there is uncertainty about the best time to initiate treatment in patients taking these glucocortical steroids, as well as the choice of initial medication. More research about long-term benefits of treatment are especially needed in this population.

VERTEBRAL FRACTURES: NO FIRM RECOMMENDATIONS

Doshi et al state that the Gourlay study was biased towards longer screening intervals because it included women with asymptomatic vertebral fractures. This does not make sense, because women who have untreated asymptomatic fractures would not be expected to lose bone at a slower rate. This does not mean that the asymptomatic fractures are trivial.

Instead of getting more frequent bone density measurements, I think it would be more logical to evaluate vertebral fractures using radiographs or vertebral fracture assessment, but we can't make a firm recommendation without studies of the effectiveness of screening for vertebral fractures.

WHAT ABOUT OSTEOPENIA?

Rodeo riders have a high fracture risk, but alendronate would not help

Critics of the Gourlay study point out that most fractures occur in the osteopenic population. This is true, but it does not mean that bone density should be measured more frequently. The bisphosphonates are not effective at preventing a first fracture unless the T score is lower than –2.5.[13] Patients who have risk factors in addition to osteopenia may have a higher risk of fracture, but it is not clear if this can be treated with medication. For example, rodeo riders have a high fracture risk, but they would not benefit from taking alendronate. In some cases, such as people who smoke or drink alcohol to excess, treating the risk factor would be more appropriate.

As Doshi et al and others have noted, the study by Gourlay et al has limitations, and of course clinical judgment must be used in implementing the findings of any study. But doctors should not order unnecessary and expensive tests, and physicians who perform bone densitometry should not recommend frequent repeat testing that does not benefit the patient. ■

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