June 24, 2008 -- An ultrasound exam of the heel combined with an assessment of specific risk factors for bone loss and falling can help predict fracture risk due to osteoporosis, a new study suggests.

Researchers say the combination approach could be used to identify older people with a low fracture risk who may not need X-ray-based bone density tests.

The National Osteoporosis Foundation recommends bone density X-ray testing for all women aged 65 and older and all men aged 70 and older, regardless of their risk factors for bone loss. Testing is also recommended for younger men and women with identified risk factors.

But many people who should have the test are not getting it, researcher Idris Guessous, MD, tells WebMD. "In many areas, lack of access and cost keep people from getting tested, and this is likely to get worse as the population at risk for osteoporosis grows."

By one estimate, the incidence of hip fracture related to bone loss is expected to quadruple by the year 2050. Roughly 10 million Americans -- four out of five of whom are women -- have a diagnosis of osteoporosis; 34 million have low bone mass. Low bone mass puts you at increased risk for developing osteoporosis.

Even if the numbers don't rise as expected, it is clear that the incidence of osteoporosis will outpace the economic resources available to treat the disease, Guessous says. "The development of strategies to better identify [people] that need to be tested is crucial."

Heel Ultrasound Predicts Risk

With this in mind, Guessous and colleagues from Switzerland's Lausanne University Hospital developed their own risk assessment model combining an ultrasound exam of the heel with evaluation of established risk factors for osteoporosis and a simple, office-based test to determine a patient's risk for falling.

They used the model on 6,174 women between the ages of 70 and 85 without a diagnosis of osteoporosis.

All the women were evaluated with a heel-bone quantitative ultrasound (QUS), a test that measures bone density at the heel using sound waves rather than radiation.

Other recorded risk factors for fracture included being over the age of 75, having a history of fracture, having a recent fall, and failing a test in which participants were asked to rise from a chair three times in quick succession without using their arms for balance.

Different versions of the "chair-stand test" are widely used to measure lower body strength and falling risk in frail and elderly populations.

Using this five-item model, the researchers concluded that 1,464 of the women (24%) were at lower risk for fractures and 4,710 (76%) had a higher risk.

The women were then followed for three years, during which time 66 women had a hip fracture. Nine out of 10 fractures occurred among women in the higher-risk group.

The study appears in the July issue of Radiology.

"Fracture risk is not just related to the strength of your bones," says Guessous. "It is also determined by risk of falling, but this risk is often overlooked by clinicians."

He adds that the heel ultrasound combined with risk assessment could prove useful for identifying lower-risk people who may not need further bone density testing.

Heel Ultrasound vs. Bone Density X-Ray Testing

Thomas Jefferson University Hospital radiology professor Levon Nazarian, MD, tells WebMD that heel ultrasound may represent a safer alternative to bone density X-ray testing for some patients.

"Anytime you can avoid radiation, that is a good thing," he says. "If it turns out that [ultrasound] screening keeps some patients from needing more testing, it could be beneficial."

But National Osteoporosis Foundation Clinical Director Felicia Cosman, MD, sees little need for the ultrasound screening, especially in the U.S.

She says X-ray-based bone density testing remains the single best predictor of risk of hip fracture.

"[X-ray] bone density testing is accessible to just about everyone, except perhaps those living in really rural, remote areas," she says. "And it is widely covered, so cost is not a big issue. In this country, at least, it is difficult to make the argument that people should have other tests."

Cosman says the utilization of bone density testing is high among many at-risk groups in the U.S., but she adds that this is unfortunately not true for those with the highest risk -- elderly people who have had previous hip or spine fractures.

"Many of these patients get treated for their fracture with no follow-up in terms of testing or treatment for osteoporosis," she says. "These are the patients you want to make sure you evaluate and treat."