

A wide range of topics were selected for presentation in Orlando, Florida on August 17, 2008 at the American College of Foot and Ankle Orthopedics and Medicine Clinical Conference 2008, chaired by Kathleen Satterfield, DPM FACFAOM. The following abstracts were those chosen for oral presentations and represent those from both student and professional categories

**A new ultrasound device for estimating calcaneal bone density**

Jeffrey Robertson (BA), Jonathan Kaufman (PhD), Bradley Levitt (BS), Alon Kol (BA), Mark Kosinski (DPM, FIDSA), Eileen D. Chusik (PhD)

**Abstract**

Objectives of study were to develop a novel ultrasound device to estimate bone mineral density (BMD) at the calcaneus as well as to examine utility of bone density screening in a podiatric clinic population. The new device is entirely self-contained, portable (<5 lbs) and permits real-time evaluation of BMD by computing a parameter known as net time delay (NTD).

The device also incorporates a novel positioning mechanism for locating a region-of-interest in the calcaneus that depends on size of subject's foot. NTD is defined as difference between transit time through the heel by an ultrasound signal and the transit time through an equivalent thickness (to the heel) of soft tissue. This parameter is sensitive primarily to the total amount of bone mass contained in the propagation path, and thus is equivalent to the bone mineral content estimated by dual-energy X-ray absorptiometry (DXA) scanners.

A clinical institutional review board-approved study enrolled 95 subjects in a podiatric clinic (ages 22–81) whose BMD was measured at the heel using DXA. A subset of these subjects ( $N=28$ ) were also measured with the ultrasound device at the same site. Associations of BMD with age, race, weight, and gender were evaluated. Approximately

16% of the subjects measured were either osteopenic or osteoporotic. A linear regression of BMD with the ultrasonically determined NTD produced a high degree of linear correlation ( $r=0.88$ ,  $p<0.001$ ), which represents significant improvement over present ultrasound bone densitometers. Reproducibility of ultrasound devices was 4.3%.

This study demonstrates the utility of bone density screening and the advantage of being able to assess bone with a relatively low cost (<\$400 USD) device that may enable a significant expansion of clinical diagnosis and management of osteoporosis.

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**Application of Apligraf skin graft substitute along with autologous platelet derived growth factors in the treatment of diabetic foot ulcer**

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**Purpose**

This is a case study to evaluate the efficiency of applying an Apligraf skin graft along with an application of autologous platelet derived growth factors in the treatment and care of diabetic foot ulcer. Additionally off loading was accomplished with a Bledsoe diabetic walking boot.