

## T-scores in African American Women

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Many older bone densitometer (DXA) machines are programmed to calculate T-scores for African-American patients using peak African-American bone mass as reference standard.

This presents a problem because most data regarding fracture risk has been derived using Caucasian data (Binkley 2002). If the T-score for an African-American woman is calculated using a race-adjusted reference, the same absolute bone density will yield a lower T-score for an African-American than for a Caucasian woman. For this reason, the International Society for Clinical Densitometry has recommended that T-scores for all women, regardless of ethnicity, be calculated from Caucasian reference standards (ISCD 2007).

An African-American patient was referred to our clinic because of an abnormal bone density study. Her DXA measurements ( $\text{gm}/\text{cm}^2$ ) and the reported T-scores are shown in Table 1. We suspected these calculations were done using the African-American reference standard and asked that the T-scores be recalculated on the same machine, entering the patient as Caucasian. The results are shown in the 3rd column of Table 1.

**Table 1. Density and T-scores for a 64 year-old African-American Woman**

Site	Bone mineral density (g/cm <sup>2</sup> )	Race-adjusted T-score	Non-race-adjusted T-score
Spine	0.824	-3.0	-2.0
R total hip	0.865	-1.1	-0.6
R femoral neck	0.740	-1.5	-1.0
L total hip	0.932	-0.6	-0.1
L femoral neck	0.728	-1.6	-1.1

Using the initial calculations, the patient has a diagnosis of osteoporosis and is therefore a candidate for bisphosphonate therapy. Using the recalculated values and the World Health Organization fracture risk assessment tool FRAX<sup>®</sup> pharmacologic therapy is not recommended.

Clinicians who treat African-American women should ascertain whether bone density T-scores for these patients are being calculated with African-American or with Caucasian peak bone density as the reference standard. Older machines that report T-scores based on an African-American reference standard can be replaced or updated with software available from the manufacturer.

## REFERENCES

Binkley, N.C., Schmeer, P., Wasnich, R.D., & Lenchik, L. (2002). What are the criteria by which a densitometric diagnosis of osteoporosis can be made in males and non-Caucasians? *J Clin Densitom*, 5 (supplement), S19-27.

International Society for Clinical Densitometry 2007 Official Positions (2009, December 4). Retrieved from <http://www.iscd.org/Visitors/pdfs/ISCD2007OfficialPositions-Combined-AdultandPediatric.pdf>

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