DIAGNOSIS

Assay variability of biochemical markers of bone turnover

Reproducibility of biochemical measurements of bone turnover varies considerably across US commercial laboratories, according to the authors of a masked study of identical specimens published in *Osteoporosis International*.

Urine N-telopeptide and serum bone-specific alkaline phosphatase are biochemical markers of bone turnover, and changes in their concentrations can indicate treatment efficacy in patients with osteoporosis. Although frequently employed in research trials, the use of these markers in clinical practice remains limited owing to concerns over analytical variability.

Anne Schafer and colleagues (University of California, San Francisco) assessed between-run and within-run reproducibility of urine and serum samples collected from five postmenopausal women aged >55 years. Investigators obtained identical aliquots by pooling specimens from all individuals

to create a urine pool and a serum pool. Analyses performed by six commercial US laboratories revealed substantial variation, with automated assays providing more precise results than manual assays.

Although the study is limited by the small number of samples and laboratories investigated, the results nevertheless support the need for proficiency testing and standardized guidelines to improve the reproducibility of biochemical marker measurements and validate their use in clinical diagnostics. “Clinicians should be aware of the substantial variability in reproducibility of marker measurements, particularly if they do not consistently use the same assay and laboratory,” concludes Schafer.

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Original article Schafer, A. L. *et al.* Laboratory reproducibility of biochemical markers of bone turnover in clinical practice. *Osteoporos. Int.* doi:10.1007/s00198-009-0974-2