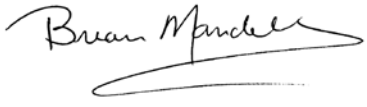
Bone quality: A soft concept, hard to ignore

Thanks to evidence from large-scale, controlled clinical trials, doctors have been slowly moving toward writing more prescriptions for more patients. Aggressive drug treatment has become standard (and increasingly mandated) in hypertension, hyperlipidemia, congestive heart failure, and thromboprophylaxis, to name a few. In many of these disorders, as dictated by the US Food and Drug Administration, a new drug is generally expected to have a beneficial effect on a "hard" outcome measure, not just on a surrogate marker.

In the case of the antiresorptive drugs for treating osteoporosis, the bisphosphonates have been shown not only to improve bone density but also to reduce the risk of fractures. The clinical trials used dual-energy x-ray absorptiometry (DXA) measurements as a surrogate marker for fragility fractures, and the two correlated reasonably well. Thus, clinicians for the past 10-plus years have used DXA results to justify prescribing these drugs for patients (primarily women) with low T scores to prevent future fractures. There is no doubt that osteoporosis had previously been undertreated, and the projected number of patients with hip and spine fractures would overflow chronic-care beds. Yet there has been a sense that bisphosphonates are prescribed so often they may as well be "put in the water," and that we are prophylactically treating many thousands of patients who are never going to suffer a fracture.

How can we better predict who will, with a given low T score, have a fracture of the hip or spine and who will not? Why do patients exposed to excess corticosteroids suffer strikingly more fractures than patients with identical T scores who were not exposed to steroids? Why do smoking and family history of fracture contribute to fracture risk in a way not accounted for by density measures alone?

Thus enters the intellectually pleasing concept of bone quality. However, bone quality is pragmatically as tough to measure as emotional stress. Yet we have learned to not minimize either of these when looking at hard outcomes. In this issue of the *Journal* (page 331), Dr. Angelo Licata discusses how clinicians can use the concept of bone quality in daily practice.



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doi:10.3949/ccjm.76a.06001