Abstract
Quantitative ultrasound (QUS) appears to be developing into an acceptable, low-cost and readily-accessible alternative to dual X-ray absorptiometry (DXA) measurements of bone mineral density (BMD) in the detection and management of osteoporosis. Perhaps the major difficulty with their widespread use is that many different QUS devices exist that differ substantially from each other, in terms of the parameters they measure and the strength of empirical evidence supporting their use. But another problem is that virtually no data exist outside of Caucasian or Asian populations. In general, heel QUS appears to be most tested and most effective. Some, but not all heel QUS devices are effective assessing fracture risk in some, but not all populations, the evidence being strongest for Caucasian females > 55 years old, though some evidence exists for Asian females > 55 and for Caucasian and Asian males > 70. Certain devices may allow to estimate the likelihood of osteoporosis, but very limited evidence exists supporting QUS use during the initiation or monitoring of osteoporosis treatment. Likely, QUS is most effective when combined with an assessment of clinical risk factors (CRF); with DXA reserved for individuals who are not identified as either high or low risk using QUS and CRF. However, monitoring and maintenance of test and instrument accuracy, precision and reproducibility are essential if QUS devices are to be used in clinical practice; and further scientific research in non-Caucasian, non-Asian populations clearly is compulsory to validate this tool for more widespread use.

Keywords
Quantitative ultrasound, osteoporosis, fragility fracture, dual-energy X-ray absorptiometry, evidence-based practice.