

Telemedicine-cloud: Bone Density Evaluation for Osteoporosis in Rural Areas

Generally speaking, in small cities, towns, villages and the rural areas the osteoporosis is suspected after a broken bone in both older women and men. Most older women and men in small cities, towns, villages and the rural areas have no access to bone density evaluation for several reasons beyond their control, e.g., lack of medical facilities in their area of residency, inadequate and infrequent outreach programs by the clinicians, long travel distances to a clinic, etc.

Bone density is defined as the measurement of the calcium and other bone minerals that are packed into a segment of the bone. Bone density is determined into two scores, i.e., T-score and Z-score. Bone density scanning, also called dual-energy x-ray absorptionmetry (DXA) or bone mineral density (BMD), is an enhanced version of x-ray scan that is used to measure bone loss. BMD tests are usually done on bones in the spine (vertebrae), hip, forearm, wrist, fingers and heel.

Bone density testing is recommended in several situations, e.g., menopausal women and not taking estrogens, men with clinical conditions associated with bone loss, such as rheumatoid arthritis, chronic kidney or liver disease. Bone density measurement is advised in few other clinical conditions, e.g., use of medications (prednisone), excessive collagen in urine, hyperthyroidism, hyperparathyroidism, type 1 diabetes, etc. All these clinical conditions demand access to endocrinologist, rheumatologist, pulmonologist, etc., and these specialists are not easily accessible to them in rural areas.

We have solved this problem by sending “Mobile Medical Van” to small cities, towns, villages, and the rural areas with an installed DXA machine and other instruments for the evaluation of the person. The DXA scan is transmitted employing Zoom and Dicom to a radiologist working in an urban area and the interpretation is available in thirty (30) minutes.