Dual energy x-ray absorptiometry (DXA, DEXA)

- Gold standard for osteoporosis screening, diagnosis and monitoring of therapy
- Monitors changes over time and predicts risk of future fractures
- Quick and acceptable to patients and relatively inexpensive
- Very low dose of radiation (similar to daily background radiation exposure)

Measures bone mineral content (BMC, in grams) and bone area (BA, in square centimeters) used to calculate BMD by dividing BMC/BA or gm/cc^2.

T-scores
$$\frac{\text{BMD pt} - \text{BMD young-adult population}}{\text{SD of young-adult population}}$$

SD=Standard deviation
pt=patient

Z-scores
$$\frac{\text{BMD pt} - \text{BMD age- and sex matched population}}{\text{SD of age- and sex-matched population}}$$

World Health Organization definitions based on BMD as measured by DXA:

T-score of − 1.0 and >	-1.0 to -2.5	-2.5 or less
Normal	Osteopenia	Osteoporosis

Region	BMD (g/cm²)	YA (T)	AM (Z)
L3	1.348	1.2	1.4
L4	1.373	1.4	1.6
L1-L2	1.356	1.7	1.9
L1-L3	1.353	1.5	1.7
L1-L4	1.359	1.5	1.6
L2-L3	1.371	1.4	1.6
L2-L4	1.372	1.4	1.6
L3-L4	1.361	1.3	1.5

Image not for diagnosis

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