What is a Bone Density Scan?

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PA-S1

“Bone Density Scans”

	X-ray Absorptiometry	Single Energy Absorptiometry	Dual Energy X-Ray Absorptiometry	Quantitative Computed Tomography
Can Measure Bone Density	X	X	X	X
Measures with precision		X	X	X
Efficiently scans multiple bones or full body		X	X	X
Low Radiation	X	X	X	

precision

+ efficiency

+ safe levels of radiation

= DEXA

When to order a DEXA Scan:

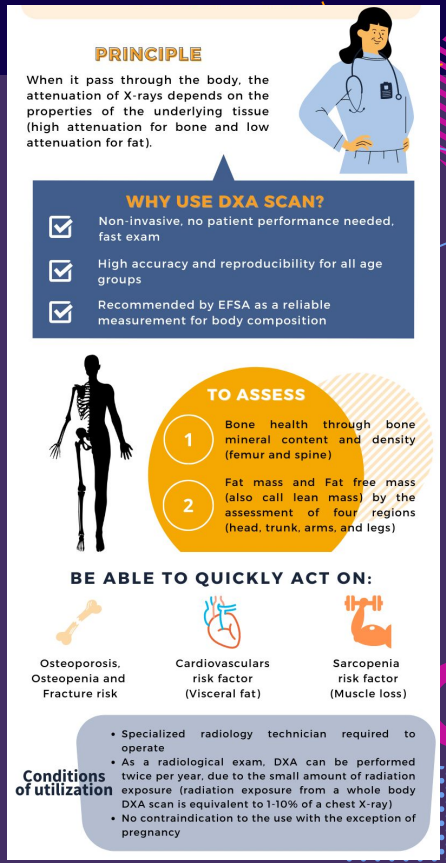
Most commonly: To assess bone health for osteoporosis/fracture risk

Factors of Bone Density Loss:

- **Age**
  - ***SOME loss of bone density is NORMAL with aging***
- **Gender**
  - **Screen starting at 65 for women and 70 in men**
- Family history of osteoporosis or multiple fractures
- Previous fracture injuries
- Medications
  - Prednisone, cancer drugs, immunosuppressant drugs
- Overall Health
  - Rheumatoid arthritis, lupus, diabetes, liver disease and kidney disease

Other Indications:

- To track bone health changes over time
- To monitor treatment efficacy
- To evaluate body composition, including fat and muscle mass

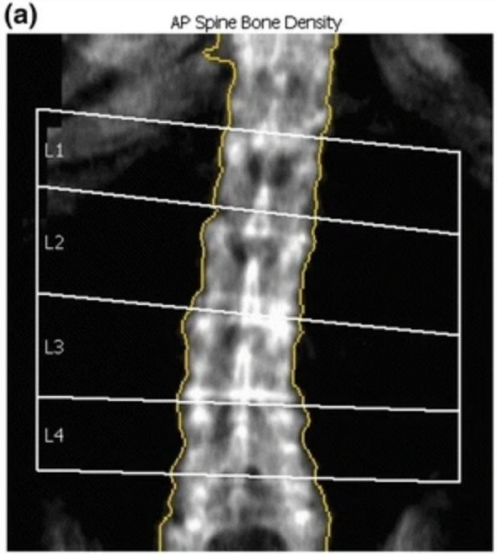


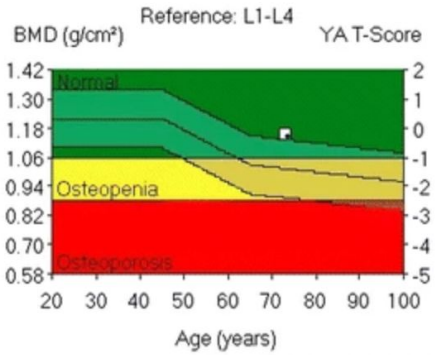
DEXA SCANNING STEPS:

1. **Pt positioned** on **DEXA table** by technologist, often with foam blocks
    a. Hip and spine most commonly scanned
2. **DEXA arm passes over Pt**, emitting two beams of varying energies
3. **DEXA computer calculates** bone density measurement data and translates into pictures and graphs

DEXA scans measure bone density (thickness and strength of bones) by passing ***both a high and low energy x-ray beam*** through the body. The ***difference in absorptiometry between beams*** is used for calculations.

4. **Results are reviewed and interpreted** by a radiologist or other provider trained in DEXA interpretation





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L1	0.999	88	-1.1	104	0.3
L2	1.149	96	-0.4	111	1.0
L3	1.312	109	0.9	127	2.3
L4	1.131	94	-0.6	109	0.8
L1-L2	1.085	94	-0.5	110	0.9
L1-L3	1.165	100	0.0	116	1.3
L1-L4	1.156	98	-0.2	114	1.2
L2-L3	1.227	102	0.2	119	1.6
L2-L4	1.198	100	0.0	116	1.4
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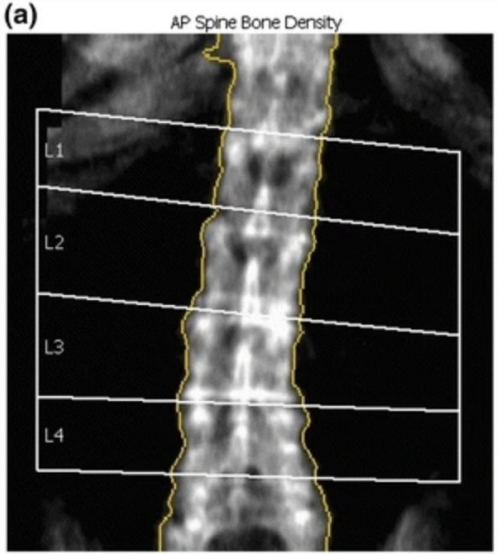

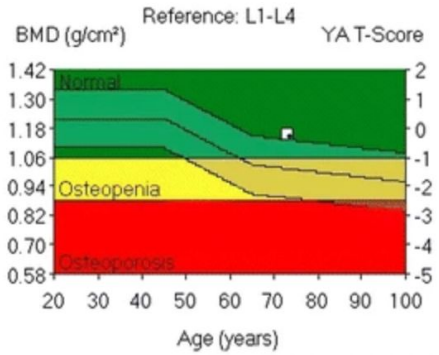

Reference Population Curves

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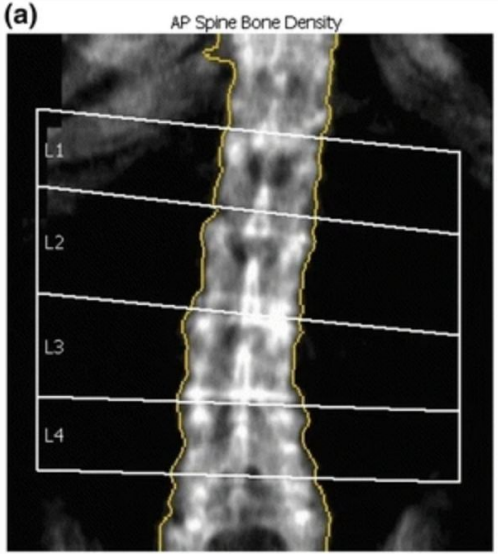

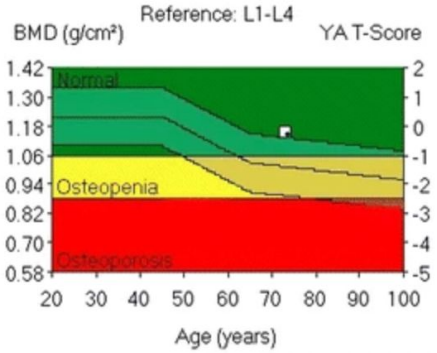

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1. T-score: compares to the optimal peak bone density for gender

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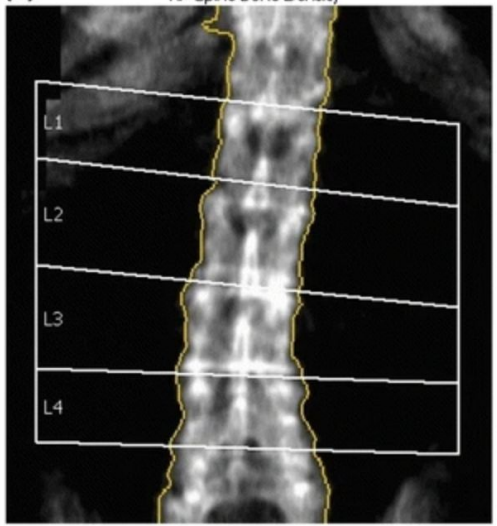

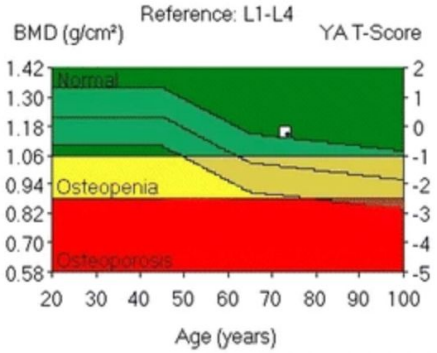

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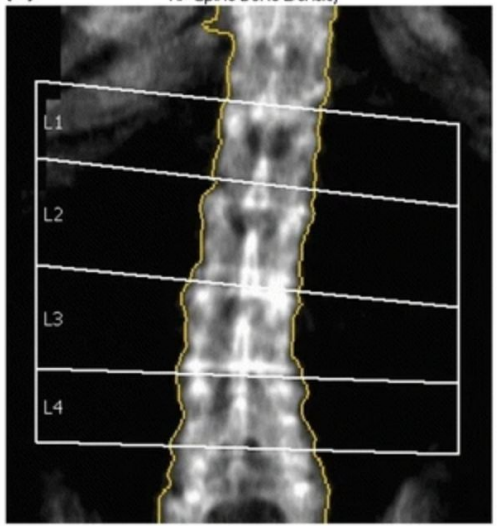
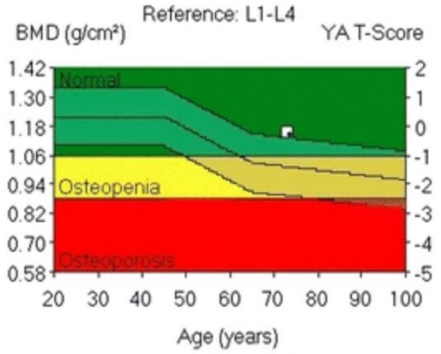


3. 3D Renderings and breakdowns to locate areas of particular clinical interest



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STATS ARE HARD!

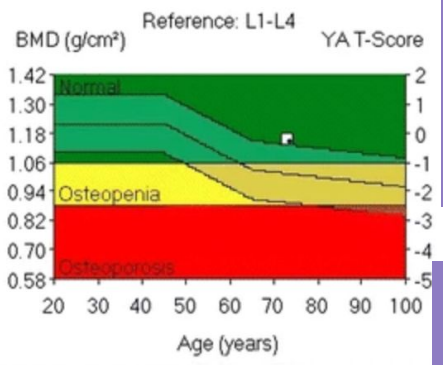
Reductive Breakdown…

T-Score: for men >50yo and menopausal women

- >-1 = normal
- -1 to -2.4 = osteopenia
- <-2.5 = osteoporosis

Z-Score: for children, premenopausal women, and males younger than age 50

- >-2 = normal
- <-2 = abnormal



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T-score: IGNORES age and race

- Is bone lost since optimal age "normal?"
- "Longitudinal"
- ***Diagnostic***

Z-score: FACTORS age and race

- Is bone mass compared to age group normal?
- "Cross-sectional"
- ***Non-diagnostic clinical tool***

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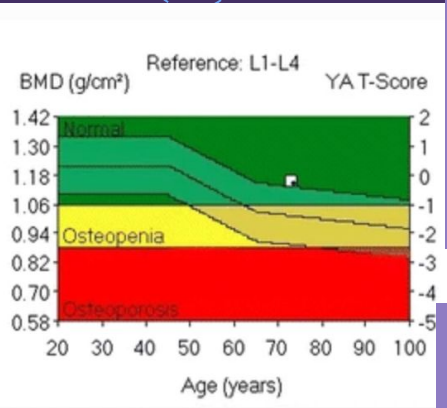

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5. **Results sent to prescribing provider** for diagnosis and treatment…

References

- Centers for Disease Control and Prevention. (2021, October 20). Radiation in healthcare: Bone Density (Dexa Scan). Centers for Disease Control and Prevention. Retrieved November 21, 2022, from https://www.cdc.gov/nceh/radiation/dexa-scan.html#:~:text=DEXA%20(dual%20x%2Dray%20absorptiometry,the%20hip%20and%20the%20spine.
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- Modi, J. (2022, June 7). DXA Results Interpretation: A Quick Guide for X-ray techs. CE4RT. Retrieved November 25, 2022, from https://ce4rt.com/rad-tech-talk/dxa-results-interpretation-a-quick-guide-for-x-ray-techs/