



IMAGING UPDATE

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BONE MINERAL DENSITY REPORTING, FRAX SCORING
Reporting formats and criteria for bone mineral density are being upgraded to conform to the latest recommendations from the International Society For Clinical Densitometry (ISCD)¹ and the National Osteoporosis Foundation (NOF)².

Reporting for menopausal and post-menopausal women, and men 50 and older is based on calculated T-scores that compare the patient's bone mineral density to normal young adults utilizing the standard classification according to the World Health Organization (WHO criteria).

Reporting criteria for children, premenopausal women, and men less than age 50 is based on calculated Z-scores that compare the patient's bone mineral density to age-based normals. Note that the NOF does not recommend routine BMD testing in children, healthy young men, or premenopausal women.²

EXAMINATION

Our standard bone mineral density examination utilizes dual-energy X-ray absorptiometry (DXA)

REPORTING CRITERIA

Menopausal/postmenopausal women, men age 50 and older:

T-SCORE	RESULT
-1.0 or higher	normal bone mineral density
-1 and -2.5	osteopenia
-2.5 and lower	osteoporosis

of the lumbar spine (L1-L4) and both hips (total hip and femoral neck measurements) performed on GE-Lunar equipment. One or more of these sites may not be measured due to prior fractures or metal hardware. Lumbar measurements may be falsely elevated due to degenerative changes and/or prior fractures, and one or more vertebral levels may be excluded in some patients due to hardware or markedly elevated vertebral body BMD. Individual vertebral body measurements are not utilized.

WEIGHT LIMITATIONS

The table weight limit is 300 pounds, and the L-spine and hips cannot be measured for patients above this weight. The distal third of the nondominant forearm is utilized in these patients, and is added in those patients who cannot have the L-spine or hips measured for other reasons.

REPORTS

BMD is reported as the lowest measurement for the L-spine, total hip, or femoral neck. The complete BMD report with graphs is available on PowerChart via ProVisionWeb, or by contacting the radiology department. We are unable to attach this information to the printed report with our current RadNet software but hope to be able to in the future.

Children, premenopausal women, men less than age 50:

Z-SCORE	RESULT
-2.0 or higher	within expected range for age
lower than -2.0	low bone density for age

PEDIATRIC BMD

The software package for pediatric BMD (ages 5-19) is only available at the Munson Copper Ridge facility and at Mercy Hospital Cadillac. Pediatric BMD is reported with Z-scores with the same criteria as premenopausal women listed above.

PROBABILITY OF FRACTURES USING “FRAX”

The WHO has developed a FRAX tool (www.shef.ac.uk/FRAX) to estimate an individual's 10-year probability for a hip fracture and a 10-year probability for a major osteoporotic fracture (clinical spine, forearm, hip or shoulder fracture). In young healthy individuals (with a low mortality), the one year probability for a fracture is approximately 10% of the 10-year probability.³ According to the National Osteoporosis Foundation, FRAX is most useful in patients with low hip BMD (the WHO algorithm has not been validated for spine BMD, and FRAX may underestimate the risk of fracture with a low spine BMD and relatively normal hip BMD). FRAX only applies to previously untreated patients, and is only intended for postmenopausal women and men 50 and older (FRAX scoring is not recommended for use in younger adults or children).²

A patient's FRAX score can be calculated on the website³ utilizing the femoral neck BMD and clinical risk factors. This website also has downloadable charts that can be utilized to give a quick estimate of fracture risk. The GE-Lunar software does not have FRAX scoring incorporated into the report at this time.

If you have questions or concerns, as always, please don't hesitate to contact me at 231.935.6400 or shodges@mhc.net.

Footnotes/Endnotes

1. *International Society For Clinical Densitometry: www.ISCD.org*
2. *Clinician's Guide to Prevention and Treatment of Osteoporosis. NOF. 2008.*
3. *FRAX tool: www.shef.ac.uk/FRAX*
4. *National Osteoporosis Foundation: www.nof.org*

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