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Subject: Bone Mineral Density Studies

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Position Statement	Billing/Coding	Reimbursement	Program Exceptions	Definitions	Related Guidelines
Other	References	Updates			

DESCRIPTION:

Bone mineral density (BMD) studies can be used to identify individuals with osteoporosis and monitor response to osteoporosis treatment; the goal of BMD measurements is to reduce the risk of fracture. Bone density is most commonly evaluated with dual x-ray absorptiometry (DXA); other bone mass measurement technologies are available.

BMD can be measured with several bone mass measurement technologies in a variety of skeletal sites; central (e.g., hip, spine) or peripheral (e.g., wrist, finger, heel). While BMD measurements are predictive of fragility fractures at all sites, central measurements of the hip and spine are the most predictive. Fractures of the hip and spine (e.g., vertebral fractures) are also considered to be the most clinically relevant. The following bone mass technologies are most commonly used for BMD measurement:

Dual-Energy X-Ray Absorptiometry (DXA)

DXA is used to measure BMD at central sites (hip and spine). DXA can also be used to measure peripheral sites (forearm, wrist, and finger); DXA performed at peripheral sites is usually referred to as pDXA. DXA is the most commonly used technique to measure BMD because of its ease of use, low radiation exposure, and its ability to measure BMD at both the hip and spine. DXA can also be used to measure peripheral sites, such as the wrist and finger. DXA generates two x-ray beams of different energy levels to scan the region of interest and measure the difference in attenuation as the low- and high-energy beams pass through the bone and soft tissue. The low-energy beam is preferentially attenuated by bone, while the high-energy beam is attenuated by both bone and soft tissue. This differential attenuation between the two beams allows for correction for the irregular masses of soft tissue, which surround the spine and hip, and therefore the measurement of bone density at those sites.

Quantitative Computed Tomography (QCT)

QCT depends on the differential absorption of ionizing radiation by calcified tissue and is used for central measurements (spine, proximal femur, distal forearm and whole body). Compared to DXA, QCT is less readily available and associated with relatively high radiation exposure and relatively high cost.

Ultrasound Densitometry

Ultrasound densitometry is a technique for measuring BMD at peripheral sites, typically the heel but also the tibia and phalanges. Compared to osteoporotic bone, normal bone demonstrates higher attenuation of the ultrasound wave and is associated with a greater velocity of the wave passing through bone. Ultrasound densitometry has no radiation exposure, and machines may be purchased for use in an office setting.

Vertebral Fracture Assessment (VFA)

Vertebral fracture assessment (VFA) with densitometry is a technique to assess vertebral fractures at the same time as bone mineral density, using additional software with dual-energy x-ray absorptiometry. The addition of VFA to bone mineral density may augment diagnostic information on fracture risk.

Various devices for BMD (e.g., Hologic) and VFA (e.g., Lunar Dual Energy Vertebral Assessment, Hologic Instant Vertebral Assessment software) have received clearance for marketing by the U.S. Food and Drug Administration (FDA).

POSITION STATEMENT:

Central bone mineral density measurement with dual-energy absorptiometry (DXA) **meets the definition of medical necessity** for any of the following indications:

- Where the risk of osteoporosis is the crucial factor in a decision to initiate pharmacologic therapy either estrogen replacement therapy (ERT) or antiresorptive therapy (e.g., Fosamax (alendronate))
- In estrogen deficient individuals with relative contraindications to ERT/hormone replacement therapy (e.g., uterine cancer) and who are at clinical risk for osteoporosis;
- Vertebral abnormalities (e.g., osteomalacia, osteitis, compression fractures, fibrosa cystica, osteosclerosis, spinal deformities, roentgenographic osteopenia);
- Primary hyperparathyroidism;
- For individuals who are receiving long-term glucocorticoid (steroid) therapy;
- For individuals who have a family history of osteoporosis;
- Estrogen deficient individuals who are at clinical risk for osteoporosis;
- For individuals being monitored to assess the response to or efficacy of FDA-approved osteoporosis drug therapy;
- For individuals on long term hormone replacement therapy (e.g., Depo-Provera);
- For individuals on long-term anticonvulsant therapy (e.g., Phenytoin, Phenobarbital); **OR**
- For individuals on long-term luteinizing hormone releasing hormone agonist (e.g., Leuprolide, Goserelin).

Peripheral bone mineral density measurement using the forearm (cortical bone), **meets the definition of medical necessity** when performed for asymptomatic primary hyperparathyroidism (PHPT) where consideration for surgery is determined by the bone density level.

Peripheral bone mineral density measurement (lower arm, wrist, finger or heel) **meets the definition of medical necessity** when conventional central (hip/spine) DXA screening is not feasible or in the management of hyperparathyroidism (PHPT), where peripheral DXA at the forearm (ie, radius) is essential for evaluation.

Screening for osteoporosis

NOTE: Refer to member's contract benefits.

Central bone mineral density measurement with dual-energy absorptiometry (DXA) when used for screening for osteoporosis **may be eligible for coverage** for the following:

- Women aged 65 years and older;
- Postmenopausal women younger than 65 years who are at increased risk of osteoporosis, as determined by a formal clinical risk assessment tool*
- Men aged 70 years and older;
- Men aged 50-69 years with an elevated risk factor assessment.

*Several tools are available to assess osteoporosis risk, such as OST, ORAI, OSIRIS, SCORE, and FRAX.

Abbreviations: FRAX: Fracture Risk Assessment Tool; ORAI: Osteoporosis Risk Assessment Instrument; OSIRIS: Osteoporosis Index of Risk; OST, Osteoporosis Self-assessment Tool; SCORE: Simple Calculated Osteoporosis Risk Estimation Tool

Screening for vertebral fractures using dual x-ray absorptiometry is considered **experimental or investigational** there is insufficient clinical evidence in the peer-reviewed medical literature to support the use of screening for vertebral fractures using dual x-ray absorptiometry.

Bone mineral density study performed for screening when a preventive health benefit/wellness benefit is not available is **not eligible for coverage**.

Bone mineral density study for all other indications not included above is considered **not medically necessary**.

BILLING/CODING INFORMATION:

CPT Coding:

76977	Ultrasound bone density measurement and interpretation, peripheral site(s), any method
77078	Computed tomography bone mineral density study, 1 or more sites; axial skeleton (e.g., hips, pelvis, spine)
77080	Dual energy X-ray absorptiometry (DXA), bone density study, 1 or more sites; axial skeleton (e.g., hips, pelvis, spine)

77081	Dual energy X-ray absorptiometry (DXA), bone density study, 1 or more sites; appendicular skeleton (peripheral) (e.g., radius, wrist, heel)
77085	Dual-energy X-ray absorptiometry (DXA), bone density study, 1 or more sites; axial skeleton (eg, hips, pelvis, spine), including vertebral fracture
77086	Vertebral fracture assessment via dual-energy X-ray absorptiometry (DXA)
78350	Bone density (bone mineral content) study, 1 or more sites; single photon absorptiometry
78351	Bone density (bone mineral content) study, one or more sites; single photon absorptiometry; dual photon absorptiometry, 1 or more sites
0508T	Pulse-echo ultrasound bone density measurement resulting in indicator of axial bone mineral density, tibia
0749T	Bone strength and fracture-risk assessment using digital X-ray radiogrammetrybone mineral density (DXR-BMD) analysis of bone mineral density (BMD) utilizing data from a digital X ray, retrieval and transmission of digital X ray data, assessment of bone strength and fracture-risk and BMD, interpretation and report
0750T	Bone strength and fracture-risk assessment using digital X-ray radiogrammetrybone mineral density (DXR-BMD) analysis of bone mineral density (BMD) utilizing data from a digital X ray, retrieval and transmission of digital X ray data, assessment of bone strength and fracture-risk and BMD, interpretation and report; with single-view digital X-ray examination of the hand taken for the purpose of DXR-BMD

HCPCS Coding:

G0130	Single energy x-ray absorptiometry (SEXA) bone density study, one or more sites; appendicular skeleton (peripheral) (e.g., radius, wrist, heel)
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REIMBURSEMENT INFORMATION:

Bone mineral density measurement/study (76977, 77078, 0508T, and G0130) are limited to one (1) of any type study in a twelve (12) month period.

Bone mineral density study (77080, 77081, 77085, 77086, 78350, and 78351) are limited to two (2) of any type study in a twelve (12) month period.

Repeat or serial bone mineral density (BMD) measurement/study is usually not indicated more frequently than once every 2 years. Repeat or serial BMD more frequent than every 2 years requires documentation that additional BMD measurements will alter treatment decision or clinical management (e.g., monitoring or evaluation of response to treatment, initiation or change in clinical management, initiation or change in pharmacologic treatment).

Documentation should include reason for repeat or serial BMD measurement/study, current BMD results, including, but not limited to updated member fracture risk assessment, study comparison to prior BMD study (assessment of whether any changes in measured BMD are statistically significant), a statement about fracture risk and BMD results. Normal: Bone density is within 1 SD (+1 or -1) of the young adult mean. Low bone mass: Bone density is between 1 and 2.5 SD below the young adult mean (-1 to -2.5 SD). Osteoporosis: Bone density is 2.5 SD or more below the young adult mean (-2.5 SD or

lower). (Adapted from: National Institute of Health Osteoporosis and Related Bone Diseases National Resource Center Osteoporosis: Bone Mass Measurement: What the Numbers Mean, Oct 2018).

Re-imaging or additional imaging due to technically limited exam is the responsibility of the imaging provider.

LOINC Codes:

The following information may be required documentation to support medical necessity: physician history and physical, physician progress notes, plan of treatment and reason for bone mineral density measurement/study.

Documentation Table	LOINC Codes	LOINC Time Frame Modifier Code	LOINC Time Frame Modifier Codes Narrative
Physician history and physical	28626-0	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Attending physician progress note	18741-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Plan of treatment	18776-5	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology reason for study	18785-6	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology comparison study-date and time	18779-9	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology comparison study observation	18834-2	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology-study observation	18782-3	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim
Radiology-impression	19005-8	18805-2	Include all data of the selected type that represents observations made six months

			or fewer before starting date of service for the claim
Radiology study-recommendation (narrative)	18783-1	18805-2	Include all data of the selected type that represents observations made six months or fewer before starting date of service for the claim

PROGRAM EXCEPTIONS:

Federal Employee Program (FEP): Follow FEP guidelines.

State Account Organization (SAO): Follow SAO guidelines.

Medicare Advantage products: The following National Coverage Determination (NCD) was reviewed on the last guideline reviewed date: Bone (Mineral) Density Studies (150.3) located at cms.gov.

The following Local Coverage Determination (LCD) was reviewed on the last guideline reviewed date: Bone Mineral Density Studies, (L36356) located at fcso.com.

DEFINITIONS:

Bone densitometry: a diagnostic technique used to measure the amount of minerals in bone, and is designed to help predict who needs treatment to protect from bone loss, and predict who is at risk for fractures.

Dual-Energy X-ray Absorptiometry (DEXA): the gold standard for the diagnosis of osteoporosis; most widely used densitometry technology (measures multiple skeletal sites). DXA of the femoral neck is considered to be the best predictor of hip fracture and is comparable with DXA measurements of the forearm for predicting fractures at other skeletal sites. There are two types of DXA scans: peripheral DXA (pDXA): measures bone density in the forearm (lower arm), wrist finger or heel and central DXA: measures lumbar spine and hips (this scan is best scan to predict risk of fractures).

Dual-Photon Absorptiometry (DPA): measures bone mineral content at axial skeletal sites, e.g., spine and hip, using gadolinium-153 as the isotopic source of photons emitted at two energy levels. It is also use to measure total body calcium and provides a measurement of both cortical and trabecular bone mineral density.

Osteoporosis: reduction in bone mineral density (BMD) of 2.5 standard deviations (SD) or more below the mean of young healthy adults, leading to increased susceptibility to fractures.

Peripheral bone density testing: measures bone density in the forearm (lower arm), wrist, finger or heel. The types of peripheral test are: pDXA (peripheral dual energy x-ray absorptiometry), QUS (quantitative ultrasound) and pQCT (peripheral quantitative computed tomography).

Quantitative Computed Tomography (QCT): measures volumetric trabecular and cortical bone density and cortical bone density at the spine and hip, measured in milligram per cubic centimeter.

Radiographic Absorptiometry (RA): measures the small bones of the hand using computer-assisted x-ray densitometry. RA is also known as photodensitometry and radiographic densitometry. Lightly

exposed x-rays are taken under different settings, and the computer scanner compares the density of bone to other tissue, and is compared to normal values based on age and sex.

Single Energy X-ray Absorptiometry (SEXA): measures bone mineral content of the arms and legs.

Single-Photon Absorptiometry (SPA): measures appendicular bone mass, e.g., wrist or calcaneous, using a monoenergetic photon source and a scintillation detector. SPA provides a measurement of mineral density of primary cortical and, to a lesser degree, trabecular bone.

RELATED GUIDELINES:

[Whole Body Dual X-ray Absorptiometry \(DEXA\) to Determine Body Composition and Other Body Composition Techniques, 04-70000-22](#)

OTHER:

Coverage for screening bone density measurement is determined by the member's/subscriber's contract benefits. If the member/subscriber has a preventive health benefit/wellness benefit, screening bone mineral density study may be eligible for coverage.

Florida Statute 627.6691 Coverage for Osteoporosis Screening, Diagnosis, Treatment, and Management.

Any health insurance policy that covers a resident of this state and that is issued, amended, delivered, or renewed in this state after October 1, 1996, must provide coverage for the medically necessary diagnosis and treatment of osteoporosis for high-risk individuals, including, but not limited to, estrogen-deficient individuals who are at clinical risk for osteoporosis, individuals who have vertebral abnormalities, individuals who are receiving long-term glucocorticoid (steroid) therapy, individuals who have primary hyperparathyroidism, and individuals who have a family history of osteoporosis.

Other names used to report bone mineral density studies:

Note: The use of specific product names is illustrative only. It is not intended to be a recommendation of one product over another, and is not intended to represent a complete listing of all products available.

Bone densitometry

Bone mass measurement

DEXA (dual-energy X-ray absorptiometry)

REFERENCES:

1. ACR–SPR–SSR Practice Parameter for the Performance of Dual-Energy X-ray Absorptiometry (DXA), Revised 2018.
2. ACR Practice Guideline for the Performance of Quantitative Computed Tomography (QCT) Bone Densitometry, 2018.
3. American College of Obstetricians and Gynecologists (ACOG) FAQ Osteoporosis, 2018.
4. Blue Cross Blue Shield Association Evidence Positioning System®. 6.01.01 Bone Mineral Density Studies, 10/21.

5. Blue Cross Blue Shield Association Evidence Positioning System® 6.01.44. Vertebral Fracture Assessment with Densitometry, 10/21.
6. Brunader R, Shelton DK. Radiologic bone assessment in the evaluation of osteoporosis. *American Family Physician* 2002; 65(7): 1357-1364.
7. Camacho PM, Petak SM, Binkley N, et al. American Association of Clinical Endocrinologists/American College of Endocrinology Clinical Practice Guidelines for the Diagnosis and Treatment of Postmenopausal Osteoporosis-2020 Update. *Endocr Pract.* 2020 May; 26 (Suppl 1):1-46. doi: 10.4158/GL-2020-0524 Suppl.
8. Charopoulos I, Tournis S, Trovas G et al. Effect of primary hyperparathyroidism on volumetric bone mineral density and bone geometry assessed by peripheral quantitative computed tomography in postmenopausal women. *Journal of Clinical Endocrinology & Metabolism* 2006; 91(5): 1748-1753.
9. Crandall CJ, Newberry SJ, Diamant A, et al. Comparative effectiveness of pharmacologic treatments to prevent fractures: an updated systematic review. *Ann Intern Med.* Nov 18 2014;161(10):711-723.
10. Crandall CJ, Newberry SJ, Gellad WG, et al. Treatment to Prevent Fractures in Men and Women with Low Bone Density or Osteoporosis: Update of a 2007 Report. Comparative Effectiveness Review No. 53. (Prepared by Southern California Evidence-based Practice Center under Contract No. HHS-290-2007-10062-I.) Rockville, MD: Agency for Healthcare Research and Quality; March 2012.
11. Expert Panel on Musculoskeletal Imaging: Yu JS, Krishna NG, Fox MG, et al. ACR Appropriateness Criteria® Osteoporosis and Bone Mineral Density. American College of Radiology (ACR), Revised 2022.
12. Florida Statute 627.6691 Coverage for Osteoporosis Screening, Diagnosis, Treatment, and Management, 2016.
13. Goodman NF, Cobin RH, Ginzburg SB, et al. American Association of Clinical Endocrinologists Medical Guidelines for Clinical Practice for the diagnosis and treatment of menopause. *Endocr Pract.* 2011 Nov-Dec;17 Suppl 6:1-25.
14. Gourlay ML, Overman RA, Ensrud KE. Bone Density Screening and Re-screening in Postmenopausal Women and Older Men. *Curr Osteoporos Rep.* 2015 Dec;13(6):390-8.
15. International Society for Clinical Densitometry (ISCD) Positions-Adults, 2019.
16. National Institute of Health (NIH) Osteoporosis and Related Bone Diseases National Resource Center: Bone Mass Measurement: What the Numbers Mean NIH Pub. No. 18-7877-ENational Institute of Health Osteoporosis, Oct 2018.
17. National Osteoporosis Foundation Osteoporosis Bone Density Testing, 2013.
18. Osteoporosis screening, diagnosis, treatment, and management Florida Statute 627.6691 (10/01/96), 2011.
19. US Preventive Services Task Force, Curry SJ, Krist AH, Owens DK, Screening for Osteoporosis to Prevent Fractures: US Preventive Services Task Force Recommendation Statement. *JAMA.* 2018 Jun 26; 319(24): 2521-2531.
20. Watts NB, Adler RA, Bilezikian JP, Endocrine Society, et al. Osteoporosis in men: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab.* 2012 Jun;97(6):1802-22.

21. Wilhelm SM, Wang TS, Ruan DT, et al. The American Association of Endocrine Surgeons Guidelines for Definitive Management of Primary Hyperparathyroidism. JAMA Surg. 2016 Oct 1;151(10):959-968.
22. Wood K, Dhital S, Chen H et al. What is the clinical utility of distal forearm DXA in primary hyperparathyroidism? The Oncologist 2012; 17(3): 322-5.

COMMITTEE APPROVAL:

This Medical Coverage Guideline (MCG) was approved by the Florida Blue Medical Policy and Coverage Committee on 05/26/22.

GUIDELINE UPDATE INFORMATION:

08/15/96	Medical Coverage Guideline Developed.
04/17/00	Medical Coverage Guideline Reformatted.
01/01/02	HCPCS coding changes.
04/15/02	Revised description section of the guideline to include additional information about osteoporosis, bone mineral density studies. Changed bone densitometry to bone mineral density study. Added the National Osteoporosis Foundation (NOF) patient selection criteria for osteoporosis screening to the section entitled other. Added ultrasound densitometry to definition section. Updated references.
01/01/03	2003 CPT and HCPCS update.
09/30/03	Changed 3rd digit from 1 to 0 for diagnosis 252.1.
04/15/04	Annual Review. Added 5th digit to diagnosis code 256.31. Expanded diagnoses code range for other ovarian failure to include 256.31-256.39.
10/15/04	Revised reimbursement statement; deleted the word annually.
01/01/05	HCPCS update. Revised code 76075 descriptor. Added 76077.
02/15/06	Added “for individuals who have been taking hormone replacement therapy long-term (e.g., Depo-Provera) to when services are covered. Deleted ICD-9 diagnoses codes that support medical necessity. Added “wellness benefit” to when services are not covered. Added program exception (covered indications and ICD-9 codes that support medical necessity. Updated references.
08/15/06	Revised covered indications for bone mineral density studies: for individuals on long-term anticonvulsant therapy (e.g., phenytoin, Phenobarbital, Dilantin), for individuals on long-term luteinizing hormone releasing hormone agonist (e.g., Leuprolide, Goserelin). Deleted reference to Adult Preventive Services 01-99385-01 under RELATED GUIDELINES. Updated references.
09/15/06	Updated the NOF recommendation for measurement of bone mineral density (BMD).
11/15/06	Added code 76070, 76071, 76078, and 76877 to limitation of 1 of any type study per day and 1 of any type study in 12 months. Revised limitation for 76075, 76076, 76077, 78350, and 78351; changed to 2 of any type study per day and 2 of any type study in 12 months. Revised 627.2 code descriptor.
01/01/07	HCPCS update. Deleted 76070, 76071, 76075, 76076, 76077, 76877, and 76078. Added 77078, 77079, 77080, 77081, 77082, and 77083.

08/15/07	Reformatted guideline. Updated description section. Deleted Medicare Advantage products program exception. Updated references.
09/15/09	Annual review. Maintain position statements. Updated description. Added 76977 to reimbursement information section (1 of any type study in 12 month limit). Updated references.
01/01/12	Annual HCPCS coding update; deleted 77079 and 77083.
05/15/12	Guideline reviewed. Revised description. Reworded bone mineral density study medical necessity statement (added "central bone mineral density measurement"). Expanded position statement: added appropriateness criteria for peripheral bone mineral density measurement for primary hyperparathyroidism and screening for osteoporosis. Deleted 77079 and 77083. Revised reimbursement information; added statement regarding repeat, serial, documentation and imaging. Added LOINC codes. Revised definitions. Added cross-reference for Whole Body Dual X-ray Absorptiometry (DXA) to Determine Body composition and Other Body Composition Techniques, 04-70000-22. Revised wording for Florida statute for screening bone density measurement. Updated references.
05/11/14	Revision: Program Exceptions section updated.
01/01/15	Annual HCPCS code update. Deleted 77082. Added 77085 and 77086.
03/15/17	Revision; updated program exception and references.
07/01/18	Quarterly CPT/HCPCS update; added 0508T.
05/15/20	Review/revision. Added medical necessity statement for peripheral bone mineral density measurement for (lower arm, wrist, finger or heel) for management of hyperparathyroidism. Deleted experimental/investigational statement for peripheral bone mineral density measurement performed on any body part other than the forearm (cortical bone) for hyperparathyroidism. Updated description and references.
06/15/22	Review/revision. Revised screening for osteoporosis and reimbursement information. Updated references.
01/01/23	Annual CPT/HCPCS coding update. Added 0749T and 0750T.