Corporate Medical Policy

Bone Mineral Density Studies

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Description of Procedure or Service

Risk factors for fracture include low bone mass, low bone strength, a personal history of fracture as an adult, or a history of fracture in a first-degree relative. Osteoporosis, defined as low bone mass leading to an increased risk of fragility fractures, is an extremely common disease in the elderly population due to age-related bone loss in both sexes and menopause-related bone loss in women. The World Health Organization (WHO) has diagnostic thresholds for osteoporosis based on bone mineral density (BMD) measurements compared with a T score, which is the standard deviation difference between an individual’s BMD and that of a young-adult reference population. Conditions that can cause or contribute to osteoporosis include lifestyle factors such as low intake of calcium, high intake of alcohol or cigarette smoking, and thinness. Other risk factors for osteoporosis include certain endocrine, hematologic, gastrointestinal tract and genetic disorders, hypogonadal states, and medications.

Bone mineral density can be measured with a variety of techniques in a variety of central (i.e., hip or spine) or peripheral (i.e., wrist, finger, heel) sites. 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 (i.e., vertebral fractures) are also considered to be the most clinically relevant. BMD is typically expressed in terms of the number of standard deviations (SD) the BMD falls below the mean for young healthy adults. This number is termed the T score.

The following technologies are most commonly used to measure BMD.

**Dual X-ray Absorptiometry (DXA)**

DXA is probably the most commonly used technique to measure bone mineral density, 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 uses two x-ray beams of different energy levels to scan the region of interest and measure the 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.

Whole body dual X-ray absorptiometry (DXA) uses x-rays of two different energy levels to measure lean tissue mass and total and regional body fat as well as bone density.

**Quantitative Computed Tomography (QCT)**

QCT depends on the differential absorption of ionizing radiation by calcified tissue and is used for central measurements only. Compared to DXA, QCT is less readily available and associated with relatively high radiation exposure and relatively high cost.

**Ultrasound Densitometry**
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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.

The following bone mass technologies are less commonly used for BMD measurement:

- Single photon absorptiometry
- Single-energy X-ray absorptiometry (SEXA, SXA)
- Dual photon absorptiometry (DPA)
- Radiographic absorptiometry (RA)

**NOTE:** This policy does not address the use of DXA as a technique to screen for vertebral fractures. That application of DXA is addressed in a separate policy, Screening for Vertebral Fracture with Dual X-Ray Absorptiometry.

**Related Policy:**
Bone Turnover Markers for Diagnosis and Management of Osteoporosis and Diseases Associated with High Bone Turnover AHS – G2051

***Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.***

**Policy**

BCBSNC will provide coverage for Axial (Central) Bone Mineral Density (BMD) Studies when they are determined to be medically necessary because the medical criteria and guidelines shown below are met.

**Benefits Application**

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

**When Bone Mineral Density Studies are covered**

Initial or repeat bone mineral density (BMD) measurement is not indicated unless the results will influence treatment decisions.

An initial measurement of central (hip/spine) BMD using dual x-ray absorptiometry may be considered medically necessary to assess fracture risk and the need for pharmacologic therapy in individuals who are considered at risk for osteoporosis. BMD testing may be indicated under the following conditions:

- Women age 65 and older, regardless of other risk factors;
- Men age 70 and older, regardless of other risk factors;
- Younger postmenopausal women about whom there is a concern based on their risk factors;
- Men age 50-70 about whom there is a concern based on their risk factors;
- Adults with a condition or taking a medication associated with low bone mass or bone loss.

Repeat measurement of central (hip/spine) BMD using dual x-ray absorptiometry for individuals who previously tested normal (does not require pharmacologic treatment) may be considered medically
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necessary at an interval not more frequent than every 3–5 years; the interval depends on patient risk factors.

Regular (not more frequent than every 2–3 years) serial measurements of central (hip/spine) BMD using dual x-ray absorptiometry to monitor treatment response may be considered medically necessary when the information will affect treatment decisions such as duration of therapy.

Peripheral measurement of BMD may be considered medically necessary:
- If the hip/spine or hip/hip cannot be done or the patient is over the table limit for weight;
- For hyperparathyroidism, where the forearm is essential for diagnosis

When Bone Mineral Density Studies are not covered

Bone mineral density studies are considered not medically necessary if the criteria listed above are not met.

Screening individuals who are at low risk for osteoporosis is considered not medically necessary.

Bone mineral density measurement using ultrasound densitometry, quantitative computed tomography, or dual x-ray absorptiometry of peripheral sites is considered investigational.

Peripheral or appendicular bone density studies are considered not medically necessary except as noted above.

Dual x-ray absorptiometry (DXA) body composition studies are considered investigational.

Policy Guidelines

For individuals who are eligible for screening of bone mineral density (BMD) based on risk factor assessment who receive dual x-ray absorptiometry (DXA) analysis of central sites (hip or spine), the evidence includes large cohort studies, observational studies, and systematic reviews. Relevant outcomes are disease-specific survival, morbid events, functional outcomes, health status measures, quality of life, hospitalizations, medication use, and resource utilization. BMD measurements with central DXA identify individuals at increased risk of fracture. There is sufficient evidence that osteoporosis medications are effective at reducing fracture risk in postmenopausal women with BMD in the osteoporotic range identified by central DXA. Therefore, a chain of evidence establishes that screening BMD with central DXA is likely to improve health outcomes. Evidence to support serial or repeat measurement of BMD is less compelling; nonetheless, the available evidence and the consensus of clinical evidence-based guidelines support at least a 2-year interval in BMD measurement to monitor response to pharmacologic therapy. Finally, available evidence suggests that at least a 3- to 5-year timeframe is reasonable for repeat measurement of BMD in individuals who initially tested normal and to monitor pharmacologic therapy. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome. For individuals who are eligible for screening of BMD based on risk factor assessment who receive ultrasound densitometry, or quantitative computed tomography, or DXA analysis of peripheral sites, the evidence includes observational studies and systematic reviews. Relevant outcomes are disease-specific survival, morbid events, functional outcomes, health status measures, quality of life, hospitalizations, medication use, and resource utilization. These technologies are not commonly used for BMD measurements in practice and no studies have shown that they can select patients who benefit from treatment for osteoporosis. There is little to no evidence on the usefulness of repeat measurement of BMD using these techniques. The evidence is insufficient to determine the effects of the technology on health outcomes.

The decision to perform bone density assessment should be based on an individual’s fracture risk profile and skeletal health assessment. In addition to age, gender, and bone mineral density (BMD), risk factors included in the World Health Organization (WHO) Fracture Risk Assessment Model (FRAX) are:
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- Low body mass index;
- Parental history of hip fracture;
- Previous fragility fracture in adult life (i.e., occurring spontaneously, or a fracture arising from trauma which, in a healthy individual, would not have resulted in a fracture);
- Current smoking or alcohol 3 or more units/day, where a unit is equivalent to a standard glass of beer (285ml), a single measure of spirits (30ml), a medium-sized glass of wine (120ml), or 1 measure of an aperitif (60ml);
- A disorder strongly associated with osteoporosis. These include rheumatoid arthritis, type I (insulin dependent) diabetes, osteogenesis imperfecta in adults, untreated long-standing hyperthyroidism, hypogonadism or premature menopause (<45 years), chronic malnutrition or malabsorption, and chronic liver disease;
- Current exposure to oral glucocorticoids or the patient has been exposed to oral glucocorticoids for more than 3 months at a dose of prednisolone of 5 mg daily or more (or equivalent doses of other glucocorticoids).

Bone mass measurement must be done with a device that has been approved by the FDA.

**Billing/Coding/Physician Documentation Information**

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable service codes: 76499, 77078, 77080, 77081, 77085, 76977, 78350, 78351, G0130, 0508T Effective July 1, 2019: 0554T, 0555T, 0556T, 0557T

**Documentation requirements:**

The procedure must be ordered by a physician or qualified practitioner after a complete assessment of the patient's condition determines that a bone mass measurement is medically necessary. If diagnosis, frequency, or documentation does not support medical necessity, coverage will be denied.

The need for bone mass measurement more frequently than every 2 years must have documentation defining the medical necessity. Documentation must include the complete medical record including previous bone densitometry study results and any other pertinent test findings, medication lists, and office notes. Letters summarizing the medical record may be useful, but are not considered adequate documentation.

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

**Scientific Background and Reference Sources**

Physician Advisory Group - 1/25/96


Consultant Review 11/18/97

Consultant review and Medical Director review, 9/1/98, including literature:
Bone Mineral Density Studies

ACOG Educational Bulletin number 246, Osteoporosis, April 1998.


Medicare Policy, revised 4/15/98.

Consultant Review 8/98.


Medical Policy Advisory Group 12/2/1999


TEC Evaluation - 1999; Tab 19

TEC Evaluation - 1999; Tab 24


BCBSA Medical Policy Reference Manual, 6.01.01; 5/15/02

TEC Assessment - 2002; Tab 5


BCBSA Medical Policy Reference Manual, 6.01.01; 12/17/03

BCBSNC Medical Policy Oversight Committee - 5/17/04

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Specialty Matched Consultant Advisory Panel - 8/25/05


BCBSA Medical Policy Reference Manual [Electronic Version]. 6.01.01, 1/14/10


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Policy Implementation/Update Information

10/98 Policy revised. See policy (L)78350.ARC for policy prior to date.

1/99 Added new codes; deleted QUS; changed screening codes to not medically necessary; and DPA and US codes as investigational.


6/99 Reformatted, Description of procedure or service changed, Medical Term Definitions added.

12/99 Reaffirmed, Medical Policy Advisory Group

10/00 System coding changes.

9/01 Specialty Matched Consultant Advisory Panel review. Policy reformatted for ease of understanding. Ultrasound is listed as investigational. Policy key word added.

11/01 Title changed to Bone Mineral Density Studies.

9/02 System coding changes.

12/03 Specialty Matched Consultant Advisory Panel review 8/2003. Under "When Covered" section, A. added "or 5" to "any of the following" (1,2,3,4); Changed B. to C., B. now reads "Peripheral bone density is covered for a patient with a recent long bone fracture." Added CPT code 76071 to Billing/Coding section and removed HCPCS Level II codes G0131 and G0132 as they are no longer valid codes as of 12/31/02. Added "D" to "vitamin" in second paragraph, second sentence of "Description" section. Typos corrected.

8/12/04 Reference sources added.

7/7/05 Under When Covered section, A.3 - second sentence "These include:...." added...."but are not limited to:". Also added A.3.e - Long-term, Depo-Provera Contraceptive Injections (e.g., longer than 2 years)". Key word and Reference sources added.

9/1/05 Added reference to separate policy for screening for vertebral fracture with DXA under "Description" section. Under "When Covered", C. re: Follow up BMD added #3- "Monitoring patients on long-term glucocorticoid therapy of more than three months." Added reference source. Specialty Matched Consultant Advisory Panel review - 8/25/05. Following review, under "When Covered", B. Peripheral bone density-added "using DXA or QCT".

1/17/07 CPT codes 77078, 77079, 77080, 77081 and 77083 effective January 1, 2007 added to Billing/Coding section. Removed deleted CPT codes 76070, 76071, 76075, 76076 and 76078. (pmo)
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10/8/07 Under "When Covered" section, changed "those" to "women or men"; also added "The patient is postmenopausal, aged 65 years or older regardless of additional risk factors." Reference sources added. (pmo)

4/27/10 Description section revised. Information in the When BMD Studies Are Covered was changed to read: An initial measurement of BMD at the hip or spine may be considered medically necessary to assess fracture risk and the need for pharmacologic therapy in both women and men who are considered at risk for osteoporosis. Repeat measurement of central BMD for individuals who previously tested normal may be considered medically necessary at an interval not more frequent than every 3-5 years; the interval depends on patient risk factors. Regular (not more frequent than every 2-3 years) serial measurements of central BMD to monitor treatment response may be considered medically necessary when the information will affect treatment decisions such as duration of therapy. The following statement added to the When Not Covered section: Dual x-ray absorptiometry (DEXA) body composition studies are considered investigational. Information in the Policy Guidelines section updated. Information regarding whole body dual x-ray absorptiometry added to policy. CPT 76499 added to Billing/Coding section. Notice given 4/27/10 for effective date of 8/3/10. (adn)


10/11/11 Added the following statement to the When Covered section: “Peripheral measurement of BMD may be considered medically necessary if the hip/spine or hip/hip cannot be done or the patient is over the table limit for weight; for hyperparathyroidism, where the forearm is essential for diagnosis.” The When BMD Studies Are Not Covered section was revised to read: “Bone mineral density studies are considered not medically necessary if the criteria listed above are not met. Screening individuals who are at low risk for osteoporosis is considered not medically necessary. Ultrasound technology to measure and interpret bone density at peripheral sites by any method is considered investigational. Peripheral or appendicular bone density studies are considered not medically necessary except as noted above. Dual x-ray absorptiometry (DEXA) body composition studies are considered investigational.” Rationale in the Policy Guidelines section updated. Added information from U.S. Preventive Services Task Force guidelines. The statement: The procedure must be ordered by a physician or qualified practitioner after a complete assessment of the patient’s condition determines that a bone mass measurement is medically necessary. If diagnosis, frequency, or documentation does not support medical necessity, coverage will be denied” was added to the Billing/Coding section. Specialty Matched Consultant Advisory Panel review 9/28/11. (adn)

1/1/12 CPT codes 77079 and 77083 deleted from Billing/Coding section. (adn)

10/1/12 Specialty Matched Consultant Advisory Panel review 9/21/12. Policy Statement unchanged. (sk)

5/28/13 Reference added. No change to Policy Statement. (sk)


10/14/14 Specialty Matched Consultant Advisory Panel 9/30/14. No change to Policy statement. (sk)

12/30/14 Code 77085 added to Billing/Coding section for effective date 1/1/2015. (sk)

2/24/15 Reference added. (sk)

4/28/15 Reference added. (sk)
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10/30/15 Specialty Matched Consultant Advisory Panel 9/30/15. Removed related guideline “Bone Turnover Markers for the Diagnosis and Management of Osteoporosis” as that guideline has been archived. (sk)

11/24/15 References added. Policy guidelines updated. (sk)

4/1/16 Reference added. Policy Guidelines updated. (sk)

11/22/16 Specialty Matched Consultant Advisory Panel review 9/28/2016. No change to policy statement. (an)

4/28/17 Minor wording changes to “When Covered” section. No change to policy statement or criteria. Reference added. (an)

10/13/17 Specialty Matched Consultant Advisory Panel review 9/27/2017. No change to policy statement. (an)

06/29/18 Added code 0508T to Billing/Coding section. (an)

10/26/18 Minor update to Description section. 3rd item in the Not Covered section was clarified to read: Bone mineral density measurement using ultrasound densitometry, quantitative computed tomography, or dual x-ray absorptiometry of peripheral sites is considered investigational. Policy Guidelines updated. References added. Specialty Matched Consultant Advisory Panel review 10/3/2018. (an)

4/1/19 Policy archived. See new policy titled “Bone Turnover Markers for Diagnosis and Management of Osteoporosis and Diseases Associated with High Bone Turnover AHS – G2051.” (an)

6/11/19 Policy archived in error. Codes added to Billing/Coding section to be effective July 1, 2019: 0554T, 0555T, 0556T, 0557T. (an)

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.