

Corporate Medical Policy

Bone Mineral Density Studies

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Description of Procedure or Service

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

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 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 due to age-related bone loss in both sexes and menopause-related bone loss in women. 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 and genetic disorders, hypogonadal states, and medications. Low bone mineral density (BMD) is a primary indication for pharmacologic therapy. Current pharmacologic options include bisphosphonates such as alendronate (i.e., Fosamax), selective estrogen receptor modulators (SERMs) such as raloxifene (i.e., Evista), the recombinant human parathyroid hormone teriparatide (Forteo), and calcitonin.

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.

Dual-energy 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 (DEXA) 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

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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.

The above techniques dominate BMD testing. Single and dual photon absorptiometry and radiographic absorptiometry are now rarely used and may be considered obsolete.

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 the Diagnosis and Management of Osteoporosis

*****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

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. 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 for individuals who previously tested normal (does not require pharmacologic treatment) 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.

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;

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- 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.

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.

Policy Guidelines

There is evidence that bone mineral density measurements predict fracture risk and may be useful for individuals at increased risk of fracture who are considering pharmacologic therapy. The greatest amount of support is for central BMD measurements using DXA. There is less evidence on serial or repeat measurement of BMD. The available evidence and the consensus of clinical opinion support at least a 2-year interval in BMD measurement to monitor response to treatment. In addition, the available evidence suggests that a 3- to 5-year timeframe is reasonable for repeat measurement of BMD in individuals who initially tested normal.

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

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 WHO Fracture Risk Assessment Model (FRAX) are:

- 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 Mineral Density Technologies

Dual x-ray absorptiometry (DXA) of axial central sites (i.e., hip and spine) is the most commonly used technique, but peripheral (appendicular) DXA and quantitative computed tomography (CT) scanning are sometimes used, based on local availability. Peripheral measurement can identify patients with low bone mass, but does not predict response to pharmacologic therapy and is not a substitute for central DXA measurements. Therefore, central DXA (hip/spine) is required for both the initial diagnosis and repeat BMD assessments.

Ultrasound densitometry is an office-based technology. It is unknown whether this technology can be used to predict response to pharmacologic therapy (i.e., reduce fractures). Therefore, this technology is

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considered investigational.

In pediatric patients, total body calcium is preferred because it helps reduce the issue of following patients with growing bones. This applies to pediatric patients who are not skeletally mature as documented by non-closure of growth plates (e.g., 15 years of age or younger).

Studies of DEXA body composition have emerged as a potential new reference standard for body studies, replacing underwater weighing. While DEXA scans have become a valued research tool, it is unclear how information regarding body composition could be used in the active medical management of the patient to improve health outcomes. Periodic literature searches have not identified any controlled studies in which DEXA body composition measurements were actively used in patient management compared to the use of other simpler techniques of body composition assessment, i.e., bioelectrical impedance or skin-fold thickness. None of the studies reported data demonstrating the impact of body composition measurement on health outcomes. The technique is considered investigational.

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 codes: 76499, 77078, 77080, 77081, 76977, 78350, 78351, G0130

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

BCBSA Medical Policy Reference Manual

Physician Advisory Group - 1/25/96

American Association of Clinical Endocrinologists Clinical Guidelines, 1996.

“Screening for Postmenopausal osteoporosis”, Guide to clinical Preventive Services, 2nd Ed. Report of the U.S. Preventive Services Task force, 1996.

Consultant Review 11/18/97

Consultant review and Medical Director review, 9/1/98, including literature:

ACOG Educational Bulletin number 246, Osteoporosis, April 1998.

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Eastell, R, Treatment of Postmenopausal osteoporosis, *N. Eng. J. Med.*, 338-11, Mar. 12, 1998; p736-46.

Treatment of Postmenopausal Osteoporosis (letters), *N. Eng. J. Med.*, July 16, 1998, p. 202-203

Medicare Policy, revised 4/15/98.

Consultant Review 8/98.

Medical Policy Advisory Group 11/98.

Medical Policy Advisory Group - 3/99

Specialty Matched Consultant Advisory Panel - 11/1999

Medical Policy Advisory Group 12/2/1999

BCBSA Medical Policy Reference Manual - 4/30/2000

Physician's Guide to Prevention and Treatment of Osteoporosis. National Osteoporosis Foundation, 1150 17th Street, NW, Suite 500, Washington, DC.

TEC Evaluation - 1999; Tab 19

TEC Evaluation - 1999; Tab 24

Rosenthal L, Caminis J, Tenehouse A. Calcaneal ultrasonometry: response to treatment in comparison with dual x-ray absorptiometry measurements of the lumbar spine and femur. *Calcif Tissue Int.* 1999 Mar;64(3):200-4.

Taal MW, Cassidy MJ, Pearson D, et al. Usefulness of quantitative heel ultrasound compared with dual-energy X-ray absorptiometry in determining bone mineral density in chronic haemodialysis patients. *Nephrol Dial Transplant.* 1999 Aug;14(8):1917-21.

Naganathan V, March L, Hunter D, et al. Quantitative heel ultrasound as a predictor for osteoporosis. *Med J Aust.* 1999 Sep 20;171(6):297-300.

Homik J, Hailey D. The status of quantitative ultrasound for bone density measurement. *Annu Meet Int Soc Technol Assess Health Care.* 1999;15:129.

Specialty Matched Consultant Advisory Panel - 9/2001

American Association of Clinical Endocrinologists 2001 Medical Guidelines for Clinical Practice for the Prevention and Management of Postmenopausal Osteoporosis. Accessed at <http://www.aace.com/clin/guidelines/osteoporosis2001.pdf>

Physician's Guide to Prevention and Treatment of Osteoporosis Developed by the National Osteoporosis Foundation. Accessed at <http://www.nof.org>

American College of Obstetricians and Gynecologists, ACOG News Release, For Release February 28, 2002. Accessed at <http://www.acog.org>

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

TEC Assessment - 2002; Tab 5

Specialty Matched Consultant Advisory Panel - 8/2003

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

BCBSNC Medical Policy Oversight Committee - 5/17/04

U.S. Food and Drug Administration. FDA Talk Paper, November 17, 2004: Black Box Warning Added Concerning Long-Term Use of Depo-Provera Contraceptive Injection. Retrieved on 5/24/2005 from <http://www.fda.gov/bbs/topics/ANSWERS/2004/ANS01325.html>

U.S. Food and Drug Administration. Dear Healthcare Professional Letter dated November 18, 2004. (Pfizer Inc.). Retrieved on 5/24/2005 from http://www.fda.gov/medwatch/SAFETY/2004/DepoProvera_deardoc.pdf

Bone Mineral Density Studies

U.S. Food and Drug Administration. Label (Pfizer Inc.), Physician Information. Retrieved on 5/24/2005 from http://www.fda.gov/medwatch/SAFETY/2004/DepoProvera_Label.pdf

BCBSA Medical Policy Reference Manual [Electronic Version]. 6.01.01, 3/15/05

Specialty Matched Consultant Advisory Panel - 8/25/05

BCBSA Medical Policy Reference Manual [Electronic Version]. 6.01.01, 3/7/06

BCBSA Medical Policy Reference Manual [Electronic Version]. 6.01.01, 4/17/07

Specialty Matched Consultant Advisory Panel - 8/29/07

National Osteoporosis Foundation (NOF). Physician's guide to prevention and treatment of osteoporosis. Developed by the National Osteoporosis Foundation in collaboration with the American Academy of Orthopaedic Surgeons, the American Academy of Physical Medicine and Rehabilitation, the American College of Obstetricians and Gynecologists, the American College of Radiology, the American College of Rheumatology, the American Geriatrics Society, the American Medical Association, the International Society for Physical Medicine and Rehabilitation and the Endocrine Society. Washington, D.C.: National Osteoporosis Foundation; 2003. Accessed August 31, 2007 at <http://www.nof.org/professionals/clinical.htm>

U.S. Preventive Services Task Force. Screening for Osteoporosis in Postmenopausal Women: Recommendations and Rationale. September 2002. Agency for Healthcare Research and Quality, Rockville, MD. <http://www.ahrq.gov/clinic/3rduspstf/osteoporosis/osteorr.htm>

American College of Obstetricians and Gynecologists. ACOG practice bulletin. Clinical management guidelines for obstetrician-gynecologists. Number 50, January 2004. Obstet Gynecol. 2004 Jan;103(1):203-16.

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

BCBSA Medical Policy Reference Manual [Electronic Version]. 6.01.40, 1/14/10

Screening for Osteoporosis, Topic Page. January 2011. U.S. Preventive Services Task Force. <http://www.uspreventiveservicestaskforce.org/uspstf/uspsooste.htm>

BCBSA Medical Policy Reference Manual [Electronic Version]. 6.01.01, 2/10/2011

BCBSA Medical Policy Reference Manual [Electronic Version]. 6.01.40, 3/10/2011

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.
3/99	Medical Policy Advisory Group - 3/99
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

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- "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)
- 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)
- 1/18/2011 Specialty Matched Consultant Advisory Panel review 12/16/2010. Policy Statement unchanged. Policy accepted as written. (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)

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

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