Bone Mineral Density Measurement

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Related Coverage Resources

- eviCore Adult Musculoskeletal Imaging Guideline (Osteoporosis)
- Preventive Care Services

INSTRUCTIONS FOR USE

The following Coverage Policy applies to health benefit plans administered by Cigna Companies. Certain Cigna Companies and/or lines of business only provide utilization review services to clients and do not make coverage determinations. References to standard benefit plan language and coverage determinations do not apply to those clients. Coverage Policies are intended to provide guidance in interpreting certain standard benefit plans administered by Cigna Companies. Please note, the terms of a customer’s particular benefit plan document [Group Service Agreement, Evidence of Coverage, Certificate of Coverage, Summary Plan Description (SPD) or similar plan document] may differ significantly from the standard benefit plans upon which these Coverage Policies are based. For example, a customer’s benefit plan document may contain a specific exclusion related to a topic addressed in a Coverage Policy. In the event of a conflict, a customer’s benefit plan document always supersedes the information in the Coverage Policies. In the absence of a controlling federal or state coverage mandate, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of 1) the terms of the applicable benefit plan document in effect on the date of service; 2) any applicable laws/regulations; 3) any relevant collateral source materials including Coverage Policies and; 4) the specific facts of the particular situation. Coverage Policies relate exclusively to the administration of health benefit plans. Coverage Policies are not recommendations for treatment and should never be used as treatment guidelines. In certain markets, delegated vendor guidelines may be used to support medical necessity and other coverage determinations.

Coverage Policy

In certain markets, delegated vendor guidelines may be used to support medical necessity and other coverage determinations.

SCREENING

Coverage of bone mineral density measurement for screening for osteoporosis is generally subject to the terms, conditions and limitations of a preventive services benefit as described in the applicable benefit plan's schedule of copayments. Please refer to the applicable benefit plan document and schedules to determine benefit availability and the terms, conditions and limitations of coverage.

If coverage for bone mineral density measurement for screening for osteoporosis is available, the following conditions apply.

Any of the following bone mineral density measurement testing methods is considered medically necessary as screening for osteoporosis:

- peripheral ultrasound (CPT® 76977)
- central dual x-ray absorptiometry (DXA) (CPT® 77080)
- peripheral DXA (CPT® 77081)
- peripheral single energy x-ray absorptiometry (HCPCS code G0130)
for ANY of the following indications:

- woman age ≥65 years
- woman age <65 years whose 10-year fracture risk is equal to or greater than that of a 65-year-old white woman without additional risk factors (a 9.3% 10-year risk for any osteoporotic fracture) as determined by FRAX* score
- man age >50 years with at least one factor related to an increased risk of osteoporosis (i.e., age > 70, low body weight, weight loss >10%, physical inactivity, corticosteroid use, androgen deprivation therapy, hypogonadism and previous fragility fracture

Computed tomography (CT) (CPT® 77078) for bone mineral density measurement testing is considered medically necessary as screening for osteoporosis when DXA scanner is unavailable or known to be inaccurate for ANY of the following indications:

- woman age ≥65 years
- woman age <65 years whose 10-year fracture risk is equal to or greater than that of a 65-year-old white woman without additional risk factors (a 9.3% 10-year risk for any osteoporotic fracture) as determined by FRAX* score
- man age >50 years with at least one factor related to an increased risk of osteoporosis (i.e., age > 70, low body weight, weight loss >10%, physical inactivity, corticosteroid use, androgen deprivation therapy, hypogonadism and previous fragility fracture

* Fracture Risk Assessment (FRAX®) tool, developed by the World Health Organization (Sheffield, United Kingdom)

Repeat bone density measurement is considered medically necessary every two years.

Bone mineral density measurement for screening for osteoporosis for any other population is considered experimental, investigational or unproven.

NON-SCREENING/MONITORING

Any of the following bone mineral density measurement testing methods is considered medically necessary:

- peripheral ultrasound (CPT® 76977)
- central dual x-ray absorptiometry (DXA) (CPT® 77080)
- peripheral DXA (CPT® 77081)
- peripheral single energy x-ray absorptiometry (HCPCS code G0130)

for ANY of the following indications:

- prior to and during pharmacologic treatment for osteoporosis
- child or adolescent with a disease process known to adversely affect the skeleton
- known osteoporotic fracture
- individual with vertebral abnormalities as demonstrated by an x-ray to be indicative of osteoporosis, osteopenia, or vertebral fracture

Computed tomography (CT) (CPT® 77078) for bone mineral density measurement testing is considered medically necessary when DXA scanner is unavailable or known to be inaccurate for ANY of the following indications:

- multiple healed compression fractures
- significant scoliosis
- follow-up in cases where QCT was the original study
- obese individual over the weight limit of the DXA exam table or BMI >35kg/m²
- extremes in body height (i.e., very large and very small individuals)
- extensive degenerative disease of the spine
- a clinical scenario that requires sensitivity to small changes in trabecular bone density (parathyroid hormone and glucocorticoid treatment monitoring)

Repeat bone density measurement is considered medically necessary no earlier than one year following a change in treatment regimen, and only when the results will directly impact a treatment decision.

Non-screening/monitoring bone mineral density measurement for any other indication is considered experimental, investigational or unproven.

VERTEBRAL FRACTURE ASSESSMENT

Vertebral fracture assessment by dual-energy x-ray absorptiometry (DXA) for any indication is considered experimental, investigational or unproven.

Overview

This Coverage Policy addresses bone mineral density measurement using various testing methods and vertebral fracture assessment by using dual-energy x-ray absorptiometry (DXA).

General Background

Osteoporosis is the most common bone disease in humans; characterized by low bone mass, deterioration of bone tissue and disruption of bone architecture, compromised bone strength and an increase in the risk of fracture. Osteoporosis is a silent disease until it is complicated by fractures—fractures that can occur following minimal trauma. Osteoporosis can be prevented, diagnosed and treated before any fracture occurs. Importantly, even after the first fracture has occurred, there are effective treatments to decrease the risk of further fractures. The National Osteoporosis Foundation (NOF) has estimated that more than 9.9 million Americans have osteoporosis and an additional 43.1 million have low bone density of the hip (NOF, 2014).

Bone Mineral Density (BMD) and Dual-energy X-ray Absorptiometry (DXA)

DXA measurement of the hip and spine is the most common technology used to establish or confirm a diagnosis of osteoporosis, predict future fracture risk and monitor patients by performing serial assessments. Areal BMD is expressed in absolute terms of grams of mineral per square centimeter scanned (g/cm²) and as a relationship to two norms: compared to the BMD of an age-, sex-, and ethnicity-matched reference population (Z-score), or compared to a young-adult reference population of the same sex (T-score). The difference between the patient’s BMD and the mean BMD of the reference population, divided by the standard deviation (SD) of the reference population, is used to calculate the T-score and Z-score. According to the World Health Organization (WHO) diagnostic classification, osteoporosis is defined by BMD at the hip or lumbar spine that is less than or equal to 2.5 standard deviations below the mean BMD of a young-adult reference population. Osteoporosis is a risk factor for fracture just as hypertension is for stroke. The risk of fractures is highest in those with the lowest BMD; however, the majority of fractures occur in patients with low bone mass rather than osteoporosis, because of the large number of individuals with bone mass in this range (NOF, 2014).

FRAX®

BMD testing is a powerful tool, but clinical risk factors also significantly influence fracture risk in individual patients. The FRAX® (Fracture Risk Assessment) tool is widely available and incorporates multiple clinical risk factors that predict fracture risk, largely independent of BMD. The FRAX® tool has been developed by World Health Organization Collaborating Centre for Metabolic Bone Diseases (Sheffield, United Kingdom) to evaluate fracture risk of patients. It is based on individual patient models that integrate the risks associated with clinical risk factors as well as BMD at the femoral neck. The FRAX models have been developed from studying population-based cohorts from Europe, North America, Asia and Australia. In their most sophisticated form, FRAX is available on newer DXA machines or with software upgrades that provide the FRAX scores on the bone.
density report. The FRAX tool is computer-driven and is available online. Also, several simplified paper versions, based on the number of risk factors are also available, and can be downloaded for office use. The FRAX algorithms give the 10-year probability of fracture. The output is a 10-year probability of hip fracture and the 10-year probability of a major osteoporotic fracture (clinical spine, forearm, hip or shoulder fracture).

**BMD Measurement Sites and Techniques**

DXA of the lumbar spine and proximal femur (hip) provides accurate and reproducible BMD measurements at important osteoporosis-associated fracture sites. Optimally, both hips should be initially measured to prevent misclassification and to have a baseline for both hips in case a fracture or replacement occurs in 1 hip. These axial sites are preferred over peripheral sites for both baseline and serial measurements. The most reliable comparative results are obtained when the same instrument and, ideally, the same technologist are used for serial measurements. Diagnostic criteria, therapeutic studies, and cost-effectiveness data have been primarily based on DXA measurements of the total hip, femoral neck, and/or lumbar spine (L1-L4), and are the preferred measurement sites.

Several other techniques are available for BMD measurement, including quantitative computed tomography (QCT) for measurement of both central and peripheral sites, quantitative ultrasonometry (QUS), radiographic absorptiometry, and single-energy x-ray absorptiometry (SXA). Peripheral bone density measurements can identify patients at increased risk for fracture; however, the diagnostic DXA criteria established by the WHO and recommended by the American Association of Clinical Endocrinologists (AACE) apply only to the axial measurements (i.e., lumbar spine, femoral neck, and total hip) and the distal one-third of the radius. Thus, other technologies should not be used to diagnose osteoporosis but may be used to assess fracture risk (AACE/Camacho, et. al., 2016).

**Professional Societies/Organizations**

**National Osteoporosis Foundation (NOF):** The NOF (Cosman, et. al., 2014) states BMD testing should be performed:

- in women age 65 and older and men age 70 and older,
- in postmenopausal women and men above age 50-69, based on risk factor profile.
- in post-menopausal women and men over age 50 who have had an adult age fracture, to diagnose and determine degree of osteoporosis.
- at DXA facilities using accepted quality assurance measures.

**United States Preventive Services Task Force (USPSTF):** The USPSTF (2011) recommendations on screening for osteoporosis:

- The USPSTF recommends screening for osteoporosis in women aged 65 years or older and in younger women whose fracture risk is equal to or greater than that of a 65-year-old white woman who has no additional risk factors.
  Rating: B Recommendation.
- The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for osteoporosis in men.
  Rating: I Statement.

The USPSTF used the FRAX tool (WHO Collaborating Centre for Metabolic Bone Diseases, Sheffield, United Kingdom) to estimate 10-year risks for fractures because this tool relies on easily obtainable clinical information, such as age, body mass index (BMI), parental fracture history, and tobacco and alcohol use.

Based on the U.S. FRAX tool, a 65-year-old white woman with no other risk factors has a 9.3% 10-year risk for any osteoporotic fracture. White women between the ages of 50 and 64 years with equivalent or greater 10-year fracture risks based on specific risk factors include but are not limited to the following persons:

1) a 50-year-old current smoker with a BMI less than 21 kg/m2, daily alcohol use, and parental fracture history;
2) a 55-year-old woman with a parental fracture history;
3) A 60-year-old woman with a BMI less than 21 kg/m2 and daily alcohol use; and
4) A 60-year-old current smoker with daily alcohol use.

The FRAX tool also predicts 10-year fracture risks for black, Asian, and Hispanic women in the United States. In general, estimated fracture risks in nonwhite women are lower than those for white women of the same age.

Although the USPSTF recommends using a 9.3% 10-year fracture risk threshold to screen women aged 50 to 64 years, clinicians also should consider each patient's values and preferences and use clinical judgment when discussing screening with women in this age group. Menopausal status is one factor that may affect a decision about screening in this age group.

American Association of Clinical Endocrinologists (AACE): The AACE and American College of Endocrinology (ACE) Clinical Practice Guidelines for the Diagnosis and Treatment of Postmenopausal Osteoporosis (Camacho, et. al., 2016) lists the following:

Indications for Bone Mineral Density Testing:
- All women ≥65 years old
- All postmenopausal women
  - With a history of fracture(s) without major trauma
  - With osteopenia identified radiographically
  - Starting or taking long-term systemic glucocorticoid therapy (≥3 mo)
- Other peri- or postmenopausal women with risk factors for osteoporosis if willing to consider pharmacologic interventions
  - Low body weight (<127 lb or body mass index <20 kg/m2)
  - Long-term systemic glucocorticoid therapy (≥3 mo)
  - Family history of osteoporotic fracture
  - Early menopause (<40 years old)
  - Current smoking
  - Excessive alcohol consumption
- Secondary osteoporosis (Table 9)

Bone Mineral Density Measurements: Potential Uses in Postmenopausal Women:
- Screening for osteoporosis
- Establishing the severity of osteoporosis or bone loss in patients with suspected osteoporosis (e.g., patients with fractures or radiographic evidence of osteopenia)
- Determining fracture risk—especially when combined with other risk factors for fractures
- Identifying candidates for pharmacologic intervention
- Assessing changes in bone density over time in treated and untreated patients
- Enhancing acceptance of, and perhaps adherence with, treatment
- Assessing skeletal consequences of diseases, conditions, or medications known to cause bone loss (Table 10)

American College of Radiology (ACR): The ACR Practice Guideline for the Performance of Dual-energy x-ray Absorptiometry (DXA) (2013) states indications for DXA include, but are not limited to individuals with established or clinically suspected low BMD, including:

- All women age 65 years and older and men age 70 years and older (asymptomatic screening).
- Women younger than age 65 years who have additional risk for osteoporosis, based on medical history and other findings. Additional risk factors for osteoporosis include:
  - Estrogen deficiency.
  - A history of maternal hip fracture that occurred after the age of 50 years.
  - Low body mass (less than 127 lbs or 57.6 kg).
  - History ofamenorrhea (more than 1 year before age 42 years).
• women younger than age 65 years or men younger than age 70 years who have additional risk factors, including:
  ➢ current use of cigarettes
  ➢ loss of height, thoracic kyphosis.
• individuals of any age with bone mass osteopenia, or fragility fractures on imaging studies such as radiographs, computed tomography (CT), or magnetic resonance imaging (MRI).
• individuals age 50 years and older who develop a wrist, hip, spine, or proximal humerus fracture with minimal or no trauma, excluding pathologic fractures.
• individuals of any age who develop 1 or more insufficiency fractures.
• individuals receiving (or expected to receive) glucocorticoid therapy for more than 3 months
• individuals beginning or receiving long-term therapy with medications known to adversely affect BMD (e.g., anticonvulsant drugs, androgen deprivation therapy, aromatase inhibitor therapy, or chronic heparin).
• individuals with an endocrine disorder known to adversely affect BMD (e.g., hyperparathyroidism, hyperthyroidism, or Cushing’s syndrome).
• hypogonadal men older than 18 years and men with surgically or chemotherapeutically induced castration.
• individuals with medical conditions that could alter BMD, such as:
  ➢ chronic renal failure.
  ➢ rheumatoid arthritis and other inflammatory arthritides.
  ➢ eating disorders, including anorexia nervosa and bulimia.
  ➢ organ transplantation.
  ➢ prolonged immobilization.
  ➢ conditions associated with secondary osteoporosis, such as gastrointestinal malabsorption or malnutrition, sprue, osteomalacia, vitamin D deficiency, endometriosis, acromegaly, chronic alcoholism or established cirrhosis, and multiple myeloma.
  ➢ individuals who have had gastric bypass for obesity. The accuracy of DXA in these patients might be affected by obesity.
• individuals being considered for pharmacologic therapy for osteoporosis.
• individuals being monitored to:
  ➢ assess the effectiveness of osteoporosis drug therapy.
  ➢ follow-up medical conditions associated with abnormal BMD.
• children or adolescents with medical conditions associated with abnormal BMD including but not limited to:
  ➢ individuals receiving (or expected to receive) glucocorticoid therapy for more than 3 months.
  ➢ individuals receiving radiation or chemotherapy for malignancies.
  ➢ individuals with an endocrine disorder known to adversely affect BMD (e.g., hyperparathyroidism, hyperthyroidism, growth hormone deficiency or Cushing’s syndrome).
  ➢ individuals with bone dysplasias known to have excessive fracture risk (osteogenesis imperfecta, osteopetrosis) or high bone density.
  ➢ individuals with medical conditions that could alter BMD, such as:
    o chronic renal failure.
    o rheumatoid arthritis and other inflammatory arthritides.
    o eating disorders, including anorexia nervosa and bulimia.
    o organ transplantation.
    o prolonged immobilization.
    o conditions associated with secondary osteoporosis, such as gastrointestinal malabsorption, sprue, inflammatory bowel disease, malnutrition, osteomalacia, vitamin D deficiency, acromegaly, cirrhosis, HIV infection, prolonged exposure to fluorides.
• DXA may be indicated in the diagnosis, staging, and follow-up of individuals with conditions that result in pathologically increased BMD, such as osteopetrosis or prolonged exposure to fluoride.
• DXA may be indicated as a tool to measure regional and whole body fat and lean mass (e.g., for patients with malabsorption, cancer, or eating disorders).

Contraindications
There are no absolute contraindications to performing DXA. However, a DXA examination may be of limited value or require modification of the technique or rescheduling of the examination in some situations, including:

- recently administered gastrointestinal contrast or radionuclides.
- pregnancy.
- severe degenerative changes or fracture deformity in the measurement area.
- implants, hardware, devices, or other foreign material in the measurement area.
- the patient’s inability to attain correct position and/or remain motionless for the measurement.
- extremes of high or low body mass index (BMI) which may adversely affect the ability to obtain accurate and precise measurements. Quantitative computed tomography (QCT) may be a desirable alternative in these individuals.
- any condition that precludes proper positioning of the patient to be able to obtain accurate BMD values.

The ACR Practice Guideline for the Performance of Quantitative Computed Tomography (QCT) Bone Densitometry (2013) states:

The primary goal of QCT is to measure BMD accurately and reproducibly and compare that measurement to reference population standards and/or to an individual’s previous bone densitometry examination(s). This comparison contributes to the diagnosis of osteoporosis, helps in determining future fracture risk, and the need for pharmacologic therapy and fracture prevention programs. It is also useful in evaluating the effectiveness of prior or current therapy.

QCT has some advantages over dual-energy X-ray absorptiometry (DXA). DXA BMD estimates may be significantly biased by severe degenerative changes of the hip or spine, vascular calcifications, oral contrast agents, and foods or dietary supplements containing significant quantities of calcium or other heavier minerals or elements. QCT is often more accurate in patients with extreme obesity or low body mass index.

In addition to the same indication as DXA for adults, there are indications for performing QCT BMD examinations and its subsequent assessment in children. DXA is unable to take into account changes in body and skeletal size during growth, limiting its usefulness in longitudinal studies. For example, an increase in DXA measured areal BMD in the spine is more likely a reflection of change of vertebral size than a change in density. Because QCT can assess both volume and density of bone in the axial and appendicular skeleton, it may be more useful than DXA in children. Due to its lower radiation dose, peripheral QCT, which assesses the extremities, may be preferable to central QCT in pediatric patients.

Contraindications: There are no absolute contraindications to performing QCT. However, a QCT examination may be of limited value or require modification of the technique or rescheduling of the examination in some situations, including:

- administration of intravascular iodinated contrast. If a QCT of the spine and contrast enhanced examination of the abdomen are performed simultaneously, the BMD calculation may be altered by the contrast enhancement. If both QCT and a contrast enhanced scan of the abdomen are planned for the same imaging session, this pitfall may be avoided by performing sequential scanning with the QCT portion as the first of the two examinations or by using a published conversion factor.
- pregnancy.
- severe degenerative changes or fracture deformity in the measurement area. Implants, hardware, devices, or other foreign material in the measurement area.
- inability to position the patient completely within the scanning field of view.

American College of Obstetricians and Gynecologists (ACOG): ACOG Practice Bulletin Osteoporosis (2012) states:

All major guidelines state that DXA screening should begin at age 65 years for women. Most guidelines also agree that DXA screening can be used selectively for women younger than 65 years if they are postmenopausal and have other risk factors for fracture. Alternatively, FRAX can be used in women younger than 65 years to
determine which women should have a DXA scan. Those women with a FRAX 10-year risk of major osteoporotic fracture of 9.3% could justifiably be referred for DXA because that is the risk of fracture found in a 65-year-old Caucasian woman with no risk factors. Routine screening of newly menopausal women is not recommended nor is a “baseline” screen recommended. After treatment initiation, one DXA scan 1 year or 2 years later can be used to assess the effect of treatment. If the BMD is improved or stable (no significant change), the DXA does not usually need to be repeated in the absence of new risk factors. Testing generally should not be undertaken before 2 years after initiation of treatment because it often takes 18–24 months to document a clinically meaningful change.

When to Screen for Bone Density Before Age 65 Years
Bone density should be screened in postmenopausal women younger than 65 years if any of the following risk factors are noted:

- medical history of a fragility fracture
- body weight less than 127 lb
- medical causes of bone loss (medications or diseases)
- parental medical history of hip fracture
- current smoker
- alcoholism
- rheumatoid arthritis

Recommendations regarding screening:

- bone density screening for women should begin at age 65 years. Dual-energy X-ray absorptiometry screening can be used selectively for women younger than 65 years if they are postmenopausal and have other significant risk factors for osteoporosis or fracture
- in the absence of new risk factors, DXA screening should not be performed more frequently than every 2 years
- in the absence of new risk factors, DXA monitoring of therapy should not be repeated once BMD has been determined to be stable or improved

The American Board of Internal Medicine’s (ABIM) Foundation Choosing Wisely® Initiative (2017): The American College of Rheumatology (2013) recommends not routinely repeating DXA scans more often than once every two years. The American Academy of Family Physicians (2012) recommends that DXA scan not be used for screening for osteoporosis in women younger than 65 or men younger than 70 with no risk factors.

Men
For men, osteoporosis is associated with increased morbidity and mortality, specifically following a fracture. This relationship is complex depending on multiple factors including comorbidities, the fragility of the individual, and even the implementation of measures to prevent fractures, i.e., fall prevention. The clinical measurement of bone mineral density using DXA remains the gold standard for diagnosis of osteoporosis in males; and fracture risk assessment is now recognized as a preferred approach to guide treatment decisions. Utilizing surrogate end-points such as increasing bone mineral density and decreasing concentrations of bone resorption markers, clinical trials have demonstrated efficacy in pharmacological treatment of osteoporosis in the adult male. Unfortunately, few studies have evaluated the anti-fracture benefits in this population (Korpi-Steiner, et al., 2014).

The NOF (2014) states BMD testing should be performed in men:

- age 70 and older, regardless of clinical risk factors
- age 50-69, with clinical risk factors for fracture
- over age 50 who have had an adult age fracture
- with a condition (e.g., rheumatoid arthritis) or taking a medication (e.g., glucocorticoids in a daily dose ≥ 5 mg prednisone or equivalent for ≥ three months) associated with low bone mass or bone loss
The Endocrine Society Clinical Practice Guideline on Osteoporosis in Men recommends BMD testing should be performed in men who are higher risk men (aged ≥70 and men aged 50–69 who have risk factors (e.g. low body weight, prior fracture as an adult, smoking, etc.) The Endocrine Society recommends using DXA of the spine and hi or forearm DXA (when spine or hip BMD cannot be interpreted) and for men with hyperparathyroidism or receiving androgen deprivation therapy (ADT) for prostate cancer (Watts, et al., 2012).

American College of Physicians (ACP): The ACP clinical practice guideline ‘Screening for Osteoporosis in Men’ noted the population screened included as low as age 50. The ACP recommends assessing men before age 65 for risk factors; recommending DXA scans only for those with an increased risk of osteoporosis based on the presence of one or more risk factors and are candidates for drug therapy (i.e., age > 70, low body weight, weight loss >10%, physical inactivity, corticosteroid use, androgen deprivation therapy, and previous fragility fracture (Qaseem, et al., 2008).

Serial BMD
The NOF (2014) states:

- Perform BMD testing 1 to 2 years after initiating therapy to reduce fracture risk and every two years thereafter.
- More frequent testing may be warranted in certain clinical situations.
- The interval between repeat BMD screenings may be longer for patients without major risk factors and who have an initial T-score in the normal or upper low bone mass range.

The USPSTF states “evidence is lacking about optimal intervals for repeated screening” (2011).

Vertebral Fracture Assessment (VFA)
The gold standard for diagnosing vertebral fractures is lateral spine x-rays. Image quality of VFA by DXA has been reported in studies as equal to and inferior to radiography, with sensitivity and specificity ranging from 0.65–0.84 and 0.97–0.98, respectively. If a vertebral fracture is identified in an asymptomatic individual, studies do not report the impact of that finding on long-term health outcomes (Fuerst, et al., 2009).

In a small prospective trial, Bazzocchi et al. (2012) compared DXA to the gold standard, lateral x-ray of the spine, in the detection of vertebral fractures. The study included 68 patients. Seventy vertebrae (70/884, 7.9%) were excluded from the lesion-based analysis, as not evaluable: 11/70 (15.7%) missed by x-ray only, 56/70 (80.0%) missed by DXA only, 3/70 (4.3%) missed by both techniques (upper thoracic spine). Forty “true” fractures were detected (4.9% out of 814 vertebrae) in 26 patients (38.2% of the 68 studied patients).

Consider vertebral imaging tests for the following individuals***:

- all women age 70 and older and all men age 80 and older if BMD T-score at the spine, total hip or femoral neck is ≤ -1.0
- women age 65 to 69 and men age 70 to 79 if BMD T-score at the spine, total hip or femoral neck is ≤ -1.5
- postmenopausal women and men age 50 and older with specific risk factors:
  - low trauma fracture during adulthood (age 50)
  - historical height loss of 1.5 inches or more (4 cm)*
  - prospective height loss of 0.8 inches or more (2 cm)**
  - recent or ongoing long term glucocorticoid treatment

* Current height compared to peak height during young adulthood
** Cumulative height loss measured during interval medical assessment
*** If bone density testing is not available, vertebral imaging may be considered based on age alone (NOF 2014).

Use Outside of the US
• Women aged 65 and older
• For post-menopausal women younger than age 65 a bone density test is indicated if they have a risk factor for low bone mass such as;
  ➢ Low body weight
  ➢ Prior fracture
  ➢ High risk medication use
  ➢ Disease or condition associated with bone loss.
• Women during the menopausal transition with clinical risk factors for fracture, such as low body weight, prior fracture, or high-risk medication use.
• Men aged 70 and older.
• For men < 70 years of age a bone density test is indicated if they have a risk factor for low bone mass such as;
  ➢ Low body weight
  ➢ Prior fracture
  ➢ High risk medication use
  ➢ Disease or condition associated with bone loss.
• Adults with a fragility fracture.
• Adults with a disease or condition associated with low bone mass or bone loss.
• Adults taking medications associated with low bone mass or bone loss.
• Anyone being considered for pharmacologic therapy.
• Anyone being treated, to monitor treatment effect. Anyone not receiving therapy in who evidence of bone loss would lead to treatment.
Note: Women discontinuing estrogen should be considered for bone density testing according to the indications listed above.

Coding/Billing Information

Note: 1) This list of codes may not be all-inclusive.
  2) Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement.

Considered Medically Necessary when criteria in the applicable policy statements listed above are met:

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<th>CPT® Codes</th>
<th>Description</th>
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<tr>
<td>76977</td>
<td>Ultrasound bone density measurement and interpretation, peripheral site(s), any method</td>
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<tr>
<td>77078</td>
<td>Computed tomography, bone mineral density study, 1 or more sites; axial skeleton (e.g., hips, pelvis, spine)</td>
</tr>
<tr>
<td>77080</td>
<td>Dual-energy X-ray absorptiometry (DXA), bone density study, 1 or more sites; axial skeleton (e.g., hips, pelvis, spine)</td>
</tr>
<tr>
<td>77081</td>
<td>Dual-energy X-ray absorptiometry (DXA), bone density study, 1 or more sites; appendicular skeleton (peripheral) (e.g., radius, wrist, heel)</td>
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<th>HCPCS Codes</th>
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<tr>
<td>G0130</td>
<td>Single energy X-ray absorptiometry (sexa) bone density study, one or more sites; appendicular skeleton (peripheral) (e.g., radius, wrist, heel)</td>
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Considered Experimental/Investigational/Unproven:

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<th>CPT® Codes</th>
<th>Description</th>
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<tr>
<td>77085</td>
<td>Dual-energy X-ray absorptiometry (DXA), bone density study, 1 or more sites;</td>
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axial skeleton (eg, hips, pelvis, spine), including vertebral fracture assessment

77086 Vertebral fracture assessment via dual-energy x-ray absorptiometry (DXA)


References


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