Medical Coverage Policy

Bone Mineral Density Measurement

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Related Coverage Resources

EviCore 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. Each coverage request should be reviewed on its own merits. Medical directors are expected to exercise clinical judgment where appropriate and have discretion in making individual coverage determinations. Where coverage for care or services does not depend on specific circumstances, reimbursement will only be provided if a requested service(s) is submitted in accordance with the relevant criteria outlined in the applicable Coverage Policy, including covered diagnosis and/or procedure code(s). Reimbursement is not allowed for services when billed for conditions or diagnoses that are not covered under this Coverage Policy (see "Coding Information" below). When billing, providers must use the most appropriate codes as of the effective date of the submission. Claims submitted for services that are not accompanied by covered code(s) under the applicable Coverage Policy

will be denied as not covered. 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.

Overview

This Coverage Policy addresses the assessment of bone density, vertebral fracture, bone strength or fracture risk, from imaging scans other than DXA (e.g., computed tomography [CT] scan).

For Osteoporosis Screening information, see Cigna's Administrative Policy on Preventive Care Services (A004).

Coverage Policy

Assessment of bone density, vertebral fracture, bone strength or fracture risk, from imaging scans other than DXA (e.g., CPT® 0691T, 0743T) for any indication is not covered or reimbursable.

Health Equity Considerations

Health equity is the highest level of health for all people; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which people are born, grow, live, work, and age.

Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include safe housing, transportation, and neighborhoods; racism, discrimination and violence; education, job opportunities and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

General Background

Bone Mineral Density (BMD)
A BMD test measures calcium and other minerals in bone. Bones containing more minerals are denser, so they tend to be stronger and less likely to break. Bones can become less dense from aging or from certain medical conditions. When too much bone is lost, osteoporosis can develop. Osteoporosis causes bones to become weak and brittle, which increases the risk of fractures. Bone mineral density testing can identify and diagnose osteoporosis, measure the risk of fractures, and monitor the effectiveness of osteoporosis treatment.

The Bone Health & Osteoporosis Foundation (BHOF) (previously known as National Osteoporosis Foundation) published the Clinician's Guide to Prevention and Treatment of Osteoporosis (LeBoff, et al., 2022). It states DXA measurement of hip and lumbar spine is the preferred method for establishing and/or confirming a diagnosis of osteoporosis, predicting future fracture risk, and monitoring patients. LeBoff et al. addresses Serial BMD Measurement under the section on Monitoring Treatment Response, and notes the following:
- Central DXA assessment of the total hip, femoral neck, or lumbar spine is the "gold standard" for serial assessment of BMD.
- DXA is currently the preferred approach for monitoring treatment response.

The United States Preventive Services Task Force (USPSTF) Screening for Osteoporosis to Prevent Fractures Recommendation Statement states the most used bone measurement test to screen for osteoporosis is DXA at a central site (eg, total hip, femoral neck, or lumbar spine). Centrally measured DXA correlates with bone strength and clinical fracture outcomes and uses low doses of radiation. Fracture risk at a specific site is best predicted if bone density is measured at that site. The USPSTF found adequate evidence that centrally measured DXA BMD can accurately predict osteoporotic fractures in women (Jin, 2025).

Vertebral Fracture Assessment (VFA)
Vertebral fracture is the most common osteoporotic fracture and indicates a high risk for future fractures. The gold standard for initial VFA is the use of the spinal radiographs. Images are taken from AP and lateral views of the thoracic and lumbar spine. VFA using DXA is an alternative approach for the identification of vertebral fracture. Vertebral fracture assessment is a tool available on modern DXA instruments and has proven ability to detect vertebral fractures, the majority of which occur without a fall and without the signs and symptoms of an acute fracture. DXA-VFA has several distinct advantages including lower cost, lower radiation exposure, less obliquity, and greater convenience for patients given it can be performed at the same time as BMD measurements. Conventional spinal radiograph in comparison to DXA-VFA images has been widely researched. Studies establish the validity and reproducibility of VFA. There is good agreement between DXA-VFA and spinal radiographs for presence of vertebral fracture.

The BHOF Clinician's Guide to Prevention and Treatment of Osteoporosis (LeBoff, et al., 2022) states that vertebral fracture imaging (X-ray or DXA vertebral fracture assessment) should be performed in high-risk individuals to detect subclinical vertebral fractures.

The American Association of Clinical Endocrinologists (AACE) and American College of Endocrinology (ACE) Clinical Practice Guidelines for the Diagnosis and Treatment of Postmenopausal Osteoporosis (Camacho, et. al., 2020) notes that Lateral spine imaging with standard radiography or VFA with DXA is indicated in certain in high-risk individuals (for example, in the elderly, those on glucocorticoid therapy, those with height loss).

The International Society for Clinical Densitometry (2023) states Lateral Spine imaging with Standard Radiography or Densitometric VFA is Indicated for VFA in certain in high-risk individuals (for example, in the elderly, those on glucocorticoid therapy, those with height loss).

Use of an Existing Computed Tomography (CT) Scan
Automated analysis of an existing computed tomography (CT) scans using artificial intelligence (AI) technology (such as specialized analysis software/algorithms/advanced engineering computation) is proposed for the identification (computer-aided detection/diagnosis [CAD]) of vertebral fracture, as well as assessment of bone strength and fracture risk using finite element analysis. Finite element analysis (FEA) utilizes bone biomechanical properties, geometry, and loading conditions to assess bone strength and overall fracture risk. The algorithms/software programs are continually evolving.

In a published Review article, Keaveny et al. (2020) states that biomechanical computed tomography analysis (BCT), is a test comprises a finite element analysis of bone strength using as input a clinical resolution CT scan. It also includes CT-based measurements of BMD and DXA-equivalent hip BMD T-scores. The finite element analysis component of BCT represents a "virtual stress test" that provides a functional noninvasive assessment of the breaking strength of the patient's hip (proximal femur) or spine (vertebral body).

There is a lack of well-designed clinical trials addressing the impact of algorithmic-based assessments of non-DXA scans on patient-specific long-term health outcomes (Lin, et al., 2024; Kolanu, et al., 2020; Dagan, et al., 2020; Allaire, et al., 2019; Adams, et al., 2018).

Lin et al. (2024) reported results of a retrospective study of 91 men with metastatic hormone-sensitive prostate cancer (mHSPC) on androgen deprivation therapy (ADT) who received CT abdomen/pelvis or PET/CT within 48 weeks before ADT initiation and during follow-up.
- Lin et al. noted that biomechanical computed tomography (BCT) is an image-based analysis technique that can be applied to CT scans obtained through routine management of mHSPC patients to assess BMD and bone strength, without need for DXA. BCT analyzes previously obtained imaging and can be applied to CT scans that were performed at any point in the past.
- The authors analyzed correlations with concurrent DXAs performed within 90 days before or after a baseline or follow-up CT scan. The authors reported that BCT-assessed BMD T-score calculated using scans performed in routine clinical management of this population was strongly correlated with DXA-measured femoral-neck BMD T-score. The authors concluded that BCT of routinely collected CT scans may offer an accurate and convenient means to screen for fracture risk among patients with mHSPC.

Adams et al. (2018) conducted a retrospective case-cohort study (FOCUS) of 3938 patients who received an abdominal or pelvic CT scan during routine clinical care and received a DXA scan within 3 years of the CT. Adams et al. stated that methods now exist for analyzing previously taken clinical CT scans to measure a DXA-equivalent BMD at the hip and a finite element analysis–derived femoral strength. Adams et al. assessed the efficacy of this 'biomechanical CT' (BCT) approach for identifying patients at high risk of incident hip fracture in a large clinical setting.
- In women, BCT had a sensitivity and specificity for detecting hiposteoporosis of 0.56 (95% CI, 0.51 to 0.60) and 0.77 (95% CI, 0.72 to 0.81), respectively, while DXA had a sensitivity of 0.52 (95% CI, 0.47 to 0.56) and specificity of 0.77 (95% CI, 0.73 to 0.81). In men, BCT had a sensitivity of detecting hip osteoporosis of 0.45 (95% CI, 0.39 to 0.52) and a sensitivity of 0.82 (95% CI, 0.76 to 0.87) compared to 0.43 (95% CI, 0.37 to 0.50) and 0.83 (95% CI, 0.77 to 0.88), respectively, for DXA. The authors concluded that BCT is at least as effective as DXA in identifying patients who are at high risk of hip fracture.

The BHOF Clinician's Guide to Prevention and Treatment of Osteoporosis (LeBoff, et al., 2022) states vertebral fracture imaging (X-ray or DXA vertebral fracture assessment) should be performed in high risk individuals to detect subclinical vertebral fractures. Recently performed MRI or CT imaging studies done for other purposes can and should also be evaluated for presence of vertebral fractures or evidence of vertebral deformity.

The AACE 2020 Clinical Practice Guidelines for the Diagnosis and Treatment of Postmenopausal Osteoporosis (Camacho, et al., 2020) does not address use of existing CT scans.

The International Society for Clinical Densitometry (2023) notes that Opportunistic CT to screen for patients with low BMD or low bone strength of the spine or proximal femur is possible only if validated machine-specific cutoff values and scanner stability have been established. Finite element analysis (FEA) is discussed in the section on QCT and pQCT.

The USPSTF Screening for Osteoporosis to Prevent Fractures Recommendation Statement only addresses DXA. It does not address CT, MRI or finite element analysis (Jin, 2025).

Medicare Coverage Determinations

	Contractor	Determination Name/Number	Revision Effective Date
NCD	National	Bone (Mineral) Density Studies (150.3)	01/01/2007
LCD		No Determination found	

Note: Please review the current Medicare Policy for the most up-to-date information.
(NCD = National Coverage Determination; LCD = Local Coverage Determination)

Coding Information

Notes:
1. This list of codes may not be all-inclusive since the American Medical Association (AMA) and Centers for Medicare & Medicaid Services (CMS) code updates may occur more frequently than policy updates.
2. Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement.

Not Covered or Reimbursable when used to report imaging scans other than DXA for the assessment of bone density, vertebral fracture, bone strength or fracture risk:

CPT®* Codes	Description
0691T	Automated analysis of an existing computed tomography study for vertebral fracture(s), including assessment of bone density when performed, data preparation, interpretation, and report
0743T	Bone strength and fracture risk using finite element analysis of functional data and bone-mineral density (BMD), with concurrent vertebral fracture assessment, utilizing data from a computed tomography scan, retrieval and transmission of the scan data, measurement of bone strength and BMD and classification of any vertebral fractures, with overall fracture risk assessment, interpretation and report

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Revision Details

Type of Revision	Summary of Changes	Date
Annual Review	• Revised policy statements for CPT® 0691T and 0743T. • Removed policy statements for all other CPT® codes.	4/15/2025
Annual Review	• Added policy statement for ultrasound-based radiofrequency echographic multi-spectrometry (REMS) (CPT® 0815T) • Revised policy statement for bone mineral density measurement testing.	4/15/2024