Evolent Clinical Guideline 2024 for Computed Tomography (CT) Bone Density Study

Guideline Number: Evolent_CG_2024	**Applicable Codes**	
"Evolent" refers to Evolent Health LLC and Evolent Specialty Services, Inc. 		
Original Date: April 1999	**Last Revised Date:** June 2025	**Implementation Date:** January 2026

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STATEMENT

General Information

- *It is an expectation that all patients receive care/services from a licensed clinician. All appropriate supporting documentation, including recent pertinent office visit notes, laboratory data, and results of any special testing must be provided. If applicable: All prior relevant imaging results and the reason that alternative imaging cannot be performed must be included in the documentation submitted.*
- *Where a specific clinical indication is not directly addressed in this guideline, medical necessity determination will be made based on widely accepted standard of care criteria. These criteria are supported by evidence-based or peer-reviewed sources such as medical literature, societal guidelines and state/national recommendations.*
- *The guideline criteria in the following sections were developed utilizing evidence-based and peer-reviewed resources from medical publications and societal organization guidelines as well as from widely accepted standard of care, best practice recommendations.*

Purpose

Bone mineral density (BMD) measurement identifies patients with low bone density and increased fracture risk. Methods for measuring BMD are non-invasive, painless, and available on an outpatient basis.

Special Note

See **Legislative Language** for specific mandates in Washington State.

INDICATIONS FOR CT BONE DENSITY STUDY (QUANTITATIVE CT (QCT))

NOTE: Dual x-ray absorptiometry (DXA) (Previously referred to DEXA) scanning is the gold standard initial study for measuring bone mineral density (BMD). A CT Bone density Study (Quantitative CT (QCT)) is an enhanced technique that is indicated to measure BMD when DXA is expected to be insufficient OR is not available. Indications are the same for QCT as DXA; however, DXA is recommended as the first-line test in most cases as it requires less radiation exposure and is less expensive.

Screening for Asymptomatic Low Bone Mineral Density (BMD) (1)

A CT bone density study (Quantitative CT (QCT)) is indicated for screening for asymptomatic low BMD after meeting any ONE of the following general criteria:

- Dual x-ray absorptiometry (DXA) (Previously referred to as DEXA) scanning is insufficient OR not available
- Patients with advanced degenerative changes of the spine (may falsely elevate bone marrow density measurements)

- Severe obesity (BMI > 35 kg/m) (may limit the accuracy of DXA scans)
- After meeting any one of the general criteria above, a CT bone density study (QCT) is indicated for any ONE of the following clinical criteria for asymptomatic screening:
    - Women ≥ 65 years of age
    - Men ≥ 70 years of age

Suspected Low Bone Mineral Density (Osteopenia or Osteoporosis) (1–3)

NOTE: Osteopenia and osteoporosis are both conditions involving decreased bone mineral density (BMD). Osteopenia is considered a precursor to osteoporosis, which is a more severe stage of bone loss.

A CT bone density study (Quantitative CT (QCT)) is indicated for suspected osteopenia or osteoporosis after meeting any ONE of the following general criteria:

- Dual x-ray absorptiometry (DXA) (Previously referred to DEXA) scanning is insufficient OR not available
- Patients with advanced degenerative changes of the spine (may falsely elevate bone marrow density measurements)
- Severe obesity (BMI > 35 kg/m) (may limit the accuracy of DXA scans)
- After meeting any one of the general criteria above, a CT bone density study (QCT) is indicated for any ONE of the following clinical criteria associated with increased risk of osteoporosis or osteopenia:
    - Women< 65 years of age who exhibit any ONE of the following risk factors:
        - History of estrogen deficiency
        - A history of fracture without a clear etiology (such as a fall or known trauma)
        - History of maternal hip fracture that occurred after the age of 50 years
        - Low body weight (< 127 lb. or 57.6 kg or BMI < 20 kg per m)
        - History of amenorrhea for greater than 1 year before the age of 42
        - Current use of cigarettes
        - Excessive alcohol use
        - Loss of body height (> 4 cm (> 1.5 inches)), increasing thoracic kyphosis
    - Men < 70 years of age who exhibit any ONE of the following risk factors:
        - Current use of cigarettes
        - Excessive alcohol use
        - Loss of body height (> 4 cm (> 1.5 inches)), increasing thoracic kyphosis
    - Women or men ≥ 50 years of age who exhibit any ONE of the following risk factors:
        - High risk medications (Such as steroids or glucocorticosteroids, medroxyprogesterone acetate, anticonvulsants, heparin, lithium, estrogen receptor modulators, calcitonin, or bisphosphonates)

- Conditions that cause or contribute to osteoporosis and fractures (Such as malabsorption syndromes, inflammatory bowel disease and other gastrointestinal conditions, metabolic bone disease, hyperparathyroidism, hypogonadism, thyroid hormone therapy or hyperthyroidism, chemotherapy, long-term heparin therapy, rheumatologic and autoimmune diseases, renal failure, hematologic disorders, multiple myeloma, chronic alcoholism, cerebral palsy, etc.)
- Patients with fragility fractures (Such as hip fracture, wrist (Colles) fracture, vertebral compression fracture) that are indicative of osteopenia or osteoporosis
- Wrist, hip, spine, or proximal humerus fracture with minimal or no trauma, (excluding pathologic fractures)
- Eating disorders, including anorexia nervosa and bulimia
- Patients who have had gastric bypass for obesity (accuracy of DXA may be affected by obesity)
- Advanced degenerative changes of the spine (with or without scoliosis), or other conditions that may falsely elevate bone marrow density measurements

Known Osteopenia or Osteoporosis (4,5)

NOTE: Osteopenia and osteoporosis are both conditions involving decreased bone mineral density (BMD). Osteopenia is considered a precursor to osteoporosis, which is a more severe stage of bone loss.

- In women with known low to moderate overall fracture risk to reassess risk every 2-4 years
- In post-menopausal women with a low bone mineral density at high risk for fractures who are on treatment to monitor the spine and hip every 1-3 years
- For patients on bisphosphonates to reassess fracture risk every 3-5 years
- For a patient ≥ 50 years of age who meets any one of the above risk factors listed under suspected low BMD, repeat QCT is indicated every 24 months (More frequent BMD testing may be warranted in certain clinical situations and should be considered on a case-by-case basis.)

Indications for Pediatric Patients (≤ 18 years old) (2)

NOTE: Peripheral DXA/QCT that is performed on an extremity (versus the hip and spine in axial DXA/QCT) is commonly used in children to avoid radiation exposure to the torso

- Children/adolescents receiving (or expected to receive) glucocorticoid therapy for more than 3 months
- Children/adolescents receiving radiation or chemotherapy for malignancies
- Children/adolescents with an endocrine disorder known to adversely affect BMD (Such as hyperparathyroidism, hyperthyroidism, growth hormone deficiency or Cushing's syndrome)
- Children/adolescents with bone dysplasia known to have excessive fracture risk (Such as osteogenesis imperfecta, osteopetrosis) or high BMD, such as prolonged exposure to fluoride

- Children/adolescents with medical conditions that could alter bone marrow density, such as:
  - Primary bone disorders
  - Potential secondary bone diseases (Such as juvenile idiopathic arthritis, celiac disease, cystic fibrosis)
  - Chronic immobilization (Such as Cerebral palsy, myopathic disease)
  - Endocrine disturbances (Such as Turner's syndrome, anorexia nervosa)
  - Cancer and therapies with adverse effects on bone health
  - Hematologic disorders (Such as Thalassemia, Sickle cell disease)
  - Genetic disorders (Such as Ehlers Danlos syndrome, Marfan syndrome)

LEGISLATIVE REQUIREMENTS

Washington

20141121A - Screening & Monitoring Tests for Osteopenia/ Osteoporosis [(6)]

Number and Coverage Topic:

20141121A – Screening & Monitoring Tests for Osteopenia/ Osteoporosis

HTCC Coverage Determination:

Bone mineral density testing with dual x-ray absorptiometry (DXA) is a **covered benefit with conditions** consistent with the criteria identified in the reimbursement determination.

HTCC Reimbursement Determination:

Limitations of Coverage:

Initial Screening:

Asymptomatic women

- Women ≥ 65,

Or

- Younger women with equivalent ten year fracture risk to women age 65 as calculated by FRAX* (Fracture Risk Assessment) tool or other validated scoring tool

Men or women

- Long term glucocorticoids (i.e. current or past exposure to glucocorticoids for more than 3 months),
- Androgen deprivation,

Or

- Other conditions known to be associated with low bone mass

Repeat Screening:

- T-score** > -1.5, 15 years to next screening test
- T-score -1.5 to -1.99, 5 years to next screening test
- T-score ≤ -2.0, 1 year to next screening test

Or

- Use of medication associated with low bone mass or presence of a condition known to be associated with low bone mass

Monitoring Treatment:

- Once treatment for osteoporosis has begun, serial monitoring is not covered
- Development of a fragility fracture alone is not a covered indication

CODING AND STANDARDS

Codes

77078

Applicable Lines of Business

☒	CHIP (Children's Health Insurance Program)
☒	Commercial
☒	Exchange/Marketplace
☒	Medicaid
☒	Medicare Advantage

BACKGROUND

Dual energy x-ray absorptiometry (DXA) scanning, previously referred to as a DEXA scan, is the most commonly used method of evaluating bone marrow density (BMD). Patients who have a BMD that is 2.5 standard deviations below that of a "young normal" adult (T-score at or below -2.5) are deemed to have osteoporosis. Quantitative computed tomography (QCT) is an enhanced technique that measures volumetric integral, trabecular, and cortical bone density at the spine and hip and can be used to determine bone strength.

Axial BMD measurements of the hip and spine provide the "gold standard" for clinical assessment. Peripheral DXA or QCT measures BMD at peripheral sites, generally at the heel or wrist. It is relatively cheap and portable and is an option when there is limited access to axial DXA/QCT. It is also frequently used in children to avoid radiation exposure to the torso.

SUMMARY OF EVIDENCE

ACR-SPR-SSR Practice Parameter for the Performance of Quantitative Computed Tomography (QCT) Bone Mineral Density [2]

Study Design: This document outlines the practice parameters and technical standards for performing quantitative computed tomography (QCT) for bone mineral density (BMD) assessment. It includes guidelines for indications, contraindications, and the qualifications and responsibilities of personnel involved in the procedure.

Target Population: The guidelines apply to both adult and pediatric patients. For adults, QCT is indicated for individuals with suspected abnormal bone metabolism, including postmenopausal women, men over 70 years, individuals with risk factors for osteoporosis, and those receiving long-term therapy affecting BMD 1. For children, QCT is indicated for those with conditions affecting BMD, such as endocrine disorders, bone dysplasias, and chronic immobilization.

Key Factors:

- **Advantages of QCT:** QCT allows volumetric assessment of BMD, which can eliminate confounding factors such as overlapping anatomy and quantify trabecular and cortical BMD 1. It is particularly useful in patients with severe degenerative changes, high or low body mass index, and those undergoing therapies affecting bone metabolic activity.
- **Indications:** QCT is recommended for clinical decisions influenced by BMD results, including screening for osteoporosis in older adults and monitoring therapy effectiveness.
- **Contraindications:** There are no absolute contraindications, but certain conditions may limit the value of QCT, such as pregnancy and severe degenerative changes.

Pharmacological Management of Osteoporosis in Postmenopausal Women: An Endocrine Society Clinical Practice Guideline [5]

Study Design: This clinical practice guideline focuses on the pharmacological management of osteoporosis in postmenopausal women. It evaluates evidence from clinical trials and incorporates patient preferences, adherence data, and risk-benefit profiles.

Target Population: Postmenopausal women at high risk of fractures, especially those who have experienced a recent fracture.

Key Factors:

- **Pharmacological Therapies:** The guideline recommends bisphosphonates, denosumab, teriparatide, abaloparatide, selective estrogen receptor modulators, menopausal hormone therapy, tibolone, calcitonin, calcium, and vitamin D.
- **Fracture Risk Assessment:** The risk of future fractures should be determined using country-specific assessment tools, and patient preferences should be incorporated into treatment planning.
- **Monitoring:** Bone mineral density should be monitored by dual-energy X-ray absorptiometry (DXA) at the spine and hip every 1 to 3 years.

ACR Appropriateness Criteria Osteoporosis and Bone Mineral Density: 2022 Update [1]

Study Design: This document provides the ACR Appropriateness Criteria for osteoporosis and bone mineral density assessment. It includes evidence-based guidelines reviewed annually by a multidisciplinary expert panel.

Target Population: Adults over 50 years of age, particularly those with risk factors for osteoporosis, such as advanced degenerative changes in the spine.

Key Factors:

- **Imaging Modalities:** DXA is the primary imaging modality for screening and monitoring osteoporosis. QCT is useful in patients with advanced degenerative changes in the spine.
- **Indications for BMD Testing:** The criteria include screening for osteoporosis in women over 65 years and men over 70 years, as well as individuals with risk factors such as estrogen deficiency, low body mass, and history of fractures.
- **Follow-up Imaging:** Follow-up DXA scanning is important for monitoring patients with low BMD, either for progression or therapeutic response.

ANALYSIS OF EVIDENCE

Shared Conclusions [1,2,5]**:**

- **Advantages of QCT:** All three documents highlight the advantages of QCT, such as volumetric assessment of BMD, which eliminates confounding factors like overlapping anatomy and quantifies trabecular and cortical BMD.
- **Use in Patients with Severe Degenerative Changes:** QCT is particularly useful in patients with severe degenerative changes, high or low body mass index, and those undergoing therapies affecting bone metabolic activity.
- **Importance of Accurate Imaging:** Accurate imaging and monitoring are crucial in managing osteoporosis and related conditions.
- **Use of QCT in Specific Populations:** QCT is beneficial for patients with severe degenerative changes and those undergoing therapies affecting bone metabolic activity

In summary, QCT is recognized for its advantages in volumetric assessment of BMD and its usefulness in patients with severe degenerative changes and those undergoing therapies affecting bone metabolic activity. However, DXA remains the primary imaging modality for screening and monitoring osteoporosis, with QCT serving as a valuable secondary tool in specific populations.

POLICY HISTORY

Date	Summary
June 2025	• Guideline name updated from CT Bone Density Study to Computed Tomography (CT) Bone Density Study

Date	Summary
	• Guideline number changed from 060-2 to 2024 • Added new bullet-point to the General Statement section • Checked the Medicare Advantage box in the Applicable Lines of Business table • Added a Summary of Evidence and Analysis of Evidence • Clarified indications for screening and suspected osteoporosis • Updated references • Reduced background
July 2024	• Reduced background • Updated references • Added WA legislative requirement

LEGAL AND COMPLIANCE

Guideline Approval

Committee

Reviewed / Approved by Evolent Specialty Services Clinical Guideline Review Committee

Disclaimer

Evolent Clinical Guidelines do not constitute medical advice. Treating health care professionals are solely responsible for diagnosis, treatment, and medical advice. Evolent uses Clinical Guidelines in accordance with its contractual obligations to provide utilization management. Coverage for services varies for individual members according to the terms of their health care coverage or government program. Individual members' health care coverage may not utilize some Evolent Clinical Guidelines. Evolent clinical guidelines contain guidance that requires prior authorization and service limitations. A list of procedure codes, services or drugs may not be all inclusive and does not imply that a service or drug is a covered or non-covered service or drug. Evolent reserves the right to review and update this Clinical Guideline in its sole discretion. Notice of any changes shall be provided as required by applicable provider agreements and laws or regulations. Members should contact their Plan customer service representative for specific coverage information.

Evolent Clinical Guidelines are comprehensive and inclusive of various procedural applications for each service type. Our guidelines may be used to supplement Medicare criteria when such criteria is not fully established. When Medicare criteria is determined to not be fully established, we only reference the relevant portion of the corresponding Evolent

Clinical Guideline that is applicable to the specific service or item requested in order to determine medical necessity.

REFERENCES

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3. US Preventive Services Task Force, Nicholson WK, Silverstein M, et al. Screening for Osteoporosis to Prevent Fractures: US Preventive Services Task Force Recommendation Statement. *JAMA*. Published online January 14, 2025. doi:10.1001/jama.2024.27154
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6. Washington State Health Care Authority. *Screening & Monitoring Tests for Osteopenia/Osteoporosis*. 20141121A; 2015. https://www.hca.wa.gov/about-hca/programs-and-initiatives/health-technology-assessment/screening-and-monitoring-tests-osteopenia/osteoporosis