INDICATIONS FOR CT BONE DENSITY STUDY:

For first time baseline study:
(ACR, 2016, 2017; Cosman, 2014; ISCD, 2015)

In patient with suspected osteoporosis or osteopenia meeting any of the following criteria when DEXA scanning is not available or for patients >50 years of age with advanced degenerative changes of the spine that may limit the efficacy of DEXA scans

- Asymptomatic women 65 years of age or older and men 70 and older
- Women aged 50-64 years old with a 9.3% or greater 10-year fracture risk based on the WHO (World Health Organization Fracture Risk Assessment (FRAX) tool (USPSTF, 2011)*.
- Individuals with at least ONE of the following risk factors:
  - Currently on medications associated with development of osteoporosis (e.g., steroids or glucocorticosteroids, anticonvulsants, heparin, lithium, estrogen receptor modulators (SERMs), calcitonin, or bisphosphonates, etc.)
  - Post-menopausal women younger than 65 and a low body weight (BMI <21 kg/m²)
  - Estrogen deficiency and low calcium intake or alcoholism.
  - In postmenopausal women and men age 50 and older who have had an adult age fracture or individuals of any age who develop 1 or more insufficiency fractures.
  - Evidence of osteoporosis or osteopenia from x-ray or ultrasound.
- Back pain associated with loss of vertebral body height per x-ray without significant traumatic event
- Loss of body height (>4 cm (>1.5 inches)) (ACR, 2017).
- Multiple fractures including compression fractures of the spine.
- Conditions that cause or contribute to osteoporosis and fractures (e.g. 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, etc.).
- Amenorrhea for greater than 1 year before the age of 42

For follow-up of individuals with known osteoporosis or osteopenia:
(Cosman, 2014)

- No previous bone mineral density study within the past 23 months.
• Previous bone density within past 23 months **AND** meets any one of the above risk factor criteria. (More frequent BMD testing may be warranted in certain clinical situations and should be determined on a case by case basis).
• After initiation of medical therapy for osteoporosis**: 1 to 2 years after initiating therapy for osteoporosis and every two years subsequent to the initial study (More frequent BMD testing may be warranted in certain clinical situations and should be determined on a case by case basis) (Cosman, 2014).

**BACKGROUND:**
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. Dual energy x-ray absorptiometry (DXA), previously referred to as DEXA, is the most commonly used method of evaluating BMD and is the only BMD technology for which World Health Organization (WHO) criteria for the diagnosis of osteoporosis can be used. 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) has not been validated for WHO criteria but can identify patients with low BMD compared to the QCT reference database and it can be used to identify patients who are at risk of fracture.

**OVERVIEW:**
**DXA** – Dual energy x-ray absorptiometry (DXA) is most often used to measure bone mineral density due to its low radiation exposure, low precision error, and capacity to measure multiple skeletal sites (spine, hip, or total body).

**Axial DXA** – This provides the “gold standard”. Axial DXA predicts fracture risk at the site being measured.

**Peripheral DXA** – This device 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.

**Fracture Risk Assessment** - The fracture risk assessment (FRAX) tool developed by the World Health Organization estimates the 10 year risk of having a fracture based on factors such as age, sex, body mass index (BMI), previous fractures, parental fracture history, glucocorticoid use, Rheumatoid arthritis, and conditions predisposing to secondary osteoporosis (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) and tobacco and alcohol use. Based on FRAX, a 65-year-old women without any additional conditions increasing fracture risk has a 9.3% 10-year risk of developing a fracture. This value is therefore used as the risk level cut-off recommending
screening in patients younger than 65. The FRAX tool is available on line at https://www.sheffield.ac.uk/FRAX/tool.jsp.

**Ethnicity and Screening** - Due to the potential negative consequences of fractures and the lack of an optimal age at which to screen populations of different ethnicity the USPSTF now recommends screening of all women aged 65 and older regardless of race and ethnicity.

**Follow up Imaging** - Follow up imaging is performed on patients at risk of developing osteoporosis or to evaluate the outcome of osteoporosis treatment. Follow up imaging is generally performed at 1-2 years after initiation of therapy for osteoporosis and subsequently every 2 years unless clinical circumstances prompt earlier imaging. In patients at increased risk for developing osteoporosis, imaging may be performed more frequently, particularly with patients with certain medical conditions and taking medications predisposing to fracture. The later population includes those undergoing long term therapy with common medications such as heparin or glucocorticoids.

**POLICY HISTORY:**
**Review Date:** April 2019
**Review Summary:**
- Changed language by removing “screening” in the following: “For first time baseline screening study” AND “For screening follow-up of individuals with known osteoporosis or osteopenia”
- Removed erroneous chart information that was not intended for inclusion in guideline
- Updated references
REFERENCES:


Disclaimer: Magellan Healthcare service authorization policies do not constitute medical advice and are not intended to govern or otherwise influence the practice of medicine. These policies are not meant to supplant your normal procedures, evaluation, diagnosis, treatment and/or care plans for your patients. Your professional judgement must be exercised and followed in all respects with regard to the treatment and care of your patients. These policies apply to all Magellan Healthcare subsidiaries including, but not limited to, National Imaging Associates (“Magellan”). The policies constitute only the reimbursement and coverage guidelines of Magellan. Coverage for services varies for individual members in accordance with the terms and conditions of applicable Certificates of Coverage, Summary Plan Descriptions, or contracts with governing regulatory agencies. Magellan reserves the right to review and update the guidelines at its sole discretion. Notice of such changes, if necessary, shall be provided in accordance with the terms and conditions of provider agreements and any applicable laws or regulations.