Bone density evaluation for patients with prostate cancer and receiving androgen deprivation therapy

- **eCQM Title**: Bone density evaluation for patients with prostate cancer and receiving androgen deprivation therapy
- **eCQM Identifier (Measure Authoring Tool)**: 645
- **eCQM Number**: 4.1.000
- **NQF Number**: Not Applicable
- **GUID**: 977b302e-cdf3-4ba2-8020-5e099d93ad18
- **Measurement Period**: January 1, 20XX through December 31, 20XX
- **Measure Steward**: Oregon Urology
- **Measure Developer**: Oregon Urology
- **Endorsed By**: None
- **Rationale**: Androgen suppression as a treatment for prostate cancer can cause osteoporosis (Qaseem, 2008). Men undergoing prolonged androgen deprivation therapy (ADT) incur bone loss at a rate higher than menopausal women (Guise, 2007). In preserving bone health, the goal is to prevent or treat osteopenia/osteoporosis for the patient on ADT and to prevent or delay skeletal related events. The National Osteoporosis Foundation recommendations including a baseline assessment of bone density with a DEXA scan and daily calcium and vitamin D supplementation (Watts, 2012). The DEXA scan is the gold standard for bone density screening. Men at risk for adverse bone consequences from chronic ADT do not always receive care according to evidence-based guidelines. These findings call for improved processes that standardize evidence-based practice including baseline and follow bone density assessment (Watts, 2012).

- **Clinical Recommendation Statement**: Bone density screening should be performed at the start of Androgen Deprivation Therapy (ADT) for prostate cancer. It should also be performed every 2 years for the patient with continued ADT or for patients with known osteoporosis. Current insurance practice is to possibly cover the cost of bone density screening if osteoporosis is known or if there is a high-risk drug. Some patients choose to delay bone density screening until after ADT is started and they therefore have insurance authorization due to the administration of a high-risk drug.

- **Improve Notation**: A higher score indicates better quality


- **Reference**: Data Criteria Value Set 2.16.840.1.113762.1.4.1151.38 DEXA, Dual Energy X-ray Absorptiometry, Bone Density for Urology Care contains 2 LOINC codes identifying the axial and appendicular skeleton and will meet the measure intent.

- **Definition**: DEXA - Dual Energy X-ray Absorptiometry - A scan that measures the bone of the spine, hip or total body and measures bone mineral density. It is considered one of the most accurate measurements.

- **Guidance**: In order to capture the practitioner’s intent of androgen deprivation therapy (ADT) for a period of 12 months or greater, SNOMEDCT 456381000124102 which is Injection of leuprolide acetate for twelve month period (regime/therapy) is the correct code.

This eCQM is a patient-based measure.
Transmission Format

Initial Population

Male patients with a qualifying encounter in the measurement period AND with a diagnosis of prostate cancer AND with an order for ADT or an active medication of ADT with an intent for treatment greater than or equal to 12 months during the measurement period

Denominator

Equals Initial Population

Denominator Exclusions

None

Numerator

Patients with a bone density evaluation within the two years prior to the start of or less than three months after the start of ADT treatment

Numerator Exclusions

Not Applicable

Denominator Exceptions

Patient refused recommendation for a bone density evaluation after the start of ADT therapy

Supplemental Data Elements

For every patient evaluated by this measure also identify payer, race, ethnicity and sex

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Population Criteria

- Initial Population
  - "Patient is Male"
  - and "Has Qualifying Encounter"
  - and "First Androgen Deprivation Therapy" is not null

- Denominator
  - "Initial Population"

- Denominator Exclusions
  - None

- Numerator
  - "Has Baseline DEXA Scan Two Years Prior to the Start of or Less than Three Months After the Start of ADT"

- Numerator Exclusions
  - None

- Denominator Exceptions
  - exists ("No Bone Density Scan Ordered Due to Patient Refusal")
  - or exists ("No Bone Density Scan Performed Due to Patient Refusal")

- Stratification
  - None

Definitions

- Denominator
  - "Initial Population"

- Denominator Exception
  - exists ("No Bone Density Scan Ordered Due to Patient Refusal")
  - or exists ("No Bone Density Scan Performed Due to Patient Refusal")

- First Androgen Deprivation Therapy
  - First(["Medication, Active": "Androgen deprivation therapy for Urology Care"] InitialADTTherapy with "Prostate Cancer Diagnosis" ProstateCancer such that InitialADTTherapy.relevantPeriod starts on or before end ProstateCancer.prevalencePeriod with ["Procedure, Order": "Injection of leuprolide acetate for twelve month period (regime/therapy)"] TwelveMonthADTTherapy such that InitialADTTherapy.relevantPeriod includes TwelveMonthADTTherapy.authorDateTime and InitialADTTherapy.relevantPeriod overlaps "Measurement Period" sort by start of relevantPeriod)

- Has Baseline DEXA Scan Two Years Prior to the Start of or Less than Three Months After the Start of ADT
exists ( ("Diagnostic Study, Order": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care") DEXAOdered with "First Androgen Deprivation Therapy" FirstADT such that DEXAOdered.authorDatetime 3 months or less after start FirstADT.relevantPeriod or DEXAOdered.authorDatetime 2 years or less before start of FirstADT.relevantPeriod )
union ( ("Diagnostic Study, Performed": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care") DEXAPerformed with "First Androgen Deprivation Therapy" FirstADT such that DEXAPerformed.relevantDateTime 3 months or less after start FirstADT.relevantPeriod or DEXAPerformed.relevantDateTime 2 years or less before start of FirstADT.relevantPeriod )

▶ Has Qualifying Encounter
exists ["Encounter, Performed": "Office Visit"] Encounter where Encounter.relevantPeriod during "Measurement Period"

▶ Initial Population
"Patient is Male" and "Has Qualifying Encounter" and "First Androgen Deprivation Therapy" is not null

▶ No Bone Density Scan Ordered Due to Patient Refusal
from "First Androgen Deprivation Therapy" FirstADTTherapy,
["Diagnostic Study, Not Ordered": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care"] DEXANotOrdered where (DEXANotOrdered.authorDatetime 3 months or less after start of FirstADTTherapy.relevantPeriod and DEXANotOrdered.negationRationale in "Patient Reason refused") return FirstADTTherapy

▶ No Bone Density Scan Performed Due to Patient Refusal
from "First Androgen Deprivation Therapy" FirstADTTherapy,
["Diagnostic Study, Not Performed": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care"] DEXANotPerformed where (DEXANotPerformed.authorDatetime 3 months or less after start of FirstADTTherapy.relevantPeriod and DEXANotPerformed.negationRationale in "Patient Reason refused") return FirstADTTherapy

▶ Numerator
"Has Baseline DEXA Scan Two Years Prior to the Start of or Less than Three Months After the Start of ADT"

▶ Patient is Male
exists ["Patient Characteristic Sex": "Male"]

▶ Prostate Cancer Diagnosis
["Diagnosis": "Prostate Cancer"] ProstateCancer where ProstateCancer.prevalencePeriod starts same day or before end "Measurement Period"

▶ SDE Ethnicity
["Patient Characteristic Ethnicity": "Ethnicity"]

▶ SDE Payer
["Patient Characteristic Payer": "Payer"]

▶ SDE Race
["Patient Characteristic Race": "Race"]

▶ SDE Sex
["Patient Characteristic Sex": "ONC Administrative Sex"]

Functions
None

Terminology
- code "Injection of leuprolide acetate for twelve month period (regime/therapy)" ("SNOMEDCT Code (456381000124102)"
- code "Male" ("AdministrativeGender Code (M)"
- valueset "Androgen deprivation therapy for Urology Care" (2.16.840.1.113762.1.4.1151.48)
- valueset "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care" (2.16.840.1.113762.1.4.1151.38)
- valueset "Ethnicity" (2.16.840.1.114222.4.11.837)
- valueset "Office Visit" (2.16.840.1.113883.1.464.1003.101.12.1001)
- valueset "ONC Administrative Sex" (2.16.840.1.113762.1.4.1)
- valueset "Patient Reason refused" (2.16.840.1.113883.3.600.791)
- valueset "Payer" (2.16.840.1.114222.4.11.3591)
- valueset "Prostate Cancer" (2.16.840.1.113883.3.526.3.319)
- valueset "Race" (2.16.840.1.114222.4.11.836)

Data Criteria (QDM Data Elements)
- "Diagnosis: Prostate Cancer" using "Prostate Cancer (2.16.840.1.113883.3.526.3.319)"
- "Diagnostic Study, Not Ordered: DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care" using "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care (2.16.840.1.113762.1.4.1151.38)"
- "Diagnostic Study, Not Performed: DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care" using "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care (2.16.840.1.113762.1.4.1151.38)"

https://ecqi.healthit.gov/sites/default/files/ecqm/measures/CMS645v4.html
Supplemental Data Elements

- **SDE Ethnicity**
  - ["Patient Characteristic Ethnicity": "Ethnicity"]

- **SDE Payer**
  - ["Patient Characteristic Payer": "Payer"]

- **SDE Race**
  - ["Patient Characteristic Race": "Race"]

- **SDE Sex**
  - ["Patient Characteristic Sex": "ONC Administrative Sex"]

Risk Adjustment Variables

None