

|   |  |                            |                                      |
|---|--|----------------------------|--------------------------------------|
| <b>eCQM Title</b>                               | <b>Bone density evaluation for patients with prostate cancer and receiving androgen deprivation therapy</b>  |                            |                                      |
| <b>eCQM Identifier (Measure Authoring Tool)</b> | 645  | <b>eCQM Version Number</b> | 5.1.000                              |
| <b>NQF Number</b>                               | Not Applicable   | <b>GUID</b>                | 977b302e-cdf3-4ba2-8020-5e099d93ad18 |
| <b>Measurement Period</b>                       | January 1, 20XX through December 31, 20XX  |                            |                                      |
| <b>Measure Steward</b>                          | Oregon Urology   |                            |                                      |
| <b>Measure Developer</b>                        | Oregon Urology   |                            |                                      |
| <b>Endorsed By</b>                              | None   |                            |                                      |
| <b>Description</b>                              | <p>Patients determined as having prostate cancer who are currently starting or undergoing androgen deprivation therapy (ADT), for an anticipated period of 12 months or greater and who receive an initial bone density evaluation. The bone density evaluation must be prior to the start of ADT or within 3 months of the start of ADT.</p> <p>Limited proprietary coding is contained in the measure specifications for convenience. Users of the proprietary code sets should obtain all necessary licenses from the owners of these code sets. Oregon Urology Institute (OUI) and Large Urology Group Practice Association (LUGPA) disclaim all liability for use or accuracy of third party codes contained in the specifications.</p>   |                            |                                      |
| <b>Copyright</b>                                | <p>CPT(R) contained in the Measure specifications is copyright 2004-2020. American Medical Association. LOINC(R) copyright 2004-2020 Regenstrief Institute, Inc. This material contains SNOMED Clinical Terms(R) (SNOMED CT[R]) copyright 2004-2020. International Health Terminology Standards Development Organisation. ICD-10 copyright 2020 World Health Organization. All Rights Reserved.</p> <p>The performance measure is not a clinical guideline and does not establish a standard of medical care, and has not been tested for all potential applications.</p>  |                            |                                      |
| <b>Disclaimer</b>                               | <p>THE MEASURES AND SPECIFICATIONS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND.</p> <p>Due to technical limitations, registered trademarks are indicated by (R) or [R] and unregistered trademarks are indicated by (TM) or [TM].</p>  |                            |                                      |
| <b>Measure Scoring</b>                          | Proportion   |                            |                                      |
| <b>Measure Type</b>                             | Process  |                            |                                      |
| <b>Stratification</b>                           | None   |                            |                                      |
| <b>Risk Adjustment</b>                          | None   |                            |                                      |
| <b>Rate Aggregation</b>                         | None   |                            |                                      |
| <b>Rationale</b>                                | <p>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 up bone density assessment (Watts, 2012).</p> |                            |                                      |
| <b>Clinical Recommendation Statement</b>        | <p>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.</p>  |                            |                                      |
| <b>Improvement Notation</b>                     | <p>A higher score indicates better quality</p> <p>Reference Type: CITATION</p>   |                            |                                      |
| <b>Reference</b>                                | <p>Reference Text: 'Cosman, F., deBeur, S., LeBoff, M., et al. (2014,June). Clinician's guide to prevention and treatment of osteoporosis. Osteoporosis International, 25(10), 2359–2381. Retrieved from <a href="http://link.springer.com/article/10.1007/s00198-014-2794-2">http://link.springer.com/article/10.1007/s00198-014-2794-2</a>'</p> <p>Reference Type: CITATION</p>  |                            |                                      |
| <b>Reference</b>                                | <p>Reference Text: 'Finkelstein, J., &amp; Yu, E. (2017). Clinical manifestations, diagnosis, and evaluation of osteoporosis in men. Retrieved from <a href="https://www.uptodate.com/contents/clinical-manifestations-diagnosis-and-evaluation-of-osteoporosis-in-men/print?source=see_link">https://www.uptodate.com/contents/clinical-manifestations-diagnosis-and-evaluation-of-osteoporosis-in-men/print?source=see_link</a>'</p> <p>Reference Type: CITATION</p>   |                            |                                      |
| <b>Reference</b>                                | <p>Reference Text: 'Guise, T., Oefelein, M., Eastham, J., et al. (2007). Estrogenic side effects of androgen deprivation therapy. Reviews in Urology, 9(4), 163-180. Retrieved from <a href="https://www.researchgate.net/profile/Celestia_Higano/publication/5619579_Estrogenic_side_effects_of_androgen_deprivation_therapy/links/0c960526434483fd000000.pdf">https://www.researchgate.net/profile/Celestia_Higano/publication/5619579_Estrogenic_side_effects_of_androgen_deprivation_therapy/links/0c960526434483fd000000.pdf</a>'</p> <p>Reference Type: CITATION</p>   |                            |                                      |
| <b>Reference</b>                                | <p>Reference Text: 'Qaseem, A., Snow, V., Shekelle, P., et al. (2008). Annals of Internal Medicine. Screening for osteoporosis in men: A clinical practice guideline from the American College of Physicians, 2008. Annals of Internal Medicine, 148(9), 680-684. Retrieved from <a href="http://annals.org/aim/article/740825/screening-osteoporosis-men-clinical-practice-guideline-from-american-college-physicians">http://annals.org/aim/article/740825/screening-osteoporosis-men-clinical-practice-guideline-from-american-college-physicians</a>'</p> <p>Reference Type: CITATION</p>  |                            |                                      |
| <b>Reference</b>                                | <p>Reference Text: 'Ward, R., Roberts, C., Bencardino, J., et al. (2016). American College of Radiology: ACR Appropriateness Criteria (R)—Osteoporosis and bone mineral density. Retrieved from <a href="https://www.jacr.org/article/S1546-1440(17)30198-9/pdf">https://www.jacr.org/article/S1546-1440(17)30198-9/pdf</a>'</p> <p>Reference Type: CITATION</p>   |                            |                                      |
| <b>Reference</b>                                | <p>Reference Text: 'Watts, N., Adler, R., Bilezikian, J., et al. (2012, June). Osteoporosis in men: An Endocrine Society clinical practice guideline, Journal of Clinical Endocrinology &amp; Metabolism, 97(6), 1802–1822. Retrieved from <a href="https://academic.oup.com/jcem/article-lookup/doi/10.1210/jc.2011-3045">https://academic.oup.com/jcem/article-lookup/doi/10.1210/jc.2011-3045</a>'</p>  |                            |                                      |
| <b>Definition</b>                               | <p>Data Criteria Value Set 2.16.840.1.113762.1.4.1151.38 DEXA, Dual Energy Xray Absorptiometry, Bone Density for Urology Care contains 2 LOINC codes identifying the axial and appendicular skeleton and will meet the measure</p>   |                            |                                      |

intent.

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.  
PDXA - Peripheral Dual Energy X-ray Absorptiometry - Bone mineral density measurement of the wrist, heel or finger.

First Androgen Deprivation Therapy - The First Androgen Deprivation Therapy (ADT) is measured as the first order or administration of ADT for an anticipated period of 12 months or greater to a patient with prostate cancer.

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.

|                                   |  |
|-----------------------------------|--|
| <b>Guidance</b>                   | This eCQM is a patient-based measure.<br><br>This version of the eCQM uses QDM version 5.5. Please refer to the eCQI resource center ( <a href="https://ecqi.healthit.gov/qdm">https://ecqi.healthit.gov/qdm</a> ) for more information on the QDM.                |
| <b>Transmission Format</b>        | TBD  |
| <b>Initial Population</b>         | 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 |
| <b>Denominator</b>                | Equals Initial Population  |
| <b>Denominator Exclusions</b>     | None   |
| <b>Numerator</b>                  | 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  |
| <b>Numerator Exclusions</b>       | Not Applicable   |
| <b>Denominator Exceptions</b>     | Patient refused recommendation for a bone density evaluation after the start of ADT therapy  |
| <b>Supplemental Data Elements</b> | For every patient evaluated by this measure also identify payer, race, ethnicity and sex   |

## Table of Contents

- [Population Criteria](#)
- [Definitions](#)
- [Functions](#)
- [Terminology](#)
- [Data Criteria \(QDM Data Elements\)](#)
- [Supplemental Data Elements](#)
- [Risk Adjustment Variables](#)

## Population Criteria

### Initial Population

"Patient is Male"  
and "Has Qualifying Encounter"  
and "Androgen Deprivation Therapy Start Date" 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

### Androgen Deprivation Therapy for Urology Care Medication Active Start Dates

["Medication, Active": "Androgen deprivation therapy for Urology Care"] ADTActive  
return Global.EarliestOf ( ADTActive.relevantDatetime, ADTActive.relevantPeriod )

### Androgen Deprivation Therapy for Urology Care Medication Order Start Dates

["Medication, Order": "Androgen deprivation therapy for Urology Care"] ADTOrder  
return Global.EarliestOf ( ADTOrder.authorDatetime, ADTOrder.relevantPeriod )

#### 4 Androgen Deprivation Therapy Start Date

```
First(("Androgen Deprivation Therapy for Urology Care Medication Active Start Dates"  
  union "Androgen Deprivation Therapy for Urology Care Medication Order Start Dates")ADTTherapyDate  
  with "Prostate Cancer Diagnosis" ProstateCancer  
  such that ADTTherapyDate during ProstateCancer.prevalencePeriod  
  with ["Procedure, Order": "Injection of leuprolide acetate for twelve month period (regime/therapy)"] TwelveMonthADTTherapy  
  such that TwelveMonthADTTherapy.authorDatetime on or after ADTTherapyDate  
  where ADTTherapyDate before  
  end of "Measurement Period"  
  sort ascending  
)
```

#### 4 Denominator

"Initial Population"

#### 4 Denominator Exception

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

#### 4 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"] DEXAOrdered  
  with "Androgen Deprivation Therapy Start Date" ADTTherapyStartDate  
  such that DEXAOrdered.authorDatetime 3 months or less after ADTTherapyStartDate  
  or DEXAOrdered.authorDatetime 2 years or less before ADTTherapyStartDate  
  )  
  union ( ["Diagnostic Study, Performed": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care"] DEXAPerformed  
  with "Androgen Deprivation Therapy Start Date" ADTTherapyStartDate  
  such that Global."NormalizeInterval" ( DEXAPerformed.relevantDatetime, DEXAPerformed.relevantPeriod ) 3 months or less after ADTTherapyStartDate  
  or Global."NormalizeInterval" ( DEXAPerformed.relevantDatetime, DEXAPerformed.relevantPeriod ) 2 years or less before ADTTherapyStartDate  
  )  
  )
```

#### 4 Has Qualifying Encounter

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

#### 4 Initial Population

"Patient is Male"  
 and "Has Qualifying Encounter"  
 and "Androgen Deprivation Therapy Start Date" is not null

#### 4 No Bone Density Scan Ordered Due to Patient Refusal

["Diagnostic Study, Not Ordered": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care"] DEXANotOrdered  
 where DEXANotOrdered.authorDatetime 3 months or less after "Androgen Deprivation Therapy Start Date"  
 and DEXANotOrdered.negativeRationale in "Patient Reason refused"

#### 4 No Bone Density Scan Performed Due to Patient Refusal

["Diagnostic Study, Not Performed": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care"] DEXANotPerformed  
 where DEXANotPerformed.authorDatetime 3 months or less after "Androgen Deprivation Therapy Start Date"  
 and DEXANotPerformed.negativeRationale in "Patient Reason refused"

#### 4 Numerator

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

#### 4 Patient is Male

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

#### 4 Prostate Cancer Diagnosis

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

#### 4 SDE Ethnicity

["Patient Characteristic Ethnicity": "Ethnicity"]

#### 4 SDE Payer

["Patient Characteristic Payer": "Payer"]

#### 4 SDE Race

["Patient Characteristic Race": "Race"]

#### 4 SDE Sex

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

## Functions

#### 4 Global.Earliest(period Interval<DateTime>)

if ( HasStart(period)) then start of period  
 else  
 end of period

#### Global.EarliestOf(pointInTime DateTime, period Interval<DateTime>)

Earliest(NormalizeInterval(pointInTime, period))

#### Global.HasStart(period Interval<DateTime>)

not ( start of period is null  
or start of period = minimum DateTime  
)

#### Global.NormalizeInterval(pointInTime DateTime, period Interval<DateTime>)

if pointInTime is not null then Interval[pointInTime, pointInTime]  
else if period is not null then period  
else null as Interval<DateTime>

### 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" (2.16.840.1.113883.3.464.1003.101.12.1001)
- 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)"
- "Diagnostic Study, Order: 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, 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)"
- "Encounter, Performed: Office Visit" using "Office Visit (2.16.840.1.113883.3.464.1003.101.12.1001)"
- "Medication, Active: Androgen deprivation therapy for Urology Care" using "Androgen deprivation therapy for Urology Care (2.16.840.1.113762.1.4.1151.48)"
- "Medication, Order: Androgen deprivation therapy for Urology Care" using "Androgen deprivation therapy for Urology Care (2.16.840.1.113762.1.4.1151.48)"
- "Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity (2.16.840.1.114222.4.11.837)"
- "Patient Characteristic Payer: Payer" using "Payer (2.16.840.1.114222.4.11.3591)"
- "Patient Characteristic Race: Race" using "Race (2.16.840.1.114222.4.11.836)"
- "Patient Characteristic Sex: Male" using "Male (AdministrativeGender Code M)"
- "Patient Characteristic Sex: ONC Administrative Sex" using "ONC Administrative Sex (2.16.840.1.113762.1.4.1)"
- "Procedure, Order: Injection of leuprolide acetate for twelve month period (regime/therapy)" using "Injection of leuprolide acetate for twelve month period (regime/therapy) (SNOMEDCT Code 456381000124102)"

### 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

|             |      |
|-------------|------|
| Measure Set | None |
|-------------|------|