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|---|---|----------------------------|--------------------------------------|
| <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> | 2.1.000                              |
| <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>                              | 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 (indicated by HCPCS code) 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.  |                            |                                      |
| <b>Copyright</b>                                | <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 any Current Procedural Terminology (CPT- [R]) or other coding contained in the specifications.</p> <p>CPT (R) contained in the Measure specifications is copyright 2004-2017 American Medical Association. LOINC(R) copyright 2004-2017 Regenstrief Institute, Inc. This material contains SNOMED Clinical Terms(R) (SNOMED CT[R]) copyright 2004-2017 International Health Terminology Standards Development Organisation. ICD-10 copyright 2017 World Health Organization. All Rights Reserved.</p>   |                            |                                      |
| <b>Disclaimer</b>                               | <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> <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].</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>                     | A higher score indicates better quality   |                            |                                      |
| <b>Reference</b>                                | <p>Cosman,F; deBeur,S; LeBoff,M; Lewiecki,E; Tanner,B; Randall,S; Lindsay,R. Osteoporosis International. Clinician's Guide to Prevention and Treatment of Osteoporosis, June, 2014.<br/> <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>  |                            |                                      |
| <b>Reference</b>                                | <p>Finkelstein,J; Yu,E. UpToDate. Clinical manifestations, diagnosis, and evaluation of osteoporosis in men, 2017.<br/> <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>   |                            |                                      |
| <b>Reference</b>                                | <p>Guise,T; Defelein,M; Eastham,J; Cookson,M; Higano,C; Smith,M. Reviews in Urology. Estrogenic Side Effects of Androgen Deprivation Therapy, 2007.<br/> <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>  |                            |                                      |
| <b>Reference</b>                                | <p>Qaseem,A; Snow,V; Shekelle,P; et al. Annals of Internal Medicine. Screening for Osteoporosis in Men: A Clinical Practice Guideline from the American College of Physicians, 2008.<br/> <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>   |                            |                                      |
| <b>Reference</b>                                | <p>Ward,R; Roberts,C; Bencardino,J; Baccei,S; Cassidy,R; Chang,E; Fox,M; Greenspan,B; Gyftopoulos,S; Hochman,M; Mintz,D; Newman,J; Reitman,C; Rosenberg,S; Shah,N; Small,K; Weisman,B. American College of Radiology. ACR Appropriateness Criteria (R) osteoporosis and bone mineral density, 2016.<br/> <a href="https://www.guideline.gov/summaries/summary/50461/acr-appropriateness-criteria--osteoporosis-and-bone-mineral-density">https://www.guideline.gov/summaries/summary/50461/acr-appropriateness-criteria--osteoporosis-and-bone-mineral-density</a></p>  |                            |                                      |
| <b>Reference</b>                                | <p>Watts,N; Adler,R; Bilezikian,J; Drake,M; Eastell,R; Orwoll,E; Finkelstein,J. Journal of Clinical Endocrinology &amp; Metabolism. Osteoporosis in Men: An Endocrine Society Clinical Practice Guideline, June, 2012.<br/> <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 intent.</p> <p>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.<br/> PDXA - Peripheral Dual Energy X-ray Absorptiometry - Bone mineral density measurement of the wrist, heel or finger.</p>   |                            |                                      |
| <b>Guidance</b>                                 | <p>In order to capture the practitioner's intent of androgen deprivation therapy (ADT) for a period of 12 months or greater, the custom HCPCS code of J1950,cont was added to the First Androgen Deprivation Therapy definition as Procedure, Order. Each EHR can define this custom code as intended therapy for 12 months or greater with the practitioner indicating this code at the start of the intended therapy.</p>   |                            |                                      |
| <b>Transmission Format</b>                      | TBD   |                            |                                      |
| <b>Initial Population</b>                       | <p>Male patients with a diagnosis of prostate cancer and an order for ADT that is intended for greater than or equal to 12 months during the measurement period. Also included are male patients with a diagnosis of prostate cancer with ADT that was administered with an intent of 12 months or greater therapy and began during the measurement period.</p>   |                            |                                      |
| <b>Denominator</b>                              | Equals Initial Population   |                            |                                      |
| <b>Denominator Exclusions</b>                   | None  |                            |                                      |
| <b>Numerator</b>                                | <p>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</p>  |                            |                                      |

|                                   |   |   |
|-----------------------------------|---|---|
| <b>Numerator Exclusions</b>       | None  | ☰ |
| <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    | ☰ |

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## Population Criteria

### Initial Population

"Patient is Male"  
and exists "Qualifying Encounter"  
and "First Androgen Deprivation Therapy" is not null

### Denominator

"Initial Population"

### Denominator Exclusions

None

### Numerator

exists "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"

### Stratification

None

## Definitions

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

"Bone Density Scan Ordered or Performed" DEXAScan  
with "First Androgen Deprivation Therapy" FirstADT  
such that DEXAScan.authorDatetime 3 months or less after start FirstADT.relevantPeriod  
or DEXAScan.authorDatetime 2 years or less before start of FirstADT.relevantPeriod

### Bone Density Scan Ordered or Performed

(["Diagnostic Study, Order": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care"] DEXAOrdered  
union ( ["Diagnostic Study, Performed": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care"] DEXAPerformed  
return "Diagnostic Study, Order" { authorDatetime: start of DEXAPerformed.relevantPeriod }  
)

### Denominator

"Initial Population"

### Denominator Exception

exists "No Bone Density Scan Ordered 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 after start of ProstateCancer.prevalencePeriod  
with ["Procedure, Order": "Injection Leuprolide Acetate"] TwelveMonthADTTherapy  
such that InitialADTTherapy.relevantPeriod includes TwelveMonthADTTherapy.authorDatetime  
and InitialADTTherapy.relevantPeriod overlaps "Measurement Period"  
sort by start of relevantPeriod  
)

### Initial Population

"Patient is Male"  
and exists "Qualifying Encounter"  
and "First Androgen Deprivation Therapy" is not null

### 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.negotiationRationale in "Patient Reason refused"  
)  
union ( ["Diagnostic Study, Not Performed": "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care"] DEXANotPerformed  
where DEXANotPerformed.negotiationRationale in "Patient Reason refused"  
)

### Numerator

exists "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"

#### ▲ Qualifying Encounter

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

- valueset "Androgen deprivation therapy for Urology Care" using "2.16.840.1.113762.1.4.1151.48"
- valueset "DEXA Dual Energy Xray Absorptiometry, Bone Density for Urology Care" using "2.16.840.1.113762.1.4.1151.38"
- valueset "Ethnicity" using "2.16.840.1.114222.4.11.837"
- valueset "Injection Leuprolide Acetate" using "2.16.840.1.113762.1.4.1151.16"
- valueset "Male" using "2.16.840.1.113883.3.560.100.1"
- valueset "Office Visit" using "2.16.840.1.113883.3.464.1003.101.12.1001"
- valueset "ONC Administrative Sex" using "2.16.840.1.113762.1.4.1"
- valueset "Patient Reason refused" using "2.16.840.1.113883.3.600.791"
- valueset "Payer" using "2.16.840.1.114222.4.11.3591"
- valueset "Prostate Cancer" using "2.16.840.1.113883.3.526.3.319"
- valueset "Race" using "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)"
- "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 (2.16.840.1.113883.3.560.100.1)"
- "Patient Characteristic Sex: ONC Administrative Sex" using "ONC Administrative Sex (2.16.840.1.113762.1.4.1)"
- "Procedure, Order: Injection Leuprolide Acetate" using "Injection Leuprolide Acetate (2.16.840.1.113762.1.4.1151.16)"

### 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 | ≡ |
|-------------|------|---|