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| **eCQM Title** | **Bone density evaluation for patients with prostate cancer and receiving androgen deprivation therapy** | | |
| **eCQM Identifier (Measure Authoring Tool)** | 645 | **eCQM Version number** | 3.1.000 |
| **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 | | |
| **Description** | 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. | | |
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| **Measure Scoring** | Proportion | | |
| **Measure Type** | Process | | |
| **Stratification** | None | | |
| **Risk Adjustment** | None | | |
| **Rate Aggregation** | 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 up 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. | | |
| **Improvement** | A higher score indicates better quality | | |

| | |
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| **Notation** | |
| **Reference** | 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 http://link.springer.com/article/10.1007/s00198-014-2794-2 |
| **Reference** | Finkelstein, J., & Yu, E. (2017). Clinical manifestations, diagnosis, and evaluation of osteoporosis in men. Retrieved from https://www.uptodate.com/contents/clinical-manifestations-diagnosis-and-evaluation-of-osteoporosis-in-men/print?source=see_link |
| **Reference** | 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 https://www.researchgate.net/profile/Celestia_Higano/publication/5619579_Estrogenic_side_effects_of_androgen_deprivation_therapy/links/0c960526434483fdfd000000.pdf |
| **Reference** | 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 http://annals.org/aim/article/740825/screening-osteoporosis-men-clinical-practice-guideline-from-american-college-physicians |
| **Reference** | Ward, R., Roberts, C., Bencardino, J., et al. (2016). American College of Radiology: ACR Appropriateness Criteria (R)—Osteoporosis and bone mineral density. Retrieved from https://www.jacr.org/article/S1546-1440(17)30198-9/pdf |
| **Reference** | Watts, N., Adler, R., Bilezikian, ,J., et al. (2012, June). Osteoporosis in men: An Endocrine Society clinical practice guideline, Journal of Clinical Endocrinology & Metabolism, 97(6), 1802–1822. Retrieved from https://academic.oup.com/jcem/article-lookup/doi/10.1210/jc.2011-3045 |
| **Definition** | 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.<br><br>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. |
| **Guidance** | 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 removed in 2019 from to the First Androgen Deprivation Therapy definition as Procedure, Order and replaced by SNOMEDCT 456381000124102 which is Injection of leuprolide acetate for twelve month period (regime/therapy) |
| **Transmission Format** | TBD |
| **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** | None |
| **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 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" )
or exists ( "No Bone Density Scan Performed 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" )
    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 after start of 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
)
```

### 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

```
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

```
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

- code "Injection of leuprolide acetate for twelve month period (regime/therapy)" ("SNOMEDCT Code (456381000124102)")
- 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 "Male" (2.16.840.1.113883.3.560.100.1)
- 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)"

- "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 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 |
|---|---|