### Intravesical Bacillus-Calmette-Guerin for non-muscle invasive bladder cancer

<table>
<thead>
<tr>
<th>eCQM Title</th>
<th>Intravesical Bacillus-Calmette-Guerin for non-muscle invasive bladder cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>eCQM Identifier (Measure Authoring Tool)</td>
<td>646</td>
</tr>
<tr>
<td>eCQM Version Number</td>
<td>2.0.000</td>
</tr>
<tr>
<td>NQF Number</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>GUID</td>
<td>224b1722-aef9-4e7f-97f8-284267fc1b00</td>
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<tr>
<td>Measurement Period</td>
<td>January 1, 20XX through December 31, 20XX</td>
</tr>
<tr>
<td>Measure Steward</td>
<td>Oregon Urology</td>
</tr>
<tr>
<td>Measure Developer</td>
<td>Oregon Urology</td>
</tr>
</tbody>
</table>

**Endorsed By:** None

**Description:**

Percentage of patients initially diagnosed with non-muscle invasive bladder cancer and who received intravesical Bacillus-Calmette-Guerin (BCG) within 6 months of bladder cancer staging.

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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.

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**Measure Scoring:** Proportion

**Measure Type:** Process

**Stratification:** None

**Risk Adjustment:** None

**Rate Aggregation:** None

**Rationale:**

Bladder cancer is ranked 10th for new cancer cases in 2020 and is the 9th leading cause of cancer death in the United States. There are 81,400 estimated new cases in 2020 and 17,980 estimated deaths in 2020. In 2016, there were an estimated 699,450 people living with bladder cancer in the United States. Early detection (discovery of cancer in situ or localized to the primary site) is found in 85% of the patients, and with these there is a five-year survival rate of 95.8% for In Situ and 69.2% for Localized. Bladder cancer is rarely found in patients under age 20, with the median age of diagnosis being 73 (NIH SEER State Facts:Bladder Cancer SEER April,2020)

NCCN Guidelines for Bladder Cancer (version 6.2020) defines intravesical Bacillus-Calmette-Guerin (BCG) as Category 1 Treatment for Ta - high grade, T1 and Tis non-muscle invasive bladder cancer. Most public data reflects prophylactic or adjuvant use of intravesical therapy with the goal of preventing recurrence or delaying progression to a higher grade or stage. BCG has been shown to be effective as prophylaxis to prevent bladder cancer recurrences following TURBT. The NCCN Bladder Cancer Panel Members recommend BCG as the preferred option over Mitomycin C for adjuvant treatment of high-grade lesions (T2). BCG is also standard therapy for Primary Tis. Most T1 lesions are high risk and are similarly treated with adjuvant intravesical therapy with BCG being a Category 1 recommendation. (NCCN guidelines 6.2020)

Intravesical BCG should be administered within 6 months of the initial diagnosis of non-muscle invasive bladder cancer. It may be administered 3-4 weeks after resection, but there needs to be pathological tumor confirmation and must be withheld if there is traumatic catheterization, bacteriuria, persistent gross hematuria, persistent severe local symptoms or systemic symptoms. The normal induction course is 6 weekly instillations of intravesical BCG (AUA Non-Muscle Invasive Bladder Cancer and AUA Guideline for the Management of Non-muscle Invasive Bladder Cancer: Stages Ta High Risk, T1 and TIS).

A higher score is the preferred result and indicates better quality

**Reference Type:** CITATION

**Reference:**


https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3206145/

**Reference Type:** CITATION

**Reference:**


https://www.auanet.org/education/guidelines/non-muscle-invasive-bladder-cancer.cfm'

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https://www.uptodate.com/contents/treatment-of-primary-non-muscle-invasive-urothelial-bladder-cancer?source=search_result&search=Treatment%20of%20primary%20non-muscle%20invasive%20urothelial%20bladder%20cancer&selectedTitle=1~150 T of primary'

Intravesical - Within the urinary bladder
Bacillus Calmette-Guerin (BCG) - A live attenuated strain of Mycobacterium bovis, first indicated as a tuberculosis vaccine, has had widespread use in intravesical immunotherapy since the 1970's.
Tumor location: urinary bladder
Histology: urothelial carcinoma
Primary Tumor (T) stage:
Ta - Noninvasive and high grade
Tis - Carcinoma in situ: "flat tumor"
T1- tumor invades subepithelial connective tissue (high grade or low grade)
Ta bladder cancer must be high grade Ta only and is supported by the 2016 AUA guidelines and 2018 NCCN guidelines.
The BCG dose can be full or partial and can be from any lot or manufacturer.

This eCQM is a patient-based measure.

Telehealth encounters are not eligible for this measure because the measure requires a clinical action that cannot be conducted via telehealth.

This version of the eCQM uses QDM version 5.5. Please refer to the eCQI resource center (https://ecqi.healthit.gov/qdm) for more information on the QDM.

Transmission Format
None

Initial Population
All patients initially diagnosed with T1, Tis or high grade Ta non-muscle invasive bladder cancer and a qualified encounter in the measurement period.

Denominator
Equals Initial population

Immunosuppressed patients, includes HIV and immunocompromised state.
Immunosuppressive drug therapy.
Active Tuberculosis.
Mixed histology urothelial cell carcinoma including micropapillary, plasmacytoid, sarcomatoid, adenocarcinoma and squamous disease.
Patients who undergo cystectomy, chemotherapy or radiation within 6 months of Bladder Cancer Staging.

Numerator
Intravesical Bacillus-Calmette Guerin (BCG) instillation for initial dose or series.
BCG is initiated within 6 months of the bladder cancer staging and during the measurement period.

Transmission Format
None

Initial Population
All patients initially diagnosed with T1, Tis or high grade Ta non-muscle invasive bladder cancer and a qualified encounter in the measurement period.

Denominator
Equals Initial population

Immunosuppressed patients, includes HIV and immunocompromised state.
Immunosuppressive drug therapy.
Active Tuberculosis.
Mixed histology urothelial cell carcinoma including micropapillary, plasmacytoid, sarcomatoid, adenocarcinoma and squamous disease.
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Intravesical Bacillus-Calmette Guerin (BCG) instillation for initial dose or series.
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Transmission Format
None

Initial Population
All patients initially diagnosed with T1, Tis or high grade Ta non-muscle invasive bladder cancer and a qualified encounter in the measurement period.

Denominator
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Immunosuppressed patients, includes HIV and immunocompromised state.
Immunosuppressive drug therapy.
Active Tuberculosis.
Mixed histology urothelial cell carcinoma including micropapillary, plasmacytoid, sarcomatoid, adenocarcinoma and squamous disease.
Patients who undergo cystectomy, chemotherapy or radiation within 6 months of Bladder Cancer Staging.

Numerator
Intravesical Bacillus-Calmette Guerin (BCG) instillation for initial dose or series.
BCG is initiated within 6 months of the bladder cancer staging and during the measurement period.
exists "BCG Not Available Within 6 Months After Bladder Cancer Staging"

**Stratification**

None

**Definitions**

▲ **Acute Tuberculosis Diagnosis**

["Diagnostic": "Active Tuberculosis for Urology Care"] TB

with "Most Recent Bladder Cancer Staging Procedure" Staging

such that TB.prevalencePeriod overlaps after Global."NormalizeInterval" ( Staging.relevantDatetime, Staging.relevantPeriod )

▲ **BCG Not Available Within 6 Months After Bladder Cancer Staging**

( ["Medication, Not Administered": "BCG Bacillus Calmette Guerin for Urology Care"] BCGnotGiven

with "Most Recent Bladder Cancer Staging Procedure" Staging

such that BCGnotGiven.authorDatetime 6 months or less after start of Global."NormalizeInterval" ( Staging.relevantDatetime, Staging.relevantPeriod )

and BCGnotGiven.authorDatetime in "Measurement Period"

where BCGnotGiven.negationRationale in "Unavailability of Bacillus Calmette Guerin for urology care"
)

▲ **Bladder Cancer Diagnoses**

["Diagnostic": "Bladder Cancer for Urology Care"] BladderCancer

where BladderCancer.prevalencePeriod starts before end "Measurement Period"

▲ **Chemotherapy Exclusion**

["Medication, Active": "Chemotherapy for Advanced Cancer"] Chemotherapy

with "Most Recent Bladder Cancer Staging Procedure" Staging

such that Global."NormalizeInterval" ( Chemotherapy.relevantDatetime, Chemotherapy.relevantPeriod ) starts 6 months or less before Staging.relevantPeriod

▲ **Cystectomy Done**

["Procedure, Performed": "Cystectomy for Urology Care"] Cystectomy

with "Most Recent Bladder Cancer Staging Procedure" Staging

such that Global.EarliestOf ( Cystectomy.relevantDatetime, Cystectomy.relevantPeriod ) 6 months or less before Staging.relevantPeriod

▲ **Denominator**

"Initial Population"

▲ **Denominator Exception**

exists "BCG Not Available Within 6 Months After Bladder Cancer Staging"

▲ **Denominator Exclusion**

"HIV Diagnosis"

or exists "Immunocompromised Conditions Diagnosis"

or exists "Immunosuppressive Drugs"

or exists "Acute Tuberculosis Diagnosis"

or exists "Mixed Histology Urothelial Cell Carcinoma"

or exists "Cystectomy Done"

or exists "Chemotherapy Exclusion"

or exists "Radiation Done"

▲ **First BCG Administered**

First(["Medication, Administered": "BCG Bacillus Calmette Guerin for Urology Care"] BCG

with "Most Recent Bladder Cancer Staging Procedure" Staging

such that Global."NormalizeInterval"(BCG.relevantDatetime, BCG.relevantPeriod)starts 6 months or less after Staging.relevantPeriod

and Global."NormalizeInterval"(BCG.relevantDatetime, BCG.relevantPeriod)starts during "Measurement Period"

sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)
)

▲ **Has Most Recent Bladder Cancer Tumor Staging is Ta HG, T1, T1**

"Most Recent Bladder Cancer Staging Procedure".result ~ "T1: Urinary tract tumor invades subepithelial connective tissue (finding)"

or "Most Recent Bladder Cancer Staging Procedure".result ~ "Ta: Noninvasive papillary carcinoma (urinary tract) (finding)"

or "Most Recent Bladder Cancer Staging Procedure".result ~ "Tis: Carcinoma in situ (flat tumor of urinary bladder) (finding)"

or "Most Recent Bladder Cancer Staging Procedure".result ~ "Carcinoma in situ of bladder"

▲ **Has Qualifying Encounter**

exists ["Encounter, Performed": "Office Visit"] ValidEncounter

where ValidEncounter.relevantPeriod during "Measurement Period"

▲ **HIV Diagnosis**

exists ["Diagnosis": "HIV"] HIV

with "Most Recent Bladder Cancer Staging Procedure" Staging

such that HIV.prevalencePeriod starts on or before start of Staging.relevantPeriod

▲ **Immunocompromised Conditions Diagnosis**

["Diagnostic": "Immunocompromised Conditions"] ImmunocompromisedDiagnosis

with "Most Recent Bladder Cancer Staging Procedure" Staging

such that ImmunocompromisedDiagnosis.prevalencePeriod starts on or before start of Global."NormalizeInterval" ( Staging.relevantDatetime, Staging.relevantPeriod )

▲ **Immunosuppressive Drugs**
Initial Population

exists ( "Bladder Cancer Diagnoses" )
and "Has Most Recent Bladder Cancer Tumor Staging is Ta HG, Tis, T1"
and "Has Qualifying Encounter"

Mixed Histology Urothelial Cell Carcinoma

["Diagnosis": "Mixed histology urothelial cell carcinoma for Urology Care"] MixedHistology
with "Most Recent Bladder Cancer Staging Procedure" Staging
such that MixedHistology.prevalencePeriod starts on or before start of Global."NormalizeInterval" ( Staging.relevantDatetime, Staging.relevantPeriod )

Most Recent Bladder Cancer Staging Procedure

Last(["Procedure, Performed": "Cancer staging (tumor staging)"]) Staging
with "Bladder Cancer Diagnoses" BladderCancer
such that Global."NormalizeInterval"(Staging.relevantDatetime, Staging.relevantPeriod)starts on or before day of start BladderCancer.prevalencePeriod and Global."NormalizeInterval"(Staging.relevantDatetime, Staging.relevantPeriod)overlaps day of BladderCancer.prevalencePeriod

sort by start of Global."NormalizeInterval"(relevantDatetime, relevantPeriod)

Numerator

"First BCG Administered" is not null

Radiation Done

["Procedure, Performed": "Combined radiotherapy (procedure)"] Radiation
with "Most Recent Bladder Cancer Staging Procedure" Staging
such that Global."NormalizeInterval" ( Radiation.relevantDatetime, Radiation.relevantPeriod ) starts 6 months or less before Staging.relevantPeriod

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

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 "Cancer staging (tumor staging)" ("SNOMEDCT Code (258232002)"
- code "Carcinoma in situ of bladder" ("ICD10CM Code (D09.0)"
- code "Combined radiotherapy (procedure)" ("SNOMEDCT Code (169331000)"
- code "T1: Urinary tract tumor invades subepithelial connective tissue (finding)" ("SNOMEDCT Code (369935001)"
- code "Ta: Noninvasive papillary carcinoma (urinary tract) (finding)" ("SNOMEDCT Code (369949005)"
- code "Tis: Carcinoma in situ (flat tumor of urinary bladder) (finding)" ("SNOMEDCT Code (369934002)"
- valueset "Active Tuberculosis for Urology Care" (2.16.840.1.113762.1.4.1151.56)
- valueset "BCG Bacillus Calmette Guerin for Urology Care" (2.16.840.1.113762.1.4.1151.52)
- valueset "Bladder Cancer for Urology Care" (2.16.840.1.113762.1.4.1151.45)
- valueset "Chemotherapy for Advanced Cancer" (2.16.840.1.113883.3.7543.3.1048)
- valueset "Cystectomy for Urology Care" (2.16.840.1.113762.1.4.1151.55)
- valueset "Ethnicity" (2.16.840.1.114222.4.11.837)
- valueset "HIV" (2.16.840.1.113883.3.464.1003.120.12.1003)
- valueset "Immunocompromised Conditions" (2.16.840.1.113883.3.666.5.1940)
- valueset "Immunosuppressive Drugs for Urology Care" (2.16.840.1.113762.1.4.1151.32)
- valueset "Mixed histology urothelial cell carcinoma for Urology Care" (2.16.840.1.113762.1.4.1151.39)
- valueset "Office Visit" (2.16.840.1.113883.3.464.1003.101.12.1001)
Data Criteria (QDM Data Elements)

- "Diagnosis: Active Tuberculosis for Urology Care" using "Active Tuberculosis for Urology Care (2.16.840.1.113762.1.4.1151.56)"
- "Diagnosis: Bladder Cancer for Urology Care" using "Bladder Cancer for Urology Care (2.16.840.1.113762.1.4.1151.45)"
- "Diagnosis: HIV" using "HIV (2.16.840.1.113883.3.464.1003.120.12.1003)"
- "Diagnosis: Immunocompromised Conditions" using "Immunocompromised Conditions (2.16.840.1.113883.3.666.5.1940)"
- "Diagnosis: Mixed histology urothelial cell carcinoma for Urology Care" using "Mixed histology urothelial cell carcinoma for Urology Care (2.16.840.1.113762.1.4.1151.39)"
- "Encounter, Performed: Office Visit" using "Office Visit (2.16.840.1.113883.3.464.1003.101.12.1001)"
- "Medication, Active: Chemotherapy for Advanced Cancer" using "Chemotherapy for Advanced Cancer (2.16.840.1.113883.3.7643.3.1048)"
- "Medication, Active: Immunosuppressive Drugs for Urology Care" using "Immunosuppressive Drugs for Urology Care (2.16.840.1.113762.1.4.1151.32)"
- "Medication, Administered: BCG Bacillus Calmette Guerin for Urology Care" using "BCG Bacillus Calmette Guerin for Urology Care (2.16.840.1.113762.1.4.1151.52)"
- "Patient Characteristic Ethnicity: Ethnicity" using "Ethnicity (2.16.840.1.114222.4.11.837)"
- "Patient Characteristic Race: Race" using "Race (2.16.840.1.114222.4.11.3591)"
- "Medication, Not Administered: BCG Bacillus Calmette Guerin for Urology Care" using "BCG Bacillus Calmette Guerin for Urology Care (2.16.840.1.113762.1.4.1151.52)"
- "Procedure, Performed: Cancer staging (tumor staging)" using "Cancer staging (tumor staging) (SNOMEDCT Code 258232002)"
- "Procedure, Performed: Combined radiotherapy (procedure)" using "Combined radiotherapy (procedure) (SNOMEDCT Code 169331000)"
- "Procedure, Performed: Cystectomy for Urology Care" using "Cystectomy for Urology Care (2.16.840.1.113762.1.4.1151.55)"

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 |