Urinary Tumor Markers for Bladder Cancer

Description of Procedure or Service

The diagnosis of bladder cancer is generally made by cystoscopy and biopsy. Moreover, bladder cancer has a very high frequency of recurrence and therefore requires follow-up cystoscopies, along with urine cytology, as periodic surveillance to identify recurrence early. Consequently, urine biomarkers that might be used to either supplement or supplant these tests have been actively investigated.

Background

Urinary bladder carcinoma, a relatively common form of cancer in the United States, results in significant morbidity and mortality. Bladder cancer (urothelial carcinoma) typically presents as a tumor confined to the superficial mucosa of the bladder. The most common symptom of early bladder cancer is hematuria; however, urinary tract symptoms (i.e., urinary frequency, urgency and dysuria) may also occur. Cigarette smoking is an important risk factor for urothelial carcinoma. The 2012 guidelines from the American Urological Association on the evaluation of microscopic hematuria, which were reviewed and affirmed in 2016, have recommended cystoscopic evaluation of adults older than age 40 years with microscopic hematuria and for those younger than age 40 years with microscopic hematuria and risk factors for developing bladder cancer. Confirmatory diagnosis of bladder cancer must be made by cystoscopic examination, which is considered to be the criterion standard, and biopsy. At initial diagnosis, approximately 70% of patients have cancers confined to the epithelium or subepithelial connective tissue. Non-muscle invasive disease is usually treated with transurethral resection, with or without intravesical therapy, depending on depth of invasion and tumor grade. However, a 50% to 75% incidence of recurrence has been noted in these patients, with 10% to 15% progressing to muscle invasion over a 5-year period. Current follow-up protocols include flexible cystoscopy and urine cytology every 3 months for 1 to 3 years, every 6 months for an additional 2 to 3 years, and then annually thereafter, assuming no recurrence. While urine cytology is a specific test (from 90–100%), its sensitivity is lower, ranging from 50%–60% overall and is considered even lower for low-grade tumors. Therefore, interest has been reported in identifying tumor markers in voided urine that would provide a more sensitive and objective test for tumor recurrence.

Adjunctive testing to urine cytology has used a variety of nuclear and cytoplasmic targets, and a range of molecular pathology and traditional (e.g., immunohistochemistry) methods.

Tests cleared by the U.S. Food and Drug Administration (FDA):

The BTA (bladder tumor antigen) stat® test, (Polymedco Inc., Cortlandt Manor, NY) is a point-of-care immunoassay that identifies a human complement factor H-related protein. The BTA stat® test is intended for the qualitative detection of bladder tumor-associated antigen in the urine of persons diagnosed with bladder cancer.
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The BTA TRAK® test (Polymedco Inc., Cortlandt Manor, NY) is a reference laboratory immunoassay that identifies a human complement factor H-related protein. The test provides a quantitative detection of bladder tumor–associated antigen in the urine of persons diagnosed with bladder cancer.

The Alere NMP22® (Alere) is an immunoassay that tests for NMP22 protein and provides in vitro quantitative determination of the nuclear mitotic apparatus protein (NuMA) in stabilized voided urine. It is used as an adjunct to cystoscopy. BladderChek® (Alere) is a point of care immunoassay that tests for NMP22 protein and is used as an adjunct to cystoscopy.

Fluorescence in situ hybridization (FISH) is a molecular cytogenetic technology that can be used with either DNA or RNA probes to detect chromosomal abnormalities. DNA FISH probe technology involves the creation of short sequences of fluorescently labeled, single-strand DNA probes that match target sequences. The probes bind to complementary strands of DNA, allowing for identification of the location of the chromosomes targeted. DNA FISH probes have been used to detect chromosomal abnormalities in voided urine to assist in bladder cancer surveillance and in the initial identification of bladder cancer. Vysis UroVysion® (Abbott Molecular) is a commercially available FISH test.

The ImmunoCyt™ test and uCYT+™ (Scimedx) use fluorescence immunohistochemistry to detect antibodies to a mucin glycoprotein and a carcinoembryonic antigen (CEA). These tests are used for monitoring as an adjunct to cystoscopy.

With the exception of the ImmunoCyt™ test, which is only cleared for monitoring bladder cancer recurrence, all tests are FDA-cleared as adjuncts to standard procedures for use in the initial diagnosis of bladder cancer and surveillance of bladder cancer patients.

In addition to FDA-cleared tests, clinical laboratories may develop and validate tests in-house and market them as a laboratory service: laboratory-developed tests (LDTs) must meet the general regulatory standards of the Clinical Laboratory Improvement Amendments (CLIA). Urine-based tests are available under the auspices of CLIA. Laboratories that offer LDTs must be licensed by CLIA for high-complexity testing. To date, the U.S. Food and Drug Administration has chosen not to require any regulatory review of these tests. Laboratory-developed tests include:

- Cxbladder Monitor (Pacific Edge) measures the expression of 5 genes (MDK, HOXA13, CDC2, IGFBP5, CXCR2). Pacific Edge also has Cxbladder Detect and Cxbladder Triage tests.
- PolyPDX™ (Metabonomic Technologies) is a urine metabolite assay that uses liquid chromatography–mass spectrometry. An algorithm compares urine metabolite concentrations to determine the likelihood of colonic adenomatous polyps.

**Related Policies**

None

***Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.***

**Policy**

BCBSNC will provide coverage for Urinary Tumor Markers for Bladder Cancer when it is determined to be medically necessary because the medical criteria and guidelines shown below are met.

**Benefits Application**
Urinary Tumor Markers for Bladder Cancer

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

When Urinary Tumor Markers for Bladder Cancer are covered

Initial evaluation

The following urinary bladder tumor markers may be considered medically necessary as an adjunct in the diagnostic exclusion of bladder cancer only in conjunction with current standard diagnostic procedures for patients who have an atypical or equivocal cytology:

- BTA stat®, BTA TRAK®;
- NMP22®, NMP22 Bladder Chek®;
- UroVysion™.

Bladder cancer surveillance

The following urinary bladder cancer tumor markers may be considered medically necessary as an adjunct in the monitoring of bladder cancer only in conjunction with current standard diagnostic procedures:

- BTA stat®, BTA TRAK®;
- Immunocyt™;
- NMP22®, NMP22 Bladder Chek®;
- UroVysion™.

* FDA Approved indications

When Urinary Tumor Markers for Bladder Cancer are not covered

The following urinary bladder tumor markers are considered investigational in the initial diagnosis of bladder cancer:

- ImmunoCyt™, UCyt+™

Urinary bladder cancer tumor markers are considered investigational for routine screening for bladder cancer in low or high risk individuals.

All other bladder cancer tumor markers not addressed under “When Urinary Tumor Markers for Bladder Cancer are covered” are considered investigational in the diagnosis, monitoring, or screening for bladder cancer.

The use of urinary tumor markers is considered investigational in the screening for precancerous colonic polyps.

Policy Guidelines

For the purpose of this policy, standard diagnostic procedures for bladder cancer consist of urine cytology and cystoscopy, with or without biopsy.

Numerous well-designed studies have evaluated the diagnostic performance of the FDA-approved urinary tumor markers. Overall, studies have found reasonable sensitivities and specificities, and a recent study found that that one or two of these urinary tumor markers can enhance the sensitivity of urinary cytology. Studies describing other, non-FDA approved markers generally involve limited numbers of patients, and they have not been compared to urinary cytology or the
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commercially available tests. Based on the available evidence, the FDA-approved urinary markers are considered medically necessary for their approved indications when used in conjunction with standard diagnostic procedures for patients who have an atypical or equivocal cytology, and other markers are considered investigational.

For individuals who are asymptomatic and at a population-level risk of bladder cancer who receive urinary tumor marker tests, the evidence includes a 2010 systematic review and several uncontrolled prospective and retrospective studies. Relevant outcomes are overall survival, disease-specific survival, and test accuracy and validity. The systematic review (conducted for the U.S. Preventive Services Task Force [USPSTF]) did not identify any randomized controlled trials, the preferred trial design to evaluate the impact of population-based screening, and found only one prospective study that USPSTF rated as poor quality. A more recent retrospective study, reporting on a population-based screening program in the Netherlands, had low diagnostic yield. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who are asymptomatic and at a population-level risk of colon cancer who receive urinary tests for precancerous polyps, evidence includes a validation study. Relevant outcomes are overall survival, disease-specific survival, and test accuracy and validity. A urine metabolite assay for adenomatous polyps is at a very early stage of development, with a report of a training and validation set published in 2017. Current evidence does not support the diagnostic accuracy of urinary tumor markers to screen asymptomatic individuals for precancerous polyps. The evidence is insufficient to determine the effects of the technology on health outcomes.

**Billing/Coding/Physician Documentation Information**

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

*Applicable service codes: 86294, 86316, 86386, 88120, 88121, 88271, 88299, 88367, 88368, 88369, 88373, 88374, 88377, 81599, 0002U, 0012M, 0013M*

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

**Scientific Background and Reference Sources**

**Original Policy named: Tumor Markers**


Conference call with the American Society of Clinical Oncology (ASCO) - 7/2001 (clarification of 2000 ASCO guidelines)


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Medical Director – 10/2010

Tumor Marker Policy Separated – New Name Urinary Tumor Markers for Bladder Cancer


Specialty Matched Consultant Advisory Panel review 12/2012
Medical Director review 3/2013


Specialty Matched Consultant Advisory Panel review 11/2013
Medical Director review 11/2013


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Specialty Matched Consultant Advisory Panel 11/2017


Specialty Matched Consultant Advisory Panel 11/2018

Policy Implementation/Update Information


8/16/11 Reworded 8th bullet in “Description”, under Other Urinary Markers to indicate “Cytokeratin 8, 18, 19, 20”. Reference added. (btw)

1/1/12 Added new 2012 CPT code, 86386, to the “Billing/Coding” section. (btw)

5/15/12 Specialty Matched Consultant Advisory Panel review 4/18/2012. The When Not Covered section re-formatted; no change to policy intent. (btw)

4/1/13 Specialty Matched Consultant Advisory Panel review 12/2012. Removed the following statement from the “When not Covered” section: “Urinary bladder tumor markers are considered investigational for screening for bladder cancer in asymptomatic patients.” Revised statement in the “When Covered” section: “The following urinary bladder tumor markers may be considered medically necessary as an adjunct in the diagnosis of bladder cancer only in conjunction with current standard diagnostic procedures for patients who have an atypical or equivocal cytology...” Revised headers in “When Covered” from “Bladder cancer monitoring” to “Bladder cancer surveillance” and “Initial Diagnosis” to “Initial Evaluation.” Medical Director review 3/2013. (mco)

5/14/13 Description section updated. References updated. No changes to Policy Statements. (mco)

12/10/13 Description section updated to include new test “CxBladder.” “CxBladder added to the “When not Covered” section. Unlisted CPT code 81599 added to “Billing/Coding” section. Specialty Matched Consultant Advisory Panel review 11/2013. Medical Director review 11/2013. (mco)

4/29/14 References updated. No changes to Policy Statements. (mco)

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12/30/14 Added codes 88369, 88373, 88374, and 88377 to Billing/Coding section for effective date 1/1/2015. (sk)

4/28/15 Reference added. (sk)

12/30/15 Specialty Matched Consultant Advisory Panel review 11/18/2015. (sk)

2/29/16 Reference added. (sk)


7/28/17 Reference added. Description section updated. Policy Guidelines section updated. (sk)


Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.