

MEDICAL POLICY

MEDICAL POLICY DETAILS	
Medical Policy Title	GENE EXPRESSION ANALYSIS FOR PROSTATE CANCER MANAGEMENT
Policy Number	2.02.48
Category	Technology Assessment
Effective Date	08/20/15
Revised Date	12/15/16, 02/15/18, 12/20/18, 12/19/19
Product Disclaimer	<ul style="list-style-type: none"> • If a product excludes coverage for a service, it is not covered, and medical policy criteria do not apply. • If a commercial product (including an Essential Plan product) or a Medicaid product covers a specific service, medical policy criteria apply to the benefit. • If a Medicare product covers a specific service, and there is no national or local Medicare coverage decision for the service, medical policy criteria apply to the benefit.

POLICY STATEMENT

Based on our criteria and assessment of the peer-reviewed literature, all gene expression analyses (e.g., Oncotype DX[®] Genomic Prostate Score, Prolaris[®] Assay, Confirm MDx[®] Assay, or Decipher[®] Prostate Cancer Classifier Assay) to guide management of prostate cancer are considered **investigational**.

POLICY GUIDELINES

- I. Prolaris[®] Assay, Oncotype DX[®] Genomic Prostate Score, Confirm MDx[®] Assay, and Decipher[®]-Prostate Cancer Classifier Assay are cleared for marketing by the U. S. Food and Drug Administration. Each is available under the auspices of the Clinical Laboratory Improvement Act (CLIA). Clinical laboratories may develop and validate tests in-house (laboratory-based tests (LDTs)) and market them as a laboratory service. LDTs must meet the general regulatory standards of the CLIA. Laboratories that offer LDTs must be licensed by CLIA for high-complexity testing.
- II. The Federal Employee Health Benefit Program (FEHBP/FEP) requires that procedures, devices or laboratory tests approved by the U.S. Food and Drug Administration (FDA) may not be considered investigational and thus these procedures, devices or laboratory tests may be assessed only on the basis of their medical necessity.

DESCRIPTION

Prostate cancer is the second most common cancer in the United States with a five (5)-year overall survival of nearly 100% because the vast majority of prostate cancer diagnosed is localized disease. Treatment for prostate cancer may include radical prostatectomy, radiation therapy, androgen deprivation therapy, or a combination of any of these treatment options. It has been shown that prostate cancer specific mortality is low with indolent disease often going undiagnosed in men who die of other causes. Men with newly diagnosed prostate cancer can have either aggressive or indolent forms of the disease and current tools are unable to discriminate between the two. Consequently men are treated as though they have aggressive disease which leads to overtreatment. The USPSTF has recommended against widespread prostate-specific antigen (PSA) screening for prostate cancer because the prevalence of overtreatment harms more patients than it benefits. The American Urological Association (AUA) has a similar statement to partially align with the USPSTF. Better options are needed to stratify patients and to confirm the type of prostate cancer so that patients with aggressive disease receive treatment while those with a more indolent disease may be treated more conservatively and may benefit from active surveillance.

Three tests have been developed to address this issue; Oncotype DX[®] for prostate cancer (Genomic Health, Redwood City, CA), Prolaris[®] (Myriad Genetics, Salt Lake City, UT), and ConfirmMDx[®] (MDx Health, Irvine, CA) . The Oncotype DX[®] test is a multigene RT-PCR assay designed to analyze underlying tumor biology in tumor tissue from diagnostic

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formalin-fixed paraffin-embedded (FFPE) core needle biopsies. The test includes 5 reference genes and 12 cancer genes representing distinct biological pathways with a known role in prostate tumorigenesis. Reference gene normalization is used to control for sources of pre-analytical and analytical variability as well as allow for variable RNA inputs. The Genomic Prostate Score (GPS) is calculated from the reference normalized expression of the 12 cancer-related genes. Oncotype DX[®] is different from other Oncotype DX assays such as the Oncotype DX[®] for the breast because RNA input levels are 110-180 fold less. The GPS score ranges from 0 to 100 with the higher score reflecting a higher risk. The Prolaris test is a gene expression based assay that directly measures tumor cell growth characteristics in 31 genes related to cell cycle progression and 15 housekeeping genes. A cell cycle progression (CCP) score is determined which is used to predict 10 year prostate cancer specific disease progression and mortality. CCP scores range from -3.0 to 7.0 with the higher score indicating higher estimated 10 year prostate cancer risk. ConfirmMDx[®] assesses the methylation status of 3 biomarkers (GSTP1, RASSF1, APC) associated with prostate cancer. ConfirmMDx is intended for use in patients with high-risk factors such as elevated/rising prostate-specific antigen (PSA) or abnormal digital rectal examination (DRE), with a negative or non-malignant abnormal histopathology finding (e.g., atypical cell or high grade prostate intraepithelial neoplasia (HGPIN)) in the previous biopsy, and is being considered for repeat biopsy. The Decipher[®] test predicts the probability of metastasis after surgery and provides an independent assessment of tumor aggressiveness with information distinct from that provided by Gleason score or PSA. The Decipher Test uses the expression of 2 RNA biomarkers involved in multiple biological pathways across the genome that are associated with aggressive prostate cancer to calculate the probability of clinical metastasis within 5 years of radical prostatectomy surgery.

RATIONALE

Analytical validity of the Oncotype DX[®] assay was reported by Knezevic et al (2013) which showed that the assay could accurately measure expression of the 12 cancer-related and 5 reference genes over a range of absolute RNA inputs (0.005-320 ng) with a detection limit of 0.05 ng/ml. The analytic accuracy showed average variation of less than 9.7% across all samples at RNA inputs typical of needle biopsy specimens. The amplification efficiency for the 17 genes in the test ranged from 88% to 100%, with a median of 93% (SD=6%) for all 17 genes in the assay. Analytic precision was assessed by examining variability between replicate results obtained using the same messenger RNA (mRNA) input.

Reproducibility was measured by calculating both within and between mRNA input variation. A low input level of 5 ng mRNA was used to reflect the lowest 2.5 percentile of a tumor sample of 0.023 cm³. When converted to GPS units (unit measure for reporting test results), the standard deviation for analytic precision was 1.86 GPS units (95% confidence interval [CI], 1.60 to 2.20) on the 100-unit scale. The standard deviation for reproducibility was 2.11 GPS units (95% CI, 1.83 to 2.50) on the 100-point scale. Analytical validity for the Prolaris[®] test has yet to be specifically identified in the literature but has been suggested by studies on the performance of the TaqMan array platform which is used in both of these tests.

Klein et al., (2014) suggested that incorporation of GPS would be expected to lead to fewer treatments of patients who have favorable pathology at prostatectomy without increasing the number of patients with adverse pathology left untreated. However in this study all patients received a radical prostatectomy within 6 months of diagnostic biopsy. No studies have been identified which address GPS in clinical practice and how treatment decisions were changed based on the score. Two studies reported on the potential impact of the Prolaris[®] CCP score on physician's treatment plans. Treatment might have potentially changed or definitely would have changed in up to 33% of the cohort studied. The authors of both studies suggest that physicians perceive the CCP signature as clinically useful and would likely use it to justify use of more conservative management options such as active surveillance. However patient preference was not factored in to either of the studies. No studies have directly assessed the clinical validity of either test.

The evidence for the Decipher[®] prostate cancer classifier in patients who have high-risk prostate cancer post radical prostatectomy includes 1 study of analytic validity, eight (8) studies using archived samples (seven (7) prospective-

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retrospective designs, one (1) case-control) examining clinical validity, and six (6) decision curve analyses examining indirect evidence for clinical utility, and one (1) prospective decision impact study. Relevant outcomes include overall survival, disease-specific survival, test accuracy, test validity, quality of life, and treatment-related morbidity. The clinical validity of the Decipher® genomic classifier has been evaluated in samples of patients with high-risk prostate cancer undergoing different interventions following radical prostatectomy. Studies reported some incremental improvement in discrimination. However, it is unclear whether there is consistent improved reclassification—particularly to higher risk categories—or whether the test could be used to predict which men will benefit from radiotherapy.

A 2013 Blue Cross Blue Shield TEC Assessment of gene expression analysis for prostate cancer management assessed the incremental value of gene expression tests for discriminating men with aggressive and indolent disease to guide treatment decisions that improve net health outcomes. The TEC Assessment concluded there was no evidence available on the clinical utility of either test for any clinical end point. There was insufficient evidence to determine whether Prolaris® or Oncotype Dx® Prostate tests affect the net health outcome, or whether the incremental value of either Prolaris® or Oncotype Dx® Prostate gene expression test compared with clinical criteria for discriminating men with aggressive and indolent disease to guide treatment decisions that improve the net health outcome, or whether the Prolaris® or Oncotype Dx® Prostate tests improve health outcomes in the investigational setting. TEC criteria were not met for either the Prolaris® or the Oncotype Dx® Prostate gene expression test.

The National Comprehensive Cancer Network NCCN Guidelines (2018) include prostate cancer tumor-based molecular assays may be considered to improve decision-making in newly diagnosed men considering active surveillance and in treated men considering adjuvant therapy or treatment for recurrence. Uncertainty about the risk of disease progression can be reduced if such molecular assays can provide accurate and reproducible prognostic or predictive information beyond NCCN risk group assignment and currently available life expectancy tables and nomograms. Retrospective case cohort studies have shown that these assays provide prognostic information independent of NCCN risk groups, which include likelihood of death with conservative management, likelihood of biochemical recurrence after radical prostatectomy or EBRT, and likelihood of developing metastasis after operation or salvage EBRT. No randomized controlled trials have studied the utility of these tests. Several of these assays are available, and 4 have received positive reviews by the Molecular Diagnostic Program and are likely to be covered by the Centers for Medicare & Medicaid Services. Several other tests are under development, and the use of these assays is likely to increase in the coming year. Although full assessment of their utility requires prospective randomized clinical trials, which are unlikely to be done, the panel believes that men with low or favorable intermediate disease may consider the use of Decipher, Oncotype DX Prostate, Prolaris, or Promark during initial risk stratification. In addition, Decipher may be considered during work up for radical prostatectomy PSA persistence or recurrence (category 2B). Future comparative effectiveness research may allow these tests and others like them to gain additional evidence regarding their utility for better risk stratification of men with prostate cancer.

The Active Surveillance (AS) for the Management of Localized Prostate Cancer (Cancer Care Ontario Guideline): American Society of Clinical Oncology Clinical Practice Guideline Endorsement (2016) states the use of ancillary tests beyond DRE, PRE, PSA and biopsy to improve patient selection or as part of monitoring in an Active Surveillance regimen remains investigational. The AS protocol may include ancillary tests that are still under investigation. These could include multiparametric MRI (mpMRI) and/or genomic testing. mpMRI and genomic testing may be indicated when a patient's clinical findings are discordant with the pathologic findings and could be useful in identifying occult cancers or changes indicative of tumor progression in patients at risk. These tests may be helpful when the decision regarding Active Surveillance versus active treatment is uncertain (e.g., in cases of low-volume Gleason 3 + 4). mpMRI should not be used as a replacement for re-biopsy.

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CODES

- Eligibility for reimbursement is based upon the benefits set forth in the member’s subscriber contract.
- **CODES MAY NOT BE COVERED UNDER ALL CIRCUMSTANCES. PLEASE READ THE POLICY AND GUIDELINES STATEMENTS CAREFULLY.**
- Codes may not be all inclusive as the AMA and CMS code updates may occur more frequently than policy updates.

CPT Codes

Code	Description
81541 (E/I)	Oncology (prostate), MRNA gene expression profiling by real-time RT-PCR of 46 genes (31 content and 15 housekeeping), utilizing formalin-fixed paraffin-embedded tissue, algorithm reported as a disease-specific mortality risk score (Prolaris® Assay)
81551(E/I)	Oncology (prostate), promoter methylation profiling by real-time RT-PCR of 3 genes (GSTP1, APC, RASSF1), utilizing formalin-fixed paraffin-embedded tissue, algorithm reported as likelihood of prostate cancer detection on repeat biopsy (ConfirmMDx)
0047U (E/I)	Oncology (prostate), mRNA, gene expression profiling by real-time RT-PCR of 17 genes (12 content and 5 housekeeping), utilizing formalin-fixed paraffin-embedded tissue, algorithm reported as a risk score (Oncotype Dx Prostate Cancer Assay)
0005U (E/I)	Oncology (prostate) gene expression profile by real-time RT-PCR of 3 genes (ERG, PCA3, and SPDEF), urine, algorithm reported as risk score (ExosomeDx® Prostate (IntelliScore), Exosome Diagnostics, Inc

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HCPCS Codes

Code	Description
None	

ICD10 Codes

Code	Description
C61	Malignant neoplasm of prostate
D07.5	Carcinoma in situ of prostate
D29.1	Benign neoplasm of prostate
D40.0	Neoplasm of uncertain behavior of prostate
Z12.5	Encounter for screening for malignant neoplasm of prostate
Z85.46	Personal history of malignant neoplasm of prostate

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*Key Article

KEY WORDS

Prolaris[®], Oncotype DX[®] Prostate, Confirm MDX[®], Gene expression analysis for the prostate.

CMS COVERAGE FOR MEDICARE PRODUCT MEMBERS

There is currently no National Coverage Determination (NCD) or Local Coverage Determination (LCD) for gene expression analysis for prostate cancer management. However, effective 10/01/15 the Medicare Part-B carrier for California, Noridian Healthcare Solutions, established a favorable local Coverage Decision for the Molecular Diagnostic Tests for the Confirm MDx[®] Prostate Cancer Assay. This covers most of Medicare beneficiaries in all 50 states since the MDxHealth reference laboratory in Irvine, California, is within the sole jurisdiction of NHIC for purposes of Part-B coverage. Please refer to: https://www.cms.gov/medicare-coverage-database/details/lcd-details.aspx?LCDId=36327&ver=24&CntrctrSelected=363*1&Cntrctr=363&s=6&DocType=Active&bc=AggAAAQBA AAA&

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