Decipher prostate cancer classifier

Sample Patient Test Result

Decipher prostate cancer classifier BIOPSY

GenomeDx Biosciences Laboratory
10355 Science Center Dr. Suite 240, San Diego, CA 92121
Tel: 888-792-1601 | Fax: 855-324-2768
customersupport@genomedx.com | www.genomedx.com

Decipher Biopsy Report

Patient Details:

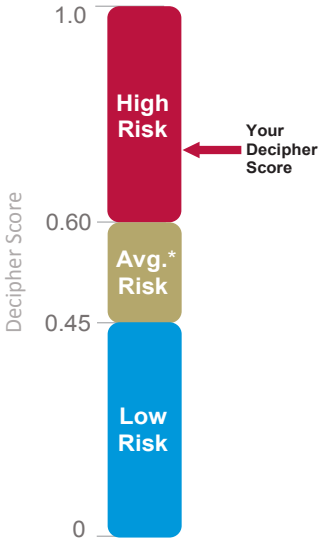
Patient Name:	**John Doe**
Medical Record Number:	**9876543**
Date of Birth:	**03/03/1950**
Date of Biopsy:	**10/06/2014**
Pathology Laboratory:	**ABC Pathology**
Pathologist:	**Dr. Pathologist**
Address:	**789 Medical Dr. There CA 98765**

Order Information:

Order Date:	**01/01/2015**
Specimen Received Date:	**01/02/2015**
GenomeDx Accession ID:	**1234567**
Specimen ID:	**7654321**
Ordering Physician:	**Dr. Joseph Doctor**
Clinic/Hospital Name:	**Urology Practice**
Clinic/Hospital Address:	**123 Maple Ave, Somewhere CA 91234**
Additional Physician:	**N/A**

Clinical Details: PSA, most recent (ng/mL): **3.9** NCCN risk category: **Low Risk** Biopsy Gleason Score: **3+3**
% Biopsy Cores Positive: **20** Clinical stage: **T1c**

BIOPSY



Your Decipher Result – Genomic High Risk

Decipher Score 0.70

Risk at RP - Percent Likelihood	
High Grade Disease (primary Gleason grade 4 or 5)	43.3%
5-Year Metastasis	16.4%
10-Year Prostate Cancer Specific Mortality	11.4%

Interpretation

Among men with a high risk Decipher prostate cancer classifier score clinical studies have shown that this cancer has an unfavorable prognosis. Men with a high risk Decipher score may not be suitable candidates for active surveillance and may benefit from intensification with multi-modal therapy.[1-3]

References on reverse

*Average clinical risk refers to the average cohort risk of metastasis at 5 years post radical prostatectomy (RP). The average cumulative incidence of metastasis was 6.0% at 5 years post radical prostatectomy, as reported by Karnes et al., 2013 from analysis of a cohort of 1,010 men with intermediate and high risk clinical features who received radical prostatectomy as first line treatment at the Mayo Clinic between 2000 and 2006.[4]

Probability of high grade disease (primary Gleason grade 4 or 5) endpoint: Decipher uses the genomic risk score to predict the probability of primary Gleason grade 4 or 5 disease upon pathologic examination of the radical prostatectomy. Probabilities were generated using a logistic regression model in a prospective cohort of 2,342 prostate cancer patients. The model is adjusted using a prevalence of 27% for a finding of primary Gleason grade 4 or 5 on radical prostatectomy among NCCN low-, intermediate- and high-risk patients.[5] Klein et al. 2016 study found Decipher Biopsy predicted high grade disease at radical prostatectomy with an AUC of 0.71.[6] The percent likelihood for this endpoint ranges from 6.5-61%.

Five-year probability of metastasis endpoint: Decipher uses the genomic risk score to predict the 5-year probability of metastasis from the time of radical prostatectomy. Probabilities were generated from a Cox proportional hazards model based upon a cohort of 1,010 men with intermediate and high risk clinical features with a median 6.9 years of follow up.[4] Klein et al. 2016 reported that Decipher Biopsy predicted 5-year metastasis with an AUC of 0.87.[6] The percent likelihood for this endpoint ranges from 0.3-67%.

Ten-year probability of prostate cancer specific mortality (PCSM) endpoint: Decipher uses the genomic risk score to predict the 10-year probability of PCSM from the time of radical prostatectomy. Probabilities are generated from a logistic regression analysis based upon a cohort of 557 patients with 112 prostate cancer deaths within 10 years post radical prostatectomy. These probabilities are adjusted for a PCSM cumulative incidence of 5% at 10 years post radical prostatectomy.[7] All non-PCSM patients in the study had at least 10 years of follow-up. Decipher had an AUC of 0.72 in predicting PCSM.[8-10] Percent likelihood for this endpoint ranges from 0.7-30.5%. This risk model has not yet been validated on prostate biopsy specimens but has been validated in multiple radical prostatectomy Decipher studies.[8-10]

GenomeDx Medical Director (Name & Signature)
Medical Directors: Timothy J. Triche, MD, PhD | Doug Dolginow, MD

Date

CLIA ID # 05D2055897

Decipher® prostate cancer classifier

Sample Patient Test Result

Decipher® prostate cancer classifier BIOPSY

GenomeDx Biosciences Laboratory
10355 Science Center Dr. Suite 240, San Diego, CA 92121
Tel: 888-792-1601 I Fax: 855-324-2768
customersupport@genomedx.com I www.genomedx.com

Test Description

Decipher uses oligonucleotide microarrays to measure 22 RNA expression biomarkers, extracted from formalin fixed paraffin embedded (FFPE) prostate biopsy specimens, to derive a Decipher score and corresponding probability of:

- High grade disease (primary Gleason grade 4 or 5)
- 5-year probability of clinical metastasis
- 10 year Prostate Cancer Specific Mortality*

All probabilities reflect the likelihood of outcome upon the patient undergoing radical prostatectomy. The Decipher score ranges from 0 to 1.0.

Intended Use

Results from Decipher are intended for use by the physician and patient as an adjunct to conventional clinical variables and models currently used for determining prognosis of patients diagnosed with localized prostate cancer by biopsy. Decipher is intended for use in those patients who present with a low, intermediate or high risk biopsy result according to NCCN Guidelines upon pathologic evaluation.

Confidence Intervals

- Probability of high grade disease reported here has a 95% confidence interval of 13.0% to 17.0%
- Probability of 5-year metastasis reported here has a 95% confidence interval of 0.2% to 2.3%
- Probability of 10-year Prostate Cancer Specific Mortality reported here has a 95% confidence interval of 0.7% to 3.5%*

Definitions

NCCN Low Risk: Includes men with a T1a, T1b, T1c, or T2a tumor AND PSA level less than 10 ng/mL, AND biopsy Gleason score of 6 or less.[7]

NCCN Intermediate Risk: Includes men with a T2b or T2c tumor OR PSA level between 10 and 20 ng/mL, OR biopsy Gleason score of 7.[7]

NCCN High Risk: Includes men with a T3a tumor, OR PSA level greater than 20 ng/mL, OR biopsy Gleason score between 8 and 10. Two or all three conditions of NCCN Intermediate Risk as listed above, is also considered as NCCN High Risk.[7]

Average Clinical Risk: Refers to the average cohort risk of clinically high risk men in the pivotal Decipher validation study (Karnes, et al.). An average clinical risk of 6.0% was established in a cohort of 1,010 clinically intermediate and high risk patients that received radical prostatectomy (robotic or open) as first line treatment at the Mayo Clinic between 2000 and 2006 (median 6.9 years of follow-up). The average incidence of metastasis was 6.0% at 5 years post radical prostatectomy.[6]

Decipher Genomic Low or High Risk: Based on the individualized genomic risk of metastasis identified by Decipher, these men have significantly higher (Decipher score >0.60) or lower (Decipher score <0.45) risk than the average clinical risk as defined above. These Decipher risk categories were selected by optimizing both the partial likelihood and hazard ratios in a series of Cox models. The categories were trained using data from the Karnes, et al. study and validated in Ross, et al. study.[6-8]

Clinical Metastasis: Regional (e.g. to regional lymph nodes) or distant (e.g. to bones) spread of cancer from the prostate as confirmed by positive CT and/or bone scan.

High Grade Disease: Primary Gleason grade 4 or 5 on surgical pathology.

References

1. Magi-Galluzzi et al., “Validation of the Decipher prostate cancer classifier for predicting 10 year postoperative metastasis from analysis of diagnostic needle biopsy specimens” presented at the 2016 Genitourinary Cancers Symposium.
2. Kim, Hyung L., et al., “Transcriptome-wide analysis of matching tumor and non-neoplastic biopsy and radical prostatectomy specimens: implications for prostate cancer biomarker signatures” presented at the 15th annual meeting of the Society of Urologic Oncology, 2014.
3. Lee, Hak J. et al., “Evaluation of a Genomic Classifier in Primary Tumor and Lymph Node Metastases in Pre- and Post-Radical Prostatectomy Tissue Specimens from Patients with Lymph Node Positive Prostate Cancer” presented at the 2015 annual meeting of the American Society of Clinical Oncology.
4. Klein et al., “Decipher Genomic Classifier Measured on Prostate Biopsy Predicts 10 Year Metastasis Risk.” 2016. Manuscript in review.
5. Erho, N. et al. “Transcriptome-wide detection of differentially expressed coding and non-coding transcripts and their clinical significance in prostate cancer.” Journal of Oncology. 2012; 2012:541353.
6. Karnes, R.J., et al. “Validation of a Genomic Classifier that Predicts Metastasis Following Radical Prostatectomy in an At Risk Patient Population.” J Urol, 2013 Dec, 190(6), 2047-2053.
7. NCCN. NCCN Clinical Guidelines in Oncology (NCCN Guideline). Prostate Cancer. Version 1. 2016. [Published November 10, 2015]; Available from: http://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf.
8. Ross A.E., et al. “Tissue Based Genomics Augment Post-Prostatectomy Risk Stratification in a Natural History Cohort of Intermediate- and High-Risk Men.” European Urology, 2015 Jun 6. doi: 10.1016/j.eururo.2015.05.042.
9. Patel H.D. et al. “Practice patterns and individual variability of surgeons performing radical prostatectomy at a high volume academic center.” J of Urology, 2015 Mar; 193(3):812-9.
10. Cooperberg, M.R., et al. “Combined Value of Validated Clinical and Genomic Risk Stratification Tools for Predicting Prostate Cancer Mortality in a High-risk Prostatectomy Cohort.” European Urology, 2015 Feb; 67(2):326-333.

Disclaimer

The Decipher test was developed and its performance characteristics were determined by GenomeDx Biosciences Laboratory. The GenomeDx Biosciences Laboratory is certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA '88) to perform high complexity testing. This test has not been cleared or approved by the U.S. Food and Drug Administration.

Summary of biopsy or surgical pathology report provided for convenience of Ordering Physician. Please refer to Referring Pathologist's original pathology report to guide treatment decisions.

Medical Directors: Timothy J. Triche, MD, PhD | Doug Dolginow, MD

*This risk model has not yet been validated on prostate biopsy specimens but has been validated in multiple radical prostatectomy Decipher studies (Cooperberg et al., 2015; Klein et al., 2015; Ross et al., 2016).