DECIPHER PROSTATE RP

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DECIPHER POST-OPERATIVE REPORT

PATIENT DETAILS

Patient Name:
MRN/Patient ID:
Date of Birth:
Date of Prostatectomy:

Pathology Laboratory:
Pathologist:
Address:

ORDER INFORMATION

Order Date:
Specimen Received Date:
GenomeDx Accession ID:
Specimen ID:
Ordering Physician:
Clinic/Hospital Name:
Clinic/Hospital Address:
Additional Physician:

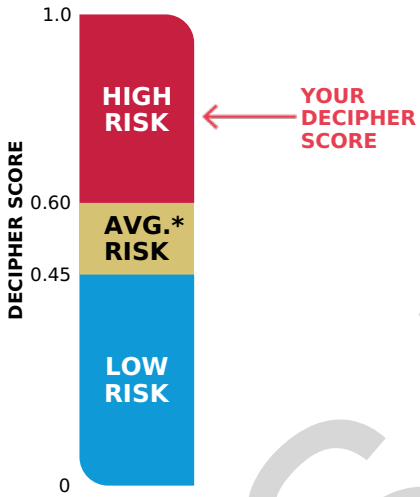
CLINICAL DETAILS

Pre-operative PSA (ng/mL): **21.8** Specimen Type: **Radical Prostatectomy** Grade Group: **5**

☑ SM+ ☑ EPE ☐ SVI ☐ LNI ☐ BCR ☑ Tertiary Gleason 5

☑ Other: Preoperative PSA (≥ 20ng/mL), Perineural Invasion, Capsular Invasion

YOUR DECIPHER RESULT: GENOMIC HIGH RISK



DECIPHER SCORE: 0.78

Risk at RP - Percent Likelihood	
5-Year Metastasis	**25.5%**
10-Year Prostate Cancer Specific Mortality	**15.3%**

INTERPRETATION

References on reverse

Clinical studies concluded that Decipher high risk men with adverse pathology have a poor prognosis overall.[1-3,12] These men may benefit from adjuvant or early salvage radiotherapy and consideration for clinical trials.[4-6]

Relevant findings from published clinical studies: Patients with Decipher high risk had 77.5% 5-year metastasis free survival and 70.0% 10-year cause specific survival.[1,2,3,7] For these patients there was improved metastasis-free survival favoring adjuvant and early salvage post-operative radiotherapy compared to post-operative observation.[5,6,11]

In patients with PSA rise or biochemical recurrence after surgery that received salvage radiotherapy, only 66.9% remained metastasis free after 5 years.[4]

Additional Comment: Tumor heterogeneity exists in most cancers, including prostate cancer. To ensure that the most aggressive tumor tissue was evaluated, analysis was repeated on two different areas of the tumor. The higher Decipher risk score was reported.

*Average clinical risk refers to the average cohort risk of metastasis at 5 years post radical prostatectomy. 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.[1]

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.[1] Decipher had an AUC of 0.76-0.85 in multiple clinical validation studies for prediction of metastasis.[1-8] 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.[9] All non-PCSM patients in the study had at least 10 years of follow-up. Decipher had an AUC of 0.73 in predicting PCSM.[2,7,13] Percent likelihood for this endpoint ranges from 0.7-30.5%.

GenomeDx Medical Director (Signature)

Report Date

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

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TEST DESCRIPTION

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

- 5-year probability of clinical metastasis
- 10-year Prostate Cancer Specific Mortality

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 and treatment of prostate cancer patients after radical prostatectomy. Decipher is intended for use in those patients who present with specific risk factors for the recurrence of prostate cancer after radical prostatectomy: (1) stage T2 disease with positive surgical margins, or (2) stage T3 disease, or (3) rising prostate-specific antigen (PSA) levels after initial PSA nadir when PSA is undetectable, or (4) preoperative PSA of 20 ng/mL or higher, or (5) lymph node involvement (LNI), or (6) high Gleason Score of 8-10.

CONFIDENCE INTERVALS

- Probability of 5-year metastasis reported here has a 95% confidence interval of 16.8% to 33.4%
- Probability of 10-year Prostate Cancer Specific Mortality reported here has a 95% confidence interval of 7.8% to 22.7%

DEFINITIONS

Clinically High Risk: These men are at high risk of clinical metastasis as defined in the Karnes, et al. study cohort inclusion criteria, which was any of: preoperative Prostate-Specific Antigen (PSA) > 20 ng/mL; pathologic Gleason score > 8; Seminal Vesicle Invasion; GPSM nomogram > 10.[10]

Average Clinical Risk: Refers to the average cohort risk of clinically high risk men in the pivotal Decipher validation study.[1]An average clinical risk of 6.0% was established in a cohort of 1,010 clinically 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.

Genomic Low or High Risk: Based on the individualized genomic risk of metastasis identified by Decipher, these men have significantly higher (Decipher result > 0.6) or lower (Decipher result < 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.[1,2]

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.

REFERENCES

1. Karnes R.J., Bergstralh E.J., Davicioni E., Ghadessi M., Buerki C., Mitra A.P., Crisan A., Erho N., Vergara I.A., Lam L.L., Carlson R., Thompson D.J.S., Haddad Z., Zimmermann B., Sierocinski T., Triche T.J., Kollmeyer T., Ballman K.V., Black P.C., Klee G.G, Jenkins R.B. Validation of a Genomic Classifier that Predicts Metastasis Following Radical Prostatectomy in an at Risk Patient Population. Journal of Urology. 2013 Dec; 190(6): 2047-53. doi: 10.1016/j.juro.2013.06.017.
2. Ross A.E., Johnson M.H., Yousefi K., Davicioni E., Netto G.J., Marchionni L., Fedor H.L., Glavaris S., Choeurng V., Buerki C., Erho N., Lam L.L., Humphreys E.B., Faraj S., Bezerra S.M., Han M., Partin A.W., Trock B.J., Schaeffer E.M. Tissue Based Genomics Augments Post-Prostatectomy Risk Stratification in a Natural History Cohort of Intermediate- and High-Risk Men. European Urology. 2016 Jan; 69(1): 157-65. doi: 10.1016/j.eururo.2015.05.042. PMID: 26058959
3. Glass A.G., Leo M.C., Haddad Z., Yousefi K., Du Plessis M., Chen C., Choeurng V., Abdollah F., Robbins B., Ra A., Richert-Boe K.E., Buerki C., Pearson K., Davicioni E., Weinmann S. Validation of a genomic classifier for predicting post-prostatectomy recurrence in a community-based healthcare setting. Journal of Urology. 2016 Jun; 195(6):1748-53. doi: 10.1016/j.juro.2015.11.044.
4. Freedland S.J., Choeurng V., Howaerd L., De Hoedt A., Du Plessis M., Yousefi K., Lam L.L., Buerki C., Ra S., Robbins B., Trabulsi E.J., Shah N.L., Abdollah F., Feng F.Y., Davicioni E., Dicker A.P., Karnes R.J., Den R.B. Utilization of a genomic classifier for prediction of metastasis following salvage radiation therapy after radical prostatectomy. European Urology. 2016; pii: S0302-2838(16)00059-2. doi: 10.1016/j.eururo.2016.01.008
5. Den R.B., Feng F.Y., Showalter T.N., Mishra M.V., Trabulsi E.J., Lallas C.D., Gomella L.G., Kelly W.K., Birbe R.C., McCue P.A., Ghadessi M., Yousefi K., Davicioni E., Knudsen K.E., Dicker A.P. Genomic Prostate Cancer Classifier Predicts Biochemical Failure and Metastases in Patients After Postoperative Radiation Therapy. Int J Radiat Oncol Biol Phys. 2014 Aug; 89(5): 1038-46. doi: 10.1016/j.ijrobp.2014.04.052.
6. Den R.B., Yousefi K., Trabulsi E.J., Abdollah F., Choeurng V., Feng F.Y., Dicker A.P., Lallas C.D., Gomella L.G., Davicioni E., Karnes R.J. A Genomic Classifier Identifies Men with Adverse Pathology after Radical Prostatectomy who Benefit from Adjuvant Radiation Therapy. Journal of Clinical Oncology. 2015 Mar; 33(8): 944-51. doi: 10.1200/JCO.2014.59.0026
7. Cooperberg M.R., Davicioni E., Crisan A., Jenkins R.B., Ghadessi M., Karnes R.J. 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): 326-33. doi: 10.1016/j.eururo.2014.05.039.
8. Klein E.A., Yousefi K., Haddad Z., Choeurng V., Buerki C., Stephnson A.J., Li J., Kattan M.W., Magi-Galluzzi C., Davicioni E. A Genomic Classifier Improves Prediction of Metastatic Disease within 5 Years After Surgery in Node-Negative High-Risk Prostate Cancer Patients Managed by Radical Prostatectomy without Adjuvant Therapy. European Urology. 2015 Apr; 67(4): 778-86. doi: 10.1016/j.eururo.2014.10.036.
9. Eggener, S.E., et al., "Predicting 15-year prostate cancer specific mortality after radical prostatectomy." Journal of Urology 2011; 185: 869–875.
10. Thompson, R.H.1, et al., "Is the GPSM scoring algorithm for patients with prostate cancer valid in the contemporary era?" J Urol. 2007 Aug;178(2):459-63; discussion 463. Epub 2007 Jun 11. 1Department of Urology and Division of Biostatistics, Mayo Clinic College of Medicine, Rochester, Minnesota 55905, USA.
11. Ross, A.E., Den, R.B., Yousefi, K., Trock, B.J., Tosoian, J., Davicioni, E., Thompson, D.J.S., Choeurng, V., Haddad, Z., Tran, P.T., Trabulsi, E.J., Gomella, L.G., Lallas, C.D., Abdollah, F., Feng, F.Y., Klein, E.A., Dicker, A.P., Freedland, S.J., Karnes, R.J., and Schaeffer, E.M. Efficacy of post-operative radiation in a prostatectomy cohort adjusted for clinical and genomic risk. Prostate Cancer Prostatic Dis. 2016 Sept; 19(3):277-82. doi: 10.1038/pcan.2016.15.
12. Spratt D.E., Yousefi K., Deheshi S., Ross A.E., Den R.B., Schaeffer E.M., Trock B.J., Zhang J., Glass A.G., Dicker A.P., Abdollah F., Zhao S.G. Lam L.L.C., Du Plessis M., Choeurng V., Haddad Z., Buerki C., Davicioni E., Weinmann S., Freedland S.J., Klein E.A., Karnes R.J., Feng F.Y. Individual Patient Level Meta-analysis of the Performance of the Decipher Genomic Classifier in High Risk Men Post-Prostatectomy to Predict Development of Metastatic Disease. Journal of Clinical Oncology. 2016. In press.
13. Karnes R.J., Choeurng V., Ross A.E., Schaeffer E.M., Klein E.A., Freedland S.J., Erho N., Yousefi K., Takhar M., Davicioni E., Cooperberg M.R., Trock B.J. Validation of a genomic risk classifier to predict prostate cancer specific mortality in men with adverse pathologic features. European Urology. 2017. pii: S0302-2838(17)30264-6. doi: 10.1016/j.eururo.2017.03.036. In press.

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GenomeDx Accession ID: MC-001354

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