A Genomic Classifier Impacts Adjuvant Treatment Decision-Making among Patients with High-Risk Pathology at Radical Prostatectomy: Results from the Multicenter Prospective PRO-IMPACT Study

John L. Gore[1], Marguerite du Plessis[2], Maria Santiago-Jiménez[2], Kasra Yousefi[2], Darby Thompson[3], Mark Bandyk[4], Fernando Bianco[5], Gordon Brown[6], David Chen[7], William Clark[8], Michael Franks[9], Lawrence Karsh[10], Adam Kibel[11], Hyung Kim[12], Brian Lane[13], Yair Lotan[14], William Lowrance[15], Murugesan Manoharan[16], Paul Maroni[17], Scott Perrapato[18], Paul Sieber[19], Edouard Trabulsi[20], Robert Waterhouse[21], Elai Davicioni[2], Daniel Lin[1]

[1]University of Washington, Seattle, WA [2]GenomeDx Biosciences Inc., Vancouver, BC, Canada [3]EMMES Canada, Burnaby, BC, Canada [4]Lakeland Regional Cancer Center, Lakeland, FL [5]Urological Research Network; Columbia University Dept of Urology, Miami, FL [6]Delaware Valley Urology, LLC, Voorhees, NJ [7]Fox Chase Cancer Center, Philadelphia, PA [8]Alaska Clinical Research Center, Anchorage, AK [9]Virginia Urology, Richmond, VA [10]The Urology Center of Colorado, Denver, CO [11]Brigham and Women's Hospital, Boston, MA [12]Cedars-Sinai Medical Center, Los Angeles, CA [13]Spectrum Health Medical Group, Grand Rapids, MI [14]UT Southwestern Medical Center, Dallas, TX [15]Huntsman Cancer Hospital, Institute, University of Utah, Salt Lake City, UT [16]University of Miami Miller, Miami, FL [17]University of Colorado, Denver Medical Campus, Denver, CO [18]University of Vermont Medical Center, Burlington, VT [19]Lancaster Urology, Lancaster, PA [20]Thomas Jefferson University, Philadelphia, PA [21]Carolina Urology Partners, Gastonia, NC

Background

- Decision to provide adjuvant therapy to men with high risk pathology after radical prostatectomy (RP) is confounded by tremendous uncertainty.
- Decipher® is a genomic test that was developed to predict disease progression after radical prostatectomy (RP) in a cohort of 359 patients [1].
- Decipher was recently shown to be a valuable tool in the immediate post-RP setting [2].
- However, clinical utility of the Decipher test on adjuvant treatment selection post-RP has not been evaluated in a prospective cohort of patients.

Study Objective

To evaluate the impact of a validated genomic classifier (the Decipher® test) on urologists' decision-making for adjuvant treatment in a prospective patient cohort with high risk pathology at RP.

Methods

- After providing informed consent, treatment recommendations before and after receiving the Decipher test report as well as Quality of Life (QOL) and Decisional Conflict Scale (DCS) questionnaires were collected.
- The Decipher test results were sent to the ordering physicians and reported the predicted 5-year probability of metastasis after surgery, in addition to clinical characteristics.
- At first, physicians made initial treatment recommendations using clinical variables alone. Physicians then reviewed the Decipher results and we repeated the assessment of treatment recommendations.
- The level of confidence of physicians and patients with regard to treatment recommendations was measured using the Provider Decision Process Assessment Instrument, and the Decisional Conflict Scale respectively [3].
- All statistical tests were two-sided and had a significance level of 0.05. Analyses were performed in R v3.1 (R Foundation, Vienna, Austria).
- Exact binomial confidence intervals were constructed to measure changes in treatment recommendations, with and without Decipher test results. The paired Wilcoxon test was used to compare continuous measurements of QOL. The McNemar's test was used to compare QOL and DCS categorical variables.

Results

Figure 1. Study diagram

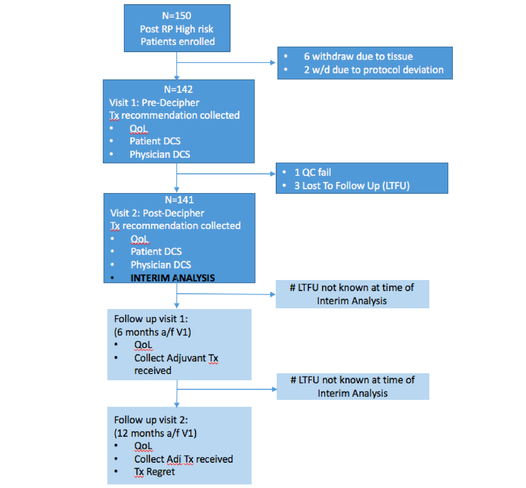


Table 1. Patient characteristics in the contemporary cohort

Variables	Study Cohort
No. patients	141
Age at RP	
Median (Range)	64 (46-76)
IQR (Q1,Q3)	(59 - 69)
Race	
White (non-Hispanic)	117 (83.0%)
White (Hispanic)	9 (6.4%)
Black/African	11 (7.8%)
Asian	3 (2.1%)
Unknown	1 (0.7%)
Pre-op PSA (ng/mL)	
Median (Range)	6.4 (0.9 - 40.5)
IQR (Q1,Q3)	(4.9 - 10)
<10 ng/mL	104 (74.3%)
10-20 ng/mL	28 (20.0%)
>20 ng/mL	8 (5.7%)
Extra-prostatic Extension, n (%)	
Present	93 (66%)
Seminal Vesicle Invasion*, n (%)	
Present	21 (14.9%)
Surgical margin, n (%)	
Positive	72 (51.1%)
Lymph node invasion*, n (%)	
Positive	2 (1.4%)
Pathologic Gleason score, n (%)	
6	2 (1.4%)
7	
(3+4)	72 (51.1%)
(4+3)	39 (27.7%)
8	17 (12.1%)
9	11 (7.8%)
Pathological stage, n (%)	
T2	38 (27.0%)
T3a	72 (51.1%)
T3b	21 (14.9%)
Unknown	10 (7.1%)

Table 2. Effect of the Decipher test result on urologists treatment recommendations post radical prostatectomy

Without Decipher Treatment	With Decipher Treatment	Number of Patients Pre-Decipher	Change N (%)	95% CI
Overall	Any change	141	26 (18%)	12-26%
Observation	Any treatment	124	18 (15%)	9-22%
Observation	Radiation	124	16 (13%)	8-20%
Observation	Hormone therapy	124	0 (0%)	0-3%
Observation	Radiation + Hormone therapy	124	2 (2%)	0-6%
Any treatment	Any change	17	8 (47%)	23-72%
Radiation	Observation	17	6 (35%)	14-62%
Radiation	Radiation + Hormone therapy	17	2 (12%)	1-36%

Table 3. Provider Decision Process Assessment Instrument score or Decision Conflict Scale (DCS) results

DCS	Without Decipher N	Without Decipher Median (range)	Without Decipher IQR	With Decipher N	With Decipher Median (range)	With Decipher IQR	p
DCS (patient)	120	25 (0-81)	(10 - 44)	120	20 (0-86)	(2 - 30)	<0.001
DCS uncertainty	123	33 (0-100)	(17 - 50)	123	25 (0-100)	(0 - 42)	
DCS informed	121	25 (0-75)	(0 - 50)	121	25 (0-75)	(0 - 25)	
DCS values clarity	122	25 (0-92)	(0 - 50)	122	25 (0-100)	(0 - 25)	
DCS support	123	25 (0-75)	(0 - 33)	123	17 (0-75)	(0 - 25)	
DCS effective decision	121	25 (0-81)	(6 - 50)	121	25 (0-100)	(0 - 31)	
DCS (physician)	141	32 (12-42)	(28 – 36)	141	28 (12-42)	(23 – 34)	<0.001

Figure 2. Treatment recommendation change by Decipher risk category

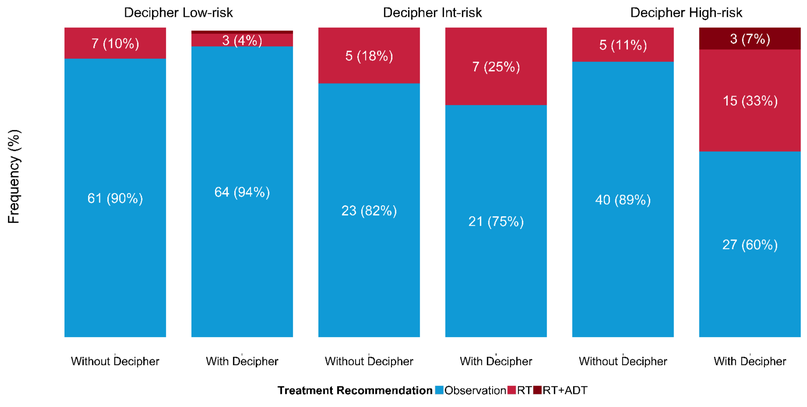
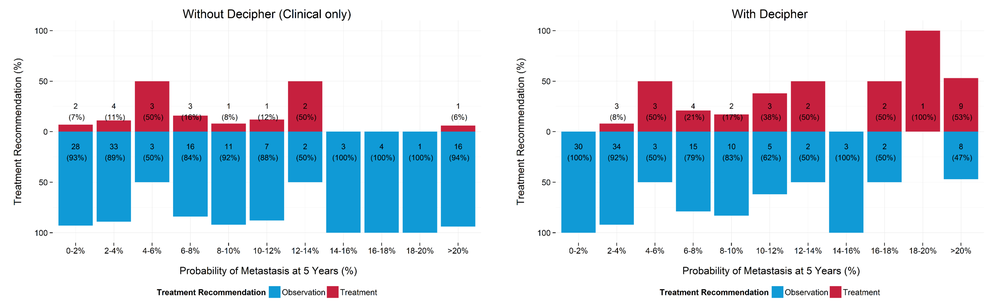


Figure 3. Treatment recommendation change by Decipher risk score



Conclusions

- **Observation is the predominantly prescribed management strategy among PCa patients with high risk features at RP.**
- **Knowledge of Decipher test results was associated with treatment decision-making among patients: patients at low risk for metastasis had higher rates of observation recommendations and high-risk patients had higher rates of ART recommendations.**
- **Decision quality was improved for patients and providers exposed to Decipher test results.**

References

1. Erho N, Crisan A, Vergara IA, et al. Discovery and validation of a prostate cancer genomic classifier that predicts early metastasis following radical prostatectomy. PLoS One. 2013;8(6):e66855. doi:10.1371/journal.pone.0066855.
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