SIGNIFICANT REDUCTION IN THERAPEUTIC BURDEN FROM USE OF CCP TEST IN TREATMENT DECISIONS AMONG NEWLY DIAGNOSED PROSTATE CANCER PATIENTS IN A LARGE PROSPECTIVE REGISTRY

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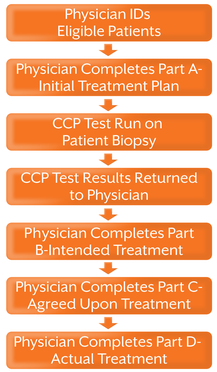
INTRODUCTION

- The purpose of the cell cycle progression (CCP) test is to enhance physician-patient decision making in personalizing prostate cancer treatment after a diagnostic biopsy.
- The CCP test is a validated molecular assay that assesses risk of prostate cancer–specific disease progression and mortality.[1-6]
- This was a prospective clinical utility study of 1,206 patients conducted for MolDx/Medicare coverage determination.
- Patient demographic information and baseline characteristics are shown in Table 1.

METHODS

- Untreated patients with newly diagnosed (≤6 months), clinically localized prostate adenocarcinoma were enrolled.
- The physician's initial therapy recommendation (pre–CCP), based on clinicopathologic parameters, was recorded on the first questionnaire (Part A).
- The CCP test was then conducted on prostate biopsy tissue.
- Three consecutive post–CCP questionnaires recorded the physician's revised treatment recommendation (Part B), physician/patient consensus treatment decision (Part C), and actual treatment administered after sufficient clinical follow–up (Part D).
- Changes in treatments between the initial recommendation and post–CCP questionnaires demonstrate the impact of CCP testing on treatment decision at each stage.



RESULTS

- Patients were enrolled by 124 physicians from 21states.
- The majority of patients were Caucasian (77.0%) with stage T1c prostate cancer.
- There was a strong statistically significant trend towards reduction in the number of treatments assigned/administered per patient.
  - These reductions occurred in radical prostatectomy (34%), radiation therapy (38.6% primary; 55% adjuvant), brachytherapy (45.9% interstitial; 62.5% HDR) and hormonal therapy (29.6% neoadjuvant; 50% concurrent) treatments.
- **For every 1-unit increase in mortality risk, there was an associated 2.7% rise in the odds of increase in treatment (vice-versa for decrease in treatment) (estimated OR = 1.027).**

RESULTS

Table 1. *Patient Demographics and Baseline Characteristics.*

Characteristic Variable	Statistic/ Category	All Patients (N=1,206)
Age (years)	Mean	65.9
Clinical Stage	T1 T2 T3	892 301 13
% Positive Cores	Mean	33.2
Pre-Biopsy PSA Categorized	0 - 4.0 4.1 - 10 >10	177 (14.7%) 820 (68.0%) 209 (17.3%)
Gleason Score	6 7 (3+4) 7 (4+3) 8 > 9	577 (47.8%) 337 (27.9%) 143 (11.9%) 100 (8.3%) 49 (4.1%)
AUA Risk	Low Intermediate High	486 (40.3%) 506 (42.0%) 214 (17.7%)
CCP Score	Mean	-0.7
10-year Mortality Risk (%)	Mean	4.2
Race	Caucasian Latino - Hispanic African Other	928 (77.0%) 110 (9.1%) 107 (8.9%) 61 (5.1%)
Charlson Comorbidity Index	0 1 2 3 4 ≥5	863 (71.6%) 212 (17.6%) 68 (5.6%) 42 (3.5%) 9 (0.7%) 12 (1.0%)

Figure 1. *Changes in Treatment Burden (Part A to Part D).*

- The CCP risk score caused a change in actual treatment administered in 47.8% of patients.

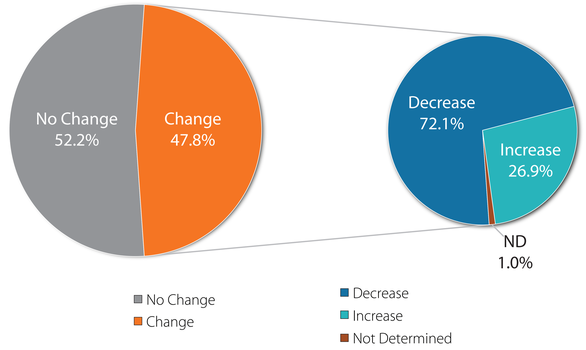
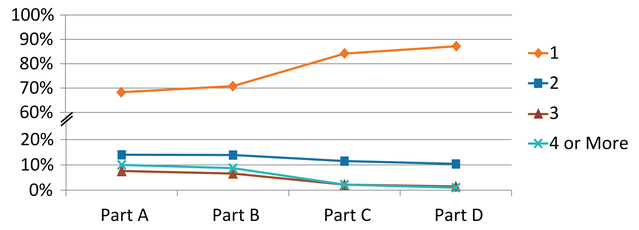


Figure 2. *Changes in Number of Treatments Assigned.*

- There was a strong statistically significant trend towards reduction in the number of treatments assigned/administered per patient, particularly from Part B to C.



	Part A (Pre-CCP)	Part B	Part C	Part D (6 mo. follow-up)
Weighted Mean	1.72	1.64	1.24	1.16
CMH χ^2 p-value <0.0001				

Table 2. *Changes in Individual Treatment Options*

- There were significant reductions in radical prostatectomy, radiation therapy, brachytherapy and hormonal therapy.
- There was an increase in active surveillance from the initial interventional therapy recommendation to actual treatment administered.

Modality/Treatment	# Patients Recommended Pre-CCP	# Patients Administered Post-CCP	Percent Change
Non-Interventional	**417**	**428**	**+2.6%**
Interventional	**789**	**778**	**-1.4%**
High Intensity Focused Ultrasound	30	2	-93.3%
Proton Beam Radiation	24	5	-79.2%
Cryosurgery	94	33	-64,9%
Brachytherapy - High Dose Rate	112	42	-62.5%
CyberKnife	18	8	-55.6%
EBRT Adjuvant	60	27	-55.0%
ADT - Concurrent	54	27	-50.0%
Brachytherapy - Interstitial	205	111	-45.9%
EBRT Primary	389	239	-38.6%
PLND	27	17	-37.0%
Radical Prostatectomy	479	316	-34.9%
ADT - Neoadjuvant	81	57	-29.6%
ADT - Adjuvant	49	50	+2.0%
ADT - Primary	28	29	+3.6%
Other	10	12	+20.0%

CONCLUSIONS

- The CCP test significantly influenced joint decision making towards appropriate personalized treatment (Table 2).
- The CCP test caused a change in treatment for nearly half of the patients in this study, 3/4ths of whom had decreased treatment assignments (Figure 1).
- For patients that were initially assigned to interventional treatment, the number of treatments administered per patient decreased after patient and physician review (Figure 2).
- This study shows that the CCP test allows improved and more precise prognostic characterization of patients for appropriate treatment selection.

REFERENCES

1. Cuzick J, et al. Lancet Oncol. 2011;12(3):245-255.
2. Cuzick J, et al. Br. J. Cancer. 2012;106(6):1095-1099.
3. Cooperberg MR, et al. J Clin Oncol. 2013;31(11):1428-1434.
4. Freedland SJ, et al. Int J Radiat Oncol Biol Phys. 2013;86(5):848-853.
5. Bishoff JT, et al. J Urol. 2014;192(2):409-414.
6. Crawford ED, et al. Curr Med Res Opin. 2014;30(6):1025-1031.

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