# EVALUATION OF THE ECONOMIC IMPACT OF THE CCP ASSAY IN LOCALIZED PROSTATE CANCER

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#### INTRODUCTION

- Stratification of localized prostate cancer based on disease aggressiveness remains challenging, resulting in overtreatment of low-risk patients and under treatment of high-risk patients.
- ♦ A biopsy-based, cell cycle progression (CCP) gene expression assay (Prolaris®, Myriad Genetic Laboratories, Inc.) can aid physicians in predicting prostate cancer aggressiveness, leading to more appropriate patient management. 1,2
- ♦ The purpose of this study was to quantify the economic impact of the CCP assay on a US commercial health plan.

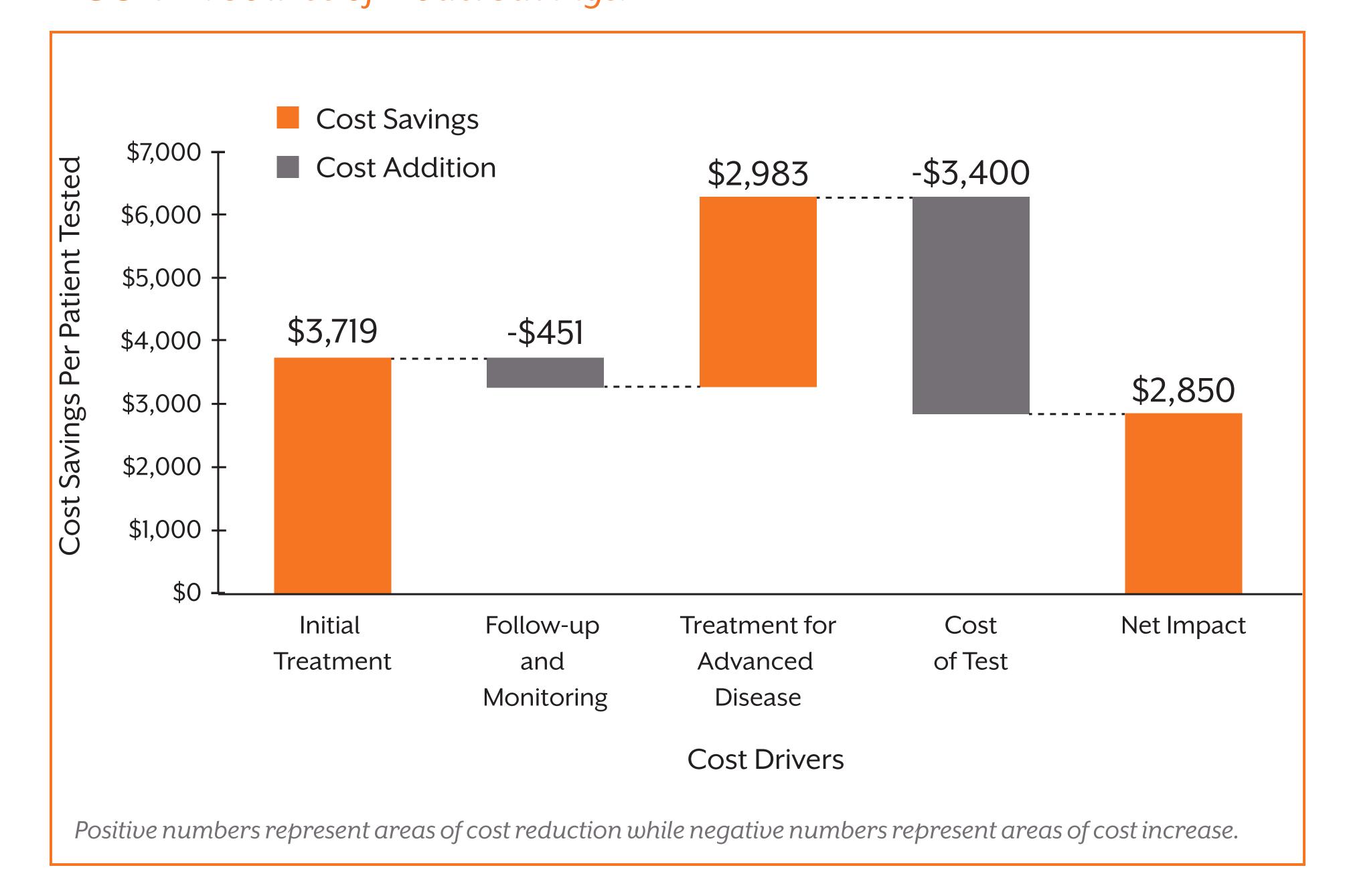
### METHODS

- A fact-based economic model was developed for a hypothetical cohort of prostate cancer patients with localized disease.
- Patients were followed in the model for 10 years with management and progression assumptions based on published clinical data and interviews with board-certified physicians.
- Total cost of care was calculated for a reference scenario (current clinical practice) and a test scenario where patient management was altered based on CCP test results (Tables 1-3).
- Cost inputs were established for each unit of care that a patient might undergo (diagnostic/surgical/radiotherapy procedures and pharmacological therapy) and costs were assigned based on published costs of care.
- Total cost of care was compared between the two scenarios to determine overall system economic impact.
- To assess the model's sensitivity, each input was changed in a way that lowered or increased cost savings and the overall cost savings was recalculated.

### RESULTS

- The CCP test reduced costs by \$2,850/patient tested over 10 years after accounting for test cost (Figure 1).
- For a health plan with 10 million members, this would translate to over \$16 million in savings with two-thirds of those savings achieved in the first year after testing (Table 5).
- ♦ The majority of savings came from increased use of active surveillance in AUA low- and intermediate-risk patients (Figure 2).
- Increasing the percentage of AUA Low-Risk patients receiving AS from 15% to 30% in the Reference Scenario reduced the cost savings to \$2,625 if taken from RP patients only or to \$2,056 if taken proportionately from RP and RT patients.
- No single model input, when changed within a range of values, caused the model to show that the test was no longer cost saving (Figure 3).
- Costs of the test scenario were never greater than the reference scenario, resulting in cost savings over the 10 years modeled.

## FIGURE 1. Source of Model Savings.



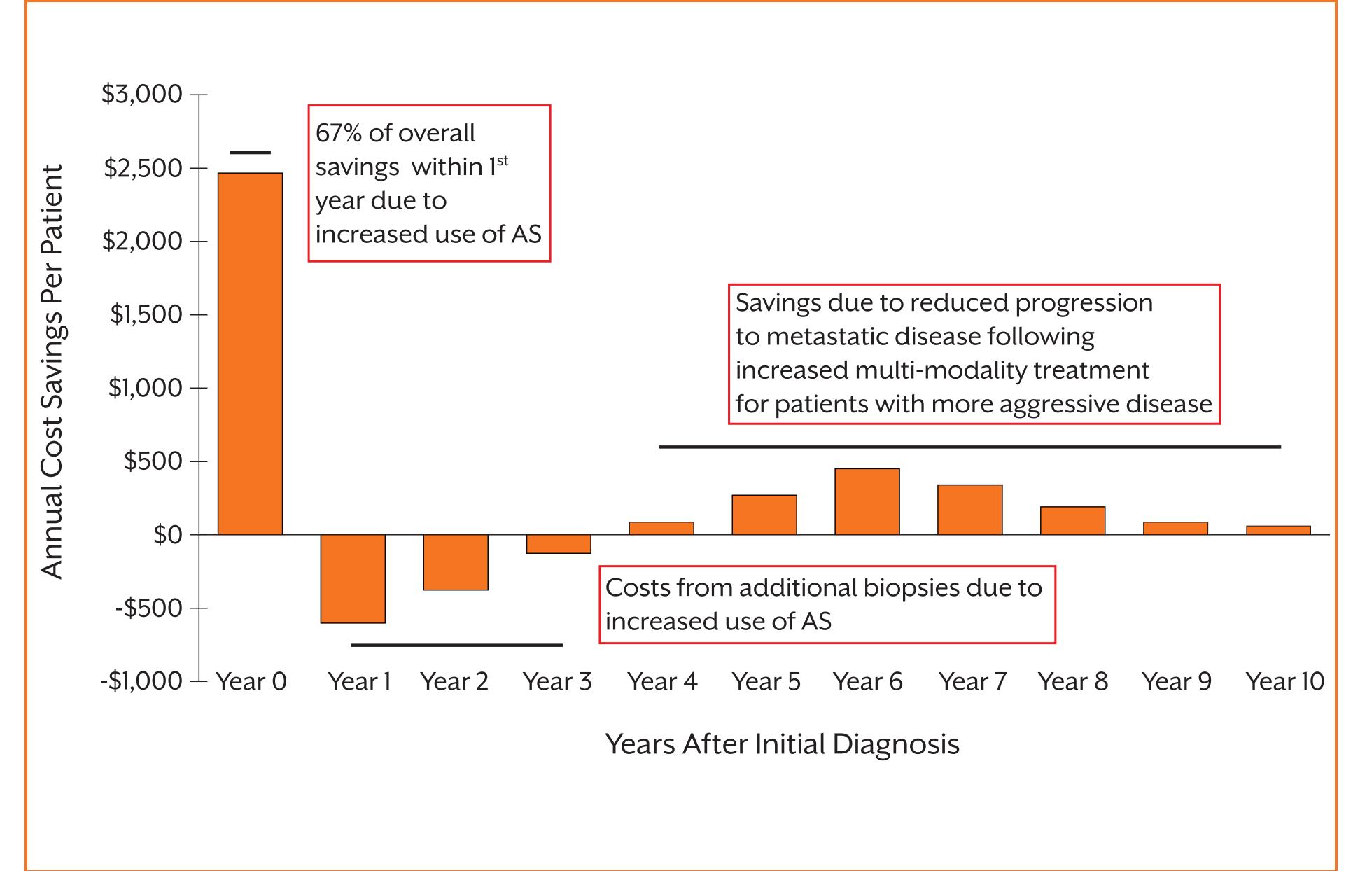
#### **TABLE 1.** Reference Scenario Clinical Treatment Paradigm.<sup>3-5</sup>

	AUA Risk Group			
Initial Treatment Modality	Low	Intermediate	High	
Active Surveillance	15%	5%	0%	
Radical Prostatectomy Only	45%	45%	35%	
Radiation Therapy Only	35%	30%	10%	
Androgen Deprivation Therapy Only	5%	15%	25%	
Radical Prostatectomy and Radiation Therapy	0%	2%	5%	
Radiation Therapy and Androgen Deprivation Therapy	0%	3%	25%	
Total	100%	100%	100%	

#### **TABLE 2.** Test Scenario Clinical Treatment Paradigm.<sup>6</sup>

	AUA Risk Group			
Initial Treatment Modality	Low	Intermediate	High	
Active Surveillance	69%	27%	0%	
Radical Prostatectomy Only	16%	31%	18%	
Radiation Therapy Only	13%	21%	5%	
Androgen Deprivation Therapy Only	2%	10%	25%	
Radical Prostatectomy and Radiation Therapy	0%	6%	23%	
Radiation Therapy and Androgen Deprivation Therapy	0%	5%	30%	
Total	100%	100%	100%	

#### FIGURE 2. CCP Test Annual Cost Savings.



#### **TABLE 3.** Cost Inputs for Reference and Test Scenarios.

		Cost (USD)	Source
Test	CCP Test List Price	\$3,400	Myriad Genetics
Initial Treatment	Radical Prostatectomy	\$9,547 (Year 1)	Medicare fee schedules and claims databases
	Primary Radiation Therapy	\$27,084 (Year 1)	Cooperberg et al. <i>BJU Int</i> . 2013;111:437-450
	Androgen Deprivation Therapy	\$2,880 (Year 1)	Medicare fee schedules and claims databases
	Adjuvant/Salvage Radiation Therapy	\$23,095 (Year 1)	Cooperberg et al. <i>BJU Int</i> . 2013;111:437-450
Monitoring Costs	Active Surveillance	\$754 (Annual)	Medicare fee schedules and claims databases
	Post-RP/ RT Monitoring	\$700-\$775 (Annual)	Medicare fee schedules and claims databases
Advanced Treatment	Androgen Deprivation Therapy	\$2,880 (Annual)	Medicare fee schedules and claims databases
	Castrate-Resistant Prostate Cancer	\$92,192 (Annual)	Medicare fee schedules and claims databases
Medicare Scale-Up Factor		125%	MEDPAC

#### FIGURE 3. Model Input Sensitivity Analysis.

Model Input	(A) Base Case Input	(B) Conservative Input	Per Patient \$0 \$2,000	t Cost Savings \$4,000 \$6,000	(C) Aggressive Input
% of AUA Low-Risk Patients Managed by AS Progressing to Tx	30%	40%	\$996	\$4,705	20%
Number of Biopsies Per Year for Patients Managed by AS	0.5	1.0	\$1,196	\$3,677	0.25
% of AUA Low-Risk Patients Managed by AS in Test Scenario	69%	50%	\$1,498	\$3,246	75%
Medicare Rate Adjustment for Private Payers	+25%	0%	\$1,600	\$4,100	+50%
% of AUA Int-Risk Patients Managed by AS in Test Scenario	27%	20%	\$2,062	\$3,751	35%
Cost of Treating CRPC	n/a	20%	\$2,291	\$3,409	+20%
% of AUA Int-Risk Patients Managed by AS in Reference Scenario	d 5%	10%	\$2,319	\$3,358	0%
Cost of Radiation Therapy	n/a	20%	\$2,400	\$3,300	+20%

To determine the model's sensitivity to individual inputs, inputs were modified from A) the Base Case to either B) a Conservative value or C) an Aggressive value.

#### **TABLE 5.** Economic Impact of Test on Costs to Payer.

	Number of Localized Prostate Cancer Patients	Number of Tests Modeled	Cumulative Cost at Year 10 in Reference Scenario	Cumulative Cost at Year 10 in Test Scenario	Cumulative Savings at 10 Years per CCP Test-Eligible Patient
Per Patient Tested	1	1	\$64,464	\$61,849	\$2,850
Health Plan - Million Members	3078	2,824	\$198,420,121	\$190,370,824	\$8,049,296
Health Plan - O Million Members	6,156	5,648	\$396,840,241	\$380,741,648	\$16,098,593

#### CONCLUSIONS

- Use of the CCP test in a US commercial health plan has the potential to result in cost savings to payers.
- In this model, the CCP test reduced costs by \$2,850 per patient tested over 10 years. For a health plan with 10 million members, this would translate to over \$16 million in savings.
- Savings are due to increased use of active surveillance in low- and intermediate-risk patients, but also from reduced progression rates in high-risk patients with more aggressive disease who transition to multi-modality therapy.

#### REFERENCES

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