# The Impact of Clinical CCP Testing in Men with Localized Prostate Cancer for Expanding the Population of Men Eligible for Active Surveillance



Cancer Center

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## BACKGROUND

- Active surveillance (AS) is an established treatment modality for select men with prostate cancer.
- Prior studies have validated a combined cell-cycle progression risk (CCR) score, which combines cell-cycle progression (CCP) gene expression data with the Cancer of the Prostate Risk Assessment (CAPRA) score to add significant prognostic discrimination to newly diagnosed prostate cancers. 1,2
- Our objective was to assess the value of the CCR score for identifying men with higher risk clinicopathologic characteristics who qualify for AS.

## METHODS

## COHORT

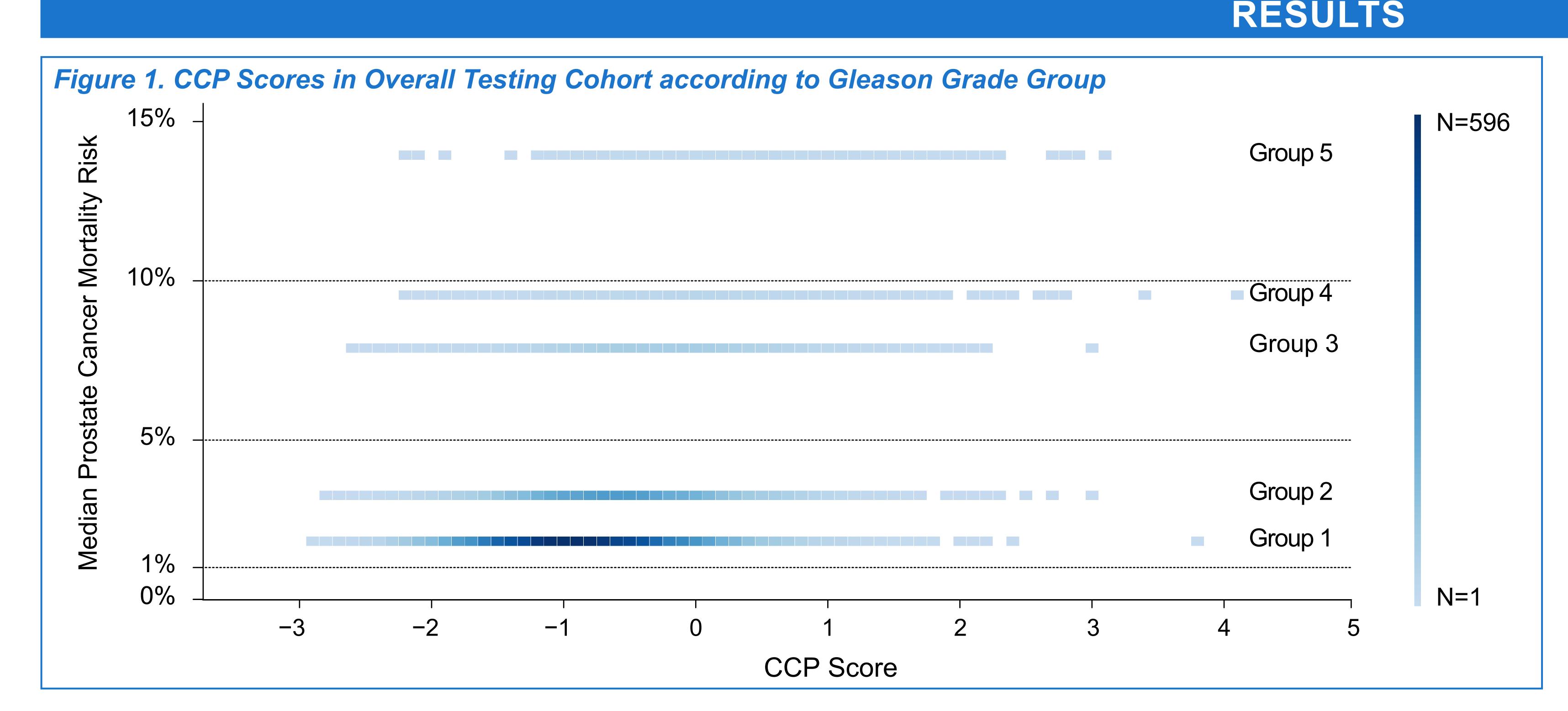
- Prostate biopsy samples from 17,017 men were submitted by their physicians for CCP testing (Myriad Genetic Laboratories).
- Clinicopathological data was obtained from physician-completed test request forms.

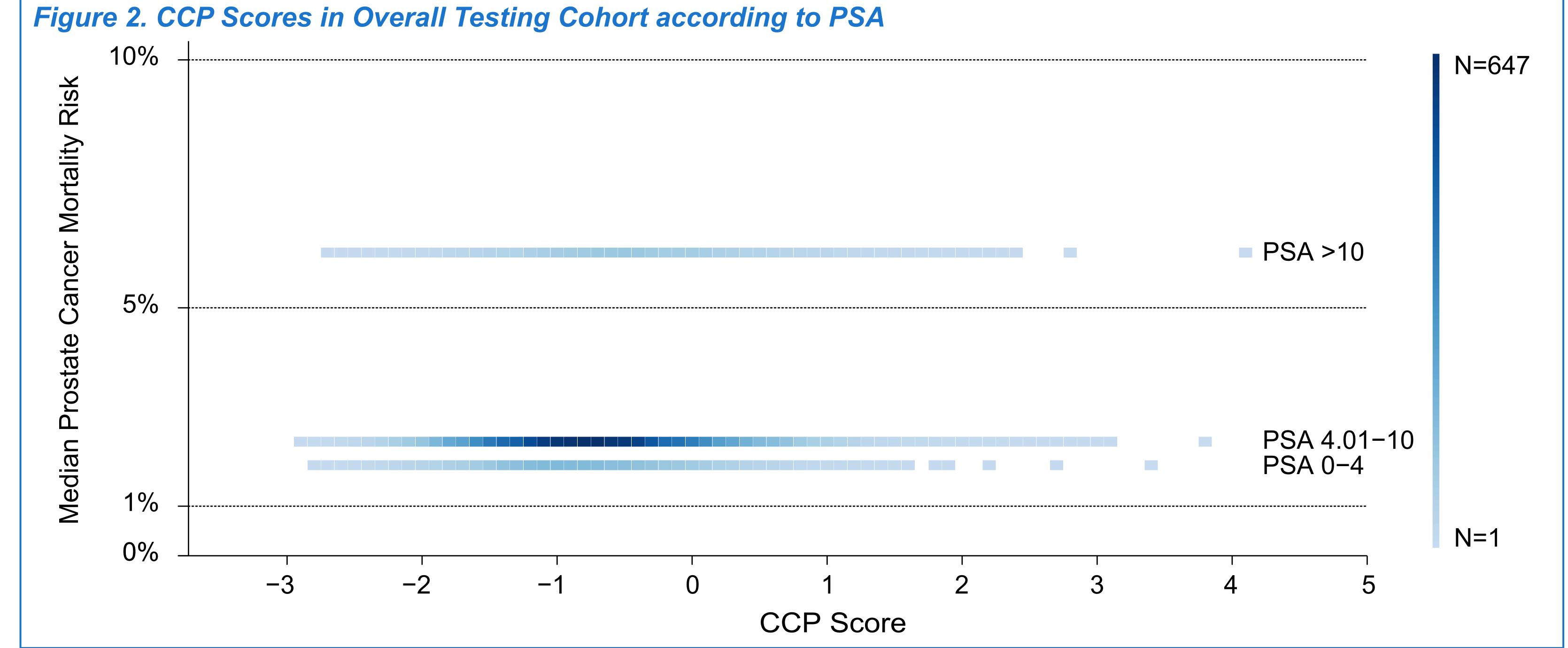
#### CCP TESTING

- Formalin-fixed paraffin-embedded biopsy samples were analyzed for the expression of 46 genes (31 CCP genes and 15 housekeeping genes).<sup>3</sup>
- The CCP score is an unweighted average of the CCP genes normalized by the average expression of the housekeeping genes.
- The CCR Score combines the CCP score with CAPRA.<sup>2</sup>
  - (0.57 × CCP score) + (0.39 × CAPRA score)
  - A threshold CCR score of 0.8 was previously developed and validated to identify 90% of men who met NCCN criteria for AS4 in a cohort of conservatively managed men (survival data censored at 10 yrs).<sup>2</sup>

### **ANALYSIS**

- We evaluated the proportion of men eligible for AS based on their CCR score (≤ 0.8) whose clinicopathologic criteria would traditionally disqualify them from AS.
  - PSA > 10ng/mL, Gleason grade group ≥ 2, AUA intermediate risk or high risk.





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Table 1. Clinicopathologic Characteristics

		All Tested Men		Qualify for AS Based on CCR ≤ 0.8	
Characteristic		N	% of Tested	N	% of Clinical Category
All Patients					
Total		17,017	100%	11,339	66.6%
AUA Risk Classification	Low	9,135	53.7%	8,446	92.5%
	Intermediate	6,183	36.3%	2,653	42.9%
	High	1,699	10.0%	240	14.1%
Gleason Grade Group	1 (Gleason ≤ 6)	10,211	60.0%	9,103	89.1%
	2 (Gleason 3+4)	4,460	26.2%	2,177	48.8%
	3 (Gleason 4+3)	1,449	8.5%	42	2.9%
	4 (Gleason 8)	585	3.4%	14	2.4%
	5 (Gleason ≥ 9)	312	1.8%	3	1.0%
Men with Gleason Score = 6					
Total		10,187	100%	9,082	89.2%
PSA	≤ 10 ng/mL	9,458	92.8%	8,732	92.3%
	> 10 ng/mL	729	7.2%	350	48.0%

## CONCLUSIONS

- Our analysis demonstrates that a significant proportion of men who qualify for AS based on their CCR score have a range of PSA and Gleason grade prostate cancer that may not traditionally be considered for AS.
- Notably, a large number of men with Gleason grade group 2 or higher as well as men with a Gleason score of 6 and PSA > 10ng/mL had CCR scores below the threshold.
- This supports using CCR score to improve risk stratification in prostate cancer and identify men for AS.

# REFERENCES

- 1. Cuzick J, et al. *Br J Cancer*. 2015;113(3):382-389.
- 2. Lin D, et al. AUA Western Poster 10. Presented
- 3. Cuzick J, et al. *Lancet Oncol*. 2011;12 (3):245-255.
- 4. Mohler JL, et al. Prostate Cancer V3.2016. NCCN Clinical Practice Guidelines in Oncology. 2016.