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### Authors

Greene, Kirsten L  
Cowan, Janet E  
Cooperberg, Matthew R  
et al.

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# WHO IS THE AVERAGE PATIENT PRESENTING WITH PROSTATE CANCER?

KIRSTEN L. GREENE, JANET E. COWAN, MATTHEW R. COOPERBERG, MAXWELL V. MENG, JANEEN DuCHANE, AND PETER R. CARROLL, FOR THE CANCER OF THE PROSTATE STRATEGIC UROLOGIC RESEARCH ENDEAVOR (CaPSURE) INVESTIGATORS

## ABSTRACT

Prostate cancer screening, diagnosis, and treatment have changed dramatically in the last 20 years. Patients with newly diagnosed prostate cancer have many treatment options available. We attempted to determine how patient demographics and quality of life (QOL) have changed, and we describe the average patient with newly diagnosed prostate cancer in the early 21st century. From the Cancer of the Prostate Strategic Urologic Research Endeavor (CaPSURE) we identified 3003 men with prostate cancer diagnosed between 1997 and 2003 for whom pretreatment demographic and QOL data were available. All patients completed both the University of California–Los Angeles Prostate Cancer Index (UCLA-PCI) and the Rand Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) as self-administered questionnaires at the time of diagnosis. We compared demographic variables (age at diagnosis, race/ethnicity, education, number of comorbidities, body mass index [BMI], and insurance type), treatment choice, and pretreatment QOL scores on the SF-36 and UCLA-PCI scales for the periods 1997 to 1999 or 2000 to 2003. Stratified analysis by risk category was performed for demographic and QOL data for the 2 periods. Race/ethnicity and insurance demographics were statistically different for the 2 periods. Low-risk patients also showed a statistically increased BMI in the 2000 to 2003 period. Risk category predicted performance on both inventories, with low-risk patients having better function than intermediate-risk patients and high-risk patients in the areas of urinary bother, bowel function and bother, and sexual function and bother, as well as in many general well-being and emotional health scales on the SF-36. We conclude that the “average” prostate cancer patient is white, 65 years of age, overweight, educated at a college level, and has 1 to 2 comorbidities. Patients report average or above-average pretreatment health-related QOL for all scales based on 2 validated instruments. In this cohort, more patients chose radical prostatectomy than any other form of treatment. *UROLOGY* **66** (Suppl 5A): 76–82, 2005. © 2005 Elsevier Inc.

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*From the Department of Urology, Program in Urologic Oncology, Urologic Outcomes Research Group, UCSF/Mt. Zion Comprehensive Cancer Center, University of California–San Francisco, San Francisco, California, USA (KLG, JEC, MRC, MVM, PRC); and TAP Pharmaceutical Products, Inc., Lake Forest, Illinois, USA (JD).*

*Reprint requests: Peter R. Carroll, MD, Department of Urology, University of California–San Francisco, 1600 Divisadero, Box 1695, San Francisco, California 94143-1695. E-mail: pcarroll@urol.ucsf.edu*

Prostate cancer is the most common noncutaneous malignancy in men, with an anticipated 232,090 new cases predicted for 2005 in the United States. With the advent of widespread prostate-specific antigen (PSA) screening, disease incidence has increased in the last 10 years.<sup>1</sup> Despite this increase in incidence, however, rates of death due to prostate cancer have declined, and there has been a corresponding stage migration resulting in the diagnosis of men at lower risk and at an earlier clinical stage.<sup>2</sup> Because early-stage prostate cancer may follow a prolonged and indolent clinical course for up to 15 years after diagnosis, newly diagnosed patients are living with prostate cancer, as well as the effects of treatment, for longer periods with attendant implications for health-related quality of life (HRQOL).<sup>3,4</sup> As a result, pretreat-

ment quality of life (QOL) and ongoing HRQOL measurements for patients with prostate cancer are of increasing importance as patients are faced with treatment options that may affect physical, sexual, and emotional health and well-being.<sup>5,6</sup> Although much of the literature has focused on treatment choices and outcomes for men with newly diagnosed prostate cancer, we sought to describe the HRQOL, demographic, and socioeconomic status of men already diagnosed with prostate cancer and to determine how these factors have changed over time.

## METHODS

The Cancer of the Prostate Strategic Urologic Research Endeavor (CaPSURE) is a longitudinal, observational disease registry of men with biopsy-proven adenocarcinoma of the prostate. The CaPSURE database contains demographic, clinical, treatment, and outcomes data for >11,000 patients from 40 urology practices across the United States (34 community based, 3 Veterans' Administration, and 3 academic practices). Patients are enrolled in CaPSURE regardless of age, stage of disease, or intended treatment plan. They are treated according to the usual practices of their physicians, and are followed until they die or withdraw from the study. Additional details of the CaPSURE database methodology have been previously reported.<sup>7</sup>

We identified 3003 men from the CaPSURE database who were diagnosed between 1997 and 2003 with prostate cancer and had available pretreatment demographic and QOL data. All patients with newly diagnosed prostate cancer were included regardless of stage or type of treatment.

QOL data were compiled from self-administered questionnaires including the University of California–Los Angeles Prostate Cancer Index (UCLA-PCI) and the Rand Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36).<sup>8,9</sup> The UCLA-PCI is a widely validated scale that measures 6 domains of prostate cancer–related QOL including urinary function, urinary bother, bowel function, bowel bother, sexual function, and sexual bother. Each item is scored from 0 to 100, with higher scores representing better HRQOL. The SF-36 evaluates 8 domains of general QOL and well-being, with summary scales for physical function, role limitations due to physical problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, mental health, physical health composite, and mental health composite. Again, each item is scored from 0 to 100, with higher scores indicating better outcomes. Reliability coefficients for patients with prostate cancer range from 0.8 to 0.95 for the UCLA-PCI and from 0.68 to 0.91 for the SF-36.<sup>10,11</sup>

We compared demographic variables (age at diagnosis, race/ethnicity, level of education, number of comorbidities, body mass index [BMI], and insurance type) and pretreatment QOL scores on the SF-36 and UCLA-PCI scales for the periods 1997 to 1999 and 2000 to 2003 and provided population means for each scale as a reference.<sup>12,13</sup> Patients were categorized as normal weight (BMI <25), overweight (BMI 25 to 29.9) or obese (BMI ≥30). Clinical information and treatment choice was gathered for all patients.

Demographics and QOL scores were then analyzed by treatment choice and risk group (low, intermediate, or high) based on modified D'Amico risk categories.<sup>14</sup> High-risk patients are those with PSA >20 ng/mL or Gleason total grade 8 to 10 or Gleason primary grade 4 to 5 or clinical stage T3a. Intermediate-risk patients are those with PSA 10.1 to 20 ng/mL or Glea-

son total grade 7 or Gleason secondary grade 4 to 5 or clinical stage T2b to T2c. Low-risk patients are those with PSA ≤10 ng/mL and Gleason total grade <7 with no 4 to 5 pattern and clinical stage T1 to T2a.

Patients' pretreatment clinical and sociodemographic data were grouped by time category and compared using the  $\chi^2$  test. The Student *t* test was used to compare mean pretreatment scores on the SF-36 and UCLA-PCI scales in the 2 time categories. This was done for the entire sample within risk groups.

## RESULTS

### DEMOGRAPHICS

There were few demographic differences among patients diagnosed from 1997 to 1999 and those diagnosed from 2000 to 2003. Most patients in both periods were white, overweight, and aged 60 to 70 years. Furthermore, the majority of patients in both periods had 1 to 2 comorbidities, had achieved a college-level education, and were covered by private insurance. The percentage of patients in other racial or ethnic groups decreased from 17% in 1997 to 1999 to 9% in 2000 to 2003, with a corresponding increase in white patients. This change in ethnic composition between the 2 periods was statistically significant ( $P < 0.0001$ ). The percentage of patients aged <60 years increased from 23% in 1997 to 1999 to 28% in 2000 to 2003, although this difference was not statistically significant. Approximately 33% of all patients had ≥3 comorbidities in both periods, with only 15% reporting no comorbidity. Only 25% of men diagnosed in 2000 to 2003 were of normal weight compared with 29% diagnosed in 1997 to 1999. Of patients with newly diagnosed prostate cancer, >60% report some level of college education, a mean that is higher than the national average of 52% based on the 2000 US Census.<sup>15</sup> In 2000 to 2003, there were fewer patients with Medicare insurance compared with the 1997 to 1999 period ( $P < 0.03$ ) (Table I).

### CLINICAL CHARACTERISTICS AND TREATMENT

When clinical characteristics and treatment choices were analyzed, PSA and clinical T stage were both significantly lower in patients diagnosed in 2000 to 2003 compared with 1997 to 1999 ( $P < 0.01$ ). In contrast, Gleason total score ≤7 was increased in patients diagnosed in 2000 to 2003 ( $P < 0.01$ ). Most patients diagnosed from 2000 to 2003 were at low risk (48%), with PSA ≤10 ng/mL (83%), clinical stage T1 (58%), and Gleason total score 5 to 6 (66%). Significantly more patients in 2000 to 2003 chose radical prostatectomy and fewer chose radiation therapy ( $P < 0.05$ ) as initial treatment for prostate cancer. Rates of hormonal therapy, watchful waiting, and cryotherapy were unchanged between the 2 periods (Table II).

**TABLE I. Pretreatment demographics by period**

Demographics	1997–1999, n (%)	2000–2003, n (%)	P Value
Age at diagnosis (yr)			0.2261
<60	76 (23)	590 (28)	
60–70	149 (46)	893 (42)	
>70	102 (31)	659 (31)	
Race/ethnicity			<0.0001
Native American	0 (0)	7 (<1)	
Asian American	5 (2)	16 (1)	
Latino	11 (3)	27 (1)	
African American	36 (11)	117 (5)	
White	271 (83)	1957 (91)	
Other	3 (1)	18 (1)	
Education level			0.9096
High school or less	47 (15)	279 (13)	
High school graduate	80 (25)	538 (26)	
Some college	61 (19)	413 (20)	
College graduate	136 (42)	866 (41)	
Comorbidities			0.4552
0	54 (17)	308 (15)	
1–2	169 (52)	1163 (56)	
≥3	102 (31)	623 (30)	
BMI category			0.1169
Normal (<25)	93 (29)	518 (25)	
Overweight (25–29)	167 (52)	1062 (51)	
Obese (≥30)	62 (19)	496 (24)	
Insurance			0.0031
Medicare supplement	94 (30)	657 (32)	
Medicare	54 (17)	252 (12)	
Private	162 (52)	1064 (52)	
Other	1 (<1)	68 (3)	

BMI = body mass index.

### HRQOL

A significant difference in mean pretreatment urinary bother score ( $P < 0.05$ ) was identified in the group of patients diagnosed in the 1997 to 1999 period compared with those diagnosed in the 2000 to 2003 period, with patients in the later period reporting less bother. Mean pretreatment SF-36 scores did not differ significantly between the 2 periods. When pretreatment scores on the UCLA-PCI and SF-36 were compared with published means, all patients across both time intervals were within 1 standard deviation of the mean on all scales. Cohort means were lower than population means on only 2 scales, sexual function and urinary bother on the UCLA-PCI (Tables III and IV).

### RISK STRATIFICATION

There was no significant difference in risk between the 2 periods. In 1997 to 1999, 42% of patients were low risk, 30% were intermediate risk, and 20% were high risk at diagnosis. In the group of patients diagnosed in 2000 to 2003, 48% were

low risk, 33% were intermediate risk, and 18% were high risk (Table II).

When pretreatment demographic and QOL data were stratified by risk category, the low-risk group had significant differences between the 2 periods for race/ethnicity and BMI. For low-risk patients, there were significantly more white patients and fewer African American patients in 2000 to 2003 compared with 1997 to 1999 ( $P < 0.05$ ). There were fewer normal-weight patients and more obese patients in 2000 to 2003, although the percentage of overweight patients was unchanged between the periods ( $P < 0.01$ ). There were no significant differences in the SF-36 or UCLA-PCI scores among low-risk patients in the 2 periods.

For patients in the intermediate-risk group, pretreatment demographics show significant differences between the 2 periods for race/ethnicity and insurance status. Again, there were more white patients and fewer African American patients in 2000 to 2003 ( $P < 0.01$ ). Additionally, fewer patients in 2000 to 2003 had Medicare insurance ( $P < 0.05$ ).

The QOL scales showed significant differences for intermediate-risk patients in the 2 periods. For

**TABLE II. Pretreatment clinical data and treatment choice by time interval**

Clinical	1997–1999, n (%)	2000–2003, n (%)	P Value
First treatment			0.0110
Radical prostatectomy	171 (52)	1249 (58)	
Cryosurgery	7 (2)	73 (3)	
Brachytherapy	88 (27)	444 (21)	
External beam radiation	43 (13)	214 (10)	
Orchiectomy	0 (0)	1 (<1)	
LHRH agonist	9 (3)	92 (4)	
LHRH antagonist	2 (1)	2 (<1)	
Antiandrogen	2 (1)	14 (1)	
5 $\alpha$ -reductase inhibitor	1 (<1)	1 (<1)	
Watchful waiting	4 (1)	50 (2)	
PSA category (ng/mL)			0.0083
≤4	46 (15)	328 (16)	
4.1–10	187 (60)	1401 (67)	
10.1–20	55 (18)	264 (13)	
>20	22 (7)	90 (4)	
Gleason total score			0.0059
2–4	11 (3)	22 (1)	
5–6	213 (66)	1410 (66)	
7	77 (24)	556 (26)	
8–10	20 (6)	144 (7)	
T stage			<0.0001
1	141 (43)	1236 (58)	
2	178 (54)	885 (41)	
3	8 (2)	20 (1)	
Risk category			0.0807
Low	132 (42)	1020 (48)	
Intermediate	122 (39)	705 (33)	
High	62 (20)	381 (18)	

LHRH = luteinizing hormone–reducing hormone; PSA = prostate-specific antigen; T stage = tumor stage.

**TABLE III. University of California–Los Angeles Prostate Cancer Index pretreatment scales by period compared with age-appropriate reference means\***

Variable	1997–1999		2000–2003		Reference Mean Score	P Value
	Patients (n)	Mean Score	Patients (n)	Mean Score		
Bowel bother	322	90	2118	89	89	0.68
Bowel function	322	88	2127	88	88	0.46
Sexual bother	307	60	2046	60	53	0.82
Sexual function	316	50	2083	51	54	0.44
Urinary bother	321	82	2099	85	86	0.03
Urinary function	320	93	2099	92	92	0.49

Adapted from J Urol.<sup>12</sup>

\* The mean age of Cancer of the Prostate Strategic Urologic Research Endeavor (CaPSURE) patients in this analysis is 65.1 years (median 65.0 years).

the SF-36 inventory, scores for 2000 to 2003 were higher in the mental composite score, mental health, role emotional, and social function scales compared with 1997 to 1999 ( $P < 0.05$ ). On the UCLA-PCI, the urinary bother scale had a higher mean score in 2000 to 2003 period compared with 1997 to 1999 ( $P < 0.05$ ). In the high-risk group, there were no significant difference in patient demographics or QOL scores between the 2 periods (Table V).

When all years were combined and demographics were stratified by risk group, age at diagnosis, race/ethnicity, education, and insurance were significantly different. Low-risk patients tended to be white, younger, with some college education, and private insurance. In contrast, the high-risk category contained a higher percentage of men who were older, who had high school education or less, and who had Medicare or Medicare supplement insurance. Additionally, a higher percentage of in-

**TABLE IV. Pretreatment Rand Medical Outcomes Study 36-Item Short Form scales by period compared with age-appropriate reference means\***

Variable	1997–1999		2000–2003		Reference Mean Score	P Value
	Patients	Mean Score	Patients	Mean Score		
Bodily pain	324	84	2109	84	68	0.79
General health	324	70	2087	72	58	0.09
Mental composite score	313	51	2004	52	50	0.09
Mental health	319	77	2125	78	77	0.07
Physical composite score	313	51	2004	51	50	0.93
Physical function	321	85	2105	85	65	0.99
Role emotional	320	80	2107	83	76	0.15
Role physical	320	79	2114	80	59	0.66
Social function	325	86	2111	88	79	0.12
Vitality	319	66	2126	67	57	0.40

Adapted from SF-36 Health Survey: Manual & Interpretation Guide.<sup>13</sup>

\* The mean age of Cancer of the Prostate Strategic Urologic Research Endeavor (CaPSURE) patients in this analysis is 65.1 years (median 65.0 years).

**TABLE V. Comparison of pretreatment demographics by period and risk category**

Demographic	Low Risk		P Value	Intermediate Risk		P Value	High Risk		P Value
	1997–1999 (%)	2000–2003 (%)		1997–1999 (%)	2000–2003 (%)		1997–1999 (%)	2000–2003 (%)	
Age at diagnosis (yr)			0.11			0.43			0.31
<60	27	32		21	26		16	19	
60–70	54	44		46	40		31	38	
>70	19	24		33	34		53	43	
Race/ethnicity			0.03			0.06			0.08
Native American	0	0		0	0		0	0	
Asian American	2	1		0	1		5	1	
Latino	2	1		6	1		0	2	
African American	11	4		11	5		11	9	
White	85	93		83	92		82	88	
Other	1	1		1	1		2	1	
Education level			0.74			0.60			0.95
High school or less	12	10		18	17		13	15	
High school graduate	27	25		22	26		27	28	
Some college	20	21		16	18		21	19	
College graduate	41	45		44	38		39	37	
Comorbidities			0.76			0.91			0.62
0	18	16		14	15		15	12	
1–2	53	56		53	54		52	58	
≥3	29	28		33	31		34	30	
BMI			0.01			0.65			0.56
Normal (<25)	32	24		23	26		31	25	
Overweight (25–29)	55	52		51	52		48	48	
Obese (≥30)	13	24		26	22		21	26	
Insurance			0.44			0.04			0.18
Medicare supplement	26	30		33	34		34	36	
Medicare	12	10		20	13		24	16	
Private	60	57		47	50		41	44	
Other	1	3		0	4		0	4	

BMI = body mass index.

**TABLE VI. Comparison of demographics by risk group: 1997–2003**

Demographics	Low Risk, n (%)	Intermediate Risk, n (%)	High Risk, n (%)	P Value
Age at diagnosis (yr)				<0.0001
<60	363 (31)	217 (24)	89 (18)	
60–70	529 (45)	366 (41)	187 (38)	
>70	281 (24)	303 (34)	217 (44)	
Race/ethnicity				0.0208
Native American	4 (<1)	2 (<1)	1 (<1)	
Asian American	10 (1)	5 (1)	6 (1)	
Latino	14 (1)	20 (2)	7 (1)	
African American	61 (5)	54 (6)	49 (10)	
White	1074 (92)	800 (90)	423 (86)	
Other	10 (1)	5 (1)	6 (1)	
Education level				<0.0001
High school or less	121 (10)	154 (18)	76 (16)	
High school graduate	288 (25)	220 (25)	132 (28)	
Some college	237 (21)	151 (17)	95 (20)	
College graduate	509 (44)	341 (39)	177 (37)	
Comorbidities				0.1643
0	191 (17)	125 (14)	60 (12)	
1–2	638 (55)	470 (54)	277 (57)	
≥3	324 (28)	271 (31)	146 (30)	
BMI				0.8491
Normal (<25.0)	292 (26)	219 (26)	128 (27)	
Overweight (25.0–29.0)	593 (52)	442 (52)	232 (49)	
Obese (≥30.0)	260 (23)	192 (23)	115 (24)	
Insurance				<0.0001
Medicare supplement	334 (30)	294 (35)	172 (37)	
Medicare	121 (11)	112 (13)	73 (16)	
Private	648 (57)	410 (49)	199 (43)	
Other	26 (2)	25 (3)	16 (3)	

BMI = body mass index.

intermediate- or high-risk patients were Latino or African American (Table VI).

## DISCUSSION

Based on this above analysis, the average prostate cancer patient diagnosed currently is aged 65 years, white, overweight, and educated at a level above the national average,<sup>15</sup> with 1 to 2 comorbidities and private insurance. Most patients present at an early clinical stage, with a PSA <10 ng/mL, and may be classified as low risk. Furthermore, newly diagnosed patients will report average to above-average HRQOL at the time of diagnosis based on widely validated scales. Men in this study generally scored at or above national means for sexual, urinary, and bladder function and bother on the UCLA-PCI inventory.<sup>12</sup> Similarly, patients in the CaPSURE cohort scored at or above published means for age-matched populations on the SF-36.<sup>13</sup> The improvement in urinary and sexual function domains noted in more contemporary patients may reflect the increasing use of screening in asymptomatic patients instead of limiting screening to those presenting to urologists with symptoms such as urinary changes and sexual function.

Not surprisingly, increasing risk category correlated with older patient age at diagnosis and ethnicity. African American and Latino men are known to be at increased risk of prostate cancer diagnosis and death, and generally present at a later stage.<sup>1</sup> Level of education has been correlated with increased prostate cancer screening, which may explain why higher level of educational attainment correlates with lower risk.<sup>16</sup> The explanation for the significant association between insurance status and increased risk may reflect increased patient age, as older patients are more likely to have Medicare insurance, although this area merits further investigation.

Despite the well-documented stage migration in prostate cancer, more patients in this study chose radical prostatectomy as initial treatment. In contrast, the percentage of patients who chose watchful waiting was low (1% to 2%) and unchanged across the periods examined. These findings may be a reflection of the CaPSURE cohort, in which patients are recruited by urologists at the time of prostate cancer diagnosis. Several reports have shown that patient treatment choice tends to reflect physician specialty.<sup>17,18</sup> Of interest is the fact

that many men are overweight or obese and have significant associated comorbidities. Such patients are more likely to have competing causes of death and present with worse QOL not only at baseline but also over time.<sup>19,20</sup>

With the combination of generally average to above-average HRQOL and low-risk disease, men with newly diagnosed prostate cancer face the possibility of significant decline in QOL with all forms of treatment with the possible exception of active surveillance. In contrast, men with early-stage disease have excellent chances for cure with many different choices of therapy. Physicians should consider baseline QOL and patient age and health status when counseling them about treatment choices.

### CONCLUSION

The results of our investigation indicate that the average prostate cancer patient is low-risk, educated at a level above the national mean, with average to above-average scores on all domains of widely validated QOL scales. The dual goals of treatment for newly diagnosed prostate cancer in the 21st century will be to cure the patient's disease while maximizing and maintaining HRQOL.

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