



Evaluation Of Radiotherapy: Timing And Outcomes For Radical Prostatectomy Patients

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1. Introduction

For patients undergoing radical prostatectomy (RP) for primary treatment of localized prostate cancer, adjuvant radiotherapy (ART) is indicated by NCCN guidelines with pathologic confirmation of seminal vesicle invasion, extraprostatic extension, positive surgical margin, and Gleason scores > 8.

We seek to assess salvage radiotherapy (SRT) to reduce the cost and overtreatment on radiotherapy.

2. Methods

Between 2002 and 2015, 1460 men underwent robot-assisted radical prostatectomy (RARP) as primary treatment for localized prostate cancer. Patients without PSA follow-up (N=40) were excluded. Biochemical recurrence (BCR) was defined as PSA>0.2 ng/ml after RP. Likelihood of ART treatment per NCCN guidelines were compared to BCR, prostate cancer specific mortality (PCSM) and overall mortality (OM). Finally, 2016 Medicare reimbursement rates were used to estimate cost of secondary interventions.

Figure 1: Patient Outcomes

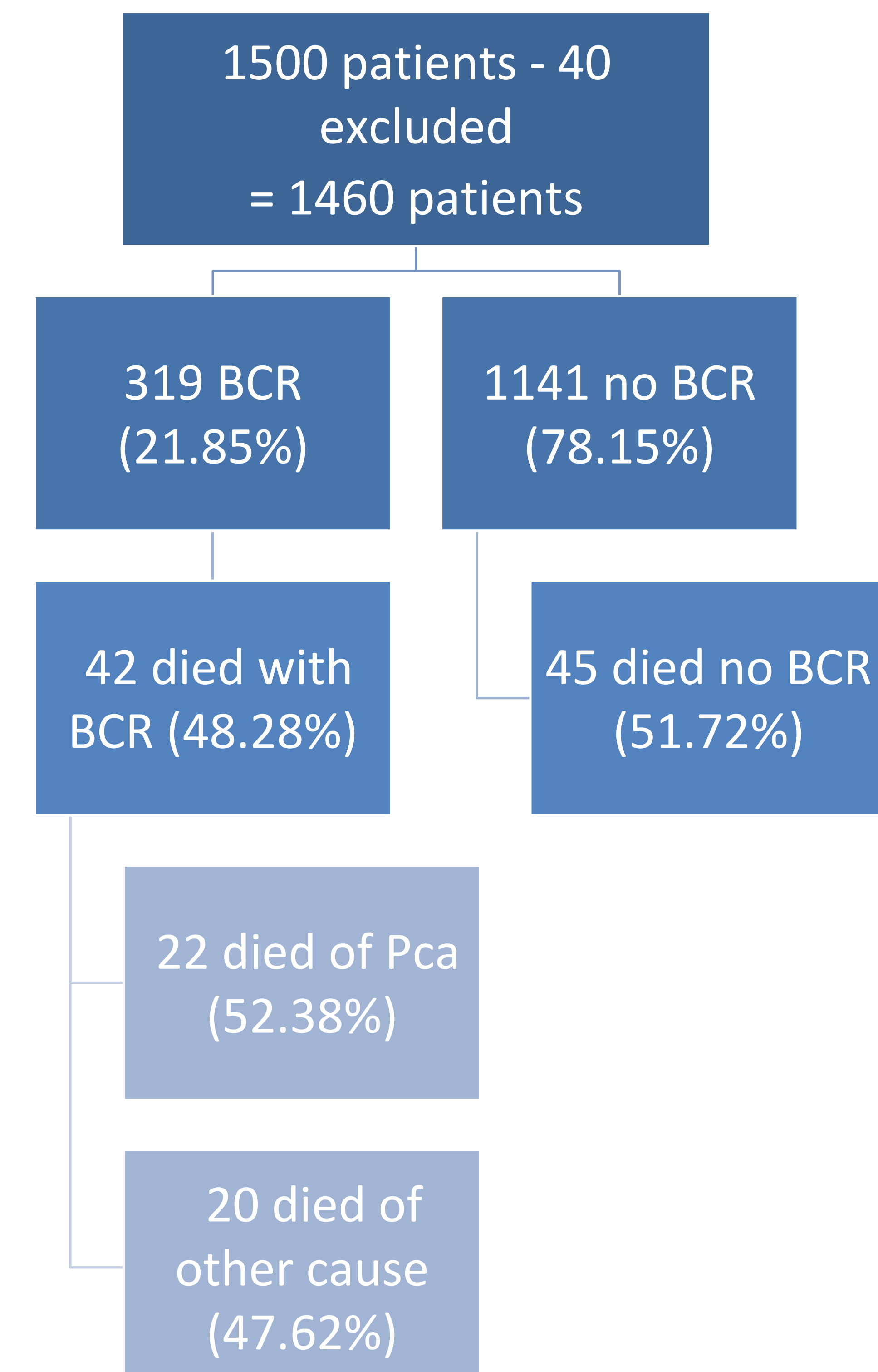
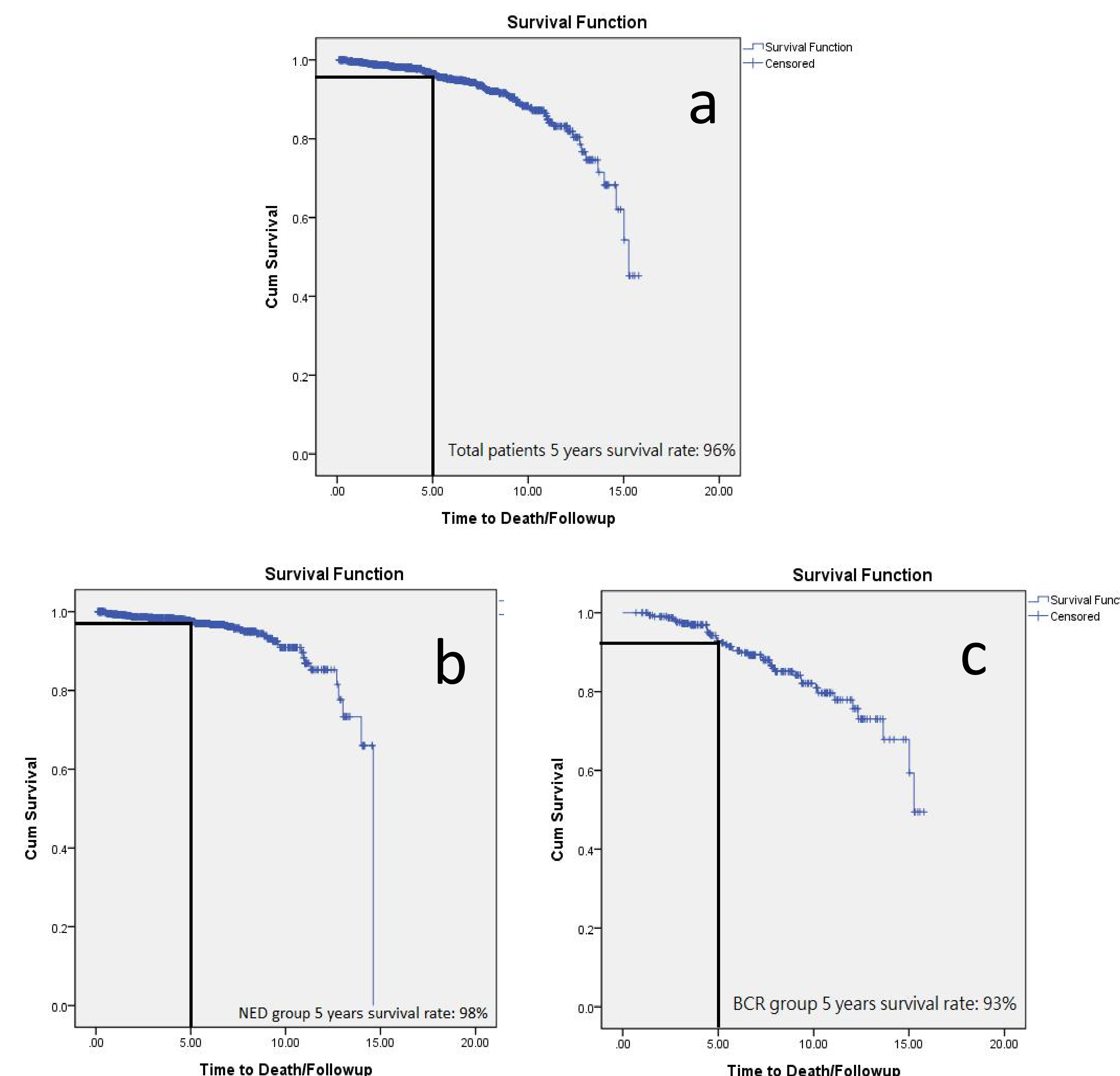


Figure 2: Survival in (a) overall, (b) NED, and (c) BCR groups



3. Results

BCR occurred in 319 (21.85%) patients; at a median follow-up data of 5 years. 81% had follow-up PSA over 2 years. Per NCCN guidelines, 527(36.1%) men were indicated to undergo ART. However, of these men, only 236(44.78%) had BCR and 17 (1.16%) of them went through ART; the remainder had no evidence of disease.

Despite the low proportion of patients undergoing ART, the overall and prostate cancer specific mortality in this cohort were non-inferior to published data: 87(5.96%) and 22 (1.51%), respectively. At a Medicare expense of \$37,000 per ART treatment, treating per NCCN guidelines would result in a surplus of \$10 million for the treatment of patients with no evidence of disease.

Table 1. Patient Demographics

Table 1: Patients with pathological features meeting NCCN adjuvant radiation recommendation guidelines, as per 1460 patient population with a median follow-up of 5.6 years

N=1460	Total	Tx per NCCN	pT3b	pT3	(+)SM	Gleaso n≥8	Tx w/ ART	Tx w/ SRT	OM	PCSM
Total	1460	527	102	313	55	57	17	57	87	22
% of 1460	--	36.1%	6.7%	21.4%	3.8%	3.9%	1.2%	3.9%	6.0%	1.5%
NED	1141	291	18	192	41	40	9	0	45	0
% of total	78.2%	55.2%	17.7%	61.3%	74.6%	70.2%	52.9%	0%	51.7%	0%
BCR	319	236	84	121	14	17	8	57	42	22
% of total	21.9%	44.8%	82.4%	38.7%	25.5%	29.8%	47.1%	100%	48.3%	100%

4. Conclusion

18-75% is the range of risk that patients who have unfavorable pathological features may be over-treated by ART. Previous reports of SRT has non-inferior outcomes and may reduce the cost are supported by these outcomes. The results of this study can provide a fundamental evidence for future trials on utilization of SRT.