

Physician Perceptions on New Technology for the Treatment of Prostate Cancer

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How do physicians perceive newer, more expensive treatment modalities which lack convincing evidence?

We sent a survey in 2011 to radiation oncologists and urologists gauging whether they thought newer technologies – Proton Beam Therapy (PRT) and Robotic Assisted Radical Prostatectomy (RARP) – were better than standard treatments – Intensity-Modulated Radiation Therapy (IMRT) and Open Radical Prostatectomy (ORP).

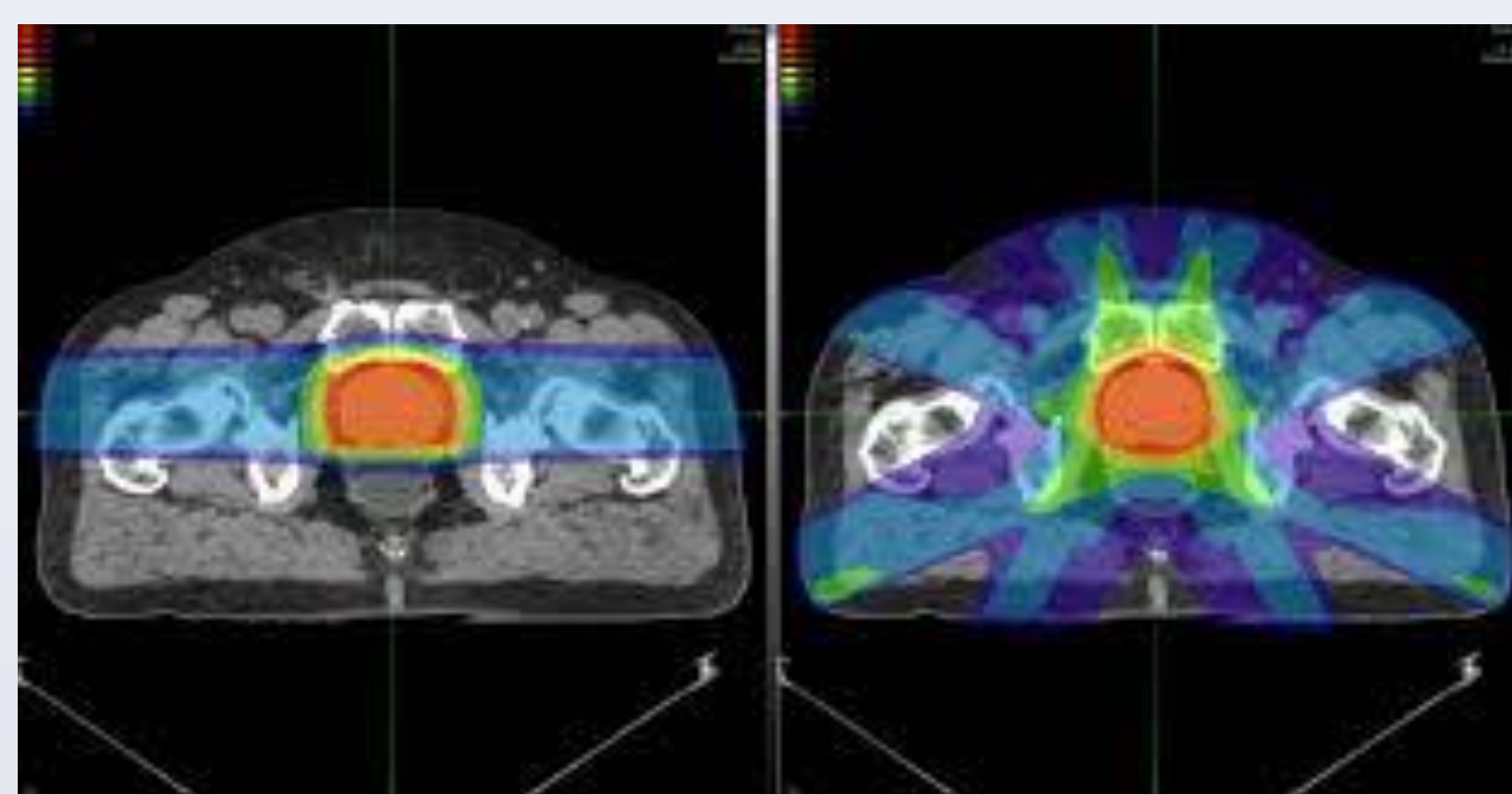


Figure 1: Difference in radiation levels between Conventional Radiation and Proton Therapy



Figure 2: Operating room set up for a Robot Assisted Radical Prostatectomy

Introduction

- New technologies are introduced with promise for improving health outcomes but lack supporting evidence.
- For prostate cancer, RARP and proton beam therapy PRT have experienced growth out of proportion to evidence of benefit.
- Benefits of RARP may improve short-term outcomes and reduce length of hospital stay.
- Similarly, early results from observational studies have shown that PRT confers minimal therapy-related side effects.
- The widespread use of these newer approaches occur in patients who least benefit from these treatments: men with low-risk disease, high-risk of other-cause mortality, or both.
- Several studies have documented the impact of PRT and RARP on higher reimbursement and market share.
- Physician perception can drive recommendation and implementation of newer technologies, even with limited evidence.

Study Data and Methods

APPENDIX I

Please indicate whether you consider robotic surgery (Da Vinci) or open radical prostatectomy superior for each of the following prostate cancer concerns. (Mark one response on each line).

	Robotic better	Open better	Neither is better
Cancer control.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Urinary incontinence.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sexual dysfunction.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix I: sample survey sent to urologists

We obtained a random sample of 1,466 specialists (50.2% radiation oncologists and 49.8% urologists) from the American Medical Association (AMA) Physician Masterfile. Of the total sample, 100 specialists were sent a pilot survey. The remaining 1,366 specialists were sent the final survey instrument.

The finalized survey included items on whether RARP or ORP was “better” for cancer control, urinary incontinence, and erectile dysfunction. The survey also included whether PRT or IMRT was better for cancer control, urinary incontinence, erectile dysfunction, rectal toxicity, hip fractures, and secondary malignancies.

Feature	Radiation Oncologists (n=361)	Urologists (n=356)	p-value
	%	%	
Age (years)			0.006
< 40	23.0	14.3	
40-54	46.8	48.0	
≥ 55	30.2	37.7	
Race			0.74
Non-white	14.7	15.4	
White	85.3	84.6	
Gender			<0.001
Female	18.6	5.6	
Male	81.4	94.4	
Type of practice			<0.001
Academic	23.5	12.1	
Community	76.5	87.9	
Compensation Structure			0.001
Billing	32.6	44.4	
Salary +/- bonus	67.4	55.6	
Number of prostate cancer patients/week			0.06
0-3	74.7	81.9	
4-6	18.1	13.6	
≥ 7	7.2	4.5	
Number of physicians in group			0.009
Solo	11.4	19.6	
2-9	32.8	28.1	
≥ 10	55.8	52.3	
Access to robotic surgery or proton beam	3.6	67.7	<0.001
Region			0.82
Northeast	24.3	22.5	
Midwest	22.1	22.5	
South	36.2	35.4	
West	17.1	19.6	

Table 1: Physician characteristics of all respondents (n=717)

Results

- Compared to urologists, significantly more radiation oncologists responded that PRT had less treatment-related toxicity regarding urinary incontinence, rectal toxicity, risks for hip fracture, and secondary cancers.

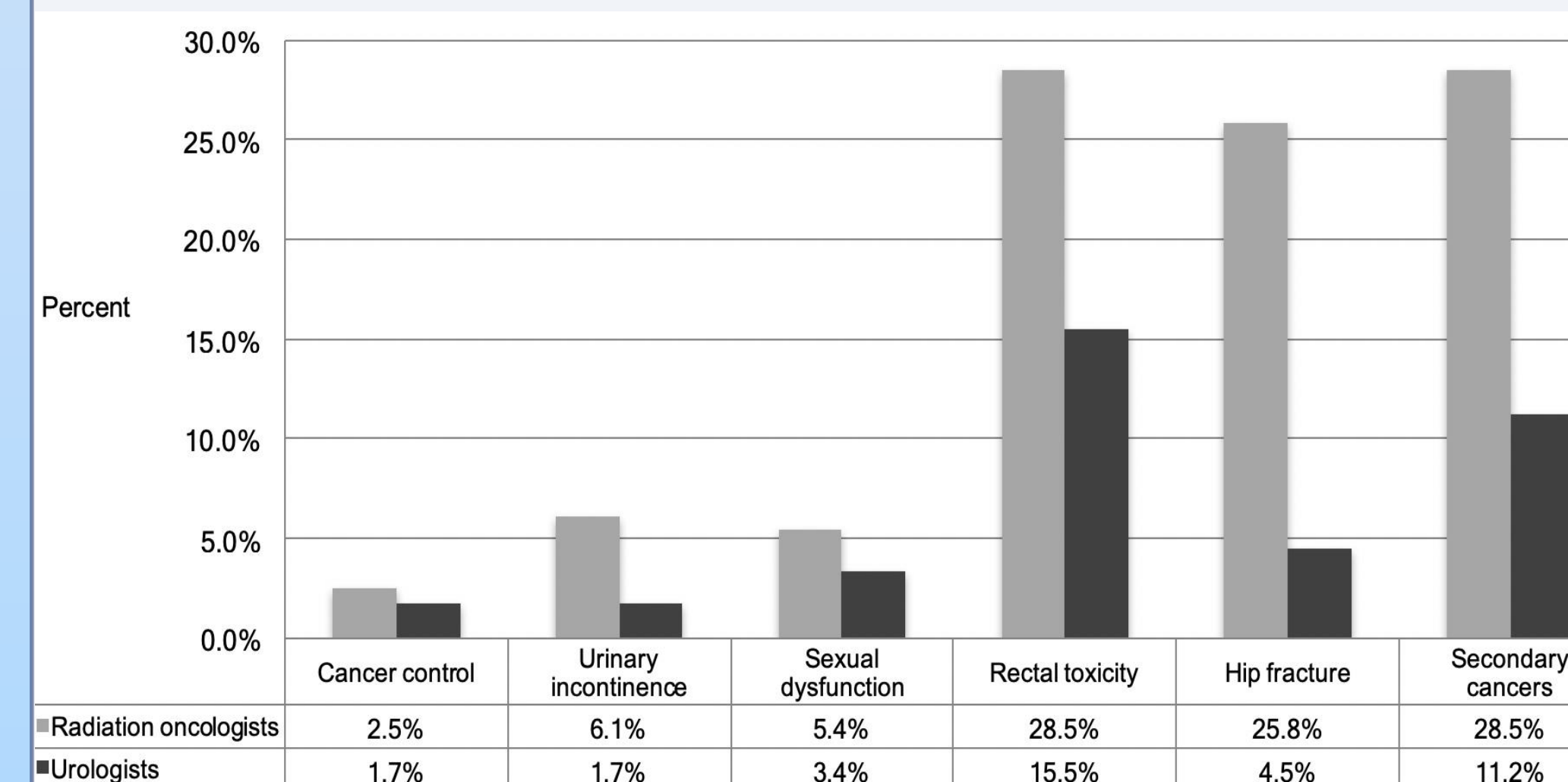


Figure 3: Physician responses on perceptions that PRT is better than IMRT for cancer control, quality of life, and complications

Feature (Reference)	OR (95% CI)	p-value
Cancer control		
Access to proton beam	11.16 (1.46-85.23)	<0.001
Radiation oncologists (Urologists)	11.32 (1.59-80.83)	<0.001
Urinary incontinence		
Access to proton beam	6.24 (1.59-24.46)	<0.001
Radiation oncologists (Urologists)	1.93 (0.47-7.82)	0.36
Sexual dysfunction		
Access to proton beam	2.63 (0.77-8.93)	0.12
Radiation oncologists (Urologists)	2.99 (0.91-9.83)	0.07
Rectal toxicity		
Access to proton beam	3.77 (2.03-6.98)	<0.001
Radiation oncologists (Urologists)	2.49 (1.32-4.69)	<0.001
Hip fracture		
Access to proton beam	1.48 (0.59-3.42)	0.42
Radiation oncologists (Urologists)	9.43 (4.04-22.00)	<0.001
Secondary cancers		
Access to proton beam	1.86 (0.94-3.72)	0.08
Radiation oncologists (Urologists)	4.65 (2.38-9.07)	<0.001

¹ Adjusted for physician age, race, gender, practice setting, compensation structure, number of physicians in group practice, number of new prostate cancer patients per week, and geographic region.

Table 2: Adjusted odds ratios in response that PRT is superior to IMRT for cancer control, quality of life, and complication outcomes¹

- Only a small fraction of survey respondents believed robotic surgery provided better cancer control than conventional surgery (4.5%).
- However, approximately one-third of all respondents viewed RARP as better for urinary incontinence (32.9%) and erectile dysfunction (30.0%) relative to ORP.

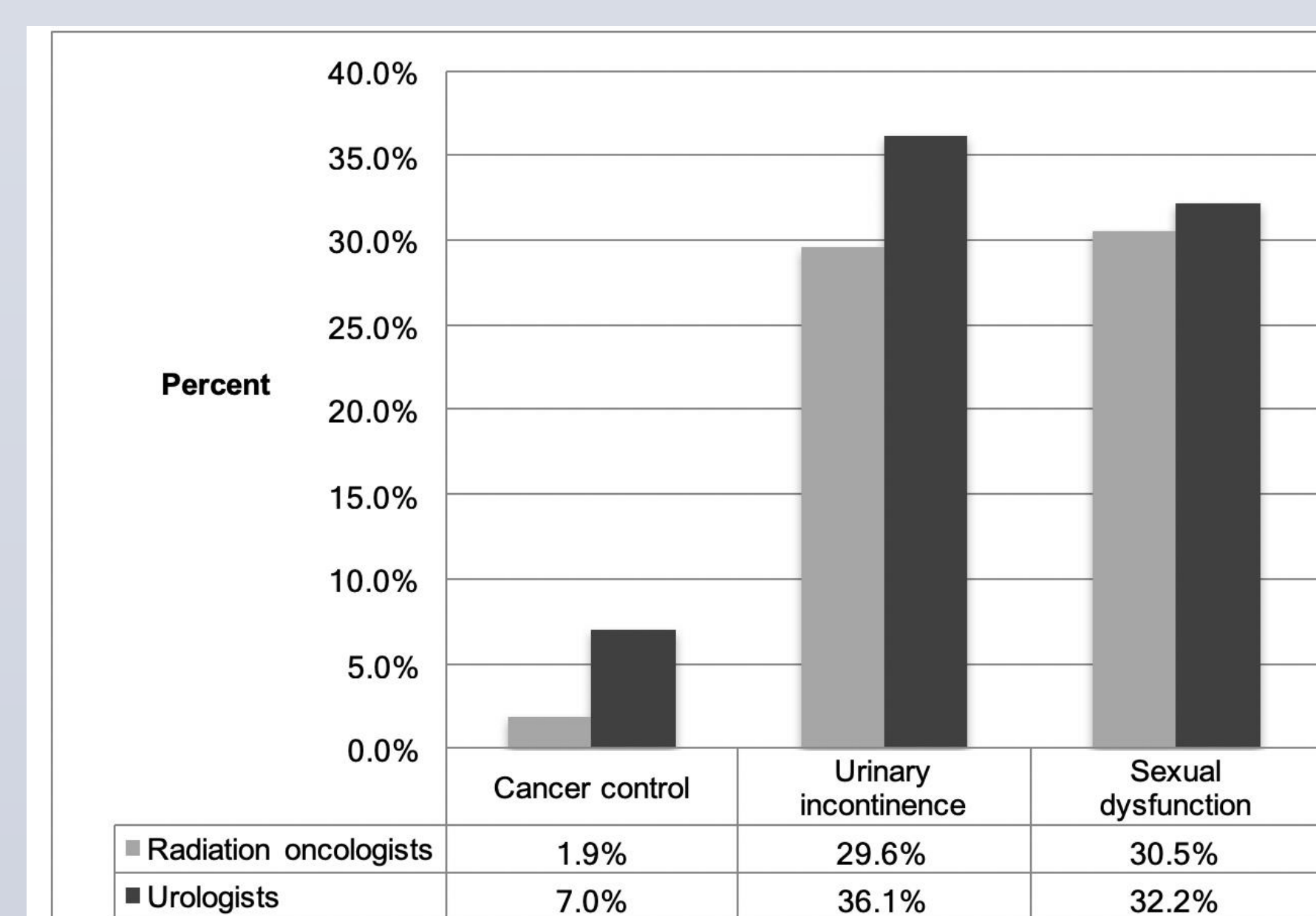


Figure 4: Physician responses on perceptions that RARP is better than ORP for cancer control and quality of life

- Significantly more urologists perceived RARP as superior to ORP for cancer control, urinary incontinence, and sexual dysfunction than radiation oncologists.

Feature (Reference)	OR (95% CI)	p-value
Cancer control		
Access to robotic surgery	2.41 (0.86-6.74)	0.09
Urologists (Radiation oncologists)	2.40 (0.76-7.54)	0.13
Urinary incontinence		
Access to robotic surgery	2.71 (1.63-4.49)	<0.001
Urologists (Radiation oncologists)	0.83 (0.50-1.38)	0.49
Sexual dysfunction		
Access to robotic surgery	3.21 (1.88-5.47)	<0.001
Urologists (Radiation oncologists)	0.54 (0.31-0.91)	0.02

¹ Adjusted for physician age, race, gender, practice setting, compensation structure, number of physicians in group practice, number of new prostate cancer patients per week, and geographic region.

Table 3: Adjusted odds ratios in response that robotic-assisted radical prostatectomy is superior to open radical prostatectomy for cancer control and quality of life outcomes

Discussion

A majority of survey respondents did not view either therapy as yielding better cancer control. RARP provides similar long-term oncologic and functional outcomes compared with conventional open surgery, yet costs approximately \$2,500 more per case. PRT costs nearly twice as much for IMRT among prostate cancer patients (\$32,428 vs. \$18,575). Our findings are concerning in that physicians with access to new technology for primary treatments of localized prostate cancer may have a biased perception about their clinical benefits despite lack of supporting evidence. Furthermore, these findings raise concerns about the degree to which patients may be influenced by the perceptions of RARP or PRT from physicians based on access to new treatment modalities. Altogether, our study suggests that the perceptions about the advertised benefits of PRT and RARP conflict with the current evidence on whether patients who receive newer primary therapies for localized prostate cancer achieve better outcomes. Specialists' perceptions of new therapies play an especially integral role in their routine utilization.

Conclusions

A majority of specialists in our national survey, regardless of access to new technology, did not view PRT or RARP as conferring better cancer control. Urologists believed RARP – a newer, more expensive treatment – provided decreased morbidity for patients despite limited evidence. Our results show that PRT is similarly perceived by radiation oncologists.

Acknowledgements

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