Utilities For Prostate Cancer Health States in Men Aged 60 and Older

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Purpose: We sought to measure utilities for prostate cancer health states in older men.

Methods: A total of 162 men aged 60 years or older (52% of whom had been diagnosed with prostate cancer) provided standard gamble utilities for 19 health states associated with prostate cancer or its treatment using an interactive, computer-based utility assessment program. Demographics and experience with specific health states were examined as predictors of ratings using ordinary least squares regression analysis.

Results: Mean utilities ranged from 0.67 to 0.84 for living with symptom-free cancer under conservative management ("watchful waiting") and from 0.71 to 0.89 for symptoms occurring with treatment (prostatectomy, radiation, and hormone ablation). For long-term treatment complications, bowel problems (0.71) were rated as significantly worse than impotence (0.89), urinary difficulty (0.88), or urinary incontinence (0.83). Combinations of these conditions were rated as significantly worse than individual component states. Men who had experienced impotence or urinary incontinence rated these states as slightly better than men who had not experienced the specific problems.

Conclusions: Both "watchful waiting" and treatment complications from prostate cancer treatments can have large impacts on quality of life. Mean ratings are important for use in policy-making and cost-effectiveness analyses. Variation in ratings across patients suggests that mean scores do not reflect individual preferences and that shared decision-making may be best for clinical decisions.

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Prostate cancer is one of the most commonly diagnosed malignancies in men and the second most frequent cause of deaths attributable to cancer in men.[1] Because the efficacy of treatment has not yet been determined, prostate cancer patients face considerable uncertainty. Health-related quality of life is an important factor in treatment decisions and can be reduced by both the cancer itself and by complications of treatments.

We have developed a decision model to examine outcomes of prostate cancer treatment.[2] The model adjusts for quality of life using utility weights for a number of prostate cancer- and treatment-related health states.[2] This approach to evaluation requires the quantification of the relative importance of various health outcomes using a common measurement unit. Utility assessment is used to assign weights to health states on a scale ranging from 0 (for dead) to 1.0 (for perfect health). A year spent with a health condition can be discounted from 1.0 by the utility for that condition, yielding a measure of survival in quality-adjusted life years (QALYs).[3] Using QALYs, the risks and benefits of different treatments can be comprehensively evaluated.

Our decision model initially used preference weights from the Self-Administered Quality of Well-Being-SA Scale (QWB-SA).[4] However, the QWB health states were not developed to represent the particular health consequences of prostate cancer. QWB standardized weights come from more than 800 judges who were recruited from the general population; however, it is not known how well these community preferences from nonpatients correspond to the preferences of patients. Also, the QWB uses a rating scale method to obtain utilities, whereas other models use the standard gamble (SG) or time trade-off (TTO) methodologies, which typically yield higher utilities.

Previous studies have measured prostate cancer utilities among older men but have used only a limited number of health states,[5–10] used small convenience samples,[5–8] or

restricted their sample to men with advanced prostate cancer.[11] The current study was undertaken to assess utility weights for the range of health states that can be experienced after prostate cancer diagnosis and treatment. We include a range of "watchful waiting" states, as well as several states that describe a combination of different treatment complications. Combination states have typically not been measured directly but rather calculated by combining component states with the assumption of either an additive or multiplicative judgment model.[12,13] Furthermore, we considered the effects of demographic variables and evaluated concerns about standardized weighting systems by comparing those who have experienced specific symptoms with those who have not.

METHODS

Subjects

The subjects were 162 men age 60 and older, of whom 52% had been diagnosed with prostate cancer. Men were recruited as volunteers from several sources in the San Diego area, including prostate cancer support groups, screening clinics, physician referrals, senior's groups, and local news media directed toward seniors. Interviews were conducted at an office near the University of California at San Diego during the year 2000 and lasted for an average of 1 hour. Subjects signed a written consent form and did not receive compensation but were mailed a synopsis of the study results. Four participants were excluded because they did not rate any of the prostate cancer health states (reasons for quitting were discomfort with the task and the computer, extremely slow progress, suspicion, and lack of interest in the task). Initial demographic and health questions included age, education, marital status, and prostate cancer diagnosis. An exit questionnaire contained additional questions regarding current and previous experience with 4 specific health conditions (impotence, bowel problems, urinary incontinence, and urinary difficulty) and monthly frequency of sexual activity. Conditions reported as "ever experienced"' included experience due to any reason, not necessarily related to prostate cancer or its treatment. Demographic and health data are shown in Table 1.

TABLE 1. Descriptive Data on Demographic and Health Experience

Variable	Percent		
	Nonpatients (n = 78*)	Patients (n = 84)	Overall (n = 162)
Age 60–69	49	38	43
Age 70–79	36	54	45
Age 80+	15	8	12
Married	64	74	69
Sexually active	73	50	61
Mean times per month	3.9	2.2	3.0
College degree or higher	78	81	79
Ever experienced			
Impotence	57	86	72
Urinary difficulty	66	64	65
Urinary incontinence	9	30	20
Bowel problems	36	25	30

*Among this group, there were 2 missing responses for education, 3 for sexual activity, 2 for impotence and urinary difficulty, and 4 for urinary incontinence and bowel problems.

Prostate Cancer-Specific Health States

Nineteen health states were chosen to reflect potential symptoms and complications of prostate cancer and of specific prostate cancer treatments. The health state descriptions were developed based on an extensive literature review and in close consultation with a urologist. The main symptoms typically occurring with the condition were described in 1 to 4 sentences, and information on function and prognosis was included when appropriate (see appendix for health state descriptions). Initial descriptions were discussed in focus encounters with 6 men and refined based on this feedback.

For the diagnosis of prostate cancer under conservative management, 3 "watchful waiting" states described asymptomatic cancer with different probabilities of spreading, to reflect the variation in the probability of metastasis associated with different tumor grades. Additional health states in this category included asymptomatic (early metastatic) and symptomatic (terminal) advanced prostate cancer. A second category of health states included 4 potential long-term side effects of treatment: impotence, urinary incontinence, urinary difficulty, and bowel problems. Combinations of 2 or 3 of these conditions were presented in 5 additional health states. A third category of health states reflected symptoms that occur during treatments: prostatectomy, radiation therapy, hormone ablation treatment, orchiectomy, and transurethral resection prostatectomy (TURP). (TURP utilities were measured and are reported although they are not directly relevant to prostate cancer.)

Because of concerns about respondent burden, we asked each subject to rate only 9 of the 19 health states, presented in random order of severity. Two health states, impotence and bowel problems, were presented to all participants to increase the sample size for these core states and enable comparison across survey versions.

Materials

Health state descriptions were rated using an interactive, computer-based utility assessment program (iMPACT3; http://preferences.ucsd.edu) designed for direct operation by study participants.[14] The standard gamble task asked respondents to imagine that they had the condition(s) described in the health state, and that there was a treatment that could cure them but had a risk of causing death. A ping-pong method

was then used to help the respondent choose the maximum risk of death he would accept as a consequence of treatment. The utility for the health state was the inverse of the accepted level of risk, transformed to a 0–1 scale. Each health state was also rated using a 20-year TTO and a rating scale method, and the order of rating methods was varied randomly across states. Results using these alternate rating methods are briefly discussed in this article.

Before rating the prostate cancer health states, participants practiced by rating a health state describing binocular blindness and then rated the anchor states of perfect health and coma. The interviewer was always present and intervened when necessary to ensure that participants correctly understood the task, clarifying aspects of the protocol for all respondents at predetermined points according to a script. Interviewers were trained by the project manager (S.S.) and completed several interviews under supervision before interviewing alone. The survey concluded when the respondent had rated all 9 states or when he no longer wished to continue.

To examine the validity of the utilities, we monitored the logical consistency of participants' ratings. Although there was no a priori order assigned to the health states in most cases, several pairs of states had a clear logical order of severity. For example, having bowel problems should not have been rated as more severe than having both bowel problems and impotence. Participants who rated such states illogically were given the opportunity to change their ratings after the computer pointed out the inconsistency. Sensitivity analyses were performed to examine the effects of excluding those who chose not to repair their ratings.

Analyses

Within-subjects differences in ratings between states and for the same state using different valuation methods are examined using *t*-tests. Relationships between utilities for combined states and their component states are illustrated graphically and examined within-subjects using *t*-tests. Effects of health and demographic variables on utilities for impotence, bowel problems, urinary incontinence, and urinary difficulty are examined using ordinary least squares regression.

RESULTS

Utilities for Health States

Eighty percent of respondents rated all 9 of the health states described to them, and the remainder completed an average of approximately 5 states. Most respondents (95%) had logically ordered ratings: 60% made no logical errors, and an additional 35% repaired logical errors when they were pointed out. The probability of an error in rating any state involved in a logic check was 12.6%. Of those with 1 or more errors, 86% made only 1 error, and the remainder made 2. Results are shown for those who made no errors or corrected errors when prompted. However, sensitivity analyses revealed that means were almost identical when the small number of noncorrectors (n = 8) was included.

The mean utilities for each of the 19 health states are shown in Table 2. Mean preference ratings for asymptomatic cancer states ranged from 0.67 to 0.84 and declined systematically as the probability of spreading increased (as illustrated in Fig. 1). These differences were significant among those who rated 2 different probabilities of spreading (20 versus 75%; t = 3.86, $P = 0.0004$, n = 47, and 40% versus metastatic asymptomatic; t = 5.27, $P < 0.0001$, n = 46). Severe metastatic cancer yielded the lowest ratings (closest to death) among all the health states. Among states reflecting potential long-term complications of treatments, impotence and urinary difficulty were rated as least bothersome and were not significantly different from each other among those who rated both. Ratings for urinary incontinence were slightly lower but not significantly different from impotence among those who rated both. Bowel problems were rated as significantly more bothersome than impotence (t = 7.55, $P < 0.0001$, n = 149) and urinary incontinence (t = 4.95, $P < 0.0001$, n = 88). Ratings for health states that involved a combination of 2 or 3 of these conditions were significantly lower than ratings for either condition on its own ($P < 0.0007$), revealing a worsening of quality of life with increasing complications.

Two versions of the survey contained multiple health states representing combinations of health conditions which allowed an examination of additive utility independence. In Figure 2, each graph shows results for the subsample of participants who rated all 4 states depicted. The points on the left in each graph illustrate the difference between the mean ratings for each of the conditions rated independently. The points on the right illustrate the ratings for each condition when combined with a second condition. If participants were judging the components of the states independently, the lines would be parallel, reflecting a similar difference between the 2 health conditions whether or not they were combined with a second condition. This is the case in Figure 2a, which shows the mean SG ratings for impotence and for bowel problems, both before and after the addition of impotence. Figure 2b illustrates a trend toward multiplicative effects; the addition of impotence reduced utilities for bowel problems more than it reduced utilities for urinary difficulty, although this difference was not statistically significant (t = 2.0, $P = 0.052$, n = 41).

In the category of symptoms occurring with treatment, Table 2 shows that the mean rating for hormone therapy was higher than the mean ratings for radiation or surgery but slightly lower than mean utilities for orchiectomy or TURP. Symptoms during recovery from prostatectomy were rated as

TABLE 2. Mean Standard Gamble Utilities for Health States by Category

Health State	Mean	SD	Median	Range	Interquartile Range	n
Cancer						
20% chance of spread	0.84	0.19	0.89	0.09–1.0	0.79–0.98	88
40% chance of spread	0.81	0.18	0.81	0.01–1.0	0.71–0.96	49
75% chance of spread	0.71	0.24	0.79	0.01–1.0	0.58–0.89	53
Spread asymptomatic	0.67	0.24	0.70	0.01–1.0	0.56–0.84	46
Metastatic cancer	0.25	0.11	0.11	0–0.9	0.01–0.52	54
Long-term treatment complications						
Impotence	0.89	0.16	0.91	0.09–1.0	0.86–1	150
Urinary difficulty	0.88	0.13	0.90	0.42–1.0	0.80–0.98	43
Urinary incontinence	0.83	0.21	0.90	0–1.0	0.78–0.98	88
Bowel problems	0.71	0.26	0.79	0–1.0	0.61–0.90	152
Impotence and urinary difficulty	0.78	0.19	0.80	0.22–1.0	0.70–0.94	42
Impotence and urinary incontinence	0.79	0.23	0.87	0–1.0	0.76–0.96	49
Urinary incontinence and bowel	0.70	0.24	0.76	0–1.0	0.66–0.88	45
Impotence and bowel	0.57	0.26	0.61	0.01–1.0	0.41–0.76	44
Impotence, urinary incontinence, and bowel	0.45	0.31	0.52	0–0.9	0.17–0.78	49
Symptoms occurring with treatment						
Hormone medications	0.83	0.19	0.90	0.19–1.0	0.78–0.98	44
Orchiectomy	0.87	0.16	0.90	0.20–1.0	0.79–0.98	38
Radiation therapy	0.73	0.30	0.83	0–1.0	0.71–0.91	44
Prostatectomy	0.67	0.29	0.73	0–1.0	0.56–0.90	51
TURP	0.86	0.16	0.90	0.42–1.0	0.80–0.99	53

more bothersome on average than side effects of radiation therapy.

Effects of Experience with Symptoms and Demographic Variables

Our second goal was to examine the effects of demographic variables, and the effects of experience with particular symptoms on utilities for those symptoms. Each regression equation included age and experience with the specific symptom, and beta coefficients are given for significant effects. Age was a significant predictor of higher utility ratings for urinary difficulty ($\beta = 0.007$, $P = 0.02$, $df = 41$), and lower ratings for bowel problems ($\beta = -0.006$, $P = 0.03$, $df = 150$). Utilities for impotence were slightly higher among those who had experienced impotence ($\beta = 0.04$, $P = 0.006$, $df = 145$), and experience with urinary incontinence also increased ratings for this health state ($\beta = 0.05$, $P = 0.046$, $df = 84$). Experiencing urinary difficulty did not predict utility level for this state. When prostate cancer diagnosis was used as a predictor of utilities rather than actual health experience (controlling for age), the only significant effect was marginally higher impotence ratings among patients ($\beta = -0.05$, $P = 0.05$, $df = 147$). When level of sexual activity (rather than impotence experience) was used to predict impotence utilities, it had an effect opposite to that of having experienced impotence, with greater monthly frequency of sexual activity predicting significantly lower utilities for the impotence health state ($\beta = -0.01$, $P = 0.0017$, $df = 144$). The effects of marital status and education on preference ratings were nonsignificant.

Effects of Rating Method

Mean ratings for most health states were similar using TTO and SG and significantly lower using the Visual Analog Scale (VAS). The exception to this pattern was for 3 of the 4 states reflecting asymptomatic cancer with a chance of spreading, for which SG utilities were lowest. In regressions testing relationships between methods using linear, quadratic, and cubed terms, 6 of the 9 analyses selected the linear term as the best fit, and 3 had significant higher order terms. These included squared terms for cancer with a 20% chance of spreading (SG predicting VAS, $\beta = 0.70$, $P < 0.001$, $df = 87$; TTO predicting SG, $\beta = 1.13$, $P < 0.01$, $df = 89$), and a cubed term for impotence (TTO predicting SG, $\beta = 1.38$, $P = 0.02$, $df = 152$).

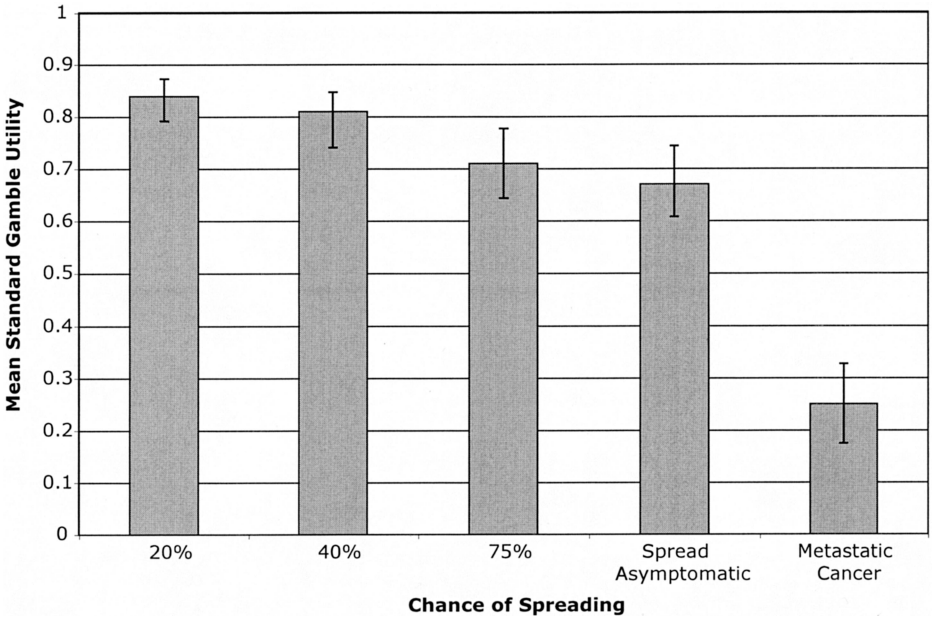

FIGURE 1. Utility by chance of spreading. Shown is the combined within- and between-subjects data; however, statistical comparisons were for within-subjects only.

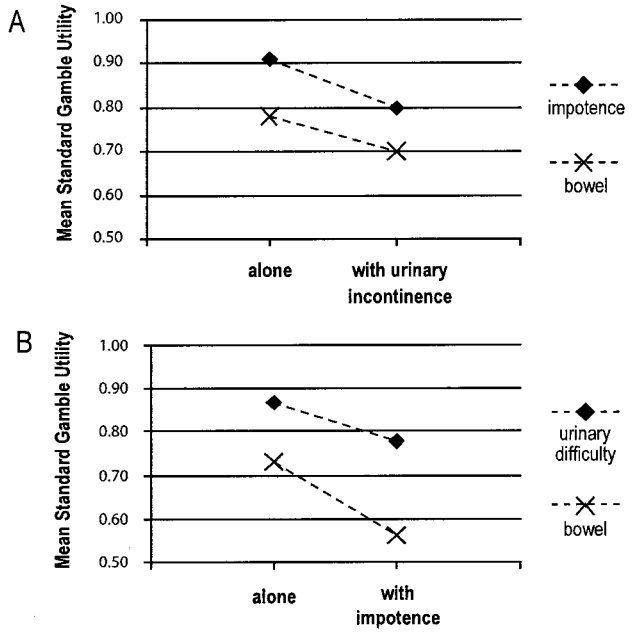

FIGURE 2. Tests of Utility Independence. A, impotence and bowel problems, with and without urinary incontinence (n = 45). B, urinary difficulty and bowel problems, with and without impotence (n = 41).

DISCUSSION

Utilities for Prostate Cancer Health States

Consistent with previous findings,[6,7] the mean utility for metastatic cancer was very low (0.25), indicating a large impact on health-related quality of life. This score would be expected for a condition with such severe physical symptoms and functional limitations. However, we also found substantial disutility for asymptomatic cancer (at levels similar to those found for long-term complications of treatment), reflecting anxiety as the result of uncertainty as to whether cancer would spread. This is consistent with the findings of Kattan and colleagues,[6] who found a utility of 0.72 for "living with prostate cancer—watchful waiting." Our use of 3 "watchful waiting" health states allowed a more detailed examination of this disutility, revealing a greater impact on quality of life associated with a higher chance of spreading.

The magnitude of this disutility is important to consider when discussing treatment options with prostate cancer patients. Upon diagnosis with prostate cancer, patients may overestimate the probability that they will end up with severe metastasis if their cancer is not aggressively treated. Anxiety may exert a strong influence on a man's treatment decision, encouraging him to choose an immediate intervention rather than the more conservative option of watchful waiting. This should be a central point of discussion during the treatment decision due to its potential impact on patient values and choices.

Utilities for Complications of Treatment

Our mean utilities for the 3 core treatment complications—impotence, urinary incontinence, and bowel problems—were similar to those found in previous studies where men rated these hypothetical health states using the SG or TTO. These include a recent study of 401 men undergoing prostate needle biopsy,[10] and 3 studies using small convenience samples to obtain utility estimates for decision mod-

els[5–7] (as summarized by Abdalla[15]). There are some differences that may be explained by variations across studies in the way health states were described. Our mean utility for impotence (0.89) was somewhat higher than those from these previous studies, in which mean estimates ranged from 0.69 to 0.74. For urinary incontinence, our mean (0.83) was similar to the mean of 0.79 found by Saigal and coauthors,[10] but higher than those found in the other studies, where a more severe form of incontinence was described. Bowel problems were assigned a significantly lower weight than impotence or urinary incontinence, as in other studies.

The results for states that combined 2 or 3 conditions indicate that some health problems appeared to be judged independently, which is consistent with an additive model. However, in another case there was a trend toward a more complex multiplicative model. Many investigators assume a multiplicative model is necessary to explain assignment of utility.[12] In this case, the task of developing utility weights becomes very challenging. The Health Utilities Index, for example, has more than 972,000 unique health states. Using an additive model, it would be possible to estimate all utilities from a limited number of ratings. Extensive evidence from the experimental psychology and cognitive science literature suggests that additive rather than multiplicative models describe most judgment processes.[13,16] Investigation of the additive versus multiplicative process underlying utility assignment is an important area for future research.

Our utilities for the symptoms of hormone ablation treatment are similar to those reported by Soucheck and colleagues,[11] but lower than those found by others for hormone-responsive cancer,[15] likely due in part to differences in health state descriptions. Utilities for hormone medications were similar to those for orchiectomy, suggesting that both are valid treatment options and that medication may not necessarily be preferred. Although treatment symptoms often do not persist as long as other complications, they can be unpleasant, and the disutility associated with these states is important to consider, since it can make a difference in choosing among treatment options.

Effects of Experience with Symptoms, and Demographic Variables

The literature is somewhat inconsistent as to whether ratings of patients differ from those of nonpatients, with patient ratings typically but not always found to be higher.[3] We found that men who report experience with impotence and urinary incontinence assign slightly higher utilities to these conditions. This appears to have been reflected more dramatically in previous studies in which men who were experiencing sexual, urinary or bowel problems after prostate cancer treatment gave high mean ratings (above 0.86) for their current functioning.[8,9,17] Ubel and colleagues[18] discuss several explanations for patient/nonpatient differences, including patient adaptation,[19] and differences in the interpretation of health state descriptions or in vantage point. Our results also suggest that tolerance for complications of treatment may increase with age for some complications and decline with age for others, the latter a result also found by Saigal and colleagues.[10] However, it is important to note that these health and age effects, while statistically significant, are often substantively small. For example, our mean difference in impotence ratings by experience is only 0.09 on a 0–1 scale.

Validity of Ratings for Individual Decision Making

Following procedures described by Lenert,[14] subjects were allowed to correct logical errors. The utilities of those who correct logical errors have previously been found the same as those who make no logical errors,[19a] thus we believe that the error rate in our study is best represented by the 5% of the sample who refused to repair errors when pointed out. This low error rate supports the validity of our measured utilities. This is in contrast to the conclusions of Souchek and colleagues,[11] who were concerned about the validity of individual patient utilities for use in the context of shared decision making in prostate cancer. Their conclusions were based largely on differences between the rank order of the utility scores and the simple ranking of states. This practice, recommended by Giesler and colleagues,[20] is based on the assumption that preferences are innate, and are simply sampled during the elicitation process. However, an equally valid perspective is that preference elicitation is a value clarification exercise. A large body of evidence shows that utilities are sensitive to the procedures used for elicitation[1] and hence must be constructed during elicitation, as Slovic[21] has argued is true of all measures of preferences. Rank ordering does not encourage the same thoughtful consideration of tradeoffs as utility elicitation techniques. It is typically performed as a first step on an individual's path to the discovery of his own values. Thus, rank ordering is potentially the least accurate assessment of patient values, and is probably not appropriate for use as a benchmark.

The elicitation process sometimes fails, and it is important to identify those with ambiguous statements of preferences.[19a,22] Participants who are presented with the opportunity to repair inconsistent ratings and fail to do so may not have valid ratings[19a] and the use of their utility values is not recommended in group-level decision analysis or individual decision-making. However, among those who do not make errors and those who repair them, utility elicitation is a valuable exercise and is recommended as a vital component of shared decision making.[23] If the elicitation process is kept simple and procedures are used to identify

those with ambiguous statements of preferences and help respondents repair ratings, individually measured utilities can be a valid and important tool to help a patient choose the treatment strategy that is likely to maximize his quality of life.

Relationships Between Rating Methods

For most health states, rating scale means were lower than mean ratings using TTO and SG, consistent with previous studies.[3] For watchful waiting health states, however, SG ratings were lowest, likely because respondents were provided with prognostic information in both the health state description (risk of cancer spreading) and in the SG tradeoff (risk of death from treatment). Because of risk aversion, scores are typically higher using the SG. However, in these cases, raters were essentially making a risk-risk trade-off, and risk aversion may not have come into play. Relationships between ratings methods were typically linear, which supports using the simpler rating scale method to obtain ratings similar to the utilities that would be obtained if the SG were used. There were some significant higher order effects, the nature of which is beyond the scope of this paper.

Limitations of this Study

This study presented subjects with a complicated protocol that required the rating of up to 27 prostate cancer health states (9 different health states using 3 different methods). It also should be noted that we used a convenience sample of volunteers that were highly motivated to participate because of an interest in prostate cancer and who were able to come to our office and to understand the task. Ratings in this study may differ from those provided by less motivated men. Another limitation of the study is that we do not have reliable information on cancer stage and grade among those with a diagnosis. Self-report information is known to have low reliability and, patients who have opted for surgical treatment may be more likely to be upstaged at the time of the surgery. However, we recognize that stage and Gleason grade may have an important effect on utility and we encourage investigators to collect this information in future studies. Finally, despite our relatively large sample size compared with other studies, all health states were not rated by all respondents, which limited our power to further explore the effects of health and demographic variables. Also, this cross-sectional study does not examine intraindividual change in utilities over time.

CONCLUSION

Our results quantify the large health-related quality of life impacts of prostate cancer and complications of its treatments. This is, to our knowledge, the most comprehensive study on utility weights for both short and long-term symptoms of prostate cancer and its treatments. This study also measures weights for several combination health states, since it is not uncommon for men to have multiple complications as a result of treatment. Although some of our results suggest that an additive judgment model may best explain utility for combination health states, we also found some evidence favoring a multiplicative relationship. The design of experiments to test additive versus multiplicative models should be a high priority for future research.

Analytic work on prostate cancer treatment continues to be an important source of guidance for cost-effectiveness analyses and policy decision-making as we await the results of trials in the post-PSA era, which will not be available for several years (Prostate Cancer Observation versus Intervention Trial, PIVOT[24]). Our modeling work, for example, suggests a decline in quality-adjusted survival after treatment of those with well-differentiated cancer, in contrast to a clear treatment benefit for those with poorly differentiated cancer.[2] The wide interindividual range in ratings underlines the importance of conducting sensitivity analyses in decision models to analyze the effects of a range of utility weights. However, the "generic"/mean utility weights presented in this paper are a valuable resource for those conducting this type of analysis.

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APPENDIX

Wording of Health State Descriptions (Subjects did not see descriptive titles.)

Asymptomatic Cancer with a Chance of Spreading

You are told that your prostate cancer is currently confined to the prostate and there is a 20% chance that the cancer will spread over time. However, you are currently in perfect health. You have no symptoms from the cancer and are able to continue with your normal activities.

(This state is also presented with 40% and 75% chance of spread, and with cancer that has already spread but was causing no symptoms.)

Metastatic Cancer

Your prostate cancer has spread. You are terminally ill, have difficulty caring for yourself, and cannot participate in your usual activities. You have extreme tiredness, weakness, uncontrollable weight loss, and severe bone pain. The only symptom that can be controlled with medication is pain. The pain medication can make you feel disoriented and unsteady.

Difficult Urination

As a result of prostate cancer or its treatment, you have to urinate often but find it difficult to start urinating and to empty your bladder. You may have some discomfort with urination. A surgical procedure may be needed to correct the problem.

Impotence

As a result of prostate cancer or its treatment, you are impotent (unable to get or maintain an adequate erection). Although there is no treatment that will "cure" this, there are medical devices and perhaps medication that may help improve your sexual function.

Urinary Incontinence

As a result of prostate cancer or its treatment, you leak urine often enough that you have to wear protective pads whenever you socialize or leave the house.

Bowel Problems

As a result of prostate cancer or its treatment, you have bowel problems. These include diarrhea, bloody stools, and irritative symptoms such as pain, burning, or itching in your rectal area. About once a week, you are unable to hold your bowel movements long enough to make it to the bathroom.

Transurethral Resection Prostatectomy (TURP)

Imagine you have had an operation through your penis to remove blockage of your urinary tract. You were in the hospital overnight and went home with a catheter inserted for 2 more days. Urination stills stings or burns, but you empty your bladder with a good stream. You are almost back to normal daily activity.

Hormone Medications

Imagine that you are taking medication as a way to control cancer spread. The medication can cause a decrease in your usual sex drive, difficulty obtaining or maintaining an erection, and perhaps "hot flashes."

Orchiectomy

Imagine that your testicles were removed as a way to control cancer spread. You now notice a decrease in your usual sex drive, difficulty obtaining or maintaining an erection, and perhaps "hot flashes."

Radiation Therapy

You are undergoing radiation therapy and spend 3 to 5 hours in the hospital several days a week. You feel tired, find urination

painful, and may have blood in your urine. You also have pain and burning in your rectal area and diarrhea or bloody stools.

Post-Prostatectomy

You have undergone surgery to remove your prostate. You are in the hospital for 3 to 5 days. When you are discharged home, you have a catheter in your bladder. You feel tired, have pain in your lower groin, and are unable to perform your regular activities.

Questions on Health Experience and Sexual Activity

Your answers to the following questions will help us to understand the relationship between individual experience and patient preferences. Please keep in mind that your responses are confidential.

1. Have you ever experienced any of the following conditions on a *repeated basis*? (Answer choices are never [= 1], previously [= 2], and currently experiencing [= 3])
   a. Difficult, slow or uncomfortable urination?
   b. Leak urine often enough to need protective pads?
   c. Bowel problems (pain or discomfort, bloody or loose stools, leakage)?
   d. Inability to get or maintain an adequate erection?
2. On average, approximately how many times *per month* are you sexually active?