Comparison of Recommendations by Urologists and Radiation Oncologists for Treatment of Clinically Localized Prostate Cancer

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About 180,000 men will be diagnosed as having prostate cancer in the United States this year, most with clinically localized disease. The majority of these men will choose among 3 primary therapies: radical prostatectomy, external beam radiotherapy, or brachytherapy.

The choice among these therapies is not easy. Because most prostate cancers are found in men in their 60s and 70s, and because these cancers generally grow slowly, many prostate cancer patients are destined to die of competing medical problems. For others, especially men with poorly differentiated tumors or high prostate-specific antigen (PSA) levels, these therapies may not be curative. Moreover, while cohort studies following surgery and external beam radiotherapy patients for 10 to 15 years have been done, patients receiving contemporary brachytherapy have not been followed up that long. Meanwhile, all of these therapies have the potential to create adverse effects or complications.

For editorial comment see p 3258.
We were interested in extending our understanding of the differences between specialties beyond simply their preferences for treatment. We also wanted to see whether the different specialties continued to have such polar views regarding treatment 10 years later, well into the era of PSA testing. To these ends, in 1998, we surveyed a nationwide random sample of practicing US urologists and radiation oncologists.

**METHODS**

A random sample of physicians who listed their specialty as either urology or radiation oncology were selected from the American Medical Association Master List of Physicians. Subsequently, the offices of the sampled physicians were contacted by telephone to verify the address and specialty, that they were not in residency training, and that they were in clinical practice for at least 20 hours weekly.

Physicians then were sent a pretested questionnaire, a cover letter, and $10. A reminder postcard was sent to all sampled individuals; another survey instrument and cover letter were sent to nonrespondents after about 3 weeks. Finally, for those physicians who had not responded to the questionnaire, follow-up telephone calls were made to the physicians’ offices to encourage response and to identify subjects who needed another questionnaire.

The survey instrument for urologists contained questions about the diagnosis and treatment of benign prostate hyperplasia and prostatitis, as well as prostate cancer. The instrument for radiation oncologists focused almost exclusively on prostate cancer. Whenever it made sense, comparable questions were asked of both specialties.

**RESULTS**

Questionnaires were returned by 76% of eligible radiation oncologists (n = 559) and 64% of eligible urologists (n = 504). Table 1 compares the characteristics of the respondents in the 2 specialties. Responding urologists were older, more often male, more likely to be in solo practice, and less likely to be salaried. When respondents and nonrespondents were compared, using data from the file from which the sample was drawn, no significant differences were noted in terms of age or region of the country. Urologists who graduated from medical school less than 20 years previously were more likely to respond than earlier graduates. Physicians in multispecialty groups were also more likely to respond than physicians in solo practice in both specialties.

**Figure 1** compares both groups of specialists’ answers to questions about their recommendations for routine PSA testing. For men up through age 70 years, members of the 2 specialties made similar recommendations. Urologists are slightly more aggressive about screening than radiation oncologists but significantly more aggressive when patients are men in their 50s. The clearer trend, however, is the much more aggressive stance of radiation oncologists regarding PSA testing for men 70 years and older, and particularly for men older than 74 years. For example, while only 16% of urologists recommend routine PSA testing for men older than 80 years, 43% of the radiation oncologists do so.
Both groups of specialists have some members (10%-20%) who are willing to consider watchful waiting for patients with cancers with Gleason scores of the survival benefit they offer?" presents the percentage of respondents saying that there is "definitely" or "probably" a survival benefit for each of the 3 main therapies for men with clinically localized, moderately differentiated prostate cancer and less or more than a 10-year life expectancy, respectively. Although there are numerous statistically significant differences between the 2 groups given the large sample sizes, there is also considerable consistency in their answers. The majority of both groups of specialists think that all 3 therapies have survival benefit for men with a 10-year or longer life expectancy; only a minority think there is benefit from any of the treatments for men with less than a 10-year life expectancy. More of both types of specialists, though, believe that radiation, either by external beam or brachytherapy, is more likely to offer a survival benefit for men with less than a 10-year life expectancy than a radical prostatectomy. Indeed, that perception is slightly but significantly more common among urologists than among radiation oncologists. Figure 2 also demonstrates that members of each specialty are generally somewhat more likely than those in the other specialty to believe in the efficacy of the treatments that they perform, and are also a little less positive about the survival benefits of the treatment offered by the other specialty group.

Table 2 presents physicians’ responses to questions about head-to-head comparisons of the effectiveness of the 3 main therapies. When comparing radical prostatectomy and external beam radiotherapy for patients with life expectancies of 10 years or longer, urologists are almost all convinced (93%) that radical prostatectomy is better. On the other hand, radiation oncologists’ perceptions (72%) are that surgery and radiotherapy are equivalent. Almost a third of urologists think neither treatment has survival value for men with less than a 10-year life expectancy, while only 19% of radiation oncologists agree.

When deciding among treatment options, prostate cancer patients need to consider not only the effectiveness of the options at extending life, but also their adverse effects. Sexual dysfunction and incontinence are 2 potential adverse effects of aggressive therapy for prostate cancer. How are the likelihoods of these adverse effects presented to patients by urologists and radiation oncologists? Table 3 presents the risks of these complications that the respondents said they quote to their patients. Table 3 is most striking in how similarly the 2 groups estimate the probability of complications associated with surgery and radiation.

Respondents were also asked to choose their preferred treatment for patients with tumors of varying Gleason scores and PSA levels. In Figure 3 and Figure 4, the patient profiles are ordered based on the decreasing likelihood that such a cancer would be organ-confined at surgical staging. Subjects were given the options of expectant management (watchful waiting) and androgen deprivation (as primary therapy) in addition to the potentially curative therapies. For this analysis, both forms of radiotherapy were considered together.

<table>
<thead>
<tr>
<th>Comparison of Treatments (Patient Life Expectancy†)</th>
<th>Radiation Oncologists, %</th>
<th>Urologists, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radical prostatectomy vs external beam radiation (&lt;10 y)</td>
<td>(n = 549)</td>
<td>(n = 501)</td>
</tr>
<tr>
<td>Radiation better</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Both the same</td>
<td>68</td>
<td>40</td>
</tr>
<tr>
<td>Prostatectomy better</td>
<td>2</td>
<td>17</td>
</tr>
<tr>
<td>Neither offers survival benefit</td>
<td>19</td>
<td>32</td>
</tr>
<tr>
<td>Do not know</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Radical prostatectomy vs external beam radiation (≥10 y)</td>
<td>(n = 549)</td>
<td>(n = 501)</td>
</tr>
<tr>
<td>Radiation better</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Both the same</td>
<td>72</td>
<td>6</td>
</tr>
<tr>
<td>Prostatectomy better</td>
<td>20</td>
<td>93</td>
</tr>
<tr>
<td>Neither offers survival benefit</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Do not know</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Brachytherapy vs external beam radiation (≥10 y)</td>
<td>(n = 548)</td>
<td>(n = 494)</td>
</tr>
<tr>
<td>Brachytherapy better</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td>Both the same</td>
<td>53</td>
<td>33</td>
</tr>
<tr>
<td>External beam radiation better</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Neither offers survival benefit</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Do not know</td>
<td>13</td>
<td>20</td>
</tr>
</tbody>
</table>

*P < .001 for all comparisons.
†Exact question wording: “For a patient with clinically localized cancer (stage A or B, moderate grade), who has a life expectancy clearly less or greater than 10 years, how do you think [treatment 1 and treatment 2] compare in terms of the survival benefit they offer?”
of 3 or 4 and PSA levels no lower than 5 ng/mL. Beyond that low-risk subset, essentially no one in either group is willing to recommend watchful waiting (Figure 3).

As one would expect from the preceding data, the majority of both groups of specialists would recommend for most patients the therapy that they themselves deliver. However, there is a subset of radiation oncologists who indicated a preference for surgery for low-grade, low-PSA tumors. There are very few urologists who prefer radiation for such tumors (Figure 4).

As Gleason scores reach 7 or 8, both groups start to consider androgen deprivation as a primary therapy (Figure 3). Urologists also begin to recommend radiation more often in relationship to surgery as Gleason scores and PSA levels increase (Figure 4).

As the probability of organ-confined disease decreases, urologists become divided about the value of surgery. For tumors with Gleason scores of 8 or higher, or a Gleason score of 7 with a high PSA level, they become as likely to recommend androgen deprivation or radiation as they do surgery. However, there is a substantial minority who continue to recommend surgery even when tumors are likely to be extracapsular. Radiation oncologists, on the other hand, continue to recommend radiation for higher-risk tumors.

Finally, physicians were asked whether they believed that the 3 main potentially curative prostate cancer therapies are overused or underused in the United States (TABLE 4). A majority of radiation oncologists believe that radical prostatectomy is overused (82%), and about half think that radiation and brachytherapy are underused. In contrast, 51% of urologists think that radical prostatectomy is used at about the right rate and 37% think that external beam radiation is overused. Substantial percentages of both radiation oncologists and urologists believe that brachytherapy is both overused and underused, and a higher proportion express no opinion than for the other 2 primary therapies.

**COMMENT**

Although urologists and radiation oncologists differed in many of their beliefs regarding prostate cancer treatment, they also demonstrated agreement on a variety of issues. First, despite controversy over the value of PSA screening, responding physicians in both these specialties are virtually unanimous in their recommendation that PSA testing be done routinely at least until around age 75 years. For men older than 75 years, the 2 specialties differ, with radiation oncologists being considerably more positive about testing older men. This position is consistent with radiation oncologists’ perceptions that they have a therapy to offer that (according to nearly a majority) is beneficial to men even with less than a 10-year life expectancy.

Second, despite the lack of published supporting evidence from randomized clinical trials, the vast majority of physicians in both specialties believe that all 3 therapies offer a sur-

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**Table 3. Average Percentage Estimates of Chance for Loss of Sexual Function and Some Permanent Wetness for Various Prostate Cancer Treatment Options**

<table>
<thead>
<tr>
<th>Treatment†</th>
<th>Radiation Oncologists (n = 547)</th>
<th>Urologists (n = 489)</th>
<th>Radiation Oncologists (n = 540)</th>
<th>Urologists (n = 488)</th>
</tr>
</thead>
<tbody>
<tr>
<td>External beam radiation</td>
<td>36.8</td>
<td>39.2</td>
<td>3.2</td>
<td>5.7</td>
</tr>
<tr>
<td>Brachytherapy</td>
<td>23.4</td>
<td>30.7</td>
<td>3.7</td>
<td>4.9</td>
</tr>
<tr>
<td>Non–nerve-sparing prostatectomy</td>
<td>93.3</td>
<td>87.2</td>
<td>25.2</td>
<td>13.3</td>
</tr>
<tr>
<td>Unilateral nerve-sparing prostatectomy</td>
<td>59.3</td>
<td>60.4</td>
<td>20.8</td>
<td>12.2</td>
</tr>
<tr>
<td>Bilateral nerve-sparing prostatectomy</td>
<td>45.7</td>
<td>51.4</td>
<td>19.7</td>
<td>12.0</td>
</tr>
</tbody>
</table>

*All differences between specialties were significant (P<.01) with the exception of estimates for the permanent loss of sexual functioning for unilateral nerve-sparing prostatectomy (P = .99). The number of respondents differed slightly from question to question due to nonresponse. The numbers reflected are the maximum number of respondents to questions in this series.

†Exact question wording: “A patient of yours with prostate cancer is 65 and has full sexual function and no sign of sural. Radiation oncologists, on testing be done routinely at least until extraprostatic spread. Which primary treatment would you be most likely to recommend for localized prostate cancer if this patient has the following biopsy results [list of Gleason/PSA profiles]?”

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**Figure 3. Recommendations of Androgen Deprivation and Watchful Waiting for Men With Clinically Localized Prostate Cancers**

The left side of the figure shows the responses recommending androgen deprivation treatment when asked: “A prostate cancer patient of yours is 65, in good health, and has a negative digital rectal examination result and no evidence of extraprostatic spread. Which primary treatment would you be most likely to recommend for localized prostate cancer if this patient has the following biopsy results [list of Gleason/PSA profiles]?” The right side of the figure shows the responses recommending watchful waiting.
the probabilities of complications of all
gery does.

survival advantage than think that sur-

think that radiation therapy offers a sur-

however, there are more physicians who

cialty thinks that any therapy offers a

a minority of members of either spe-

less than a 10-year life expectancy, only

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year or more life expectancy.

vival advantage for men with a 10-

Third, with respect to patients with

ministry.14 Members of both

specialties feel much more comfort-

able if patients with any degree of prosta-

tate cancer receive one of the major pri-

mary therapies. When the Gleason

scores (7-8) and PSA levels (≥10 ng/

mL) are higher, increasing numbers in

both specialties, eventually nearing half,

would recommend androgen depriva-

tion as the primary therapy. Radiation

oncologists continue to recommend ra-

diation for tumors with a higher likeli-

hood of capsular penetration, while

urologists appear more dubious about

the value of surgery. This finding may

reflect a difference in perspectives about

when the 2 local therapies are likely to

be still curative; that is, radiation on-

cologists may believe tumors with some

degree of capsular penetration may still

be effectively treated with radiation,

while urologists may doubt that sur-

gery will cure such tumors.

Sixth, despite a relative shortage of

long-term follow-up data, members of

both specialties generally seem to ac-

cept brachytherapy as being at least as
effective as external beam radio-

therapy. Urologists seem to be slightly

more positive about brachytherapy than

about external beam radiation therapy.

Of course, the most dramatic differ-

ence between these 2 groups of spe-
cialists is that members of each spe-

cialty tend to believe in the therapy that

they themselves deliver. Radiation on-

cologists (72%) tend to believe that their

therapy is just as good as radical pros-
tatectomy for men with moderately dif-

derentiated, clinically localized cancer

while urologists (93%) are overwhelm-

ingly convinced that radical prostate-
tomy is better. This difference is criti-

cal in understanding what treatment

recommendations patients are likely to

hear. Presumably, the radiation ther-

apists can justify their preference for re-

commending external beam radio-

therapy on the basis that they believe

it works just as well as surgery. In con-

trast, urologists believe that while men

who have surgery do indeed have

higher risks of sexual dysfunction and

incontinence, cancer control is better

with surgery, and thus radical pros-
tatectomy is preferred.

### Table 4. Perceived Rates of Use of Treatments for Prostate Cancer*

<table>
<thead>
<tr>
<th>Treatment†</th>
<th>Radiation Oncologists</th>
<th>Urologists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radical prostatectomy</td>
<td>(n = 552)</td>
<td>(n = 499)</td>
</tr>
<tr>
<td>Overused</td>
<td>82</td>
<td>34</td>
</tr>
<tr>
<td>Underused</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Used at about the right rate</td>
<td>16</td>
<td>51</td>
</tr>
<tr>
<td>No opinion</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>External beam radiation</td>
<td>(n = 552)</td>
<td>(n = 499)</td>
</tr>
<tr>
<td>Overused</td>
<td>13</td>
<td>37</td>
</tr>
<tr>
<td>Underused</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>Used at about the right rate</td>
<td>35</td>
<td>51</td>
</tr>
<tr>
<td>No opinion</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Brachytherapy (n = 547)</td>
<td>(n = 496)</td>
<td></td>
</tr>
<tr>
<td>Underused</td>
<td>44</td>
<td>27</td>
</tr>
<tr>
<td>Used at about the right rate</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>No opinion</td>
<td>10</td>
<td>22</td>
</tr>
</tbody>
</table>

*P<.001 for all comparisons.

3 treatments. Both groups perceive sur-

surgery as being more likely to produce in-

continece and sexual dysfunction than radiotherapy. Both urologists and ra-
niation oncologists are generally con-

vinced that nerve-sparing surgery sub-

stantially reduces the rate at which

patients experience sexual dysfunc-

tion. Disagreements about probabil-

ities of adverse effects, then, do not ac-

count for the differences in treatment

recommendations noted between the

specialties. Some recent studies actu-

ally suggest, however, that these esti-

mated risks of complications for all 3

treatments may be low, and particu-

larly low for nerve-sparing radical pros-
tatectomy.9,13

Fifth, physicians from the 2 special-

ties are remarkably similar in the ex-
tent to which they would recommend

either watchful waiting or androgen

depression as primary therapies for par-

cular subsets of men based on Glea-

son scores and PSA levels. Less than

25% of members of either specialty

would recommend watchful waiting to

men with a tumor with a Gleason score

of 3, despite the fact that these pa-

tients appear to have an essentially nor-

mal life expectancy without aggres-

sive treatment.13 Members of both

Figure 4. Recommendations of Radical Prostatectomy and Radiation Therapy for Men With Clinically Localized Prostate Cancer

![Figure 4](image_url)

The left side of the figure shows the responses rec-

ommending radical prostatectomy when asked. *A prostate cancer patient of yours is 65, in good health, and has a negative digital rectal examination result and no evidence of extraprostatic spread. Which primary treatment would you most likely recommend for localized prostate cancer if this patient has the fol-

lowing biopsy results [list of Gleason/PSA profiles]?* The right side of the figure shows the responses rec-

ommending external beam radiation.
While clinical trials have not proven that patient outcomes are improved by aggressive treatment with surgery or radiation, neither have they proven these treatments ineffective. Given our findings, it is also important to point out that the descriptions of the effectiveness of surgery and radiation therapy that patients receive from urologists and radiation oncologists would be expected to be quite different. Although some patients might find it confusing to hear quite different treatment recommendations from experienced physicians with access to the same medical literature, scheduling consultations with a member of each specialty may be the best approach to ensure that patients get a balanced picture regarding aggressive treatment options before making a decision.

Neither group of specialists studied was supportive of expectant management for any but a limited subset of men; primary care physicians appear no more enthusiastic. Interestingly, however, when patients hear comprehensive presentations regarding the risks and benefits of all potential treatments, a substantial minority appears to choose expectant management. Given that many more men are now being diagnosed as having prostate cancer than will ever die of it, expectant management would appear to be appropriate for some men. More research is needed to define those subgroups of men for whom an expectant approach is a reasonable, or even optimal, management strategy. An added challenge will be to ensure any such insights are effectively communicated to patients facing a treatment decision for prostate cancer.

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REFERENCES