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The ‘CaP Calculator’: an online decision support tool for clinically localized prostate cancer

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Abstract

OBJECTIVE—To design a decision-support tool to facilitate evidence-based treatment decisions in clinically localized prostate cancer, as individualized risk assessment and shared decision-making can decrease distress and decisional regret in patients with prostate cancer, but current individual models vary or only predict one outcome of interest.

METHODS—We searched Medline for previous reports and identified peer-reviewed articles providing pretreatment predictive models that estimated pathological stage and treatment outcomes in men with biopsy-confirmed, clinical T1-3 prostate cancer. Each model was entered into a spreadsheet to provide calculated estimates of extracapsular extension (ECE), seminal vesicle invasion (SVI), and lymph node involvement (LNI). Estimates of the prostate-specific antigen (PSA) outcome after radical prostatectomy (RP) or radiotherapy (RT), and clinical outcomes after RT, were also entered. The data are available at <http://www.capcalculator.org>.

RESULTS—Entering a patient’s 2002 clinical T stage, Gleason score and pretreatment PSA level, and details from core biopsy findings, into the CaP Calculator provides estimates from predictive models of pathological extent of disease, four models for ECE, four for SVI and eight for LNI. The 5-year estimates of PSA relapse-free survival after RT and 10-year estimates after RP were available. A printout can be generated with individualized results for clinicians to review with each patient.

CONCLUSIONS—The CaP Calculator is a free, online ‘clearing house’ of several predictive models for prostate cancer, available in an accessible, user-friendly format. With further development and testing with patients, the CaP Calculator might be a useful decision-support tool to help doctors promote evidence-based shared decision-making in prostate cancer.

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CONFLICT OF INTEREST

None declared.

Keywords

prostate cancer; decision support; surgery; radiotherapy; shared decision-making

INTRODUCTION

Men diagnosed with clinically localized prostate cancer frequently have distress and uncertainty about their treatment decisions, and a substantial minority of men regret their choice later after completing treatment [1,2]. Doctors are the primary resource for obtaining the information patients need to make a treatment decision, but men are increasingly finding information on the Internet, where information can be inaccurate or outdated. Currently, online resources provide either predictions for a single endpoint or might only include results from that one institution rather than reflecting the broad range of results from different models. Our hypothesis is that providing more accurate, personalized estimates of risk can provide doctors with the ability to offer men with newly diagnosed clinical T1-3 prostate cancer individualized, evidence-based treatment recommendations. Our aim was to develop and describe a novel tool that aggregates several published predictive models, which can then be used to test our hypothesis in future studies.

METHODS

We searched Medline to identify peer-reviewed published articles that describe statistical models with detailed outcomes for clinically localized prostate cancer. Searching for ‘prostate cancer predictive model’, ‘prostate cancer nomogram’, ‘prostate cancer artificial neural network’, ‘prostate cancer risk group stratification’ and ‘prostate cancer regression tree analysis’ resulted in the identification of 972 articles.

The pathological endpoints of interest we wished to estimate were the likelihood of extracapsular extension (ECE), seminal vesicle invasion (SVI) and lymph node involvement (LNI) after radical prostatectomy (RP). For treatment-related endpoints, our aim was to estimate PSA outcome after RP or radiotherapy (RT) and the possibility of clinical failure (local or distant) after RT.

We excluded any articles unrelated to newly diagnosed, clinical stage T1-3 prostate cancer, and further limited inclusion to articles with pretreatment statistical models based primarily on American Joint Committee on Cancer (AJCC) clinical T stage, biopsy Gleason score and pretreatment serum PSA level. Further, we also excluded models that had inadequate pathological data, used an inadequate radiation dose, or required use of investigational variables (e.g. DNA ploidy, novel tumour markers or MRI findings). Through reviewing the citations, we further identified two additional multi-institutional predictive models for PSA outcome after RP [3,4] and included formulae used by some radiation oncologists to predict LNI [5]. We also included a recently developed population-based formula designed to reflect the risk of LNI in a modern cohort of men undergoing RP with nodal staging, and one study estimating the risk of positive margins after RP [6,7].

We included the original Partin tables, a single-institution update, and a similar model from Walter Reed Army Medical Center [8–10]. These three studies give estimates of pathological stage rather than providing a specific risk of ECE or SVI, with three additional algorithms or nomograms also providing estimates that could be included in the CaP Calculator [11–13].

For treatment outcomes, we included four estimates of PSA outcome after RP but replaced the original preoperative nomogram for 5-year PSA outcome after RP with a more recent version with 10-year estimates [3,4,14–16]. For RT, we included several pretreatment predictive models for PSA outcome and clinical progression [17–21].

We constructed a datasheet to include a patient's age, AJCC 2002 clinical T stage, primary and secondary Gleason score, PSA level and biopsy data (Appendix). Biopsy data consisted of entering the number of positive cores and total sampled cores. For each core with adenocarcinoma, the percentage of involvement is entered. As a default, uninvolved cores were automatically assigned a value of 0% and did not require data entry to calculate the mean percentage core involvement. Also, some predictive models required inclusion of whether Gleason 4–5 was either the dominant component or present at all [11,13,16].

For each predictive model, data were entered into spreadsheet tables (Excel™, Microsoft Corp., USA) and linked to the user's data entry. We reproduced the Roach and Surveillance, Epidemiology and End Results formulae and statistical algorithms, and linked it to the data entry sheet directly [5,6]. We reproduced, with VLOOKUP tables, the Partin tables and other statistical predictive models requiring no subjective scoring.

For nomograms, data entry of PSA level, Gleason score, T stage and biopsy data were assigned values and placed in VLOOKUP tables to generate estimates for disease extent and treatment outcome. Using the graphical nomogram published in each article, we tabulated values for each PSA level on the scale, following the directions given for each model. Because the values for PSA levels varied mostly at lower levels, we estimated the value for PSA in ≤ 0.5 ng/mL intervals for each nomogram. Because each had varying values as the PSA level increases, we attempted to ensure value measurements were available for each nomogram that would increase by ≤ 3 points. No values were assigned for PSA levels above the scale provided.

We did not have access to any patient data from these studies; consequently each predictive tool was used 'as is' to determine the results. This applied specifically to nomograms, in which we assigned values based upon use of the published nomogram in the original peer-reviewed article. If estimates were not available from a given study for the data entered, because the predictive model did not apply due to the patient cohort, the CaP Calculator would give a response of 'N/A'. Because not all models provided CIs, and we did not have direct access to the data, we could not include CIs for CaP Calculator.

After data entry, the CaP Calculator was checked for accuracy by two physicians (M.S.K., P.L.N.). Both reviewers compared the initial predictive model variables and estimates for accurate entry, and one (M.S.K.) re-examined all formulae and VLOOKUP tables in Excel to ensure they accurately represented each predictive model. In Excel, 45 mock patients with varying T stage, Gleason score and PSA level were tested to ensure accuracy of the output estimates compared to the published model.

Once unit testing was complete, the program was reconstructed for online use. We used an open source solution consisting of Linux operating system, Apache server, MySQL database management system and PHP programming language. To make the website respond more rapidly to user requests for results, we used asynchronous Java script and extensible markup language. Website unit testing was repeated again with 25 mock patients by one physician (M.S.K.) and compared with results from the developer (Mechtechnologies, Lahore, Pakistan). The website was then placed on a shared server using a UNIX-based hosting plan with Aplus.net.

RESULTS

The CaP Calculator is available at <http://www.capcalculator.org>. The site describes the CaP Calculator, its intended use and provides a bibliography. We designed CaP Calculator only for prostate cancer specialists (doctors, nurses, researchers) rather than direct patient use, to ensure that any results are interpreted collaboratively and can be placed in the appropriate clinical context. Users access CaP Calculator data entry and results through a login page. Users first confirm they are healthcare professionals to register and then provide an e-mail address and password.

After registration, users can then navigate to a data entry page where a patient's pretreatment information can be entered (Fig. 1). Once data points are entered, users can then obtain results for disease extent. To obtain further results for treatment efficacy, additional data entry is required on a separate page for the type of ET (external beam, brachytherapy or both) and the total radiation dose in centigray for external beam RT.

By entering information for T stage, primary and secondary Gleason scores, pretreatment PSA level and more detailed information on core biopsy findings, users receive results from up to four models for ECE, four for SVI and eight for LNI. Also, one estimate of the likelihood of positive margins is available. All these results can then be printed on one page (Fig. 2). Similarly, the PSA outcome after surgery, external beam RT or brachytherapy can be compared on a single page. After data entry for external beam RT dose, a separate results page provides estimates of PSA outcome after surgery and RT. Another page provides results for the estimated risk of clinical progression (local or distant failure) and distant metastasis. The initial website design consisted of a results page that could be printed, but with a recent upgrade a more printer-friendly format has been designed.

The website began operational use in April 2007. We have tracked daily and monthly use of the CaP Calculator since June 2007 using Aplus.net's website use monitoring. Between 1 June 2007 and 30 November 2009, CaP Calculator has had a total of 649 registered users (Table 1). The vast majority of users are male and focus on patient care rather than research. Most users (65%) are located in the community setting rather than academic centres (26%). Although most current users are from the North America/Caribbean region (74%), CaP Calculator has been used globally, with Europe being the second-most common region (15%). As no advertising or solicitation had been made by the authors, all users found the website either by search engines or 'word of mouth'. However, most users logged on starting in late September 2008 when the abstract was presented at the American Society of Radiation Oncology annual meeting in Boston. This factor correlates with CaP Calculator users' reported speciality being radiation oncology (33%), followed by urology (25%), medical oncology (14%) and primary care (11%).

DISCUSSION

We describe the development of a free online decision support tool for prostate cancer. CaP Calculator is an evidence-based information clearinghouse that provides access to multiple sources of published research simultaneously by aggregating and individualizing available data.

Men with prostate cancer prefer to receive individualized rather than generalized information [22]. With a growing amount of published data on prostate cancer, we believe that an online platform provides an important resource to aggregate information for doctors to share with each patient. Increasingly, men expect their doctors to allow them more participation in the decision-making process. When men understand their treatment options and feel actively involved in decision-making, they are more satisfied with treatment choices

and this might facilitate enrolment in clinical trials [23]. CaP Calculator provides prostate cancer health professionals an online resource to meet the needs and expectations of their patients.

Decision support, and the use of computers to compile information to facilitate decision-making, improves doctors' ability to predict clinical endpoints of interest in prostate cancer. With the success of the Kattan nomograms in prostate cancer, individualized patient education and shared decision-making have become easier for physicians to provide than ever before. Nomograms offer a wider range of answers than CaP Calculator currently provides, but they are more tedious to use than custom software. We designed this decision-support tool to reflect the range of available reports and to temper selection and physician bias associated with the results of a single-institution or prediction tool.

By providing comprehensive outcomes rather than relying upon individual statistical models, CaP Calculator allows physicians to efficiently address several questions about disease extent and treatment outcomes from many resources. It can also be easily updated as new data become available.

Although CaP Calculator effectively aggregates information on prostate cancer, its use comes with certain caveats. First, the results produced by CaP Calculator might not account for all variations based on clinical evaluation or treatment. Estimates based on the studies of patients with prostate cancer treated mainly at academic institutions might not apply in the community setting. Surgical technique can result in markedly different pathological findings and clinical outcomes, and the anatomical extent of lymph node sampling affects the likelihood of finding positive nodes [24,25]. There can also be inter-observer variability in the DRE findings and Gleason sum [26,27]. We designed CaP Calculator to reflect these variations, but whether its estimates are equally accurate for all patients requires further study.

Second, CaP Calculator does not incorporate other potentially important factors. Because most predictive models focus on clinical stage, Gleason sum and PSA level, we chose not to include clinicopathological variables such as DNA ploidy, novel tumour markers or MRI findings. Also, recent changes in surgical and radiation techniques might not be well reflected. Except for the Memorial Sloane-Kettering Cancer Center nomogram, CaP Calculator results reflect outcomes with lower doses of RT than usually used in current practice. We believe this decision tool's aggregated data provide clinicians with evidence-based estimates, based on currently published studies, but it will require continued updating to ensure that it remains as accurate, as newer approaches to treatment might affect previous risk estimates.

Third, the definition of PSA failure after RT has changed over time [28]. Nevertheless, until new predictive models are generated with this new surrogate endpoint, we believe that CaP Calculator still provides valuable estimates that are individualized, and at least as useful as single-institution reports, for clinicians to use in patients with prostate cancer.

Fourth, we could not entirely remove bias from CaP Calculator. Losing patients during the follow-up can adversely affect anticipated outcomes after treatment [29]. Presenting published reports might help to reduce some existing bias among urologists and radiation oncologists when using CaP Calculator, but selection bias exists in patient selection for some of the studies included in the CaP Calculator. An excellent example is the Partin table nomograms, which have become increasingly stringent for patient inclusion [9,11]. However, we designed this decision-support tool for clinical use, so it would be impossible to remove all bias in its use. In its current format, the website aggregates clinical data efficiently but cannot eliminate these biases, and requires a healthcare professional

cognisant of the inherent biases to then interpret the results, and before sharing any ‘results’ with patients. Used appropriately, this free, evidence-based resource can provide clinicians with the ability to individualize the available published research on clinically localized prostate cancer for each patient, and to promote more meaningful discussion that will hopefully optimize patient outcomes. Because the focus of CaP Calculator is on pretreatment predictions, it currently provides no further guidance after surgery, but future development might also allow inclusion of these data.

Finally, CaP Calculator currently only includes four models providing estimates of ECE and SVI, and three are based upon predicting pathological stage, and therefore underestimates the risk of these pathological findings. Our initial data entry design could not account for more sophisticated biopsy data inclusion, which we might include in a future update. However, it is our hope that these estimates in CaP Calculator will be able to be refined and improved over time as new data emerge.

Most reports suggest that men with prostate cancer prefer more involvement in decision-making, particularly when it reduces uncertainty [1,22]. More personalized discussion between clinicians and patients can provide adequate information for informed consent, and engaging patients might enhance shared decision-making [1,2,30]. For this reason, we currently believe that this decision tool is best suited for clinicians to use and then share results with patients.

Whether CaP Calculator can improve doctor-patient communication and shared decision-making remains to be determined. With additional changes in the website, we will be able to include more sophisticated predictive models and can improve CaP Calculator’s ease of use. Its ability to reduce patient uncertainty, to improve men’s satisfaction with treatment decisions, and to reduce decisional regret should be evaluated rigorously, and the concept of aggregating prostate cancer research at an individualized level requires validation.

In conclusion, we created CaP Calculator as a free, accessible online resource for clinicians to individualize outcome estimates for men with clinically localized prostate cancer. With over 600 registered users, our early experience with CaP Calculator suggests definite clinician interest in using online resources. While clinical trials are now warranted to assess whether CaP Calculator achieves its stated purpose of improving shared decision-making, we believe that online decision-support tools can be a valuable resource for both clinicians and patients with prostate cancer.

Abbreviations

RP	radical prostatectomy
RT	radiotherapy
ECE	extracapsular extension
SVI	seminal vesicle invasion
LNI	lymph node involvement
AJCC	American Joint Committee on Cancer

References

1. Steginga SK, Occhipinti S, Gardiner RA, et al. Prospective study of men’s psychological and decision-related adjustment after treatment for localized prostate cancer. *Urology*. 2004; 63:751–6. [PubMed: 15072894]

2. Davison BJ, Goldenberg SL. Decisional regret and quality of life after participating in medical decision-making for early-stage prostate cancer. *BJU Int.* 2003; 91:14–7. [PubMed: 12614242]
3. Cooperberg MR, Pasta DJ, Elkin EP, et al. The University of California, San Francisco Cancer of the Prostate Risk Assessment score: a straightforward and reliable preoperative predictor of disease recurrence after radical prostatectomy. *J Urol.* 2005; 173:1938–42. [PubMed: 15879786]
4. Freedland SJ, Terris MK, Csathy GS, et al. Preoperative model for predicting prostate specific antigen recurrence after radical prostatectomy using percent of biopsy tissue with cancer, biopsy Gleason grade and serum prostate specific antigen. *J Urol.* 2004; 171:2215–20. [PubMed: 15126788]
5. Roach M III, Marquez C, Yuo HS, et al. Predicting the risk of lymph node involvement using the pre-treatment prostate specific antigen and Gleason score in men with clinically localized prostate cancer. *Int J Radiat Oncol Biol Phys.* 1994; 28:33–7. [PubMed: 7505775]
6. Nguyen PL, Chen MH, Hoffman KE, et al. Predicting the risk of pelvic node involvement among men with prostate cancer in the contemporary era. *Int J Radiat Oncol Biol Phys.* 2009; 74:104–9. [PubMed: 19286330]
7. Cheng L, Slezak J, Berhstralh EJ, et al. Preoperative prediction of surgical margin status in patients with prostate cancer treated by radical prostatectomy. *J Clin Oncol.* 2000; 18:2862–8. [PubMed: 10920134]
8. Partin AW, Kattan MW, Subong EN, et al. Combination of prostate-specific antigen, clinical stage, and Gleason score to predict pathological stage of localized prostate cancer. A multi-institutional update. *JAMA.* 1997; 277:1445–51. [PubMed: 9145716]
9. Gancarczyk KJ, Wu H, McLeod DG, et al. Using the percentage of biopsy cores positive for cancer, pretreatment PSA, and highest biopsy Gleason sum to predict pathologic stage after radical prostatectomy: the Center for Prostate Disease Research nomograms. *Urology.* 2003; 61:589–95. [PubMed: 12639653]
10. Makarov DV, Trock BJ, Humphreys EB, et al. Updated nomogram to predict pathologic stage of prostate cancer given prostate-specific antigen level, clinical stage, and biopsy Gleason score (Partin tables) based on cases from 2000 to 2005. *Urology.* 2007; 69:1095–101. [PubMed: 17572194]
11. Conrad S, Graefen M, Pichlmeier U, et al. Systematic sextant biopsies improve preoperative prediction of pelvic lymph node metastases in patients with clinically localized prostatic carcinoma. *J Urol.* 1998; 159:2023–9. [PubMed: 9598511]
12. Cagiannos I, Karakiewicz P, Eastham JA, et al. A preoperative nomogram identifying decreased risk of positive pelvic lymph nodes in patients with prostate cancer. *J Urol.* 2003; 170:1798–803. [PubMed: 14532779]
13. Naya Y, Babaian RJ. The predictors of pelvic lymph node metastasis at radical retropubic prostatectomy. *J Urol.* 2003; 170:2306–10. [PubMed: 14634402]
14. Kattan MW, Eastham JA, Stapleton AM, et al. A preoperative nomogram for disease recurrence following radical prostatectomy for prostate cancer. *J Natl Cancer Inst.* 1998; 90:766–71. [PubMed: 9605647]
15. D'Amico AV, Whittington R, Malkowicz SB, et al. Biochemical outcome after radical prostatectomy, external beam radiation therapy, or interstitial radiation therapy for clinically localized prostate cancer. *JAMA.* 1998; 280:969–74. [PubMed: 9749478]
16. Stephenson AJ, Scardino PT, Eastham JA, et al. Preoperative nomogram predicting the 10-year probability of prostate cancer recurrence after radical prostatectomy. *J Natl Cancer Inst.* 2006; 98:715–7. [PubMed: 16705126]
17. Kattan MW, Zelefsky MJ, Kupelian PA, et al. Pretreatment nomogram for predicting the outcome of three-dimensional conformal radiotherapy in prostate cancer. *J Clin Oncol.* 2000; 18:3352–9. [PubMed: 11013275]
18. Kattan MW, Potters L, Blasko JC, et al. Pretreatment nomogram for predicting freedom from recurrence after permanent prostate brachytherapy in prostate cancer. *Urology.* 2001; 58:393–9. [PubMed: 11549487]

19. Kattan MW, Zelefsky MJ, Kupelian PA, et al. Pretreatment nomogram that predicts 5-year probability of metastasis following three-dimensional conformal radiation therapy for localized prostate cancer. *J Clin Oncol*. 2003; 21:4568–71. [PubMed: 14673043]
20. Kuban DA, Thames HD, Levy LB, et al. Long-term multi-institutional analysis of stage T1–T2 prostate cancer treated with radiotherapy in the PSA era. *Int J Radiat Oncol Biol Phys*. 2003; 57:915–28. [PubMed: 14575822]
21. Thames HD, Kuban DA, DeSilvio ML, et al. Increasing external beam dose for T1–2 prostate cancer: effect on risk groups. *Int J Radiat Oncol Biol Phys*. 2006; 65:975–81. [PubMed: 16750319]
22. Jones R, Pearson J, McGregor S, et al. Randomised trial of personalized computer based information for cancer patients. *BMJ*. 1999; 319:1241–7. [PubMed: 10550090]
23. Berry DL, Ellis WJ, Russell KJ, et al. Factors that predict treatment choice and satisfaction with the decision in men with localized prostate cancer. *Clin Genitourin Cancer*. 2006; 5:219–26. [PubMed: 17239276]
24. van Poppel H, Collette L, Kirkali Z, et al. Quality control of radical prostatectomy: a feasibility study. *Eur J Cancer*. 2001; 37:884–91. [PubMed: 11313177]
25. Briganti A, Chun FK, Salonia A, et al. Validation of a nomogram predicting the probability of lymph node invasion based on the extent of pelvic lymphadenectomy in patients with clinically localized prostate cancer. *BJU Int*. 2006; 98:788–93. [PubMed: 16796698]
26. Smith DS, Catalona WJ. Interexaminer variability of digital rectal examination in detecting prostate cancer. *Urology*. 1995; 45:70–4. [PubMed: 7529449]
27. Renshaw AA, Schultz D, Cote K, et al. Accurate Gleason grading of prostatic adenocarcinoma in prostate needle biopsies by general pathologists. *Arch Pathol*. 2003; 127:1007–8.
28. Roach M III, Hanks G, Thames H, et al. Defining biochemical failure following radiotherapy with or without hormonal therapy in men with clinically localized prostate cancer: recommendations of RTOG-ASTRO Phoenix consensus conference. *Int J Radiat Oncol Biol Phys*. 2006; 65:965–74. [PubMed: 16798415]
29. Coen JJ, Chung CS, Shipley WU, Zietman AL. Influence of follow-up bias on PSA failure after external beam radiotherapy for localized prostate cancer: results from a 10-year cohort analysis. *Int J Radiat Oncol Biol Phys*. 2003; 57:621–8. [PubMed: 14529765]
30. Sommers BD, Beard CJ, D'Amico AV, et al. Decision analysis using individual patient preferences to determine optimal treatment for localized prostate cancer. *Cancer*. 2007; 110:2210–7. [PubMed: 17893907]

APPENDIX

Variables included in CaP Calculator

For all patients

Age
 Clinical T stage
 Pretreatment PSA level
 Biopsy data
 Primary Gleason score
 Secondary Gleason score
 Number of positive cores
 Number of core biopsies
 Percentage of core involvement
 Presence of Gleason 4–5 on each core

For RT patients

Treatment method (external beam, brachytherapy, both)

External beam RT dose (cGy)

Use of androgen deprivation therapy

1. Fill in the following fields:

(* = required field)

Age: 63

* AJCC Clinical T Stage: T2a

* PSA at Diagnosis: 14 ng/mL

Biopsy Information:

Fill in all available information; entering Gleason is required and entering biopsy data will provide more information needed for some predictive models

NOTE: Only fill out %CA for involved cores.

* Primary Gleason: 3

* Secondary Gleason: 4

Number Sampled Cores: 6

Number Positive Cores: 2

Core No.	% CA on Core	Any Gleason 4 or 5	Primary Gleason 4 or 5
1	45	Yes	No
2	30	Yes	No
3		No	No
4		No	No
5		No	No
6		No	No
7		No	No
8		No	No
9		No	No
10		No	No
11		No	No
12		No	No

FIG. 1.

CaP Calculator sample data entry for a man with clinical stage T2a prostate cancer.

Detailed Estimated Disease Extent at Surgery

Patient: _____ Date Used: 12-15-2008
 Age: 63
 AJCC Clinical T Stage: T2a
 Gleason Sum: 7 = (Primary:3 + Secondary: 4)
 Most Recent PSA: 14 ng/mL

Extracapsular Extension (ECE): Range: 43% to 61%

Roach (UCSF): 61%
 Partin 1997* Ψ : 55%
 Makarov (JHH) Ψ : 52%
 Gancarczyk (CPDR)* Ψ : 43%

Seminal Vesicle Invasion (SVI): Range: 12% to 24%

Roach/UCSF: 24%
 Partin 1997* Ψ : 14%
 Makarov (JHH) Ψ : 12%
 Gancarczyk (CPDR)* Ψ : 21%

Lymph Node Involvement (LNI): Range: 1% to 19%

Roach (UCSF): 19%
 Partin 1997*: 9%
 Makarov (JHH): 7%
 Gancarczyk (CPDR)*: 2%
 Caglanos (MSKCC)*: 1%
 Conrad (Hamburg): 19%
 Naya (MDACC)*: 9%
 Seer LN Risk: 4%

Likelihood of Positive Margins after Prostatectomy Cheng (Mayo): 35%

FIG. 2.

CaP Calculator predictions of disease extent for a man with clinical T2a prostate cancer.

TABLE 1

Characteristics of 649 CaP Calculator users between 1 June 2007 and 30 November 2009

Category	<i>n</i> (%) of total
Gender	
Male	570 (88)
Female	78 (12)
No answer	1 (0)
Primary interest	
Patient care	580 (89)
Research	48 (7)
Other/no answer	19 (4)
Practice	
Community	423 (65)
Academic (clinical)	166 (26)
Academic (biostatistics)	10 (2)
Other/no answer	47 (7)
Location	
Africa	7 (1)
Asia	22 (3)
Central/South America	27 (4)
Europe	98 (15)
North America/Caribbean	477 (74)
Oceania	13 (2)
No answer	2 (0)
Speciality	
Medical oncology	91 (14)
Primary care	71 (11)
Radiation oncology	217 (33)
Urology	160 (25)
Other/no answer	106 (16)