Guideline Resource Unit
guru@ahs.ca

Local Prostate Cancer

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Background

Prostate cancer is the most commonly diagnosed cancer among Canadian men, and is the third leading cause of cancer-related death. In Canada, there will be an estimated 24,600 new cases of prostate cancer diagnosed, representing 20% of all new cancers in men. On average 67 Canadian men will be diagnosed with, and 13 Canadian men will die from prostate cancer every day. This represents 10% of all cancer deaths in men in 2022.[1]

Guideline Questions

1. How should patients with localized prostate cancer be risk stratified?
2. How should patients with localized prostate cancer be managed?
3. How should patients with localized prostate cancer be followed after they have completed treatment?

Search Strategy

For the most recent version of the guideline, the PubMed database was searched using the following criteria: (local[All Fields] AND ("prostate"[MeSH Terms] OR "prostate"[All Fields])) AND (Clinical Trial, Phase III[ptyp] AND ("2018/01/01"[PDAT] : "2021/12/31"[PDAT])).

Target Population

Adult men (18 years of age or older) with a suspicion or recent diagnosis of localized prostate cancer.

Recommendations

For a complete list of early detection and screening recommendations please refer to the 2022 Canadian Urological Association recommendations (link).

Staging

1. Assessment for patients who are being considered for active surveillance or treatment with curative intent should consist of:

A.History and physical examination

B. PSA – should be done prior to biopsy

C. Radionuclide bone scan and CT scan abdomen/pelvis – indicated only in patients with high-risk disease* or if there is clinical suspicion of high-risk disease, and may be considered in select patients with high-tier intermediate risk disease*

D. Multiparametric prostate MRI may be recommended prior to biopsy in patients who are candidates for curative management with suspected clinically localized prostate cancer.[2] Prostate MRI may increase the diagnostic yield for clinically significant cancer, and reduce overdiagnosis of low grade disease (PRECISION NEJM, MRI-First Lancet). MRI use for pre-treatment local staging

is a reasonable option for assessment of extra-prostatic extension (EPE) in intermediate and high-risk patients being considered for radical therapy if knowledge of EPE will alter management.
E. PMSA-PET is evolving as a staging investigation for local prostate cancer that may augment conventional staging modalities (CT/ bone scan).

**In patients taking 5-alpha reductase inhibitors, measured PSA should be doubled for the purposes of risk stratification.*

Table 2. Risk Categories for Clinical Staging (NCCN)[3]

Risk Category	Characteristics
Very low	Has all of the following: • cT1c • Grade Group 1 • PSA <10 ng/mL • Fewer than 3 prostate biopsy fragments/cores positive, ≤50% cancer in each fragment/core • PSA density <0.15 ng/mL
Low	Has all of the following but does not qualify for very low risk: • cT1–cT2a • Grade Group 1 • PSA <10 ng/mL
Favorable intermediate	Has 1 intermediate risk factors (IRFs): cT2b–cT2c Grade Group 2 PSA 10–20 ng/mL • <50% biopsy cores positive (eg, <6 of 12 cores
Unfavorable intermediate	Has 2 or 3 IRFs: • Grade Group 3 • ≥ 50% biopsy cores positive (eg, ≥ 6 of 12 cores)
High	Has 1 of the following: • cT3a OR • Grade Group 4 or Grade Group 5 OR • PSA >20 ng/mL
Very high	Has at least one of the following: • cT3b–cT4 • Primary Gleason pattern 5 • 2 or 3 high-risk features • >4 cores with Grade Group 4 or 5

An ultrasound- or MRI- or DRE-targeted lesion that is biopsied more than once and demonstrates cancer (regardless of percentage core involvement or number of cores involved) can be considered as a single positive core.
**In patients taking 5-alpha reductase inhibitors, measured PSA should be doubled for the purposes of risk stratification.*

Treatment: General Principles

1. All patients being considered for curative-intent treatment for prostate cancer should explore treatment options with specialists from both urology and radiation oncology. Treatment options such as prostatectomy, brachytherapy, and/or external beam radiotherapy (EBRT) have equivalent cancer-specific outcomes, with different toxicity profiles.

2. Patients should be offered clinical trials wherever available.

Management of Low-Risk Disease

1. Active Surveillance[4, 5]

A. This is the preferred management option in low-risk patients with the understanding that curative treatment will be offered if follow-up demonstrates either worrisome PSA elevation or worsening biopsy characteristics (e.g. Gleason grade and or/volume changes).

B. The patient may choose to proceed with curative therapy due to personal preference at any time.

C. A reasonable surveillance protocol includes:

i. PSA assessment every 6 months, DRE annually, at the physician's discretion.

ii. Confirmatory biopsies should be done within 2 years after initial diagnosis, then consider subsequent biopsies every 2-3 years or as clinically indicated. Risks of biopsy may dictate frequency of biopsies.

iii. MRI-prostate can be considered if there is discordance between clinical and pathological information, and is increasingly used prior to confirmatory or surveillance biopsies. MRI does not obviate the need for repeat prostate biopsy.[6]

D. Disease progression:

i. Pathological progression is defined as the presence of Gleason pattern ≥4.

ii. Additional factors to consider repeat biopsy include:

a. Clinical progression: increase in clinical stage (on DRE) from baseline status.

b. Biochemical progression: PSA doubling time <3 years.

iii. If there are signs of disease progression, intervention is recommended with curative therapy (i.e., radical prostatectomy, EBRT, or brachytherapy).

E. For patients that will not benefit from curative therapy, watchful waiting or other therapies such as androgen deprivation therapy (ADT) or palliative radiotherapy can be considered. Refer to clinical practice guideline for Advanced/ Metastatic Prostate Cancer for recommendations [Cancer Guidelines | Alberta Health Services].

2. Treatment Options for Low-Risk Disease:[6]

A. Radical treatment is not appropriate for patients with a life expectancy of <10 years.

B. ***Radical prostatectomy*** options include open retropubic prostatectomy or robotic-assisted laparoscopic surgery. [Bill-Axelson, Iverson, Wilt]

i. Pelvic lymph node dissection is typically omitted in low-risk patients

C. ***Brachytherapy:***[7]

i. Brachytherapy may consist of either low dose rate (LDR) or high dose rate (HDR). Typically HDR is performed as two separate fractions.

ii. Patients with pubic arch interference may not be eligible for brachytherapy.

iii. Patients with borderline pubic arch interference may be considered for a short course of ADT to reduce gland size.

iv. Patients with a prior transurethral resection (TURP) should be assessed on an individual basis.

v. Patients with significant baseline obstructive symptoms may not be eligible for brachytherapy (i.e. American Urological Association symptom score >20).

D. *External beam radiotherapy:*[8]

i. Intensity modulated radiation therapy (IMRT) or volumetric modulated arc therapy (VMAT) should be used for delivery

ii. Hypofractionated radiation may be considered.[9]

iii. Daily image guidance is the standard of care.

iv. The clinical target volume (CTV) is defined as the prostate alone.

E. *Whole gland cryosurgery* is an alternative therapeutic option for patients who may not be good candidates for surgery or radiation. There is less long-term data regarding efficacy and toxicity compared to the other treatment modalities.[10]

F. *Whole gland high intensity focused ultrasound (HIFU)* is not a recommended treatment option for low-risk disease.[11]

3. Follow-up for Low-Risk Disease:

A. PSA every 6 to 12 months for 5 years, then yearly.

B. Evaluation of treatment morbidity and/or complications.

Management of Intermediate-Risk Disease

1. Treatment Options for Intermediate Risk Disease:[12]

A. *Radical prostatectomy plus bilateral pelvic lymph node dissection*.[13]

B. *External beam radiotherapy*[14-16]

i. Intensity modulated radiation therapy (IMRT) or volumetric modulated arc therapy (VMAT) should be used for delivery

ii. Hypofractionated radiation and SBRT/ultra hypofractionation (PACE-B) may be considered.[9, 17-19]

iii. Short term (neoadjuvant + concurrent, 4-6 months total) ADT may be considered for select patients undergoing radiotherapy.[20, 21]

iv. The CTV is defined as the prostate +/- seminal vesicles.

C. *Brachytherapy (low dose rate or high dose rate)*

D. *EBRT with a brachytherapy boost (+/- ADT)* is an option for patients with high-tier intermediate risk disease.[8, 22, 23]

i. Brachytherapy may be delivered as either LDR or high dose rate (HDR).[8, 22, 23]

ii. Short term (neoadjuvant + concurrent, 4-6 months total) ADT may be considered for select patients undergoing brachytherapy.[18,19]

E. *Active surveillance* may be considered for selected patients with low-tier intermediate risk prostate cancer.

F. *Whole gland cryosurgery* is an alternative therapeutic option for patients who may not be good candidates for surgery or radiation. There is less long-term data regarding efficacy and toxicity compared to the other treatment modalities.[24]

G. *Whole gland high intensity focused ultrasound (HIFU)* is not a recommended treatment option for intermediate-risk disease.[11]

H. *Focal therapy* may be considered for selected patients in the context of a clinical trial

2. Follow-up for Intermediate-Risk Disease:

A. PSA every 6 to 12 months for the first 5 years, then yearly.

B. Evaluation of treatment morbidity and/or complications.

Management of High-Risk or Very-High-Risk Disease

All high-risk disease patients should be encouraged to discuss treatment options with both a Urologist and Radiation Oncologist before starting treatment.

1. Treatment Options for High-Risk or Very-High-Risk Disease:[12]

A. *EBRT + ADT*.[25-28]

i. There is growing evidence for hypofractionation in this patient group.[29]

ii. The CTV is defined as the prostate + seminal vesicles +/- regional lymph nodes.

iii. EBRT with a brachytherapy boost (+/- ADT for 12 months) is an option for patients with high risk disease.[8, 22, 23]

iv. ADT should be administered for an 18 – 36 month duration and may be initiated prior to radiotherapy or concurrently with EBRT.[28]

v. An anti-androgen could be co-administered with a LHRH agonist and be continued for at least 7 days (for possible flare in testosterone with initial LHRH agonist alone).

vi. Patients may be considered for the addition of abiraterone plus prednisolone to LHRH agonist

vii. Refer to the clinical practice guideline on Bone Health for Prostate Cancer for recommendations regarding bone health for patients on ADT [link].

B Patient with either clinically positive nodes or at least 2 of the following (T3/T4, Gleason 8-10, PSA > 40) are eligible to receive 2 years of abiraterone with EBRT and ADT.[31]

C. *Radical Prostatectomy and Pelvic Lymphadenectomy* should be considered only for patients with resectable disease where the intent is to achieve negative margins. Patients should be counselled that there is a significant likelihood of requiring multimodality therapy with post-operative radiotherapy and ADT.

D. *Whole gland cryosurgery* is an alternative therapeutic option for patients who may not be good candidates for surgery or radiation. There is less long-term data regarding efficacy and toxicity compared to the other treatment modalities.[24, 30]

2. Follow-up for High-Risk or Very-High-Risk Disease

A. First post-operative PSA should be done 4-12 weeks after surgery.
B. Routine PSA should be done every 6 months, unless otherwise specified.

Post-prostatectomy Treatment Options

1. PSA persistence/recurrence after RP is defined as failure of PSA to fall to undetectable levels (PSA persistence) or undetectable PSA after RP with a subsequent detectable PSA that increases on 2 or more determinations (PSA recurrence) or that increases to PSA >0.1 ng/mL.

2. ***Early salvage radiation therapy*** is the preferred strategy over adjuvant radiation therapy (i.e., positive margins, pT3), and should be considered at the time of biochemical failure.[32-35]

3. ADT can be considered with post-operative radiation therapy in select high-risk patients; the optimal type and duration of ADT has not been established.[36, 37]

4. The CTV is the prostate bed; addition of pelvic lymph node regions may be considered in select high-risk patients.[38-40]

5. The total dose to the prostate bed should be at least 66Gy in standard fractionation or hypofractionated treatment

6. In patients with biochemical recurrence, PSMA-PET may have value over conventional imaging or after negative conventional imaging where further evaluation of clinical recurrence is needed.[41] A multidisciplinary discussion should take place if PSMA-PET is being considered.

Alternative Therapeutic Options

1. ADT alone is an alternative therapeutic option for patients who decline or are not eligible for curative local treatment.[24] Refer to the clinical practice guideline on Bone Health for Prostate Cancer for recommendations regarding bone health for patients on ADT [Cancer Guidelines | Alberta Health Services].

Biochemical Recurrence Following Local Radical Radiation Therapy

1. The definition of a biochemical recurrence is PSA nadir +2 ng/mL after primary radiation therapy, or any rise in PSA after salvage RT.

2. Investigations to rule out metastatic disease include a bone scan and a CT scan or MRI, with consideration of PSMA PET. For post-radiotherapy patients, a repeat prostate biopsy is recommended to confirm local recurrence *if* local salvage therapy is being considered.

3. Recommended options for salvage local therapy include salvage cryosurgery or salvage brachytherapy. If salvage local therapy is not offered, or if the patient fails salvage local therapy, initiation of ADT is indicated.

A. Intermittent therapy is not inferior to continuous therapy.[42]

B. There is no absolute PSA threshold for initiating ADT, but a range of 5-10 is reasonable[43]; and consideration should also be given to PSA doubling time.

References

1. Brenner D, Poirier A, Woods R, Ellison L, Billette J, Demers A, et al. Projected estimates of cancer in Canada in 2022. 2022-05-02 2022;
2. Mason R, Marzouk K, Finelli A, Saad F, So A, Violette P, et al. UPDATE - 2022 Canadian Urological Association recommendations on prostate cancer screening and early diagnosis Endorsement of the 2021 Cancer Care Ontario guidelines on prostate multiparametric magnetic resonance imaging. *Canadian Urological Association journal = Journal de l'Association des urologues du Canada*. 2022 Apr 2022;16(4)
3. Schaeffer EM, Srinivas S, Adra N, An Y, Bitting R, Chapin B, et al. NCCN Guidelines® Insights: Prostate Cancer, Version 3.2024. *J Natl Compr Canc Netw*. Apr 2024;22(3):140-150.
4. Dahabreh IJ, Chung M, Balk EM, Yu WW, Mathew P, Lau J, et al. Active surveillance in men with localized prostate cancer: a systematic review. *Annals of Internal Medicine*. 2012;156(8):582-590.
5. Simpkin AJ, Tilling K, Martin RM, Lane JA, Hamdy FC, Holmberg L, et al. Systematic Review and Meta-analysis of Factors Determining Change to Radical Treatment in Active Surveillance for Localized Prostate Cancer. *European urology*. 2015;67(6):993-1005.
6. Drost Fjh ODFNDSEWBCHRMJSIG. Prostate MRI, with or without MRI-targeted biopsy, and systematic biopsy for detecting prostate cancer (Review). Cochrane Database of Systematic Reviews2019. p. CD012663.
7. Jabbari S, Weinberg VK, Shinohara K, Speight JL, Gottschalk AR, Hsu IC, et al. Equivalent biochemical control and improved prostate-specific antigen nadir after permanent prostate seed implant brachytherapy versus high-dose three-dimensional conformal radiotherapy and high-dose conformal proton beam radiotherapy boost. *International journal of radiation oncology, biology, physics*. 2010;76(1):36-42.
8. Morris DE, Emami B, Mauch PM, Konski AA, Tao ML, Ng AK, et al. Evidence-based review of three-dimensional conformal radiotherapy for localized prostate cancer: an ASTRO outcomes initiative. *International journal of radiation oncology, biology, physics*. 2005;62(1):3-19.
9. Dearnaley D, Syndikus I, Mossop H, Khoo V, Birtle A, Bloomfield D, et al. Conventional versus hypofractionated high-dose intensity-modulated radiotherapy for prostate cancer: 5-year outcomes of the randomised, non-inferiority, phase 3 CHHiP trial. *The LancetOncology*. 2016;17(8):1047-1060.
10. Chin JL, Ng CK, Touma NJ, Pus NJ, Hardie R, Abdelhady M, et al. Randomized trial comparing cryoablation and external beam radiotherapy for T2C-T3B prostate cancer. *Prostate cancer and prostatic diseases*. 2008;11(1):40-45.
11. Crouzet S, Chapelon JY, Rouviere O, Mege-Lechevallier F, Colombel M, Tonoli-Catez H, et al. Whole-gland ablation of localized prostate cancer with high-intensity focused ultrasound: oncologic outcomes and morbidity in 1002 patients. *European urology*. 2014;65(5):907-914.
12. Grimm P, Billiet I, Bostwick D, Dicker AP, Frank S, Immerzeel J, et al. Comparative analysis of prostate-specific antigen free survival outcomes for patients with low, intermediate and high risk prostate cancer treatment by radical therapy. Results from the Prostate Cancer Results Study Group. *BJU international*. 2012;109 Suppl 1:22-29.
13. Boorjian SA, Karnes RJ, Rangel LJ, Bergstralh EJ, Blute ML. Mayo Clinic validation of the D'amico risk group classification for predicting survival following radical prostatectomy. *The Journal of urology*. 2008;179(4):1354-1.
14. Rodrigues G, Lukka H, Warde P, Brundage M, Souhami L, Crook J, et al. The prostate cancer risk stratification (ProCaRS) project: recursive partitioning risk stratification analysis. *Radiotherapy and oncology : journal of the European Society for Therapeutic Radiology and Oncology*. 2013;109(2):204-210.
15. Zietman AL, DeSilvio ML, Slater JD, Rossi CJ, Miller DW, Adams JA, et al. Comparison of conventional-dose vs high-dose conformal radiation therapy in clinically localized adenocarcinoma of the prostate: a randomized controlled trial. *JAMA*. 2005;294(10):1233-1239.
16. Peeters STH, Heemsbergen WD, Koper PCM, van Putten WLJ, Slot A, Dielwart MFH, et al. Dose-response in radiotherapy for localized prostate cancer: results of the Dutch multicenter randomized phase III trial comparing 68 Gy of radiotherapy with 78 Gy. *Journal of Clinical Oncology: Official Journal of the American Society of Clinical Oncology*. 2006;24(13):1990-1996.
17. Lee WR, Dignam JJ, Amin MB, Bruner DW, Low D, Swanson GP, et al. Randomized Phase III Noninferiority Study Comparing Two Radiotherapy Fractionation Schedules in Patients With Low-Risk Prostate Cancer. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2016;34(20):2325-2332.
18. Pollack A, Walker G, Horwitz EM, Price R, Feigenberg S, Konski AA, et al. Randomized trial of hypofractionated external-beam radiotherapy for prostate cancer. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2013;31(31):3860-3868.

19. Catton CN, Lukka H, Gu CS, Martin JM, Supiot S, Chung PWM, et al. Randomized Trial of a Hypofractionated Radiation Regimen for the Treatment of Localized Prostate Cancer. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2017;35(17):1884-1890.
20. D'Amico AV, Manola J, Loffredo M, Renshaw AA, DellaCroce A, Kantoff PW. 6-Month Androgen Suppression Plus Radiation Therapy Vs Radiation Therapy Alone for Patients with Clinically Localized Prostate Cancer: a Randomized Controlled Trial. *Jama*. 2004;292(7):821-827.
21. Jones CU, Hunt D, McGowan DG, Amin MB, Chetner MP, Bruner DW, et al. Radiotherapy and short-term androgen deprivation for localized prostate cancer. *The New England journal of medicine*. 2011;365(2):107-118.
22. Prestidge Br WKSMG, et al. Initial report of NRG Oncology/RTOG 0232: a phase 3 study comparing combined external beam radiation and transperineal interstitial permanent brachytherapy with brachytherapy alone for selected patients with intermediate-risk prostatic carcinoma (abstract). 2016;
23. Hoskin PJ, Rojas AM, Bownes PJ, Lowe GJ, Ostler PJ, Bryant L. Randomised trial of external beam radiotherapy alone or combined with high-dose-rate brachytherapy boost for localised prostate cancer. *Radiotherapy and Oncology: Journal of the European Society for Therapeutic Radiology and Oncology*. 2012;103(2):217-222.
24. Cohen JK, Miller RJ, Jr., Ahmed S, Lotz MJ, Baust J. Ten-year biochemical disease control for patients with prostate cancer treated with cryosurgery as primary therapy. *Urology*. 2008;71(3):515-518.
25. Warde P, Mason M, Ding K, Kirkbride P, Brundage M, Cowan R, et al. Combined androgen deprivation therapy and radiation therapy for locally advanced prostate cancer: a randomised, phase 3 trial. *Lancet (London, England)*. 2011;378(9809):2104-2111.
26. Mason MD, Parulekar WR, Sydes MR, Brundage M, Kirkbride P, Gospodarowicz M, et al. Final Report of the Intergroup Randomized Study of Combined Androgen-Deprivation Therapy Plus Radiotherapy Versus Androgen-Deprivation Therapy Alone in Locally Advanced Prostate Cancer. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2015;33(19):2143-2150.
27. Brundage M, Sydes MR, Parulekar WR, Warde P, Cowan R, Bezjak A, et al. Impact of Radiotherapy When Added to Androgen-Deprivation Therapy for Locally Advanced Prostate Cancer: Long-Term Quality-of-Life Outcomes From the NCIC CTG PR3/MRC PR07 Randomized Trial. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2015;33(19):2151-2157.
28. Bolla M, de Reijke TM, Van Tienhoven G, Van den Bergh AC, Oddens J, Poortmans PM, et al. Duration of androgen suppression in the treatment of prostate cancer. *The New England journal of medicine*. 2009;360(24):2516-2527.
29. Hoffman KE, Voong KR, Levy LB, Allen PK, Choi S, Schlembach PJ, et al. Randomized Trial of Hypofractionated, Dose-Escalated, Intensity-Modulated Radiation Therapy (IMRT) Versus Conventionally Fractionated IMRT for Localized Prostate Cancer. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2018;36(29):2943-2949.
30. Jung Jh RMCGRRBCBDP. Primary cryotherapy for localised or locally advanced prostate cancer (Review). 2018. p. CD005010.
31. Attard G, Murphy L, Clarke NW, Cross W, Jones RJ, Parker CC, et al. Abiraterone acetate and prednisolone with or without enzalutamide for high-risk non-metastatic prostate cancer: a meta-analysis of primary results from two randomised controlled phase 3 trials of the STAMPEDE platform protocol. *Lancet*. Jan 29 2022;399(10323):447-460.
32. Parker C CNWCA, et al. Timing of radiotherapy after radical prostatectomy Abstract LBA48_PR. *ESMO Congress 2019*. 2019;
33. Kneebone A, Fraser-Browne C, Duchesne G, Fisher R, Frydenberg M, Herschtal A, et al. Adjuvant radiotherapy versus early salvage radiotherapy following radical prostatectomy (TROG 08.03/ANZUP RAVES): a randomised, controlled, phase 3, non-inferiority trial. *The Lancet Oncology*. 2020 Oct 2020;21(10)
34. Sargos P, Chabaud S, Latorzeff I, Magné N, Benyoucef A, Supiot S, et al. Adjuvant radiotherapy versus early salvage radiotherapy plus short-term androgen deprivation therapy in men with localised prostate cancer after radical prostatectomy (GETUG-AFU 17): a randomised, phase 3 trial. *The Lancet Oncology*. 2020 Oct 2020;21(10)
35. Vale C, Fisher D, Kneebone A, Parker C, Pearse M, Richaud P, et al. Adjuvant or early salvage radiotherapy for the treatment of localised and locally advanced prostate cancer: a prospectively planned systematic review and meta-analysis of aggregate data. *Lancet (London, England)*. 10/31/2020 2020;396(10260)
36. Wang C, Raldow AC, Nickols NG, Nguyen PL, Spratt DE, Dess RT, et al. Underutilization of Androgen Deprivation Therapy with External Beam Radiotherapy in Men with High-grade Prostate Cancer. *European urology oncology*. 2019;

37. Yang DD, Muralidhar V, Mahal BA, Nezolosky MD, Labe SA, Vastola ME, et al. Low rates of androgen deprivation therapy use with salvage radiation therapy in patients with prostate cancer after radical prostatectomy. *Urologic oncology*. 2017;35(9):542.e25-542.e32.
38. Roach M, 3rd, DeSilvio M, Lawton C, Uhl V, Machtay M, Seider MJ, et al. Phase III trial comparing whole-pelvic versus prostate-only radiotherapy and neoadjuvant versus adjuvant combined androgen suppression: Radiation Therapy Oncology Group 9413. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2003;21(10):1904-1911.
39. Lawton CA, DeSilvio M, Roach M, 3rd, Uhl V, Kirsch R, Seider M, et al. An update of the phase III trial comparing whole pelvic to prostate only radiotherapy and neoadjuvant to adjuvant total androgen suppression: updated analysis of RTOG 94-13, with emphasis on unexpected hormone/radiation interactions. *International journal of radiation oncology, biology, physics*. 2007;69(3):646-655.
40. Pommier P, Chabaud S, Lagrange JL, Richaud P, Lesaunier F, Le Prise E, et al. Is there a role for pelvic irradiation in localized prostate adenocarcinoma? Preliminary results of GETUG-01. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2007;25(34):5366-5373.
41. Morgan TM, Boorjian SA, Buyyounouski MK, Chapin BF, Chen DYT, Cheng HH, et al. Salvage Therapy for Prostate Cancer: AUA/ASTRO/SUO Guideline Part I: Introduction and Treatment Decision-Making at the Time of Suspected Biochemical Recurrence after Radical Prostatectomy. *J Urol*. Apr 2024;211(4):509-517.
42. Crook JM, O'Callaghan CJ, Duncan G, Dearnaley DP, Higano CS, Horwitz EM, et al. Intermittent androgen suppression for rising PSA level after radiotherapy. *The New England journal of medicine*. 2012;367(10):895-903.
43. Duchesne GM, Woo HH, King M, Bowe SJ, Stockler MR, Ames A, et al. Health-related quality of life for immediate versus delayed androgen-deprivation therapy in patients with asymptomatic, non-curable prostate cancer (TROG 03.06 and VCOG PR 01-03 [TOAD]): a randomised, multicentre, non-blinded, phase 3 trial. *The LancetOncology*. 2017;18(9):1192-1201.

Development and Revision History

This guideline was developed by a multidisciplinary working group comprised of members from the Alberta Provincial GU Tumour Team, external participants identified by the Working Group Lead, and a methodologist from the Guideline Resource Unit. The draft guideline was externally reviewed and endorsed by members of the Alberta Provincial GU Tumour Team who were not involved in the guideline's development, including urologists, radiation oncologists, medical oncologists, nurses, pathologists, and pharmacists. A detailed description of the methodology followed during the guideline development process can be found in the Guideline Resource Unit Handbook.

This guideline was originally developed in January 2017.

Maintenance

A formal review of the guideline will be conducted in 2023. If critical new evidence is brought forward before that time, however, the guideline working group members will revise and update the document accordingly.

Abbreviations

ADT, androgen deprivation therapy; CT, computed tomography scan; CTV, clinical target volume; DRE, digital rectal exam; EBRT, eternal beam radiotherapy; HDR, high dose rate; HIFU, high intensity focused ultrasound; ICRU, international commission on radiation units; IMRT, intensity modulated radiotherapy; LDR, low dose rate; LHRH, luteinizing hormone-releasing hormone; MRI, magnetic resonance imaging; PSA, prostate specific antigen; TURP, transurethral resection

Disclaimer

The recommendations contained in this guideline are a consensus of the Alberta Provincial Genitourinary Tumour Team and are a synthesis of currently accepted approaches to management, derived from a review of relevant scientific literature. Clinicians applying these guidelines should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care.

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Conflict of Interest Statements

Dr. Brita Danielson reports receiving honoraria from Janssen, Amgen, BMS, Bayer, and Ferring.

Dr. Lucas Dean* reports other from Bayer.*

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Derek Tilley has nothing to disclose.

*Co-leads

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