Prostate Cancer

This Prostate Cancer treatment consensus algorithm is used as a framework for the application of individualized therapy for patients with prostate cancer at MD Anderson Cancer Center. The faculty and members of the Genitourinary Center apply this general algorithm to individual patients accommodating patient preference and physician experience in the context of a specific knowledge of prostate cancer.

Prostate Cancer

Note: Consider Clinical Trials as treatment options for eligible patients.

INITIAL EVALUATION

- Prostate biopsy[1,2] with Gleason grading[3]
- History and Physical
- Digital rectal exam (DRE)
- Prostate specific antigen (PSA)
- Expanded Prostate Cancer Index Composite (EPIC)
- Family history with referral to genetic counseling and germline mutation testing as indicated[4]
- Lifestyle risk assessment[5]

STAGING WORK-UP

Life expectancy ≥ 5 years or symptomatic from local or metastatic disease

- Bone scan if any of the following are present:
  - PSA > 15 ng/mL
  - cT3-cT4 disease
  - Bone pain
  - Positive nodes on CT/MRI imaging
  - Gleason groups 4 and 5[3]
  - Adverse histologies (*e.g.*, small cell and/or neuroendocrine)
- If not completed prior to biopsy and if needed for clinical decision making, multi-parametric MRI or CT pelvis with contrast if MRI cannot be done
- Biopsy suspicious lesion(s) if clinically indicated

Life expectancy < 5 years and asymptomatic

Follow up annually; no imaging or treatment until symptoms present (*e.g.*, bone pain or voiding dysfunction)

Symptomatic?

- Yes → Bone scan if any of the following are present:
- No → Follow up annually; no imaging or treatment until symptoms present (*e.g.*, bone pain or voiding dysfunction)

PRESENTING CLINICAL STAGE

- cT1a – cT3a → See Page 3
- cT3b, cT4
Any TN1, M0
Any T or N, M1[6] → See Page 4

[1] Perform prostate biopsy if not previously done. If previously done, MD Anderson to review prostate biopsy results.

[2] See MD Anderson Approved Biomarker algorithm

[3] See Appendix A: Prognostic Groups Based on Gleason Scores

[4] Men meeting any one of the following suggested criteria should undergo genetic counseling and genetic testing:
- All men with prostate carcinoma (PCA) from families meeting established testing or syndromic criteria for the following syndromes: hereditary breast and ovarian cancer (HBOC), hereditary prostate carcinoma (HPC) and Lynch Syndrome (LS)
- Men with PCA with two or more close blood relatives on the same side of the family with a cancer in the following syndromes: HBOC, HPC and LS
- All men with mCRPC should consider genetic testing

[5] See Physical Activity, Nutrition, and Tobacco Cessation algorithms; ongoing reassessment of lifestyle risks should be a part of routine clinical practice

[6] For all M1, platinum-based chemotherapy and/or a PARP (poly ADP ribose polymerase) inhibitor should be considered

Department of Clinical Effectiveness V12
Approved by the Executive Committee of the Medical Staff 09/15/2020

Prostate Cancer

Note: Consider Clinical Trials as treatment options for eligible patients.

PRESENTING CLINICAL STAGE

INITIAL THERAPY[3]

cT1a

- Life expectancy < 10 years → Transrectal ultrasound (TRUS) biopsy[1] if Gleason group 4 and 5[2] → Monitor patient for symptoms; consider treatment if progression
- Life expectancy ≥ 10 years → TRUS biopsy[1]
  - Not reclassified to higher risk →
    - Active surveillance **or**
    - Consider external beam radiation therapy[4,7]
    - Radical prostatectomy[6] if life expectancy > 20 years

    → See Page 5 for surveillance and follow-up
  - Reclassified to higher risk → Consider treatment based on new stage

cT1b

TRUS biopsy[1]

- Low Risk Disease: cT1-cT2a **and** PSA < 10 ng/mL **and** Gleason group 1[2]
  - Active surveillance
  - Brachytherapy[5,7]
  - Cryotherapy[5,7]
  - External beam radiation[4,7]
  - Radical prostatectomy[6]
  - Molecular testing[1] of positive biopsy[8]
- Intermediate Risk Disease: cT2b-cTbc (but not qualifying for high risk disease) **or** PSA 10-20 ng/mL **or** Gleason group 2 and 3[2]
  - Brachytherapy[5,7]
  - Cryotherapy[5,7]
  - External beam radiation[4,7] with or without 4-6 months androgen ablation[9]
  - Radical prostatectomy[6]
  - Active surveillance (on protocol)
- High Risk Disease: cT3a **or** PSA > 20 ng/mL **or** Gleason group 4 and 5[2]
  - Cryotherapy[5,7]
  - External beam radiation[4,7] and 18-36 months of androgen ablation[9] **or**
  - External beam radiation[4,7] with brachytherapy[5,7] and 12 months of androgen ablation[9]
  - Radical prostatectomy[6]
- Locally Advanced → See Page 4

→ See Page 5 for surveillance and follow-up

cT1c-cT3a

Life expectancy ≥ 10 years?

- Yes → Low Risk / Intermediate Risk / High Risk / Locally Advanced (as above)
- No →
  - Monitor patient for symptoms; consider treatment if progression **or**
  - Consider external beam radiation therapy[4,7] **or** cryoablation[5,7] or androgen ablation[9] (see Page 4)

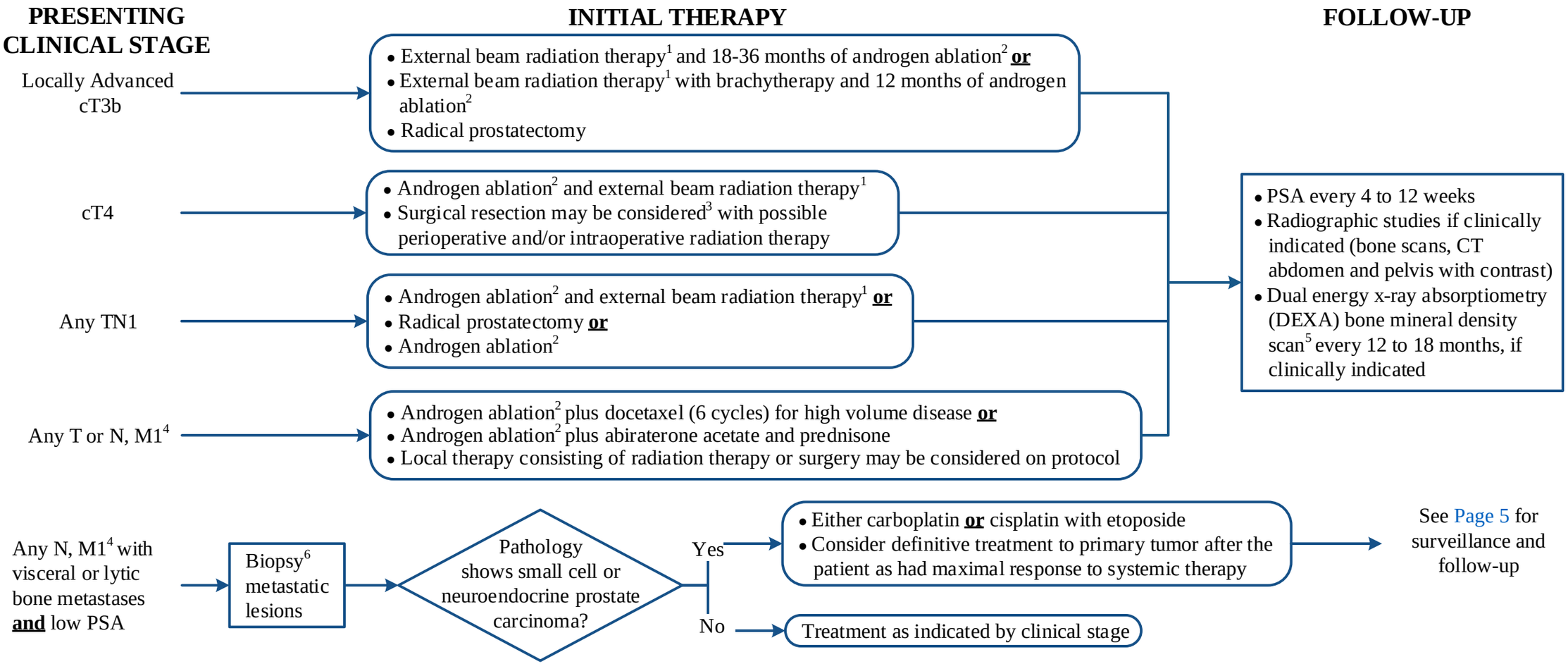
→ See Page 5 for surveillance and follow-up

[1] See MD Anderson Approved Biomarker algorithm
[2] See Appendix A: Prognostic Groups Based on Gleason Scores
[3] For all localized treatments, length of follow-up and quality of data differ with each treatment
[4] External beam radiation should be dose escalated using either intensity modulated radiation therapy (IMRT), or proton therapy. Inflammatory bowel disease and peri-rectal disease may be contraindications.
[5] Brachytherapy and cryotherapy eligibility limited by prostate size, pubic bone geometry, and baseline urinary function
[6] Radical prostatectomy is performed by open retropubic or robot assisted technique.
[7] External beam radiation and brachytherapy radical prostatectomy have longer duration of follow-up and may be preferred over cryotherapy. Cryotherapy is usually not recommended as first line definitive treatment
[8] May provide assistance to patients considering active surveillance versus treatment options
[9] Luteinizing hormone releasing hormone (LHRH) agonist or antagonist

Department of Clinical Effectiveness V12
Approved by the Executive Committee of the Medical Staff 09/15/2020

Prostate Cancer

Note: Consider Clinical Trials as treatment options for eligible patients.

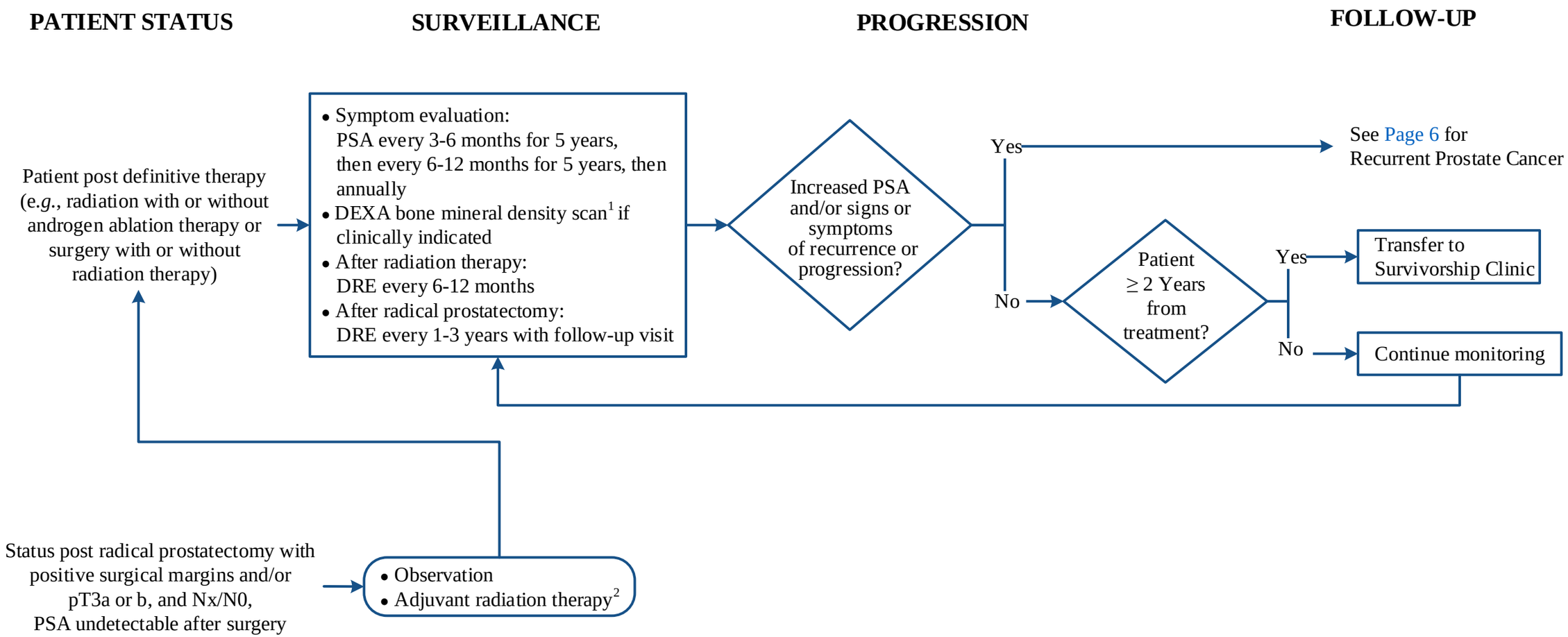


[1] 3D conformal radiation therapy, intensity modulated radiation therapy (IMRT) or proton therapy are standard for external beam radiation therapy
[2] Luteinizing hormone releasing hormone (LHRH) agonist or antagonist
[3] Based on pathologic findings after radical prostatectomy (*e.g.*, path stage, margin status, Gleason score, age), consider adjuvant external beam radiation therapy
[4] For all M1, platinum-based chemotherapy and/or a PARP (poly ADP ribose polymerase) inhibitor should be considered
[5] DEXA scan is indicated for patients < 70 years of age who have received at least 12 months of androgen ablation therapy or for patients ≥ 70 years who have received at least 6 months of androgen ablation therapy
[6] See MD Anderson Approved Biomarker algorithm

Department of Clinical Effectiveness V12
Approved by the Executive Committee of the Medical Staff 09/15/2020

Prostate Cancer

Note: Consider Clinical Trials as treatment options for eligible patients.



[1] DEXA scan is indicated for patients < 70 years of age who have received at least 12 months of androgen ablation therapy or for patients ≥ 70 years who have received at least 6 months of androgen ablation therapy

[2] External beam radiation therapy should be considered based on pathological findings after radical prostatectomy (*e.g.*, path stage, margin status, Gleason score/grade, age) when PSA is 0 ng/mL. If not considered after surgery, external beam radiation therapy should be performed at or below a PSA level of 0.5 ng/mL.

Department of Clinical Effectiveness V12
Approved by the Executive Committee of the Medical Staff 09/15/2020

Prostate Cancer

Note: Consider Clinical Trials as treatment options for eligible patients.

PROGRESSION

Increasing PSA[1] and/or signs or symptoms of disease progression

- Bone scan, and
- CT abdomen/pelvis with contrast or CT abdomen with contrast and MRI pelvis, and
- Chest x-ray or CT chest with contrast
- Consider F18-Fluciclovine PET/CT with contrast

SALVAGE THERAPY

Metastatic Disease

Hormone sensitive disease?

Yes

- Orchiectomy **or** LHRH agonist **or** antagonist with or without androgen receptor (AR) inhibitor (*e.g.*, bicalutamide, flutamide)
- Consider docetaxel for 6 cycles in high volume disease[2]
- Add AR inhibitor (prior to initiation to prevent flare) plus abiraterone acetate and prednisone

→

- PSA every 4 to 12 weeks
- Radiographic studies if clinically indicated (bone scans, CT abdomen and pelvis with contrast)
- DEXA bone mineral density scan[3] if clinically indicated

No

See Page 7

No Metastatic Disease

Evidence or high likelihood of local recurrence[1]?

Yes

- Consider salvage therapies (radiation if prior surgery)
- Salvage surgery **or** ablative procedures (if previous radiation)

No

Calculate PSA doubling time

- Less than 6 months →
  - Androgen ablation[4] intermittently
  - Observation
- Greater than 9 months →
  - Observation (recommended)
  - Androgen ablation[4] intermittently

LHRH = luteinizing hormone releasing hormone

[1] Evidence or high likelihood of local recurrence: biopsy strongly recommended

[2] Patients are classified as high volume if they have > 3 areas of presumed pathologic uptake on bone scan, involvement of the appendicular skeleton, or visceral involvement (Thall *et al* 2007)

[3] DEXA scan is indicated for patients < 70 years of age who have received at least 12 months of androgen ablation therapy or for patients ≥ 70 years who have received at least 6 months of androgen ablation therapy

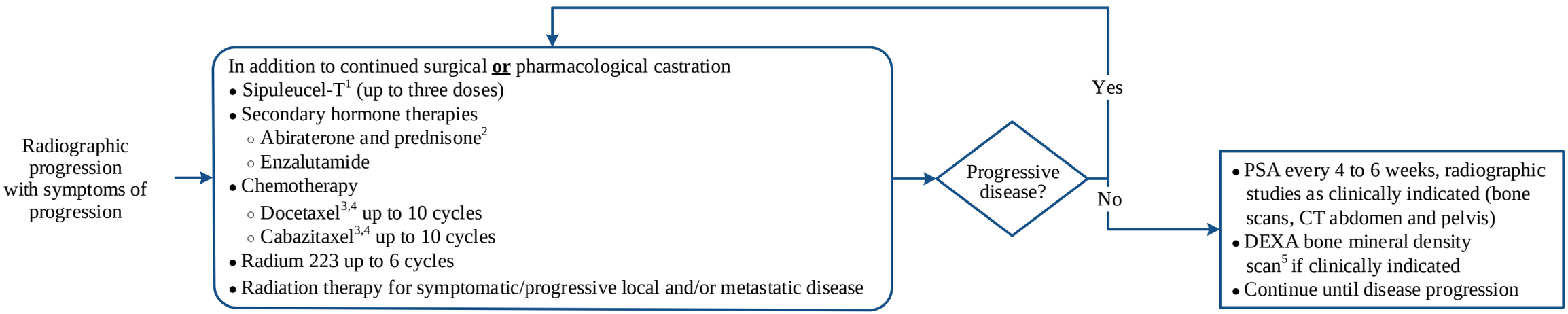
[4] LHRH agonist or antagonist

Department of Clinical Effectiveness V12
Approved by the Executive Committee of the Medical Staff 09/15/2020

Prostate Cancer

Note: Consider Clinical Trials as treatment options for eligible patients.

CASTRATION RESISTANT



[1] Recommended for early Castrate Resistant Prostate Cancer (CRPC) asymptomatic patients that do not have evidence of rapid disease progression

[2] Other possible secondary hormone therapy options include ketoconazole plus hydrocortisone when abiraterone unavailable, diethylstilbestrol (DES) with low dose prophylactic anticoagulants, low dose corticosteroids, bicalutamide, nilutamide, flutamide

[3] Addition of carboplatin to either docetaxel or cabazitaxel recommended for patients meeting Aggressive Variant Prostate Cancer Criteria.
Aggressive Variant Prostate Cancer Criteria is defined as a subset of patients with advanced castration-resistant prostate cancer who may eventually evolve into an androgen receptor (AR)–independent phenotype, with a clinical picture associated with the development of rapidly progressive disease involving visceral sites and hormone refractoriness, often in the setting of a low or modestly rising serum prostate-specific antigen level. Biopsies performed in such patients may vary, ranging from poorly differentiated carcinomas to mixed adenocarcinoma-small cell carcinomas to pure small cell carcinomas. These aggressive tumors often demonstrate low or absent AR protein expression and in some cases, express markers of neuroendocrine differentiation.

[4] May consider other chemotherapy options as per Thall et al. (2007) after progression of disease on docetaxel/cabazitaxel with or without carboplatin

[5] DEXA scan for patients < 70 years of age who have received at least 12 months of androgen ablation therapy or those ≥ 70 years who have received at least 6 months of androgen ablation therapy

APPENDIX A: Prognostic Groups Based on Gleason Scores

Prognostic Group	Corresponding Gleason Score	Risk Group
Group 1	6	Low
Group 2	3 + 4 = 7	Intermediate Favorable
Group 3	4 + 3 = 7	Intermediate Unfavorable
Group 4	8	High
Group 5	9 - 10	High

SUGGESTED READINGS

Abuzallouf, S., Dayes, I., & Lukka, H. (2004). Baseline staging of newly diagnosed prostate cancer: a summary of the literature. *The Journal of Urology, 171*(6), 2122-2127. doi:10.1097/01.ju.0000123981.03084.06

Ahmed, H., U., El-Shater Bosaily,, A., Brown, L., C., Gabe, R., Kaplan, R., Parmar, … Emberton, M. (2017). Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): A paired validating confirmatory study. *The Lancet, 389*(10071), 815-822. doi:10.1016/S0140-6736(16)32401-1

American Joint Committee on Cancer. (2009). *Cancer staging*. Retrieved from https://cancerstaging.org/references-tools/quickreferences/pages/default.aspx

Aparicio, A. M., Harzstark, A. L., Corn, P. G., Wen, S., Araujo, J. C., Tu, S. M., … Tannir, N. M. (2013). Platinum-based chemotherapy for variant castrate-resistant prostate cancer. *Clinical Cancer Research, 19*(13), 3621-3630. doi:10.1158/1078-0432.CCR-12-3791

Bolla, M., Collette, L., Blank, L., Warde, P., Dubois, J. B., Mirimanoff, R., … Pierart, M. (2002). Long-term results with immediate androgen suppression and external irradiation in patients with locally advanced prostate cancer (an EORTC study): A phase III randomised trial. *The Lancet, 366*(9485), 572-578. doi:10.1016/S0140-6736(05)67101-2

Bolla, M., van Poppel, H., Collette, L., van Cangh, P., Vekemans, K., Da Pozzo, L., … Maréchal, J. M. (2005). Postoperative radiotherapy after radical prostatectomy: A randomised controlled trial (EORTC trial 22911). *The Lancet, 366*(9485), 572-578. doi:10.1016/S0140-6736(05)67101-2

Cheng, H. H., Pritchard, C. C., Boyd, T., Nelson, P. S., & Montgomery, B. (2016). Biallelic inactivation of BRCA2 in platinum-sensitive metastatic castration-resistant prostate cancer. *European Urology, 69*(6), 992-995. doi:10.1016/j.eururo.2015.11.022

Chin, J. L., Pautler, S. E., Mouraviev, V., Touma, N., Moore, K., & Downey, D. B. (2001). Results of salvage cryoablation of the prostate after radiation: Identifying predictors of treatment failure and complications. *Journal of Urology, 165*(6), 1937-1942. doi:10.1097/00005392-200106000-00022

Corn, P. G., Tu, S., Zurita, A. J., Subudhi, S. K., Araujo, J. C., Kim, J., … Jonasch, E. (2015). A multi-institutional randomized phase II study (NCT01505868) of cabazitaxel (CAB) plus or minus carboplatin (CARB) in men with metastatic castration-resistant prostate cancer (mCRPC). *Journal of Clinical Oncology 33*(15), 5010. doi:10.1200/jco.2015.33.15_suppl.5010

D'Amico, A. V., Manola, J., Loffredo, M., Renshaw, A. A., DellaCroce, A., … Kantoff, P. W. (2004). 6-month androgen suppression plus radiation therapy vs radiation therapy alone for patients with clinically localized prostate cancer: A randomized controlled trial. *JAMA, 292*(7), 821-827. doi:10.1001/jama.292.7.821

De La Taille, A., Benson, M. C., Bagiella, E., Burchardt, M., Shabsigh, A., Olsson, C. A., & Katz, A. E. (2000). Cryoablation for clinically localized prostate cancer using an argon-based system: Complication rates and biochemical recurrence. *BJU International, 85*(3), 281-286. doi:10.1046/j.1464-410x.2000.00456.x

Epstein J. I., Amin M. B., Reuter V. E., & Humphrey P. A. (2017). Contemporary Gleason Grading of Prostatic Carcinoma: An Update With Discussion on Practical Issues to Implement the 2014 International Society of Urological Pathology (ISUP) Consensus Conference on Gleason Grading of Prostatic Carcinoma. *American Journal of Surgical Pathology*. *41*(4):e1-e7. doi: 10.1097/PAS.0000000000000820.

Epstein, J. I., Egevad, L., Amin, M. B., Delahunt, B., Srigley, J. R., & Humphrey, P. A. (2016). The 2014 International Society of Urological Pathology (ISUP) consensus conference on Gleason grading of prostatic carcinoma. *The American Journal of Surgical Pathology, 40*(2), 244-252.

Epstein, J. I., Zelefsky, M. J., Sjoberg, D. D., Nelson, J. B., Egevad, L., Magi-Galluzzi, C., … Eastham, J. A. (2016). A contemporary prostate cancer grading system: a validated alternative to the Gleason score. *European Urology, 69*(3), 428-435.doi:10.1016/j.eururo.2015.06.046

Continued on next page

SUGGESTED READINGS - continued

Fizazi, K., Tran, N., Fein, L., Matsubara, N., Rodriguez-Antolin, A., Alekseev, B.Y., … Özgüroğlu, M. (2017). Abiraterone plus Prednisone in Metastatic, Castration-Sensitive Prostate Cancer. *New England Journal of Medicine 377*(4), 352-360 doi:10.1056/NEJMoa1704174

Frank, S. J., Pugh, T. J., Blanchard, P., Mahmood, U., Graber, W. J., Kudchadker, R. J., ... Kuban, D. A. (2018). Prospective phase 2 trial of permanent seed implantation prostate brachytherapy for intermediate-risk localized prostate cancer: Efficacy, toxicity, and quality of life outcomes. *International Journal of Radiation Oncology Biology Physics*, *100*(2), 374-382. doi:10.1016/j.ijrobp.2017.09.050 doi:10.1097/PAS.0000000000000530

Giri, V. N., Knudsen, K. E., Kelly, W. K., Abida, W., Andriole, G. L., Bangman, C. H., … Gomella., L. G. (2017). Role of genetic testing for inherited prostate cancer risk: Philadelphia prostate cancer consenus conference 2017. *Journal of Clinical Oncology*, *36*(4), 414-424. doi:10.1200/JCO.2017.74.1173

Gravis, G., Fizazi, K., Joly, F., Oudard, S., Priou, F., Esterni, B., … Soulie, M. (2013). Androgen-deprivation therapy alone or with docetaxel in non-castrate metastatic prostate cancer (GETUG-AFU 15): A randomised, open-label, phase 3 trial. *The Lancet Oncology*, *14*(2), 149-158. doi:10.1016/S1470-2045(12)70560-0

James, N. D., Johann S de Bono, Spears, M. R., Clarke, N. W., Mason, M. D., Dearnaley, D. P., … Sydes, M. R. (2017). Abiraterone for prostate cancer not previously treated with hormone therapy. *The New England Journal of Medicine*, 377(4), 338-351. doi:10.1056/NEJMoa1702900

James, N. D., Sydes, M. R., Clarke, N. W., Mason, M. D., Dearnaley, D. P., James, N., J., Sydes M., R., Clarke, N., W., Mason, M., D., Dearnaley, D., P., Spears, M., R., … Parmar, M., K. (2016). Addition of Docetaxel, Aoledronic acid, or both to first-line long-term hormone therapy in prostate cancer (STAMPEDE): Survival results from an adaptive, multi-arm, multi-stage, platform randomized controlled trial. *The Lancet*, 387(10024), 1163-1177. doi:10.1016/s0140-6736(15)01037-5

Kasivisvanathan, V., Rannikko, A., S., Borghi, M., Panebianco, V., Mynderse, L., A. … Scott Eggener. (2018). MRI-targeted or standard biopsy for prostate-cancer diagnosis. *New England Journal of Medicine*, *378*(19), 1767-1777. doi:10.1056/NEJMoa1801993

Kishan, A. U., Cook, R. R., Ciezki, J. P., Ross, A. E., Pomerantz, M. M., Nguyen, P. L., … Merrick, G. S. (2018). Radical prostatectomy, external beam radiotherapy, or external beam radiotherapy with brachytherapy boost and disease progression and mortality in patients with Gleason score 9-10 prostate cancer. *The Journal of the American Medical Association*, *319*(9), 896-905. doi:10.1001/ jama.2018.0587

Mateo, J., Carreira, S., Sandhu, S., Miranda, S., Mossop, H., Perez-Lopez, R., … de Bono, J. (2015). DNA-repair defects and olaparib in metastatic prostate cancer. *New England Journal of Medicine*, *373*(18), 1697-1708. doi:10.1056/NEJMoa150685

Morris, W. J., Tyldesley, S., Rodda, S., Halperin, R., Pai, H., McKenzie, M., … Murray, N. (2017). Androgen suppression combined with elective nodal and dose escalated radiation therapy (the ASCENDE-RT Trial): An analysis of survival endpoints for a randomized trial comparing a low-dose-rate brachytherapy boost to a dose-escalated external beam boost for high-and intermediate-risk prostate cancer. *International Journal of Radiation Oncology Biology Physics*, *98*(2), 275-285. doi: 10.1016/j.ijrobp.2016.11.026

National Comprehensive Cancer Network. (2019). *Prostate Cancer* (NCCN Guideline Version 2.2020). Retrieved from https://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf

Papandreou, C. N., Daliani, D. D., Thall, P. F., Tu, S., Wang, X., Reyes, A., & Logothetis, C. J. (2002). Results of a phase II study with Doxorubicin, Etoposide, and Cisplatin in patients with fully characterized small-cell carcinoma of the prostate. *Journal of Clinical Oncology*, *20*(14), 3072-3080. doi:10.1200/JCO.2002.12.065

Parker, C., Nilsson, S., Heinrich, D., Helle, S. I., O'sullivan, J. M., Fosså, S. D., … Widmark, A. (2013). Alpha emitter radium-223 and survival in metastatic prostate cancer. *New England Journal of Medicine*, *369*(3), 213-223. doi:10.1056/NEJMoa1213755

Petrylak, D. P., Tangen, C. M., Hussain, M. H. A., Lara, P. N., Jones, J. A., Taplin, M. E., … Crawford, E. D. (2004). Docetaxel and estramustine compared with mitoxantrone and prednisone for advanced refractory prostate cancer. *New England Journal of Medicine*, *351*(15), 1513-1520. doi:10.1056/NEJMoa041318

Continued on next page

SUGGESTED READINGS - continued

Pollack, A., Zagars, G. K., Antolak, J. A., Kuban, D. A., & Rosen, I. I. (2002). Prostate biopsy status and PSA nadir level as early surrogates for treatment failure: Analysis of a prostate cancer randomized radiation dose escalation trial. *International Journal of Radiation Oncology, Biology, Physics, 54*(3), 677-685. doi:10.1016/S0360-3016(02)02977-2

Pound, C. R., Partin, A. W., Eisenberger, M. A., Chan, D. W., Pearson, J. D., & Walsh, P. C. (1999). Natural history of progression after PSA elevation following radical prostatectomy. *JAMA, 281*(17), 1591-1597. doi:10.1001/jama.281.17.1591

Pritchard, C., Mateo, J., Walsh, M., De Sarkar, N., Abida, W., Beltran, H., … Nelson, P. (2016). Inherited DNA-repair gene mutations in men with metastatic prostate cancer. *New England Journal of Medicine, 375*(5), 443-453. doi:10.1056/NEJMoa1603144

Stephenson, A. J., Shariat, S. F., Zelefsky, M. J., Kattan, M. W., Butler, E. B., Teh, B. S., … Slawin, K. M. (2004). Salvage radiotherapy for recurrent prostate cancer after radical prostatectomy. *JAMA, 291*(11), 1325-1332. doi:10.1001/jama.291.11.1325

Sweeney, C., Chen, Y., Carducci, M., Liu, G., Jarrard, D., Eisenberger, M., … DiPaola, R. (2015). Chemohormonal therapy in metastatic hormone-sensitive prostate cancer. *New England Journal of Medicine, 373*(8), 737-746. doi:10.1056/NEJMoa1503747

Tannock, I. F., de Wit, R., Berry, W. R., Horti, J., Pluzanska, A., … Chi, K. N. (2004). Docetaxel plus prednisone or mitoxantrone plus prednisone for advanced prostate cancer. *New England Journal of Medicine, 351*(15), 1502-1512. doi:10.1056/NEJMoa040720

Thall, P. F., Logothetis, C., Pagliaro, L. C., Wen, S., Brown, M. A., Williams, D., & Millikan, R. E. (2007). Adaptive therapy for androgen-independent prostate cancer: A randomized selection trial of four regimens. *Journal of the National Cancer Institute, 99*(21), 1613-1622. doi:10.1093/jnci/djm189Thompson, I. M., Tangen, C. M., Paradelo, J., Lucia, M. S., Miller, G., Troyer, D., … Crawford, E. D. (2006). Adjuvant radiotherapy for pathologically advanced prostate cancer: A randomized clinical trial. *JAMA, 296*(19), 2329-2335. doi:10.1001/jama.296.19.2329

Warde, P., Mason, M., Ding, K., Kirkbride, P., Brundage, M., Cowan, R., … Barber, J. (2011). Combined androgen deprivation therapy and radiation therapy for locally advanced prostate cancer: A randomised, phase 3 trial. *The Lancet, 378*(9809), 2104-2111. doi:10.1016/S0140-6736(11)61095-7.

Widmark, A., Klepp, O., Solberg, A., Damber, J., Angelsen, A., Fransson, P., … Fossa, S. (2009). Endocrine treatment, with or without radiotherapy, in locally advanced prostate cancer (SPCG-7/SFUO-3): An open randomised phase III trial. *The Lancet, 373*(9660), 301-308. doi:10.1016/S0140-6736(08)61815-2

Wiegel, T., Bottke, D., Steiner, U., Siegmann, A., Golz, R., Störkel, S., … Miller, K. (2009). Phase III postoperative adjuvant radiotherapy after radical prostatectomy compared with radical prostatectomy alone in pT3 prostate cancer with postoperative undetectable prostate-specific antigen: ARO 96-02/AUO AP 09/95. *Journal of Clinical Oncology, 27*(18), 2924-2930. doi:10.1200/JCO.2008.18.9563

DEVELOPMENT CREDITS

This practice algorithm is based on majority expert opinion of the Genitourinary Center Faculty at the University of Texas MD Anderson Cancer Center. It was developed using a multidisciplinary approach that included input from the following:

Ana Aparicio, MD (Genitourinary Medical Oncology)
John Araujo, MD (Genitourinary Medical Oncology)[Ŧ]
Tharakeswara Bathala, MD (Abdominal Imaging)
Brian Chapin, MD (Urology)
Seungtaek Choi, MD (Radiation Oncology)[Ŧ]
Paul Corn, MD, PhD (Genitourinary Medical Oncology)[Ŧ]
John W. Davis, MD (Urology)[Ŧ]
Colin P. Dinney, MD (Urology)
Olga N. Fleckenstein[♦]
Steven J. Frank, MD (Radiation Oncology)
Ashish Kamat, MD (Urology)
Eric Jonasch, MD (Genitourinary Medical Oncology)
Deborah A. Kuban, MD (Radiation Oncology)
Christopher J. Logothetis, MD (Genitourinary Medical Oncology)
Surena Matin, MD (Urology)
Curtis A Pettaway, MD (Urology)
Louis L Pisters, MD (Urology)
Devaki Shilpa Surasi, MBBS (Nuclear Medicine)
Chad Tang, MD (Radiation Oncology)
Shi-Ming Tu, MD (Genitourinary Medical Oncology)
John F. Ward, MD (Urology)
Mary Lou Warren, DNP, APRN, CNS-CC[♦]
Amado Zurita-Saavedra, MD (Genitourinary Medical Oncology)

[Ŧ] Core Development Team
[♦] Clinical Effectiveness Development Team