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Corporate Medical Policy

Intensity-Modulated Radiation Therapy (IMRT) of the Prostate

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Description of Procedure or Service

Radiation therapy is an integral component in the treatment of prostate cancer. Intensity-modulated radiation therapy (IMRT) has been proposed as a method of radiation therapy that allows adequate radiation therapy to the tumor while minimizing the radiation dose to surrounding normal tissues and structures.

For prostate cancer, radiation therapy is one accepted option for treatment. Other treatment options include surgery, hormonal treatment, and watchful waiting.

Radiation techniques

2-D external-beam radiation therapy. Over the past several decades, methods to plan and deliver radiation therapy have evolved in ways that permit more precise targeting of tumors with complex geometries. Most early trials used 2-dimensional treatment planning based on flat images and radiation beams with cross-sections of uniform intensity that were sequentially aimed at the tumor along 2 or 3 intersecting axes. Collectively, these methods are termed "conventional external beam radiation therapy."

3-dimensional conformal radiation (3D-CRT). Treatment planning evolved by using 3-dimensional images, usually from computed tomography (CT) scans, to delineate the boundaries of the tumor and discriminate tumor tissue from adjacent normal tissue and nearby organs at risk for radiation damage. Computer algorithms were developed to estimate cumulative radiation dose delivered to each volume of interest by summing the contribution from each shaped beam. Methods also were developed to position the patient and the radiation portal reproducibly for each fraction and immobilize the patient, thus maintaining consistent beam axes across treatment sessions. Collectively, these methods are termed 3-dimensional conformal radiation therapy (3D-CRT).

Intensity-modulated radiation therapy (IMRT). IMRT, which uses computer software and CT and magnetic resonance imaging (MRI) images, offers better conformality than 3D-CRT, as it is able to modulate the intensity of the overlapping radiation beams projected on the target and to use multiple shaped treatment fields. It uses a device (a multileaf collimator, MLC) which, coupled to a computer algorithm, allows for "inverse" treatment planning. The radiation oncologist delineates the target on each slice of a CT scan and specifies the target's prescribed radiation dose, acceptable limits of dose heterogeneity within the target volume, adjacent normal tissue volumes to avoid, and acceptable dose limits within the normal tissues. Based on these parameters and a digitally reconstructed radiographic image of the tumor and surrounding tissues and organs at risk, computer software optimizes the location, shape, and intensities of the beams ports, to achieve the treatment plan's goals.

Increased conformality may permit escalated tumor doses without increasing normal tissue toxicity and thus may improve local tumor control, with decreased exposure to surrounding normal tissues, potentially reducing acute and late radiation toxicities. Better dose homogeneity within the target may also improve local tumor control by avoiding underdosing within the tumor and may decrease toxicity by avoiding overdosing.

Since most tumors move as patients breathe, dosimetry with stationary targets may not accurately reflect doses delivered within target volumes and adjacent tissues in patients. Furthermore, treatment planning and delivery are more complex, time-consuming, and labor-intensive for IMRT than for 3D-CRT. Thus, clinical studies must test whether IMRT improves tumor control or reduces acute and late toxicities when compared with 3D-CRT.

Methodologic Issues in IMRT research

Multiple-dose planning studies have generated 3D-CRT and IMRT treatment plans from the same scans, then compared predicted dose distributions within the target and in adjacent organs at risk. Results of such planning studies show that IMRT improves on 3D-CRT with respect to conformality to, and dose homogeneity within, the target. Dosimetry using stationary targets generally confirms these predictions. Thus, radiation oncologists hypothesized that IMRT may improve treatment outcomes compared with those of 3D-CRT. However, these types of studies offer indirect evidence on treatment benefit from IMRT, and it is difficult to relate results of dosing studies to actual effects on health outcomes.

Comparative studies of radiation-induced side effects from IMRT versus alternative radiation delivery are probably the most important type of evidence in establishing the benefit of IMRT. Such studies would answer the question of whether the theoretical benefit of IMRT in sparing normal tissue translates into real health outcomes. Single-arm series of IMRT can give some insights into the potential for benefit, particularly if an adverse effect that is expected to occur at high rates is shown to decrease by a large amount. Studies of treatment benefit are also important to establish that IMRT is at least as good as other types of delivery, but in the absence of such comparative trials, it is likely that benefit from IMRT is at least as good as with other types of delivery.

Related policies:
Intensity-Modulated Radiation Therapy (IMRT) of the Chest
Intensity-Modulated Radiation Therapy (IMRT) of the Head and Neck
Intensity-Modulated Radiation Therapy (IMRT) of the Abdomen and Pelvis
Intensity-Modulated Radiation Therapy (IMRT) of the Central Nervous System
Intensity-Modulated Radiation Therapy (IMRT) for Sarcoma of the Extremities
Maximum Units of Service

******Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.***

Policy

BCBSNC will provide coverage for Intensity-Modulated Radiation Therapy (IMRT) of the Prostate when it is determined to be medically necessary because the medical criteria and guidelines shown below have been met.

Benefits Application

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

When Intensity-Modulated Radiation Therapy (IMRT) of the Prostate is covered

Intensity-modulated radiation therapy (IMRT) may be considered medically necessary in the treatment of prostate cancer when the following criteria are met:

Definitive therapy

- In patients with localized or locally advanced prostate cancer who will receive definitive dose escalated external beam radiation therapy. (see Policy Guidelines)
- In patients with low metastatic burden prostate cancer, who will receive definitive radiation to the prostate. (see Policy Guidelines)

Post-prostatectomy

A. Adjuvant

In patients who are status-post prostatectomy at high risk for recurrence due to extracapsular extension, pathologic T3 disease, seminal vesicle invasion, positive margins and/or positive nodes, who will receive adjuvant (post-operative) radiation therapy at a prescribed dose of 64-72 Gy to the prostate bed and/or pelvis.

B. Salvage

In patients who are status-post prostatectomy with evidence of local or biochemical recurrence without evidence of distant metastatic disease, who will be receiving salvage radiation therapy at a prescribed dose of 64 Gy or more to the prostate bed.

When Intensity-Modulated Radiation Therapy (IMRT) of the Prostate is not covered

Intensity-modulated radiation therapy (IMRT) of the prostate is considered **investigational** for other indications not listed above.

Policy Guidelines

Localized prostate cancer can be defined as cancer confined to the prostate gland T1-T2N0-NXM0 or as locally advanced disease.

Locally advanced disease is confined to adjacent structures and includes T3a-T3bN0-NXM0. The presence of tumor invasion to adjacent structures other than seminal vesicles or with evidence of regional lymph node involvement, T4N0-N1M0, does not necessarily preclude definitive therapy.

Low metatstatic burden (oligometastatic) prostate cancer, as defined by the STAMPEDE and CHAARTED trials, included patients (regardless of lymph node status) with:

- No visceral metastases AND
- Any number of metastatic bony foci limited to vertebral column and/or pelvis, OR three or fewer metastatic bony foci, regardless of location

NCCN guidelines for treatment of prostate cancer (v4.2019) state that “radiation therapy to the prostate is an option in patients with low-volume castration-naïve metastatic disease, without contraindication to radiotherapy. ADT is required unless medically contraindicated”.

STAMPEDE was a phase 3 randomized trial of 2061 men with newly diagnosed, metastatic prostate cancer who received standard therapy with or without radiotherapy to the primary. The overall cohort had a significant improvement in failure-free but not overall survival. The prespecified low-volume M1 subset (ie low metastatic burden) had a significant improvement in both failure-free and overall survival.

Definitive radiotherapy with IMRT may be given in conjunction with brachytherapy in men with intermediate or high/very high risk prostate cancer.

The evidence for IMRT in individuals who have localized prostate cancer and are undergoing definitive RT includes largely of retrospective cohort studies, case series, and systematic reviews. Relevant outcomes are overall survival, disease-free survival, quality of life, and treatment-related morbidity. Although there are few comparative controlled trials, the evidence generally shows that IMRT provides tumor control and survival outcomes similar to 3-dimensional conformal radiotherapy (3D-CRT). Treatment planning studies predict that IMRT improves target volume coverage and sparing of adjacent organs compared to 3D-CRT; however, the present evidence shows only similar survival outcomes. Notably, some studies have shown reductions in gastrointestinal and genitourinary toxicity with IMRT. A reduction in clinically significant complications of RT is likely to improve quality of life for treated patients. The evidence is sufficient to determine qualitatively that the technology results in a meaningful improvement in the net health outcome.

The evidence for IMRT in individuals who have prostate cancer and are undergoing RT after prostatectomy includes mostly phase 2 trials and both prospective and retrospective series of consecutive patients. Relevant outcomes are overall survival, disease-free survival, quality of life, and treatment-related morbidity. Although the comparative studies are limited to case series, the evidence generally shows that IMRT provides tumor control and survival outcomes similar to 3D-CRT. Although treatment planning studies predict that IMRT improves target volume coverage and sparing of adjacent organs compared to 3D-CRT, the present evidence shows only similar survival outcomes. Notably, a small series found a significant improvement in acute gastrointestinal toxicity with IMRT than with 3D-CRT, mainly due to better bowel sparing with IMRT. A reduction in clinically significant complications of RT is likely to improve quality of life for treated patients. The evidence is sufficient to determine qualitatively that the technology results in a meaningful improvement in the net health outcome.

CPT 77338 is reported once per IMRT plan and is limited to 3 units per 60 day treatment course.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable codes: *55874, 77301, 77338, 77385, 77386, G6015, G6016*

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

Scientific Background and Reference Sources

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.47, 4/24/09

Wilt TJ, Shamliyan T, Taylor B, MacDonald R, Tacklind J, Rutks I, Koeneman K, Cho C-S, Kane RL. Comparative

Effectiveness of Therapies for Clinically Localized Prostate Cancer. Comparative Effectiveness Review No. 13. (Prepared by Minnesota Evidence-based Practice Center under Contract No. 290-02-0009.)
Rockville, MD: Agency for Healthcare Research and Quality, February 2008. Retrieved 8/13/09 from www.effectivehealthcare.ahrq.gov/reports/final.cfm

Cahlong O, Zelefsky JM, Shippy A, et al. Ultra-high dose (86.4 Gy) IMRT for localized prostate cancer:
toxicity and biochemical outcomes. Int J Radiat Oncol Biol Phys 2008; 71(2):330-7

Senior Medical Director review, 3/2010

Specialty Matched Consultant Advisory Panel 5/2010

Senior Medical Director Review, 10/2010

Specialty Matched Consultant Advisory Panel 8/2011

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.47, 4/12/12

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.14, 6/14/12

Specialty Matched Consultant Advisory Panel 8/2012

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.14, 4/11/13

Specialty Matched Consultant Advisory Panel 5/2013

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.14, 4/10/14

Specialty Matched Consultant Advisory Panel 6/2014

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.47, 4/23/15

Specialty Matched Consultant Advisory Panel 5/2015

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.14, 6/11/15

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.14, 8/13/15

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.47, 3/10/16

Specialty Matched Consultant Advisory Panel 5/2016

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.14, 7/14/16

Specialty Matched Consultant Advisory Panel 5/2017

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.14, 7/13/17

Lee, R, Dignam, J. Randomized Phase III Noninferiority Study Comparing Two Radiotherapy Fractionation Schedules in Patients With Low-Risk Prostate Cancer. Journal of Clinical Oncology 2016; 34(20): 2325-2332.

Dearnaley, D, Hall, E. Prostate cancer and hypofractionation: reflections on recent randomized phase III clinical trial results. Transl Androl Urol 2017 Feb; 6(1): 134-136.

Dearnaley, D, Syndikus, I et al. Conventional versus hypofractionated high-dose intensity-modulated radiotherapy for prostate cancer: 5-year outcomes of the randomized, non-inferiority, phase 3 CHHiP trial. Lancet Oncology 2016; 17(8):1047-1060.

Incrocci, L, Wortel, R. Hypofractionated versus conventionally fractionated radiotherapy for patients with localised prostate cancer (HYPRO): final efficacy results from a randomised, multicentre, open-label, phase 3 trial. Lancet Oncology 2016; 17(8): 1061-1069.

Senior Medical Director review 1/2018

Senior Medical Director review 3/2018

Specialty Matched Consultant Advisory Panel 5/2018

Medical Director review 5/2018

Medical Director review 3/2019

BCBSA Medical Policy Reference Manual [Electronic Version]. 8.01.14, 7/12/18

Specialty Matched Consultant Advisory Panel 5/2019

Medical Director review 5/2019

Medical Director review 10/2019

Parker C, James N, Brawley C, et al. Radiotherapy to the primary tumour for newly diagnosed, metastatic prostate cancer (STAMPEDE): a randomised controlled phase 3 trial. Lancet. 2018 Dec 1;392(10162):2353-2366.

Sweeney C, Chen Y, Carducci M, et al. Chemohormonal Therapy in Metastatic Hormone-Sensitive Prostate Cancer. N Engl J Med. 2015 Aug 20;373(8):737-46.

National Comprehensive Cancer Network. Prostate Cancer. Version 4.2019. https://www.nccn.org/professionals/physician_gls/pdf/prostate.pdf Accessed October 7 2019.

Policy Implementation/Update Information

12/21/09 New policy issued. Intensity-modulated radiation therapy (IMRT) may be considered medically necessary in the treatment of localized prostate cancer in patients who will receive definitive dose escalated external beam radiation therapy at prescribed radiation doses of 75 to 80 Gy. Notification

12/21/09 Effective date 3/30/10. (adn)

6/22/10 Specialty Matched Consultant Advisory Panel review 5/24/10. No changes to policy statement. Medical policy number removed. (lpr)

11/9/10 Under "When Covered" section added the following statements: Intensity-modulated radiation therapy (IMRT) may be considered medically necessary in the treatment of prostate cancer when the following criteria are met: A. In patients with localized prostate cancer who will receive definitive dose escalated external beam radiation therapy at prescribed radiation doses of 75 to 80 Gy. B. In patients who are status-post prostatectomy with evidence of local recurrence, who will be receiving salvage radiation therapy at a prescribed dose of 66Gy or more to the prostate bed. C. In patients who are status-post prostatectomy who are at high risk for recurrence due to extracapsular extension, pathologic T3 disease, seminal vesicle invasion, positive margins and/or positive nodes, who will receive adjuvant Y(post-operative) radiation therapy at a prescribed dose of at least 66Gy to the prostate bed and/or pelvis. Under "When Not Covered" section deleted the statement "post-prostatectomy patients." Reviewed with medical director. (lpr)

9/30/11 Specialty Matched Consultant Advisory Panel review 8/31/2011. No changes to policy statement. (lpr)

11/13/12 Description section and Policy Guidelines extensively revised. Under "When Covered" added new indications: In conjunction with permanent transperineal implantation of radioactive seeds when 3D-CRT planning is not able to meet dose volume constraints for normal tissue tolerance and In conjunction with high-dose rate temporary brachytherapy when 3D-CRT planning is not able to meet dose volume constraints for normal tissue tolerance. Specialty Matched Consultant Advisory Panel review 8/15/2012. (lpr)

6/11/13 Specialty Matched Consultant Advisory Panel review meeting 5/15/2013. No change to policy statement. Reference added. (lpr)

7/29/14 Specialty matched consultant advisory panel review meeting 6/24/2014. No change to policy statement. Reference added. (lpr)

12/30/14 Added CPT codes 77385, 77386 and HCPCS codes G6015, G6016; Deleted CPT codes 77418, 0073T from Billing/Coding section effective 1/1/2015 for code update. Under Related Policies, changed title IMRT of Breast and Lung to IMRT of Chest. (lpr)

7/1/15 Under Policy Guidelines section added the statement: "CPT 77338 is reported once per IMRT plan and is limited to 3 units per 60 day treatment course." Also added "Maximum Units of Service" to Related Policies under Description section. Reference added. Specialty Matched Consultant Advisory Panel review 5/27/2015. No change to policy statement. lpr)

10/30/15 Reference added. No change to policy statement. (lpr)

7/1/16 Policy Guidelines updated. Specialty Matched Consultant Advisory Panel review 5/25/2016. Reference added. No change to policy statement. CPT code 0438T added to the Billing/Coding section effective 7/1/16. (lpr)

8/30/16 Reference added. No change to policy statement. (lpr)

6/30/17 Specialty Matched Consultant Advisory Panel review 5/31/17. No change to policy statement. (lpr)

8/25/17 Updated Policy Guidelines section. Reference added. No change to policy statement. (lpr)

2/9/18 Removed 75-80Gy statement under "When Covered" as well as statements D. and E. which related to 3D CRT. Updated Policy Guidelines and removed references to 3D-CRT throughout the policy. References added. Senior Medical Director review 1/2018. (lpr)

3/9/18 Replaced statements D and E under "When Covered" section. Senior Medical Director review 3/2018. (lpr)

6/8/18 Specialty Matched Consultant Advisory Panel review 5/2018. No changes to policy statements. Medical Director review 5/2018. (mco)

3/15/19 Under When Covered section, updated coverage criteria: In patients with localized or locally advanced prostate cancer who will receive definitive dose escalated external beam radiation therapy. (see Policy Guidelines). With or without brachytherapy, either low dose-rate (LDR) permanent transperineal implantation of radioactive seeds or temporary high dose-rate (HDR), except for patients with very-low or low risk of recurrence. (see Policy

Guidelines) Post-prostatectomy: A.Adjuvant: In patients who are status-post prostatectomy at high risk for recurrence due to extracapsular extension, pathologic T3 disease, seminal vesicle invasion, positive margins and/or positive nodes, who will receive adjuvant (post-operative) radiation therapy at a prescribed dose of 64-72 Gy to the prostate bed and/or pelvis. B.Salvage:In patients who are status-post prostatectomy with evidence of local recurrence, who will be receiving salvage radiation therapy at a prescribed dose of 64 Gy or more to the prostate bed. Updated Policy Guidelines. Medical Director review 3/2019. (lpr)

5/28/19 Specialty Matched Consultant Advisory Panel review 5/15/2019. Reference added. Deleted CPT 0438T and added 55874 to Billing/Coding section. Under When Covered section: deleted statement: with or without brachytherapy either low dose-rate (LDR) permanent transperineal implantation of radioactive seeds or temporary high dose-rate (HDR), except for patients with very-low or low risk of recurrence. (see Policy Guidelines); under Post-Prostatectomy statement B: added "or biochemical recurrence without evidence of distant metastatic disease." Under Policy Guidelines section, added the following statements: Localized prostate cancer can be defined as cancer confined to the prostate gland T1-T2N0-NXM0 or as locally advanced disease. Locally advanced disease is confined to adjacent structures and includes T3a-T3bN0-NXM0. The presence of tumor invasion to adjacent structures other than seminal vesicles or with evidence of regional lymph node involvement, T4N0-N1M0, does not necessarily preclude definitive therapy. Definitive radiotherapy with IMRT may be given in conjunction with brachytherapy in men with intermediate or high/very high risk prostate cancer. Medical Director review 5/2019. (lpr)

10/15/19 Under "When Covered" section added policy statement "IMRT to the prostate for definitive therapy of low-burden metastatic prostate cancer is considered medically necessary" with criteria. Medical Director review 10/2019. References added. (lpr)