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2025 2D/3D Publication

Radiation Therapy

RT-2D3D-HH

Last Review Date: 01/10/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

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2025 2D/3D Blood, Bone Marrow and Lymphatic System Cancer

Radiation Therapy

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2D/3D Radiation Therapy for Blood, Bone Marrow and Lymphatic System Cancer

B-Cell Lymphomas Guideline (Diffuse Large, Follicular, Gray Zone, High-Grade, Marginal Zone, Mantle, Primary Mediastinal)

2D/3D radiation therapy for B-cell lymphomas (diffuse large, follicular, gray zone, high-grade, marginal zone, mantle, primary mediastinal) may be appropriate when the medical record demonstrates **ANY** of the following:

1. Palliative therapy with ANY of the following:
    a. **4 fractions or less** for follicular lymphoma/mantle cell lymphoma/marginal zone lymphoma/small lymphocytic lymphoma
    b. **10 fractions or less** for diffuse large B-cell lymphoma/high-grade B-cell lymphoma/primary mediastinal large B-cell lymphoma/mediastinal gray zone lymphoma and Burkitt lymphoma
    c. HIV-related B-cell lymphomas and posttransplant lymphoproliferative disorders:
        - The role of this therapy is uncertain/unclear in the current evidence. Requests for this therapy require review by a physician reviewer, medical director and/or the individual's healthplan.

    Reference: [20]
2. **ALL** of the following:
    a. **ANY** of the following:
        i. Diffuse large B-cell lymphoma, high-grade B-cell lymphoma, primary mediastinal B-cell lymphoma or gray zone lymphoma for **ANY** of the following definitive treatments:
            A. Consolidation after chemotherapy for **EITHER** of the following:

I. **15-18 fractions** for complete response (CR) (Deauville 1-3)

II. **18-25 fractions** for partial response (PR) (Deauville 4)

B. **10 - 18 fractions** in combination with hematopoietic cell transplantation

C. **13 - 15 fractions** for prophylactic testicular irradiation

D. **20 - 28 fractions** for primary treatment (without chemoimmunotherapy) **OR** refractory disease

ii. **2 fractions** for definitive treatment for orbital and salivary gland marginal zone lymphoma (MZL)

iii. **12 - 15 fractions** for definitive treatment for follicular

iv. **12 - 18 fractions** for definitive treatment for mantle cell lymphoma

v. **20 fractions** for definitive treatment for extranodal marginal zone lymphoma of the stomach

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[1]

Reference: [20]

Hodgkin Lymphoma Guideline

2D/3D radiation therapy for Hodgkin lymphoma may be appropriate when the medical record demonstrates **ANY** of the following:

1. **15 fractions or less** for palliative therapy
   References: [2] [17] [8]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **15 fractions or less** for non-bulky disease (stages I, II, 1B, IIB)
      ii. **18 fractions or less** for bulky disease, all stages
      iii. **23 fractions or less** for Deauville 4-5 with partial response (PR) to chemotherapy/refractory disease

[1]The Lansky performance status scale can be utilized for ages 16 or less.

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[2]

References: [2] [17] [8]

Leukemia Guideline (Acute Lymphoblastic, Acute Myeloid, Chronic Lymphocytic/Small Lymphocytic, Chronic Myeloid, Hairy Cell)

2D/3D radiation for leukemia (acute lymphoblastic, acute myeloid, chronic lymphocytic/small lymphocytic, chronic myeloid, hairy cell):

- The role of this therapy is uncertain/unclear in the current evidence. Requests for this therapy require review by a physician reviewer, medical director and/or the individual's healthplan.

References: [16] [13] [19] [15] [18]

Multiple Myeloma Guideline

2D/3D radiation therapy for multiple myeloma or plasmacytoma may be appropriate when the medical record demonstrates **ANY** of the following:

1. **5 - 15 fractions** for palliative therapy for multiple myeloma
   References: [10] [14]
2. **ALL** of the following:
   a. **20 - 25 fractions** for solitary plasmacytoma
   b. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
      - Karnofsky performance status (KPS) grade of 70 or more[3]

   References: [10] [14]

[2]The Lansky performance status scale can be utilized for ages 16 or less.
[3]The Lansky performance status scale can be utilized for ages 16 or less.

Primary Bone Tumor Guideline (Chondrosarcoma, Chordoma, Ewing Sarcoma, Giant Cell Tumor of Bone, Osteosarcoma)

2D/3D radiation therapy for a primary bone tumor (chondrosarcoma, chordoma, ewing sarcoma, giant cell tumor of bone, osteosarcoma) may be appropriate when the medical record demonstrates ***10 fractions or less*** for palliative therapy.
Reference: [1]

T-Cell Lymphomas Guideline (Peripheral, Extranodal Natural Killer)

2D/3D radiation therapy for T-cell lymphomas (peripheral, extranodal natural killer) may be appropriate when the medical record demonstrates **ANY** of the following:

1. **5 - 18 fractions** for palliative therapy
   Reference: [9]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **12 - 18 fractions** for breast implant-associated anaplastic large cell lymphoma, local residual disease
      ii. Extranodal natural killer T-cell lymphoma and **ANY** of the following:
         A. **23 - 28 fractions** for concurrent chemoradiation therapy
         B. **25 - 28 fractions** for definitive treatment and chemotherapy not appropriate
         C. Combined modality therapy (non–asparaginase-based) and **ANY** of the following:
            I. Sequential chemoradiation: **25 fractions or less** for stage I-II disease after modified SMILE regimen **OR** DDGP regimen
            II. **28 fractions or less** for sandwich chemoradiation including P-GEMOX **OR** GELAD
      iii. Peripheral T-cell lymphoma and **ANY** of the following:
         A. **10 - 18 fractions** in combination with autologous hematopoietic cell transplantation
         B. **15 - 18 fractions** for consolidation after chemotherapy

C. **20 - 25 fractions** for complementary treatment after partial response

D. **20 - 28 fractions** for definitive treatment of refractory cancer or chemotherapy not appropriate

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[4]

Reference: [9]

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV

[4]The Lansky performance status scale can be utilized for ages 16 or less.

CODE	DESCRIPTION
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Blood, Bone Marrow and Lymphatic System Cancer Summary of Changes

2D/3D guideline for blood, bone marrow and lymphatic system cancer guideline had the following version changes from 2024 to 2025:
B-Cell Lymphomas Guideline (Diffuse Large, Follicular, Gray Zone, High-Grade, Marginal Zone, Mantle, Primary Mediastinal):

- Inserted new indication for palliative therapy "**4 fractions or less** for follicular lymphoma/ mantle cell lymphoma/marginal zone lymphoma/small lymphocytic lymphoma"
- Inserted new indication for palliative therapy "HIV-related B-cell lymphomas and posttransplant lymphoproliferative disorders: Current therapy uncertain."
- "**27-37 fractions**" for primary treatment (without chemoimmunotherapy) **OR** refractory disease changed to "**20-28 fractions**"
- "**17-20 fractions**" for prophylactic testicular irradiation changed to "**13-15 fractions**"
- "**13-24 fractions"** in combination with hematopoietic cell transplantation changed to "**10-18 fractions**"
- Consolidation after chemotherapy for complete response (CR) (Deauville 1-3) changed from **20-24 fractions** to "**15-18 fractions**"
- Consolidation after chemotherapy for partial response (PR) (Deauville 4) changed from "**24-33 fractions**" to "**18-25 fractions**"
- Orbital and salivary gland marginal zone lymphoma (MZL) changed from "uncertain" to "**2 fractions or less**"
- "**16-20 fractions**" changed to "**12-15 fractions**" for definitive treatment for follicular lymphoma and removed from this indication "MZL or gastric mucosa-associated lymphoid tissue (MALT)"
- **16-24 fractions** for definitive treatment for mantle cell lymphoma changed to **12-18 fractions**

- Added new indication: **20 fractions** for definitive treatment for extranodal marginal zone lymphoma of the stomach

Hodgkin Lymphoma Guideline:

- **17 fractions or less** changed to **15 fractions or less** for palliative therapy
- **20 fractions or less** changed to **15 fractions or less** for non-bulky disease (stages I, II, 1B, IIB)
- **24 fractions or less** changed to **18 fractions or less** for bulky disease, all stages
- **30 fractions or less** changed to **23 fractions or less** for Deauville 4-5 with partial response (PR) to chemotherapy/refractory disease

Leukemia Guideline (Acute Lymphoblastic, Acute Myeloid, Chronic Lymphocytic/Small Lymphocytic, Chronic Myeloid, Hairy Cell)

- No change

Multiple Myeloma Guideline

- **5-10 fractions** changed to **5-15 fractions** for palliative therapy for multiple myeloma
- PTCL: **20-25 fractions** for "**complementary treatment after partial response**" changed wording to "**consolidation after chemotherapy partial response**"
- ENKL: Added new indications
    1. Combined modality therapy (non–asparaginase-based) and **ANY** of the following:
        a. Sequential chemoradiation: **25 fractions or less** for stage I-II disease after Modified SMILE regimen **OR** DDGP regimen
        b. **28 fractions or less** for sandwich chemoradiation including P-GEMOX or GELAD

Citations updated.
Added definitions for DDGP regimen, GELAD, modified SMILE regimen, P-GEMOX, sequential chemoradiation.

2D/3D Blood, Bone Marrow and Lymphatic System Cancer Definitions

2D Radiation Therapy also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.

3D Radiation Therapy also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.

Chemotherapy is treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing. Chemotherapy may be given by mouth, injection, infusion or on the skin depending on the type and stage of the cancer being treated. It may be given alone or with other treatments, such as surgery, radiation therapy or biologic therapy.

Chondrosarcoma is a type of cancer that forms in bone cartilage. It usually starts in the pelvis (between the hip bones), the shoulder, the ribs or at the ends of the long bones of the arms and legs. A rare type of chondrosarcoma called extraskeletal chondrosarcoma does not form in bone cartilage. Instead, it forms in the soft tissues of the upper part of the arms and legs. Chondrosarcoma can occur at any age but is more common in people older than 40 years. It is a type of bone cancer.

Chordoma is a type of bone cancer that usually starts in the lower spinal column or at the base of the skull.

DDGP is a chemotherapy regimen used to treat stage III extranodal natural killer/T-cell lymphoma (ENKL). DDGP (cisplatin, dexamethasone, gemcitabine, and pegaspargase) regimen.

Eastern Cooperative Oncology Group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).

Ewing sarcoma is a type of cancer that occurs primarily in the bone or soft tissue; it is most often found in the hip bones, ribs or long bones.

GELAD (gemcitabine, etoposide, pegaspargase, and dexamethasone) chemotherapy is used with IMRT as effective regimen for the treatment of early-stage ENK.

Hodgkin lymphoma is a malignant lymphoma marked by the presence of Reed-Sternberg cells and characterized by progressive enlargement of lymph nodes, spleen and liver and progressive anemia.

Karnofsky Performance Status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.

Leukemia is an acute or chronic disease in humans and other warm-blooded animals characterized by an abnormal increase in the number of white blood cells in the tissues and often in the blood.

modified SMILE is a short course, intensive regimen incorporating pegylated asparaginase. A modification of the SMILE regimen with dexamethasone, methotrexate, ifosfamide, L-asparaginase, etoposide (mSMILE) followed by Intensity-Modulated Radiotherapy (IMRT) at lower than usual dose, has been adopted as standard of care for extranodal NK/T cell lymphoma (ENKL).

Multiple myeloma is a cancer that forms in a type of white blood cell called a plasma cell. Healthy plasma cells help you fight infections by making antibodies that recognize and attack germs. In multiple myeloma, cancerous plasma cells accumulate in the bone marrow and crowd out healthy blood cells. Rather than produce helpful antibodies, the cancer cells produce abnormal proteins that can cause complications.

Non-Hodgkin's lymphoma is any of various malignant lymphomas that are not classified as Hodgkin's lymphoma, have malignant cells derived from B cells, T cells or natural killer cells characterized especially by enlarged lymph nodes, fever, night sweats, fatigue and weight loss.

P-GEMOX, Pegaspargase Plus Gemcitabine, Oxaliplatin (P-Gemox). The P-GEMOX regimen is a safe and effective combination for newly diagnosed advanced and relapsed/refractory ENKTL.

Palliative treatment is treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.

Plasmacytoma is a type of cancer that begins in plasma cells (white blood cells that produce antibodies). A plasmacytoma may turn into multiple myeloma.

Primary bone tumor is a type of cancer that forms in cells of the bone.

R1 resection indicates the removal of all macroscopic disease, but microscopic margins are positive for tumor.

R2 resection indicates gross residual disease with gross residual tumor that was not resected (primary tumor, regional nodes, and macroscopic margin involvement)

Radiotherapy fraction is the full dose of radiation is usually divided into a number of smaller doses called fractions. This allows healthy cells to recover between treatments. The treatment sessions of fractions make up the radiotherapy course.

Sequential chemoradiation involves initial chemotherapy followed by concurrent chemoradiotherapy. It is not the standard of care but may benefit certain patient groups, such as those with large primary tumors or advanced nodal disease, particularly in laryngeal cancer.

2D/3D Blood, Bone Marrow and Lymphatic System Cancer References

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2025 2D/3D Breast Cancer

Radiation Therapy

Last Review Date: 01/20/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Breast Cancer

Breast Cancer, Palliative Care for Metastatic Disease Guideline

2D/3D radiation therapy for palliative care for metastatic breast disease may be considered appropriate when the medical record demonstrates **10 fractions or less** for palliative care. ***References:*** [6] [2] [5]

Ductal Carcinoma in Situ (DCIS) and Invasive Breast Cancer Guideline

2D/3D radiation therapy for ductal carcinoma in situ (DCIS) and invasive breast cancer may be considered appropriate when the medical record demonstrates **ALL** of the following:

1. **ANY** of the following:

a. **5 fractions or less** for accelerated partial breast irradiation (APBI) and **ALL** of the following:

i. Age is 50 years or older

ii. BRCA negative and **ANY** of the following:

A. Invasive ductal carcinoma with size of 2 cm or less and **ALL** of the following:

I. Estrogen receptor positive

II. Negative margin widths of 2mm or more

III. **NO** lymphovascular invasion

IV. pT1 disease

B. Low/intermediate nuclear grade and **ALL** of the following:

I. Negative margin widths of 3 mm or more

II. Screening-detected DCIS of 2.5 cm or less

b. **15 - 16 fractions** of hypofractionation for whole breast radiation

c. **23 - 25 fractions** for regional node radiation **OR 15 - 16 fractions** if not undergoing breast reconstruction

d. **25 - 28 fractions** of hypofractionation for whole breast radiation for **ALL** of the following:

i. High risk for recurrence

ii. Treatment will include a boost

References: [2] [4] [1] [3]

2. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[5]

References: [2] [4] [1] [3]

Post-Mastectomy Guideline

2D/3D radiation therapy post-mastectomy may be considered appropriate when the medical record demonstrates **ALL** of the following:

[5]The Lansky performance status scale can be utilized for ages 16 or less.

1. **25 - 28 fractions**
   Reference: [2]
2. Physical ability and clinical status of **ANY** of the following:
   - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
   - Karnofsky performance status (KPS) grade of 70 or more[6]

   Reference: [2]

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV

[6]The Lansky performance status scale can be utilized for ages 16 or less.

CODE	DESCRIPTION
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Breast Cancer Summary of Changes

2D/3D guideline for breast cancer had the guideline had the following version changes from 2024 to 2025:
Breast Cancer, Palliative Care for Metastatic Disease Guideline:

- **5 fractions or less** changed to **10 fractions or less** for palliative care

Ductal Carcinoma in Situ (DCIS) and Invasive Breast Cancer Guideline changes:

- Inserted size of **less than or equal to 2 cm** for invasive ductal carcinoma under APBI
- **19-21 fractions** changed to **25-28 fractions** for hypofractionation for whole breast radiation with high risk for recurrence and treatment include a boost
- **22-28 fractions** for regional node radiation changed to **23-25 fractions** and added phrase "**OR 15-16 fractions** if not undergoing breast reconstruction"

Post-Mastectomy Guideline changes:

- **25 fractions or less** changed to **25 -28 fractions**

Citations updated

2D/3D Breast Cancer Definitions

2D radiation therapy, also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.
3D radiation therapy, also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.
Boost refers to an additional dose of radiation to a very small component or part of the initial targeted field or body part that is being treated for a tumor.

Ductal carcinoma in situ (DCIS) is a histologically variable group of precancerous growths or early carcinomas of the lactiferous ducts that have the potential of becoming invasive and spreading to other tissues.

Eastern Cooperative Oncology Group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).

Hypofractionation is a treatment schedule in which the total dose of radiation is divided into large doses and treatments are given once a day or less often.

Invasive ductal carcinoma is the most common type of invasive breast cancer. It begins in the lining of the milk ducts (thin tubes that carry milk from the lobules of the breast to the nipple) and spreads outside the ducts to surrounding normal tissue. Invasive ductal carcinoma can also spread through the blood and lymph systems to other parts of the body.

Karnofsky Performance Status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.

Metastatic is the spread of cancer from the primary site (place where it started) to other places in the body.

Palliative treatment is treatment given to help relieve symptoms and reduce suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.

Radiotherapy fraction is the full dose of radiation that is divided into a number of smaller doses called fractions.

2D/3D Breast Cancer References

[1] Cardoso, F., Kyriakides, S., . . . Senkus, E. (2019). Early breast cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Annals of Oncology, 30*(8), 1194-1220.

[2] Gradishar, W.J., Moran, M.S., . . . Young, J.S. (2024). Breast Cancer Version 6.2024. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/breast.pdf

[3] Shah, C., Manyam, B., Vicini, F.A. (2021). Noninvasive Breast Cancer. J.E. Tepper, R.L. Foote, & J.M. Michalski (Eds.). *Gunderson & Tepper's Clinical Radiation Oncology* (5). (pp. 1316-1324). Philadelphia, PA: Elsevier, Inc.

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[5] Williams, G.R., Manjunath, S.H., . . . Jones, J. (2021). Palliative Radiotherapy for Advanced Cancers. *Surgical Oncology Clinics of North America, 30*(3), 1-18, 563-580.

[6] Yu, J.B., Pollack, C.E., . . . Gross, C.P. (2019). Persistent Use of Extended Fractionation Palliative Radiotherapy for Medicare Beneficiaries With Metastatic Breast Cancer, 2011 to 2014. *American Journal of Clinical Oncology, 42*(6), 493-499.

2025 2D/3D Central Nervous System Cancer

Radiation Therapy

Last Review Date: 01/20/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Central Nervous System Cancer

Adult Low Grade Glioma, High Grade Glioma, Intracranial and Spinal Ependymoma, Medulloblastoma, Primary CNS Lymphoma, Primary Spinal Cord Tumors, Meningioma, Metastatic Spine Tumor Guideline

2D/3D radiation therapy for adult low grade glioma, high grade glioma, intracranial and spinal ependymoma, medulloblastoma, primary CNS lymphoma, primary spinal cord tumors, meningioma and metastatic spine tumors may be considered appropriate when the medical record demonstrates **ALL** of the following:

1. **ANY** of the following:
    a. **13 fractions or less** for primary CNS lymphoma following a complete response (CR) to systemic therapy
    b. **18 fractions or less** for primary CNS lymphoma and **ANY** of the following:
        i. Boost for primary CNS lymphoma
        ii. Less than CR to systemic therapy
        iii. **NOT** a candidate for systemic therapy
    c. **27 fractions or less** in primary spinal cord tumors above the conus medullaris, meningioma grade 1
    d. **28 fractions or less** for adult medulloblastoma with or without adjuvant systemic therapy

e. **30 fractions or less** for adult low grade glioma or high grade glioma, intracranial and spinal ependymoma, primary spinal cord tumors below the conus medullaris, meningioma grades 2 or 3

References: [4] [1] [3]

2. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[7]

References: [4] [1] [3]

Brain and Spine Metastasis, Palliative Care Guideline

2D/3D radiation therapy for brain and spine metastasis may be considered appropriate when the medical record demonstrates palliation with **10 fractions or less**.
References: [4] [2]

Leptomeningeal Metastases Guideline

2D/3D radiation therapy for palliative care for leptomeningeal metastases:

- The role of this therapy is uncertain/unclear in the current evidence. Requests for this therapy require review by a physician reviewer, medical director and/or the individual's healthplan.

References: [2] [4]

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV

[7]The Lansky performance status scale can be utilized for ages 16 or less.

CODE	DESCRIPTION
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Central Nervous System Cancer Summary of Changes

2D/3D guideline for central nervous system cancer had the following version changes from 2024 to 2025:
Adult Low Grade Glioma, High Grade Glioma, Intracranial and Spinal Ependymoma, Medulloblastoma, Primary CNS Lymphoma, Primary Spinal Cord Tumors, Meningioma, Metastatic Spine Tumor Guideline:

- **20 fractions or less** changed to **18 fractions or less** for primary CNS lymphoma and less than CR to systemic therapy/ not a candidate for systemic therapy
- **25 fractions or less** changed to **18 fractions or less** for boost for primary CNS lymphoma
- **30 fractions or less** changed to **27 fractions or less** in primary spinal cord tumors above the conus medullaris, meningioma grade 1
- **31 fractions or less** changed to **28 fractions or less** for adult medulloblastoma with or without adjuvant systemic therapy
- **33 fractions or less** changed to **30 fractions or less** for adult low grade glioma or high grade glioma, intracranial and spinal ependymoma, primary spinal cord tumors below the conus medullaris, meningioma grades 2 or 3
- Citations updated.

2D/3D Central Nervous System Cancer Definition Section

2D radiation therapy, also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.

3D radiation therapy, also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.

Anaplastic oligodenodroglioma is a neuroepithelial tumor which is believed to originate from oligodendrocytes, a cell type of the glia. They are genetically defined according to the mutations they harbor.

Astrocytoma is a tumor that arises from the star-shaped cells (astrocytes) that form the supportive tissue of the brain.

Boost refers to an additional dose of radiation to a very small component or part of the initial targeted field or body part that is being treated for a tumor.

Conus medullaris is the terminal end of the spinal cord, which typically occurs at the L1 vertebral level in the average adult.

Eastern cooperative oncology group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).

Ependymoma is a type of brain tumor that begins in the cells lining the spinal cord central canal (fluid-filled space down the center) or the ventricles (fluid-filled spaces of the brain). Ependymomas may also form in the choroid plexus (tissue in the ventricles that makes cerebrospinal fluid).

Fraction is the full dose of radiation that is usually divided into a number of smaller doses. This allows healthy cells to recover between treatments. Factions are a series of treatment sessions that make up the radiotherapy course.

Glioma is a type of tumor that occurs in the brain and spinal cord. Gliomas begin in the gluey supportive cells (glial cells) that surround nerve cells and help them function.

High grade refers to being near the upper, most serious or most life-threatening extreme of a disease state.

Karnofsky performance status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual

patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.

Low grade refers to cancer cells that look more like normal cells and tend to grow and spread more slowly than high-grade cancer cells.

Medulloblastoma is a cancerous (malignant) brain tumor that starts in the lower back part of the brain called the cerebellum. The cerebellum is involved in muscle coordination, balance and movement.

Meningioma is a tumor (usually benign) arising from meningeal tissue of the brain.

Metastatic is the spread of cancer from the primary site (place where it started) to other places in the body.

Palliative treatment is treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.

Primary central nervous system (CNS) lymphoma is a disease in which malignant (cancer) cells form in the lymph tissue of the brain and/or spinal cord.

2D/3D Central Nervous System References

[1] Brastianos, P.K., Galanis, E., . . . Raleigh, D.R. (2019). Advances in multidisciplinary therapy for meningiomas. *Neuro-oncology, 21*(Suppl 1), i18-i31.

[2] Garsa, A., Jang, J.K., . . . Hempel, S. (2021). Radiation Therapy for Brain Metastases: A Systematic Review. *Practical Radiation Oncology, 11*(5), 354-365.

[3] Grommes, C., Rubenstein, J.L., . . . Batchelor, T.T. (2019). Comprehensive approach to diagnosis and treatment of newly diagnosed primary CNS lymphoma. *Neuro-oncology, 21*(3), 296-305.

[4] Nabors, L.B., Portnow, J., . . . Willmarth, N.E. (2024). Central Nervous System Cancers Version 3.2024. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/ped_cns.pdf

2025 2D/3D Gastrointestinal Cancer

Radiation Therapy

Last Review Date: 01/20/2025

Previous Review Date: 04/30/2024

Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Gastrointestinal Cancer

Anal Cancer Guideline

2D/3D radiation therapy for anal cancer may be considered appropriate when the medical record demonstrates **10 fractions or less** for palliative therapy.
References: [5] [4] [3]

Colon Cancer Guideline

2D/3D radiation therapy for colon cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative therapy
   References: [5] [5] [3]
2. **ALL** of the following:
   a. **25 - 28 fractions** for definitive treatment with concurrent chemotherapy
   b. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
      - Karnofsky performance status (KPS) grade of 70 or more[8]

   References: [5] [5]

Esophageal Cancer Guideline

2D/3D radiation therapy for esophageal cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative therapy
   References: [5] [1] [10] [3]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **23 - 28 fractions** for neoadjuvant therapy
      ii. **25 - 28 fractions** for adjuvant **OR** definitive therapy
   b. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less

[8]The Lansky performance status scale can be utilized for ages 16 or less.

- Karnofsky performance status (KPS) grade of 70 or more[9]

References: [5] [1] [10] [3]

Gastric Cancer Guideline

2D/3D radiation therapy for gastric cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative therapy
   References: [5] [2] [3]
2. **ALL** of the following:
   a. **25 - 28 fractions** for definitive treatment in gastric cancer
   b. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
      - Karnofsky performance status (KPS) grade of 70 or more[10]

   References: [5] [2] [3]

Rectal Cancer Guideline

2D/3D radiation therapy for rectal cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative therapy
   References: [6] [9] [5] [3]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **5 fractions** for neoadjuvant short-course therapy for rectal cancer
      ii. **28 fractions or less** for neoadjuvant treatment for resectable disease including boost
   b. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
      - Karnofsky performance status (KPS) grade of 70 or more[11]

[9]The Lansky performance status scale can be utilized for ages 16 or less.
[10]The Lansky performance status scale can be utilized for ages 16 or less.

References: [6] [9] [5]

Small Bowel Adenocarcinoma Guideline

2D/3D radiation therapy for small bowel adenocarcinoma may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative therapy
   References: [7] [5] [3]
2. **23 - 27 fractions** for definitive treatment and **ALL** of the following:
   a. Concurrent chemotherapy
   b. Positive margins
   c. Primary tumor site is the duodenum
   d. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
      - Karnofsky performance status (KPS) grade of 70 or more[12]

References: [7] [5]

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater

[11]The Lansky performance status scale can be utilized for ages 16 or less.
[12]The Lansky performance status scale can be utilized for ages 16 or less.

CODE	DESCRIPTION
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Gastrointestinal Cancer Summary of Changes

2D/3D guideline for gastrointestinal cancer had the following version changes from 2024 to 2025:
Anal cancer:

- **5-10 fractions** changed to **10 fractions or less** for palliative therapy

Pancreatic adenocarcinoma guideline removed from this guideline and added under hepatocellular cancer.
Rectal Cancer:

- Indications removed:
  - **25-28 fractions** for definitive treatment to the pelvis in unresectable rectal cancer
  - **28-33 fractions** for adjuvant treatment for resectable disease including boost
- **28-31 fractions** changed to **28 fractions or less** for neoadjuvant treatment for resectable disease including boost

Small Bowel Adenocarcinoma:

- **25-30 fractions** changed to **23-27 fractions** for definitive treatment
- Citations updated.

2D/3D Gastrointestinal Cancer Definition Section

2D Radiation therapy also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of

radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.

3D Radiation therapy also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.

Adenocarcinoma is a malignant tumor originating in glandular epithelium.

Adjuvant treatment refers to enhancing the effectiveness of medical treatment.

Anal cancer is a disease in which malignant (cancer) cells form in the tissues of the anus

Colon cancer is a type of cancer that begins in the large intestine (colon).

Definitive treatment is the treatment plan for a disease or disorder that has been chosen as the best one for a patient after all other choices have been considered.

Eastern cooperative oncology group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).

Esophageal cancer is cancer that forms in tissues lining the esophagus (the muscular tube through which food passes from the throat to the stomach).

Fraction is the full dose of radiation that is usually divided into a number of smaller doses called fractions. This allows healthy cells to recover between treatments. Factions are a series of treatment sessions that make up the radiotherapy course.

Gastric cancer also called stomach cancer, is cancer that forms in tissues lining the stomach

Karnofsky performance status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.

Neoadjuvant treatment is treatment (such as chemotherapy or hormone therapy) administered before primary cancer treatment (such as surgery) to enhance the outcome of primary treatment.

Palliative treatment is treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.

Pancreatic cancer is cancer that forms in the cells of the pancreas

Rectal cancer is cancer that begins in the rectum

Small bowel is the specialized tubular structure between the stomach and the large intestine (also called the colon or large bowel) that absorbs nutrition from the food.

2D/3D Gastrointestinal Cancer References

[1] Ajani, J.A., D'Amico, T.A., . . . Yoon, H. (2024). Esophageal or Esophagogastric Junction Cancers Version 4.2024. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/esophageal.pdf

[2] Ajani, J.A., D'Amico, T.A., . . . Yoon, H. (2024). Gastric Cancer Version 4.2024. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/gastric.pdf

[3] Arscott, W.T., Emmett, J., . . . Jones, J.A. (2019). Palliative Radiotherapy. *Hematology/Oncology Clinics of North America, 34*(1), 253-277.

[4] Benson, A. B., Venook, A. P., . . . Willett, C. G. (2024). Anal Carcinoma Version Version 1.2025. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/anal/pdf

[5] Benson, A.B., Venook, A.P., . . . Wu, C. (2024). Colon Cancer Version 5.2024. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/colon.pdf

[6] Benson, A.B., Venook, A.P., . . . Wu, C. (2024). Rectal Cancer Version 4.2024. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/rectal.pdf

[7] Benson, A.B., Venook, A.P., . . . Wu, C.(2024). Small Bowel Adenocarcinoma Version 1.2025. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/small_bowel.pdf

[8] Glynne-Jones, R., Wyrwicz, L., . . . Arnold, D. (2017). Rectal cancer: ESMO Clinical Practice Guidelines for diagnosis, treatment and follow-up. *Annals of Oncology, 28*(Suppl. 4), iv22–iv40.

[9] Kelley, S.R. & Nelson, H. (2020). Cancer of the Rectum. J.E. Niederhuber, J.O. Armitage, . . . J.E. Tepper (Eds.). *Abeloff's Clinical Oncology* (6), (pp. 1281-1299.e7). Philadelphia: Elsevier, Inc.

[10] Shah, M.A., Hofstetter, W.L. & Kennedy, E.B.(2021). Immunotherapy in Patients With Locally Advanced Esophageal Carcinoma: ASCO Treatment of Locally Advanced Esophageal Carcinoma Guideline Rapid Recommendation Update. *Journal of Clinical Oncology, 39*(28), 3182-3184.

[11] Tempero, M.A., Malafa, M.P., . . . Wolpin, B.M. (2024). Pancreatic Adenocarcinoma Version 3.2024. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/pancreatic.pdf

[12] Williams, G.R., Manjunath, S.H., . . . Jones, J. (2021). Palliative Radiotherapy for Advanced Cancers. *Surgical Oncology Clinics of North America, 30*(3), 1-18.

2025 2D/3D Genitourinary Cancer

Radiation Therapy

Last Review Date: 01/20/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Genitourinary Cancer

Bladder or Urethral Cancer Guideline

2D/3D radiation therapy for bladder or urethral cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative treatment
   References: [6] [5] [3]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. Bladder cancer and **ANY** of the following:
         A. **20 - 25 fractions** for definitive therapy, whole bladder treatment
         B. **23 - 25 fractions** for **ALL** of the following:
            I. Post radical cystectomy with ileal conduit
            II. Urothelial bladder cancer, pT3/pT4, pN0-2
      ii. Urethral cancer and **ANY** of the following:
         A. **23 - 25 fractions** for **ANY** of the following:
            I. Definitive therapy for cT3-T4 gross disease
            II. Definitive therapy for lymph node positive disease
            III. Post-operative adjuvant therapy for areas at risk for residual microscopic disease
         B. **33 - 35 fractions** for **ANY** of the following:
            I. Definitive therapy for cT2, cN0 gross disease
            II. Gross primary cT3-T4 disease **OR** lymph node positive, including boost
            III. Gross residual disease for post-operative adjuvant therapy, including boost

C. **33 - 37 fractions** for recurrent disease

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[13]

References: [6] [5] [3]

Kidney Cancer Guideline

2D/3D radiation therapy for kidney cancer:

- The role of this therapy is uncertain/unclear in the current evidence. Requests for this therapy require review by a physician reviewer, medical director and/or the individual's healthplan.

References: [13] [5] [10] [17] [5]

Penile Cancer Guideline

2D/3D radiation therapy for penile cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative therapy
   References: [7] [16] [9] [3]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **23 - 30 fractions** post penectomy without gross disease remaining
      ii. **30 - 35 fractions** post penectomy with gross disease remaining
   b. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
      - Karnofsky performance status (KPS) grade of 70 or more[14]

   References: [7] [16] [9] [3]

[13]The Lansky performance status scale can be utilized for ages 16 or less.
[14]The Lansky performance status scale can be utilized for ages 16 or less.

Prostate Cancer, Definitive Radiation Therapy Guideline

2D/3D radiation for definitive therapy for prostate cancer may be considered appropriate when the medical record demonstrates **ALL** of the following:

1. **ANY** of the following:
    a. **20 fractions or less** for moderate hypofractionation for low metastatic burden M1[f] risk
    b. **28 fractions or less** for moderate hypofractionation for **ANY** of the following risk groups:
        i. Favorable/unfavorable intermediate
        ii. High/very high
        iii. Low
        iv. Regional N1
    c. **37 - 45 fractions** for conventional fractionation

    References: [19] [4]
2. Physical ability and clinical status of **ANY** of the following:
    - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
    - Karnofsky performance status (KPS) grade of 70 or more[15]

    References: [19] [4]

Prostate Cancer, Post-Prostatectomy Radiation Guideline

2D/3D radiation post-prostatectomy for prostate cancer may be considered appropriate when the medical record demonstrates **ALL** of the following:

1. **32 - 36 fractions** for adjuvant/salvage therapy
    References: [2] [19]
2. Physical ability and clinical status of **ANY** of the following:
    - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
    - Karnofsky performance status (KPS) grade of 70 or more[16]

    References: [2] [19]

[15]The Lansky performance status scale can be utilized for ages 16 or less.
[16]The Lansky performance status scale can be utilized for ages 16 or less.

Prostate Cancer, Palliative Care for Metastatic Disease Guideline

2D/3D radiation therapy for palliative care for metastatic prostate cancer may be considered appropriate when the medical record demonstrates palliation with **15 fractions or less**
References: [19] [2]

Testicular Cancer - Pure Seminoma (any stage) Guideline

2D/3D radiation therapy for testicular cancer - pure seminoma (any stage) may be considered appropriate when the medical record demonstrates **ALL** of the following:

1. **ANY** of the following:
    a. **15 fractions or less** for **ANY** of the following:
        i. Stage 1A/1B disease, adjuvant therapy
        ii. Stage IIA disease, primary therapy
    b. **18 fractions or less** for stage IIB, primary therapy

    References: [8] [18] [12] [5]
2. Physical ability and clinical status of **ANY** of the following:
    - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
    - Karnofsky performance status (KPS) grade of 70 or more[17]

    References: [8] [18] [12] [5]

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV

[17]The Lansky performance status scale can be utilized for ages 16 or less.

CODE	DESCRIPTION
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Genitourinary System Cancer Summary of Changes

2D/3D guideline for genitourinary system cancer had the following version changes from 2024 to 2025:
Bladder or Urethral Cancer Guideline:

- **22-28 fractions** changed to **20-25 fractions** for definitive therapy, whole bladder treatment
- **25-28 fractions** changed to **23-25 fractions** for Post radical cystectomy and urothelial bladder cancer, pT3/pT4, pN0-2
- Urethral cancer:
    - **25-28 fractions** changed to **23-25 fractions** for definitive therapy for cT3-T4 gross disease, lymph node positive disease and post-operative adjuvant therapy for areas at risk for residual microscopic disease
- **37-39 fractions** changed to **33-35 fractions** for cT2, cN0 gross disease, cT3-T4 disease, including boost and gross residual disease for post-operative adjuvant therapy, including boost.
- Added "**OR** lymph node positive" to the indication cT3-T4 disease

- **37-41 fractions** changed to **33-37 fractions** for recurrent disease

2D/3D Genitourinary Cancer Definition Section

2D Radiation therapy also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.
3D Radiation therapy also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.
Adjuvant treatment refers to enhancing the effectiveness of medical treatment.
Bladder cancer is cancer that forms in tissues of the bladder (the organ that stores urine).
Brachytherapy is a type of radiation therapy in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called implant radiation therapy, internal radiation therapy, and radiation brachytherapy.
Definitive treatment is the treatment plan for a disease or disorder that has been chosen as the best one for a patient after all other choices have been considered.
Eastern cooperative oncology group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).
Fraction is the full dose of radiation that is usually divided into a number of smaller doses called fractions. This allows healthy cells to recover between treatments. Factions are a series of treatment sessions that make up the radiotherapy course.
Hypofractionation radiation therapy is radiation treatment in which the total dose of radiation is divided into large doses and treatments are given once a day or less often. It is given over a shorter period of time (fewer days or weeks) than standard radiation therapy.
Karnofsky performance status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.
Kidney cancer is cancer that forms in tissues of the kidneys.
Metastatic is the spread of cancer from the primary site (place where it started) to other places in the body.
Orchiectomy is the surgical removal of one or both testes.

Palliative treatment is treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.
Penile cancer is a rare cancer that forms in the penis (an external male reproductive organ). Most penile cancers are squamous cell carcinomas (cancer that begins in flat cells lining the penis).
Prostate is a gland in the male reproductive system. The prostate surrounds the part of the urethra (the tube that empties the bladder) just below the bladder, and produces a fluid that forms part of the semen.
Prostatectomy is a surgery to remove part or all of the prostate and some of the tissue around it, including the seminal vesicles.
Recurrent disease is characterized by repeated alternations between acute relapse and long remission. Cancer that has recurred (come back), usually after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body. Also called recurrence.
Rete testes is a network of small tubes in the testicle that helps move sperm cells (male reproductive cells) from the testicle to the epididymis.
Salvage therapy is treatment that is given after the cancer has not responded to other treatments.
Spermatic cord is a bundle of nerves, ducts and blood vessels connecting the testicles to the abdominal cavity.
Testicular cancer is cancer that forms in tissues of one or both testicles. Most testicular cancers begin in germ cells (cells that make sperm) and are called testicular germ cell tumors.
Urothelial cancer is cancer that begins in cells called urothelial cells that line the urethra, bladder, ureters, renal pelvis and some other organs.

2D/3D Genitourinary System Cancer References

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2025 2D/3D Gynecological Cancer

Radiation Therapy

Last Review Date: 01/20/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Gynecological Cancer

Cervical Cancer Guideline

2D/3D radiation therapy for cervical cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **20 fractions or less** for palliative treatment
   References: [3] [11] [1]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **20 - 23 fractions** for microscopic nodal disease
      ii. **20 - 25 fractions** for definitive therapy when cervix is intact
      iii. **25 - 33 fractions** for gross unresected adenopathy, including boost
   b. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
      - Karnofsky performance status (KPS) grade of 70 or more[18]

   References: [3] [11] [1]

[18]The Lansky performance status scale can be utilized for ages 16 or less.

Endometrial (Uterine) Cancer Guideline

2D/3D radiation therapy for endometrial (uterine) cancer may be considered appropriate when the medical record demonstrates palliation with **10 fractions or less**.
References: [2] [3] [12] [11]

Ovarian Cancer Guideline

2D/3D radiation therapy for ovarian cancer:

- The role of this therapy is uncertain/unclear in the current evidence. Requests for this therapy require review by a physician reviewer, medical director and/or the individual's healthplan.

References: [13] [5]

Vaginal or Vulvar Cancer Guideline

2D/3D radiation therapy for vaginal or vulvar cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **20 fractions or less** for palliative treatment
   References: [3] [4] [10] [9] [8] [3] [11]
2. **ALL** of the following:
   a. Squamous cell carcinoma or adenocarcinoma and **ANY** of the following:
      i. **25 - 28 fractions** for adjuvant therapy
      ii. **33 - 36 fractions** for unresectable disease
      iii. **35 fractions or less** for bulky/persistent primary disease **OR** large nodes that are unresectable, including boost
   b. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
      - Karnofsky performance status (KPS) grade of 70 or more[19]

   References: [3] [4] [10] [9] [8] [3] [11]

[19]The Lansky performance status scale can be utilized for ages 16 or less.

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Gynecological System Cancer Summary of Changes

2D/3D guideline for gynecological system cancer had the following version changes from 2024 to 2025:

Cervical Cancer Guideline

- **22-25 fractions** changed to **20-23 fractions** for microscopic nodal disease
- **22-28 fractions** changed to **20-25 fractions** for definitive therapy when cervix is intact

- **28-36 fractions** changed to **25-33 fractions** for gross unresected adenopathy, including boost

Vaginal or Vulvar Cancer Guideline

- **39 fractions or less** changed to **35 fractions or less** for bulky/persistent primary disease or large nodes that are unresectable, including boost

2D/3D Gynecological Cancer Definition Section

2D Radiation therapy also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.
3D Radiation therapy also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.
Brachytherapy is a form of radiation therapy, which utilizes a radioactive source placed in or in close proximity to the tumor. It can be done by placing the radioactive source on the surface of the body or within a body cavity depending on the area to be treated. Temporary brachytherapy places a delivery device, such as a catheter, needle, or applicator into the tumor. Medical imaging helps position the radiation sources. The doctor may insert the delivery device into a body cavity such as the vagina or uterus (intracavitary). Or, the doctor may insert an applicator (needle or catheter) into body tissues (interstitial). High dose-rate (HDR) treatments deliver radiation over 10 to 20 minutes per session. Low dose-rate (LDR) treatments deliver radiation over 20 to 50 hours. Pulsed dose-rate (PDR) treatments deliver radiation in periodic pulses.
Cervical cancer forms in tissues of the cervix (the organ connecting the uterus and vagina)
Definitive treatment is the treatment plan for a disease or disorder that has been chosen as the best one for a patient after all other choices have been considered.
Eastern cooperative oncology group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).
Fraction is the full dose of radiation that is usually divided into a number of smaller doses called fractions. This allows healthy cells to recover between treatments. Factions are a series of treatment sessions that make up the radiotherapy course.
Intensity modulated radiation therapy (IMRT) is a type of three-dimensional radiation therapy that uses computer-generated images to match radiation to the size and shape of a

tumor. In IMRT, thousands of tiny radiation beams enter the body from many angles and intersect the tumor. Since the intensity of each beam can be controlled, the radiation dose can wrap around normal tissue, create concave shapes and turn corners. The aim is to deliver a higher radiation dose to a tumor with less damage to nearby healthy tissue.

Karnofsky performance status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.

Ovarian cancer is cancer that forms in the tissues of the ovary (one of a pair of female reproductive glands in which the ova or eggs are formed).

Palliative treatment is treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.

Vaginal cancer is cancer that forms in the tissues of the vagina (birth canal).

Vulvar cancer is cancer of the vulva (the external female genital organs, including the clitoris, vaginal lips and the opening to the vagina).

2D/3D Gynecological Cancer References

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2025 2D/3D Head and Neck Cancer

Radiation Therapy

Last Review Date: 01/20/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Head and Neck Cancer

Lip, oral cavity, nasopharynx, oropharynx, hypopharynx, glottic larynx, supraglottic larynx, occult primary, salivary gland tumors, and mucosal melanoma Guideline

2D/3D radiation therapy for lip, oral cavity, nasopharynx, oropharynx, hypopharynx, glottic larynx, supraglottic larynx, occult primary, salivary gland tumors, and mucosal melanoma may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **12 fractions or less** for palliative treatment
   References: [10] [3] [8]
2. **ALL** of the following:

a. **ANY** of the following:

i. **30 - 33 fractions** for postoperative treatment with or without systemic therapy

ii. **35 fractions or less** for definite treatment including convectional fractionation

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[20]

References: [10] [3] [8]

Palliative Care for Head and Neck/Thyroid Cancer Guideline

2D/3D radiation therapy for may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for thyroid cancer and **ANY** of the following:
   a. Anaplastic thyroid cancer, bony or soft tissue metastasis
   b. Poor performance status limiting life expectancy
   c. Widely metastatic disease

   References: [10] [5]
2. **15 fractions or less** for anaplastic thyroid cancer, neck RT
   References: [10] [5]
3. **23 - 30 fractions** for **ALL** of the following:
   a. Oligometastatic disease
   b. Good performance status

   References: [10] [5]

Thyroid Carcinoma Guideline

2D/3D radiation therapy for thyroid carcinoma may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **ALL** of the following:

[20]The Lansky performance status scale can be utilized for ages 16 or less.

a. **ANY** of the following:

i. Anaplastic thyroid cancer and **ANY** of the following:

A. **30 fractions of less** for elective nodal regions

B. **30 - 33 fractions** for **ANY** of the following:

I. Adjuvant treatment post R0 or R1 resection and **ANY** of the following:

1. High-risk regions

2. Microscopic disease

II. Salvage therapy post R2 resection **OR** inoperable disease and **ANY** of the following:

1. High-risk regions

2. Microscopic disease

C. **35 fractions or less** for salvage therapy post R2 resection **OR** inoperable disease for gross disease

ii. Differentiated, medullary or poorly differentiated (non-anaplastic) thyroid cancer and **ANY** of the following:

A. **25 - 28 fractions** for elective nodal regions

B. **30 - 33 fractions** for microscopic disease for adjuvant RT for risk recurrence high, post R1 resection

C. Salvage post R2 resection **OR** inoperable disease and **ANY** of the following:

I. **30 - 33 fractions** for microscopic disease

II. **33 - 35 fractions** for gross disease

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[21]

References: [10] [1] [6]

[21]The Lansky performance status scale can be utilized for ages 16 or less.

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Head and Neck Cancer Summary of Changes

2D/3D guideline for head and neck cancer had the following version changes from 2024 to 2025:

- Combined guidelines ethmoid Sinus Tumors, Maxillary Sinus Tumors, Nasopharyngeal Cancer and Uveal Melanoma, Glottic/Supraglottic Larynx, Hypopharynx/Oropharynx/Oral Cavity (including mucosal lip) Cancer, Mucosal Melanoma, Salivary Gland Tumor and Occult Primary Cancer into single guideline consisting of Lip, oral cavity, nasopharynx, oropharynx, hypopharynx, glottic larynx, supraglottic larynx, occult primary, salivary gland tumors, and mucosal melanoma and added new indications:

1. **35 fractions or less** for definite treatment including convectional fractionation
2. **12 fractions or less** for palliative treatment
3. **30 to 33 fractions** for postoperative treatment with or without systemic therapy

- Thyroid Carcinoma Guideline:
  1. Anaplastic thyroid cancer:
     a. Added new indication: **30 fractions of less** for elective nodal regions
     b. **50-55 fractions** changed to **30-33 fractions** for adjuvant treatment of microscopic disease post R0 or R1 resection
     c. **55-58 fractions** changed to **35 fractions or less** for salvage therapy post R2 resection **OR** inoperable disease
  2. Differentiated, medullary or poorly differentiated (non-anaplastic) thyroid cancer:
     a. **30-33 fractions** for microscopic disease for adjuvant RT for risk recurrence high, post R1 resection
     b. **31-35 fractions** changed to **25-28 fractions** for elective nodal regions
     c. **33-37 fractions** changed to **30-33 fractions** for microscopic disease
     d. Removed palliative indication as redundant with palliative care guideline
     e. Salvage post R2 resection **OR** inoperable disease and ANY of the following:
        - **33-37 fractions** changed to **30-33 fractions** for microscopic disease
        - **37-39 fractions** changed to **33-35 fractions** for gross disease

Palliative Care for Head and Neck/Thyroid Cancer Guideline:

- Removed the indication for CNS metastasis.
- Added new indication for **10 fractions or less**: Poor performance status limiting life expectancy
- **20 fractions or less** changed to **15 fractions or less** for Anaplastic thyroid cancer, neck RT and removed the indication Head and Neck Cancer
- Added new indication for **23-30 fractions** for oligometastatic disease and good performance status

2D/3D Head and Neck Cancer Definition Section

2D Radiation therapy also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of

radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.

3D Radiation therapy also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.

Chemotherapy is treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing. Chemotherapy may be given by mouth, injection, infusion or on the skin depending on the type and stage of the cancer being treated. It may be given alone or with other treatments, such as surgery, radiation therapy or biologic therapy.

Eastern cooperative oncology group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).

Fraction is the full dose of radiation that is usually divided into a number of smaller doses called fractions. This allows healthy cells to recover between treatments. Factions are a series of treatment sessions that make up the radiotherapy course.

Hypopharyngeal refers to the bottom part of the throat.

Intraocular cancer is cancer that forms in tissues of and around the eye.

Karnofsky performance status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.

Laryngeal cancer is cancer that forms in tissues of the larynx (area of the throat that contains the vocal cords and is used for breathing, swallowing, and talking).

Metastatic is the spread of cancer from the primary site (place where it started) to other places in the body.

Nasopharyngeal refers to the nose and pharynx (the hollow tube inside the neck that starts behind the nose and ends at the top of the trachea and esophagus).

Oral cavity refers to the mouth. It includes the lips, the lining inside the cheeks and lips, the front two thirds of the tongue, the upper and lower gums, the floor of the mouth under the tongue, the bony roof of the mouth, and the small area behind the wisdom teeth.

Oropharyngeal refers to the part of the throat at the back of the mouth behind the oral cavity.

Palliative treatment is treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.

Recurrent disease is characterized by repeated alternations between acute relapse and long remission. Cancer that has recurred (come back), usually after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body. Also called recurrence.
Salivary gland is a gland in the mouth that produces saliva.
Squamous cell carcinoma (SCC) is carcinoma that is made up of or arises from squamous cells (stratified epithelium that consists at least in its outer layers of small scale like cells) and usually occurs in areas of the body exposed to strong sunlight over many years.
Uveal melanoma begins in the cells that make the dark-colored pigment, called melanin, in the uvea or uveal tract of the eye. Uveal melanoma of the iris is usually a small tumor that grows slowly and rarely spreads to other parts of the body. Uveal melanoma of the ciliary body and choroid are usually larger tumors and are more likely to spread to other parts of the body.
Very Advanced Head and Neck Cancers The algorithms for very advanced H&N cancers include: 1) newly diagnosed locally advanced T4b (M0); 2) newly diagnosed unresectable regional nodal disease, typically N3; 3) metastatic disease at initial presentation (M1); or 4) recurrent or persistent disease.

2D/3D Head and Neck Cancer References

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2025 2D/3D Hepatocellular Cancer

Radiation Therapy

Last Review Date: 01/20/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Hepatobiliary Cancer

Biliary Tract Cancer Guideline

2D/3D radiation therapy for biliary tract cancer may be considered appropriate when the medical record demonstrates **ALL** of the following:

1. **ANY** of the following:
   a. **15 fractions or less** for hypofractionation of unresectable tumors
   b. **25 - 30 fractions** for postoperative conventional treatment
   c. **30 - 35 fractions** for conventional fractionation for unresectable tumors

   References: [1] [6]

2. Physical ability and clinical status of **ANY** of the following:
   - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
   - Karnofsky performance status (KPS) grade of 70 or more[22]

References: [1] [6]

Hepatocellular Carcinoma Guideline

2D/3D radiation therapy for Hepatocellular carcinoma (HCC) may be considered appropriate when the medical record demonstrates **ALL** of the following:

1. **ANY** of the following:
    a. **10 - 15 fractions** for hypofractionation
    b. **25 - 33 fractions** for conventional fractionation

    References: [2] [5]
2. Physical ability and clinical status of **ANY** of the following:
    - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
    - Karnofsky performance status (KPS) grade of 70 or more[23]

    References: [2] [5]

Palliative Care for Metastatic Disease (Biliary Tract or Hepatocellular)

2D/3D radiation therapy for palliative care for metastatic disease may be considered appropriate when the medical record demonstrates **10 fractions or less** for palliative treatment.
Reference: [5]

Pancreatic Adenocarcinoma Guideline

2D/3D radiation therapy for pancreatic cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative therapy
    References: [11] [5] [3]
2. **ALL** of the following:
    a. **ANY** of the following:
        i. **23 - 27 fractions** for locally advanced or recurrent pancreatic cancer (pancreatic bed) chemoradiation
        ii. **25 - 28 fractions** for adjuvant treatment post-resection

[22]The Lansky performance status scale can be utilized for ages 16 or less.
[23]The Lansky performance status scale can be utilized for ages 16 or less.

iii. **27 fractions or less** for definitive therapy for resectable/borderline resectable tumors

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[24]

References: [11] [5]

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV

[24]The Lansky performance status scale can be utilized for ages 16 or less.

CODE	DESCRIPTION
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Hepatocellular Cancer Summary of Changes

2D/3D guideline for hepatocellular cancer had the following version changes from 2024 to 2025:
Biliary tract cancer Guideline:

- **29-33 fractions** changed to **25-30 fractions** for conventional therapy for postoperative ~~or unresectable disease, including boost~~
- Added indication: **30-35 fractions** for conventional fractionation for unresectable tumors
- Citations updated.

Pancreatic Adenocarcinoma Guideline:

- Added pancreatic adenocarcinoma guideline from gastrointestinal cancer guidelines.
- **30 fractions or less** for definitive therapy for resectable/borderline resectable tumors changed to **27 fractions or less**
- Added new indication: **23-27 fractions** for locally advanced or recurrent pancreatic cancer (pancreatic bed) chemoradiation

2D/3D Hepatobiliary Cancer Definition Section

2D Radiation therapy also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.
3D Radiation therapy also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.
Adjuvant treatment refers to enhancing the effectiveness of medical treatment.
Biliary tract involves the organs and ducts that make and store bile (a fluid made by the liver that helps digest fat), and release it into the small intestine. The biliary tract includes the gallbladder and bile ducts inside and outside the liver.

Biliary tree is a system of vessels that directs secretions from the liver, gallbladder and pancreas through a series of ducts into the duodenum.
Definitive treatment is the treatment plan for a disease or disorder that has been chosen as the best one for a patient after all other choices have been considered.
Eastern Cooperative Oncology Group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).
Fraction is the full dose of radiation that is usually divided into a number of smaller doses. This allows healthy cells to recover between treatments. Factions are a series of treatment sessions that make up the radiotherapy course.
Hepatic means relating to the liver
Hepatobiliary means having to do with the liver, bile ducts and/or gallbladder.
Hepatocellular carcinoma (HCC) is a primary malignancy of the liver that occurs predominantly in patients with underlying chronic liver disease and cirrhosis.
Hypofractionation radiation therapy is radiation treatment in which the total dose of radiation is divided into large doses and treatments are given once a day or less often. It is given over a shorter period of time (fewer days or weeks) than standard radiation therapy.
Karnofsky Performance Status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.
Metastatic is the spread of cancer from the primary site (place where it started) to other places in the body.
Palliative treatment is treatment given to help relieve symptoms and reduce suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.
Unresectable cancer is that which cannot be removed completely through surgery.

2D/3D Hepatocellular References

[1] Benson, A.B., D'Angelica, M.I., . . . Yopp, A. (2024). Biliary Tract Cancers Version 5.2024. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/btc.pdf
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2025 2D/3D Sarcoma

Radiation Therapy

Last Review Date: 01/20/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Soft Tissue Sarcoma

Sarcoma, Originating in Extremity/Body Wall/Head and Neck Guideline

2D/3D radiation therapy for soft tissue sarcoma of extremity, body wall, or head and neck may be considered appropriate when the medical demonstrates **ALL** of the following:

1. **ANY** of the following:
    a. **25 fractions or less** for desmoid tumors, neoadjuvant therapy
    b. **28 fractions or less** for **ANY** of the following:
        i. Adjuvant or neoadjuvant therapy
        ii. Desmoid tumors, definitive treatment
    c. **40 fractions or less** for definitive treatment of unresectable disease, including boost

    References: [5] [3] [2]
2. Physical ability and clinical status of **ANY** of the following:
    - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less

- Karnofsky performance status (KPS) grade of 70 or more[25]

References: [5] [3] [2]

Sarcoma, Originating in Retroperitoneal/Intra-Abdominal Guideline

2D/3D radiation therapy for retroperitoneal/intra-abdominal sarcoma may be considered appropriate when the medical record demonstrates **ALL** of the following:

1. **28 fractions or less** for neoadjuvant therapy with risk for local recurrence high
   References: [5] [4]
2. Physical ability and clinical status of **ANY** of the following:
   - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
   - Karnofsky performance status (KPS) grade of 70 or more[26]

   References: [5] [4]

Sarcoma, Palliative Care for Metastatic Disease Guideline

2D/3D radiation therapy for palliative care for metastatic disease may be considered appropriate when the medical record demonstrates **10 fractions or less** for palliative treatment.
References: [1] [5]

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV

[25]The Lansky performance status scale can be utilized for ages 16 or less.
[26]The Lansky performance status scale can be utilized for ages 16 or less.

CODE	DESCRIPTION
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Sarcoma Summary of Changes

2D/3D guideline for sarcoma had the following version changes from 2024 to 2025:
Sarcoma, Originating in Extremity/Body Wall/Head and Neck Guideline:

- **44 fractions or less** changed to **40 fractions or less** for definitive treatment of unresectable disease, including boost
- Citations updated.

2D/3D Sarcoma Definition Section

2D radiation therapy, also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.
3D radiation therapy, also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.

Adjuvant treatment refers to enhancing the effectiveness of medical treatment.
Boost refers to an additional dose of radiation to a very small component or part of the initial targeted field or body part that is being treated for a tumor.
Chemotherapy is treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing. Chemotherapy may be given by mouth, injection, infusion or on the skin depending on the type and stage of the cancer being treated. It may be given alone or with other treatments, such as surgery, radiation therapy or biologic therapy.
Clinical target volume (CTV) is the grossly detectable tumor volume plus any microscopic tumor that extends outward from the grossly involved margins. The objective in radiation oncology is to treat the visible tumor and the surrounding margins adequately to destroy as many malignant cells as possible.
Definitive radiation therapy is the treatment plan for a disease or disorder that has been chosen as the best for a person after all other choices have been considered.
Desmoid tumors are noncancerous growths that occur in the connective tissue.
Eastern cooperative oncology group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).
Fraction is the full dose of radiation that is usually divided into a number of smaller doses. This allows healthy cells to recover between treatments. Factions are a series of treatment sessions that make up the radiotherapy course.
Karnofsky performance status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.
Metastatic is the spread of cancer from the primary site (place where it started) to other places in the body.
Neoadjuvant radiation therapy is treatment given as a first step to shrink a tumor before the main treatment, which is usually surgery. Examples of neoadjuvant therapy include chemotherapy, radiation therapy and hormone therapy.
Palliative treatment is treatment given to help relieve symptoms and reduce suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.
Recurrent disease, also called recurrence, is characterized by repeated alternations between acute relapse and long remission. Cancer that has recurred (come back) usually does so after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body.
Sarcomas are rare cancers that develop in the bones and soft tissues including fat, muscles, blood vessels, nerves, deep skin tissues and fibrous tissues.
Simultaneous integrated boost (SIB) is a newly developed approach of applying different radiation doses to different areas in one single session.

Unresectable cancer is that which cannot be removed completely through surgery.

2D/3D Sarcoma References

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[2] Gronchi, A., Raut, C. P. (2020). Management of Soft Tissue Sarcoma. J.L. Cameron & A.M. Cameron (Eds.). *Current Surgical Therapy* (13), (pp. 825-840). Philadelphia, PA: Elsevier, Inc.

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2025 2D/3D Skin Cancer

Radiation Therapy

Last Review Date: 01/20/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Skin Cancers

Basal Cell Guideline

2D/3D radiation therapy for basal cell may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative treatment
   References: [1] [4]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **25- 33 fractions** for postoperative treatment
      ii. **30- 35 fractions** for definitive radiation ineligible for upfront surgery **OR** tumors in the midface area

iii. **33 fractions of less** for regional disease and **ANY** of the following:

A. Negative margins, no extranodal extension (ENE)

B. Positive margins or ENE

C. Clinically at-risk nerves

iv. **35 fractions of less** for regional disease, clinically positive for lymph node regions, without lymph node dissection

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[27]

References: [1] [4]

Benign Skin Condition or Keloid Guideline

2D3D for a benign skin condition or keloid:

- The role of this therapy is uncertain/unclear in the current evidence. Requests for this therapy require review by a physician reviewer, medical director and/or the individual's healthplan.

Reference: [3]

Dermatofibrosarcoma Guideline

2D/3D radiation therapy for dermatofibrosarcoma may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **33 fractions or less** for **ALL** of the following:

a. Dermatofibrosarcoma protuberans for **ANY** of the following:

i. Adjuvant therapy for positive margins/gross disease

ii. Recurrence or metastasis if radiation therapy was not given previously and further resection not feasible

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less

[27]The Lansky performance status scale can be utilized for ages 16 or less.

- Karnofsky performance status (KPS) grade of 70 or more[28]

References: [5] [4]

Melanoma Guideline

2D/3D radiation therapy for melanoma skin cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **20 fractions or less** for palliative treatment
   Reference: [8]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **33 fractions or less** for adjuvant therapy
      ii. **35 fractions or less** for definitive therapy in primary disease
   b. Physical ability and clinical status of **ANY** of the following:
      - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
      - Karnofsky performance status (KPS) grade of 70 or more[29]

   Reference: [8]

Merkel Cell Guideline

2D/3D radiation therapy for merkel cell may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative treatment
   References: [6] [4]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **25 - 28 fractions** for adjuvant therapy in merkel cell carcinoma with negative resection margins
      ii. **28 - 30 fractions** for adjuvant therapy in merkel cell carcinoma with microscopically positive margins
      iii. **30 - 33 fractions** for **ANY** of the following:

[28]The Lansky performance status scale can be utilized for ages 16 or less.
[29]The Lansky performance status scale can be utilized for ages 16 or less.

A. Merkel cell carcinoma for **ANY** of the following;

a. Adjuvant therapy for grossly positive margins and further resection not possible

b. No previous resection and surgery refused

c. No previous resection and surgery would result in significant morbidity

d. No previous resection and tumor unresectable

b. Physical ability and clinical status of **ANY** of the following:

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[30]

References: [6] [4]

Squamous Cell Guideline

2D/3D radiation therapy for squamous cell may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fraction or less** for palliative treatment
   References: [7] [4] [2]
2. **ALL** of the following:
   a. **ANY** of the following:
      i. **25 - 33 fractions** for postoperative treatment
      ii. **30 - 35 fractions** for definitive radiation ineligible for upfront surgery **OR** tumors in the midface area
      iii. **33 fractions of less** for regional disease and **ANY** of the following:
         A. Negative margins, no extranodal extension (ENE)
         B. Positive margins or ENE
         C. Clinically at-risk nerves
      iv. **35 fractions of less** for regional disease, clinically positive for lymph node regions, without lymph node dissection
   b. Physical ability and clinical status of **ANY** of the following:

[30]The Lansky performance status scale can be utilized for ages 16 or less.

- Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
- Karnofsky performance status (KPS) grade of 70 or more[31]

References: [7] [4] [2]

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

[31]The Lansky performance status scale can be utilized for ages 16 or less.

2D/3D Skin Cancer Summary of Changes

2D/3D guideline for skin cancer had the following version changes from 2024 to 2025:

- Non-Melanoma Cancers Guideline subdivided into 4 guidelines (Merkel Cell, Basal Cell, Squamous Cell, Dermatofibrosarcoma)
- Citations updated
- Squamous Cell and Basal Cell Guideline changes:
  - Added new indications:
    1. **25- 33 fractions** for postoperative treatment
    2. **30- 35 fractions** for definitive radiation ineligible for upfront surgery **OR** tumors in the midface area
    3. **33 fractions of less** for regional disease and **ANY** of the following: Negative and/or positive margins and/or clinically at-risk nerves
    4. **35 fractions of less** for regional disease, clinically positive for lymph node regions, without lymph node dissection
    5. **10 fractions or less** for palliative treatment of squamous cell

2D/3D Skin Cancer Definition Section

2D Radiation therapy also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.
3D Radiation therapy also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.
Adjuvant treatment refers to enhancing the effectiveness of medical treatment.
Benign means not cancer. Benign tumors may grow larger but do not spread to other parts of the body. Also called nonmalignant.
Eastern cooperative oncology group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).

Fraction is the full dose of radiation that is usually divided into a number of smaller doses called fractions. This allows healthy cells to recover between treatments. Factions are a series of treatment sessions that make up the radiotherapy course.

Karnofsky performance status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.

Keloid is a thick, irregular scar caused by excessive tissue growth at the site of an incision or wound.

Melanoma is a highly malignant tumor that starts in melanocytes of normal skin or moles and metastasizes rapidly and widely.

Non-melanoma cancer is skin cancer that forms in the lower part of the epidermis (the outer layer of the skin) or in squamous cells, but not in melanocytes (skin cells that make pigment).

Palliative treatment is treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.

2D/3D Skin Cancer References

[1] Bordeaux, J., Blitzblau, R., . . . Yusuf, M. (2024). Basal Cell Skin Cancer Version 3.2024. *National Comprehensive Cancer Network*. Retrieved: December 2024. https://www.nccn.org/professionals/physician_gls/pdf/nmsc.pdf

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2025 2D/3D Thoracic Cancer

Radiation Therapy

Last Review Date: 01/20/2025
Previous Review Date: 04/30/2024
Guideline Initiated: 06/30/2019

2D/3D Radiation Therapy for Thoracic Cancer

Mesothelioma Guideline

2D/3D radiation therapy for mesothelioma may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative treatment and **ANY** of the following:
    a. Chest wall pain from recurrent nodules
    b. Multiple brain or bone metastases

    References: [4] [6] [9]
2. **ALL** of the following:
    a. **30 fractions or less** for post pleurectomy/decortication
    b. Physical ability and clinical status of **ANY** of the following:
        - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
        - Karnofsky performance status (KPS) grade of 70 or more[32]

    References: [4] [6] [9]

Non Small Cell Lung Cancer (NSCLC); Stage I, II or III Guideline

2D/3D radiation therapy for non small cell lung cancer (NSCLC); stage I, II or III may be considered appropriate when the medical record demonstrates **ANY** of the following:

[32]The Lansky performance status scale can be utilized for ages 16 or less.

1. **ALL** of the following:
    a. **ANY** of the following:
        i. **27 fractions for less** for **ANY** of the following:
            i. Postoperative treatment for negative margins
            ii. Preoperative treatment
        ii. **30 fractions or less** for **ANY** of the following:
            i. Postoperative treatment for extracapsular nodal extension
            ii. Postoperative treatment for microscopic positive margins
        iii. **35 fractions or less** for **ANY** of the following:
            i. Definitive treatment
            ii. Postoperative treatment for gross residual tumor
    b. Physical ability and clinical status of **ANY** of the following:
        - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
        - Karnofsky performance status (KPS) grade of 70 or more[33]

References: [6] [2]

Non Small Cell Lung Cancer (NSCLC); Advanced/Metastatic (Stage IV) Guideline

2D/3D radiation therapy for non small cell lung cancer (NSCLC); advanced/metastatic (stage IV) may be considered appropriate when the medical record demonstrates **10 fractions or less** for palliative treatment.
References: [6] [2]

Small Cell Lung Cancer (SCLC), Limited or Extensive Disease Guideline

2D/3D radiation therapy for small cell lung cancer (SCLC), limited or extensive stage disease, may be considered appropriate when **ANY** of the following:

1. **10 fractions or less** for palliative treatment
   References: [3] [6] [8] [1]

[33]The Lansky performance status scale can be utilized for ages 16 or less.

2. **ALL** of the following:
    a. **ANY** of the following:
        i. **10 fractions or less** for prophylactic cranial radiation **OR** for extensive stage disease
        ii. **35 fractions or less** for limited stage disease
    b. Physical ability and clinical status of **ANY** of the following:
        - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
        - Karnofsky performance status (KPS) grade of 70 or more[34]

References: [3] [6] [8] [1]

Thymoma or Thymic Cancer Guideline

2D/3D radiation therapy for thymoma or thymic cancer may be considered appropriate when the medical record demonstrates **ANY** of the following:

1. **10 fractions or less** for palliative treatment
   References: [6] [5]
2. **ALL** of the following:
    a. **ANY** of the following:
        i. **35 fractions or less** for unresectable disease **OR** gross residual disease
        ii. Adjuvant treatment and **ANY** of the following:
            A. **23 - 25 fractions** for clear/close margins
            B. **27 fractions** for microscopically positive resection margins
    b. Physical ability and clinical status of **ANY** of the following:
        - Eastern cooperative oncology group (ECOG) performance status grade of 2 or less
        - Karnofsky performance status (KPS) grade of 70 or more[35]

References: [6] [5]

[34]The Lansky performance status scale can be utilized for ages 16 or less.
[35]The Lansky performance status scale can be utilized for ages 16 or less.

Procedure Codes

Table 1. 2D3D Associated Procedure Codes

CODE	DESCRIPTION
77401	Radiation treatment delivery, superficial and/or ortho voltage, per day
77402	Radiation treatment delivery, ≥1 MeV; simple
77407	Radiation treatment delivery, ≥1 MeV; intermediate
77412	Radiation treatment delivery, ≥1 MeV; complex
G6003	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: up to 5 MeV
G6004	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 6-10 MeV
G6005	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 11-19 MeV
G6006	Radiation treatment delivery, single treatment area, single port or parallel opposed ports, simple blocks or no blocks: 20 MeV or greater
G6007	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: up to 5 MeV
G6008	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 6-10 MeV
G6009	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 11-19 MeV
G6010	Radiation treatment delivery, 2 separate treatment areas, 3 or more ports on a single treatment area, use of multiple blocks: 20 MeV or greater
G6011	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; up to 5 MeV
G6012	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 6-10 MeV
G6013	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 11-19 MeV
G6014	Radiation treatment delivery, 3 or more separate treatment areas, custom blocking, tangential ports, wedges, rotational beam, compensators, electron beam; 20 MeV or greater

2D/3D Thoracic Cancer Summary of Changes

2D/3D guideline for thoracic cancer had the following version changes from 2024 to 2025:
Mesothelioma Guideline:

- **22 fractions or less** changed to **10 fractions or less** for palliative treatment and added indications: Chest wall pain from recurrent nodules; Multiple brain or bone metastases

- **33 fractions or less** changed to **30 fracions or less** for post pleurectomy/decortication and removed indication the postoperative treatment after extrapleural pneumonectomy (EPP)

Non Small Cell Lung Cancer (NSCLC); Stage I, II or III Guideline:

- **30 fractions for less** changed to **27 fractions or less** for postoperative treatment for negative margins and/or preoperative treatment and included
- **33 fractions or less** changed to **30 fractions or less** for extracapsular nodal extension and/or microscopic positive margins

Non Small Cell Lung Cancer (NSCLC); Advanced/Metastatic (Stage IV) Guideline:

- **15 fractions or less** changed to **10 fractions or less** for palliative treatment

Small Cell Lung Cancer (SCLC), Limited or Extensive Disease Guideline:

- **30 fractions or less** changed to **10 fractions or less** for extensive stage disease

Thymoma or Thymic Cancer Guideline:

- Removed the indication **35 fractions or less** for adjuvant and/or definitive therapy
- Added new indications:
  - **35 fractions or less** for unresectable disease **OR** gross residual disease
  - Adjuvant treatment and **23 to 25 fractions** for clear/close margins
  - Adjuvant treatment and **27 fractions** for microscopically positive resection margins

2D/3D Thoracic Cancer Definition Section

2D Radiation therapy also known as conventional radiation therapy, utilizes radiographic films to determine the best position to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. Planning for this type of therapy is normally done with the use of a fluoroscopic simulator.
3D Radiation therapy also known as conformal radiation therapy, utilizes computed tomography scan (CT) images mostly, but may also utilize magnetic resonance imaging (MRI) or positron emission testing with CT (PET/CT) for correlation. This is done to determine the best position in which to place the radiation beams in order to deliver an adequate dose of radiation to the tumor while limiting the exposure to surrounding tissue and organs. This is an improvement over the utilization of the flat images used to plan beam placement in conventional radiation therapy as it provides a 3D image of the surrounding tissue and organs. This imaging improves the ability to map the radiation beam more accurately to the tumor.
Adjuvant treatment refers to enhancing the effectiveness of medical treatment.

Definitive treatment is the treatment plan for a disease or disorder that has been chosen as the best one for a patient after all other choices have been considered.

Eastern cooperative oncology group (ECOG) scale describes a patient's level of functioning in terms of the ability to care for one's self, daily activity and physical ability (eg, walking, working).

Extrapleural pneumonectomy (EPP) is a surgical procedure for treating pleural mesothelioma. It involves the removal of the impacted lung, portions of the diaphragm and the linings of the lung and heart (pleura and pericardium). The surgery is often part of a multimodal treatment plan with chemotherapy and radiation.

Fraction is the full dose of radiation that is usually divided into a number of smaller doses called fractions. This allows healthy cells to recover between treatments. Factions are a series of treatment sessions that make up the radiotherapy course.

Hemoptysis is coughing or spitting up blood from the respiratory tract.

Karnofsky performance status (KPS) is an assessment tool for functional impairment. It can be used to compare effectiveness of different therapies and to assess the prognosis in individual patients. In most serious illnesses, the lower the Karnofsky score, the worse the likelihood of survival.

Mesothelioma is a usually malignant tumor derived from mesothelial tissue (such as that lining the peritoneum or pleura).

Metastatic is the spread of cancer from the primary site (place where it started) to other places in the body.

Non-small cell lung cancer is a group of lung cancers named for the kinds of cells found in the cancer and how the cells look under a microscope. The three main types of non-small cell lung cancer are adenocarcinoma (most common), squamous cell carcinoma and large cell carcinoma. Non-small cell lung cancer is the most common of the two main types of lung cancer (non-small cell lung cancer and small cell lung cancer).

Palliative treatment is treatment given to help relieve the symptoms and reduce the suffering caused by cancer or other life-threatening diseases. Palliative therapy may help a person feel more comfortable, but it does not treat or cure the disease.

Prophylactic treatment is a medication or a treatment designed and used to prevent a disease from occurring.

Small cell lung cancer is a highly malignant form of cancer that affects the lungs, tends to metastasize to other parts of the body, is characterized by small round or oval cells which resemble oat grains and have little cytoplasm.

Thymoma and thymic carcinoma are diseases in which malignant (cancer) cells form on the outside surface of the thymus.

2D/3D Thoracic Cancer References

[1] Daly, M.E., Ismaila, N., . . . Schneider, B.J.(2021).Radiation Therapy for Small-Cell Lung Cancer: ASCO Guideline Endorsement of an ASTRO Guideline.*Journal of Clinical Oncology,39*(8),931-939.

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Disclaimer section

Purpose

The purpose of the HealthHelp's clinical guidelines is to assist healthcare professionals in selecting the medical service that may be appropriate and supported by evidence to safely improve outcomes. Medical information is constantly evolving, and HealthHelp reserves the right to review and update these clinical guidelines periodically. HealthHelp reserves the right to include in these guidelines the clinical indications as appropriate for the organization's program objectives. Therefore the guidelines are not a list of all the clinical indications for a stated procedure, and associated Procedure Code Tables may not represent all codes available for that state procedure or that are managed by a specific client-organization.

Clinician Review

These clinical guidelines neither preempt clinical judgment of trained professionals nor advise anyone on how to practice medicine. Healthcare professionals using these clinical guidelines are responsible for all clinical decisions based on their assessment. All Clinical Reviewers are instructed to apply clinical indications based on individual patient assessment and documentation, within the scope of their clinical license.

Payment

The use of these clinical guidelines does not provide authorization, certification, explanation of benefits, or guarantee of payment; nor do the guidelines substitute for, or constitute, medical advice. Federal and State law, as well as member benefit contract language (including definitions and specific contract provisions/exclusions) take precedence over clinical guidelines and must be considered first when determining eligibility for coverage. All final determinations on coverage and payment are the responsibility of the health plan. Nothing contained within this document can be interpreted to mean otherwise.

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National and Local Coverage Determination (NCD and LCD)

NOTICE
To ensure appropriate review occurs to the most current NCD and/or LCD, always defer to https://www.cms.gov/medicare-coverage-database/search.aspx.

Background

National Coverage Determinations (NCD) and Local Coverage Determinations (LCD) are payment policy documents outlined by the Centers for Medicare and Medicaid Services (CMS) and the government's delegated Medicare Audit Contractors (MACs) that operate regionally in jurisdictions.

CMS introduced variation between different jurisdictions/Medicare Audit Contractors (MACs) and their associated covered code lists with the transition to ICD 10. The variation resulted in jurisdictions independently defining how codes are applied for exclusions, limitations, groupings, ranges, etc. for the medical necessity indications outlined in the NCD and LCD. Due to this variation, there is an inconsistent use/application of codes and coverage determinations across the United States between the different MACs.
In addition, **WITHOUT** notice, CMS can change the codes that indicate medical necessity and the format of the coverage determinations/associated documents (eg, Articles). This is an additional challenge for organizations to keep up with ongoing, unplanned changes in covered codes and medical necessity indications.

Medical Necessity Codes

Due to the variation in code application between jurisdictions/MACs and that updates can happen without notification, HealthHelp is not able to guarantee full accuracy of the codes listed for any Coverage Determination, and advises that prior to use, the associated Coverage Determination Articles are reviewed to ensure applicability to HealthHelp's programs and any associated NCDs and LCDs.

For Internal Use Only:

11248 11249 11253 11282 11325 11328 11333 11349 11350 11351 11352 11354 11355 11356 11358 11359 11360 11361 11362 11365 11366 11367 11368 11369 11370 11374 11375 11394 11395 11396 11565