

**EFFECTIVE DATE:** 09|01|2015

**POLICY LAST UPDATED:** 06|26|2015

## OVERVIEW

Intensity-modulated radiotherapy (IMRT) may be an integral component in the treatment of cancers of the abdomen and pelvis. IMRT has been proposed as a method of radiotherapy that allows adequate radiotherapy to the tumor while minimizing the radiation dose to surrounding normal tissues and critical structures. IMRT versus 3-dimensional (3D) conformal radiation in chemoradiotherapy for anal cancer shows marked differences in rates of acute toxicity.

## MEDICAL CRITERIA

### BlueCHiP for Medicare and Commercial Products

Not applicable

## PRIOR AUTHORIZATION

Not applicable

## POLICY STATEMENT

### BlueCHiP for Medicare and Commercial Products

Intensity-modulated radiotherapy may be considered **medically necessary** as an approach to delivering radiotherapy for patients with cancer of the anus/anal canal when dosimetric planning with standard 3D conformal radiation predicts that the radiation dose to an adjacent organ would result in unacceptable normal tissue toxicity and for the treatment of cancer of the abdomen and pelvis including but not limited to the stomach, hepatobiliary tract, pancreas, rectal locations or gynecologic tumors.

IMRT would be considered **not medically necessary** for all other uses in the abdomen and pelvis as there is insufficient peer-reviewed literature that demonstrates that the procedure/service is effective.

## COVERAGE

Benefits may vary between groups/contracts. Please refer to the appropriate Evidence of Coverage, Subscriber Agreement, or Benefit Booklet for radiology benefit/coverage.

## BACKGROUND

### Radiation Techniques

#### Conventional External-Beam Radiotherapy

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

#### Three-Dimensional Conformal Radiation

Treatment planning evolved by using 3-dimensional images, usually from computed tomography (CT) scans, to delineate the boundaries of the tumor and discriminate tumor tissue from adjacent normal tissue and nearby organs at risk for radiation damage. Computer algorithms were developed to estimate cumulative radiation dose delivered to each volume of interest by summing the contribution from each shaped beam. Methods also were developed to position the patient and the radiation portal reproducibly for each fraction

and immobilize the patient, thus maintaining consistent beam axes across treatment sessions. Collectively, these methods are termed 3-dimensional conformal radiotherapy (3D-CRT).

### **Intensity-Modulated Radiotherapy**

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

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

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

The body of evidence available to assess the role of IMRT in the treatment of cancers of the abdomen and pelvis generally comprises case series, both retrospective and prospective. Only 1 randomized trial has been reported that compared results of whole-pelvic IMRT with whole-pelvic conformal radiotherapy (CRT) for cervical cancer. Reports of case series, including concurrently treated control patients, are emerging. The available results are generally viewed as hypothesis-generating for the design and execution of comparative trials of IMRT versus CRT that evaluate tumor control and survival outcomes in the context of adverse events and safety.

The comparative data on use of IMRT versus 3-dimensional conformal radiation in chemoradiotherapy for anal cancer shows marked differences in rates of acute toxicity. Thus, use of IMRT in cancer of the anus/anal canal may be considered medically necessary.

For other tumors of the abdomen and pelvis, the evidence from treatment planning studies has shown that the use of IMRT decreases radiation doses delivered to normal tissue adjacent to tumor. This potentially lowers the risk of adverse events (acute and late effects of radiation toxicity), although the clinical benefit of reducing the radiation dose to normal tissue using IMRT is theoretical. Due to the limitations in this evidence, this policy underwent clinical vetting. There was support for the use of IMRT in tumors of the abdomen and pelvis when normal tissues would receive unacceptable doses of radiation. The results of the vetting, together with an indirect chain of evidence and the potential to reduce harms, led to the decision that IMRT may be considered medically necessary for the treatment of tumors of the abdomen and pelvis when dosimetric planning with standard 3D conformal radiation predicts that the radiation dose to an adjacent organ would result in unacceptable normal tissue toxicity.

### **CODING**

#### **BlueCHiP for Medicare and Commercial Products**

**A4648** Tissue marker, implantable, any type, each (Note: This code is not separately reimbursed for institutional providers.)

**Note:** To ensure correct pricing of HCPC code **A4648** for the Calypso 4D localization system, the procedure/clinical notes and the invoice must be submitted.

The following codes are covered for BlueCHiP for Medicare and commercial products:

**Intensity-modulated radiation therapy**

**77301:**

**77338:**

**77385:**

**77386:**

**G6015:** Intensity modulated treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams, binary, dynamic MLC, per treatment session (effective 1/1/2015)

**G6016:** Compensator-based beam modulation treatment delivery of inverse planned treatment using 3 or more high resolution (milled or cast) compensator, convergent beam modulated fields, per treatment session (effective 1/1/2015)



ICD9 IMRT abd  
pelvis 100115.pdf



ICD10 IMRT abd  
and pelvis 100115.pdf

**RELATED POLICIES**

None

**PUBLISHED**

Provider Update, October 2015

Provider Update, August 2014

Provider Update, April 2012

Provider Update, September 2011

Provider Update, January 2010

**REFERENCES**

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