

# Economic Issues Related to IMRT

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In addition to dramatically improving the quality of patient care, IMRT can be a very lucrative addition to both freestanding centers and hospital-based radiation oncology programs. The procedure's profit comes from the fee for technical services (around \$400 per treatment compared to around \$100 per treatment for conventional radiation oncology).

Since the time the patient spends on the table receiving IMRT is potentially the same as that for complex three-dimensional conformal radiation therapy (3D-CRT) and external beam radiation, the difference in the fees represents a considerable profit margin that swallows the inadequate reimbursement for IMRT planning. Unfortunately, the technical fee for IMRT will probably drop over the next few years as the procedure becomes more common, and the dramatic increase in Medicare costs requires re-evaluation of Medicare's IMRT-related codes.

Table 1 clearly demonstrates the profit that can result from the treatment of patients with IMRT versus conventional therapy. In terms of net revenue, an IMRT case will generate the same revenue as three 3D-CRT patients, but will also need double or triple the planning time in the physics suite.

Table 2 shows that IMRT will generate significant revenue for a freestanding center. Physicians working in a hospital-based practice will actually see a decrease in the professional reimbursement they receive for IMRT patients versus patients treated with conventional therapy (see Table 3). Hospital physicians may lose money on IMRT patients because of the number of procedures that are either bundled directly into the IMRT technical fee (like the extensive planning time IMRT requires) or that simply cannot be performed with IMRT therapy.

## PAYMENT RULES FOR IMRT

The final rules for the reimbursement of IMRT services have been published, but have not been firmly established with every local carrier. To date, two codes for IMRT have been approved. Code 77418 covers the technical component only, and 77301 is a planning code that globally covers both the technical and the professional components of the IMRT planning process.

- 77418: Intensity modulated treatment delivery, single or multiple fields/arcs, via narrow spatially and temporally modulated beams (e.g., binary, dynamic multileaf collimator), per treatment session (CPT 2002)
- 77301: Intensity modulated radiotherapy plan, including

**Table 1. Comparison of a single machine center doing conventional radiation therapy vs. a two-machine center, one unit devoted to IMRT.**

450 Patient Load – 1 Machine Center – Global Billing			
# Cases	Per Case	=	\$ Billed Conventional RT
150	\$10,000	=	\$1,500,000
100	7,500	=	750,000
100	5,000	=	500,000
100	2,000	=	200,000
450			
<b>Total revenue for year</b>			<b>\$2,950,000</b>

500 Patient Load – 2 Machine Center – Global Billing			
# Cases	Per Case Conventional		\$ Billed
75	\$10,000		\$750,000
75	7,500		562,500
75	5,000		375,000
75	2,000		150,000
300			<b>\$1,837,500</b>

# Cases	Per Case IMRT		\$ Billed
125	\$30,000		\$3,750,000
25	25,000		625,000
25	20,000		500,000
25	15,000		375,000
200			<b>\$5,250,000</b>
<b>Total revenue for year</b>			<b>\$7,087,500</b>

(Based on 2002 data and APC rates)

dose-volume histograms for target and critical structure partial tolerance specification (CPT 2002)

## CMS CODING GUIDELINES

Code 77301 from the Centers for Medicare and Medicaid Services (CMS) Coding Guidelines may be reported once per treatment course per lesion. The simultaneous or

**Table 2. Clinical case of early cancer of the prostate. Conventional conformal radiation therapy vs. IMRT total course. Procedures performed at freestanding center.**

CPT Code	Descriptors	Number of Conformal Cases	Total Global RVU Conf	Number of IMRT Cases	Total Global RVU IMRT
99245	High Level E/M	1	6.02	1	6.02
77263	Treatment Plan	1	4.37	‡1	4.37
77290	Pre-treatment Sim	1	8.30	1	8.30
77295	3-D Sim	1	32.75	*	-
77290	Post-plan Sim	1	8.30	*	-
77300	Basic Dosimetry	6	12.72	*	-
77301	IMRT Dosimetry	*	-	1	37.72
77334	Blocks	6	28.68	6	28.68
77331	Microdosimetry	6	9.96	*	-
77336	Continuing Physics	8	22.64	*	-
77370	Physics Consult	1	3.31	‡1	3.31
77470	Special Procedure	1	13.43	‡1	13.43
77413	Treatment	40	88.40	*	-
77418	Treatment	*	-	45	723.15
77417	Port Film	8	4.48	*	-
77427	Treatment Mgmt.	8	36.00	9	40.50
	<b>Total RVU</b>		<b>279.36</b>		<b>865.48</b>
	<b>Medicare Payment CF 36.1992</b>		<b>\$10,113</b>		<b>\$31,330</b>

\* Not done with this procedure code

‡Will/may be denied on same date of service - CCI Edits

(Based on 2002 data and APC rates)

planned sequential treatment of multiple targets within a region (i.e., multiple brain lesions or the prostate and seminal vesicles) should be billed as a single plan. Three-dimensional (3D) simulation (77295), teletherapy isodose plan (77305-77315), basic dosimetry (77300), and special teletherapy plan (77321) are also considered part of IMRT planning and should not be billed separately.

Conventional radiation simulation may precede IMRT. Recently published CCI edits (Version 8.0, 2002) prevent the use of certain physics codes on the same date as 77301, including continuing medical physics consultation (77336) and special medical radiation physics consultation (77370).

When indicated, treatment devices (77332-77334) may be utilized and billed.

Treatment delivery codes 77401-77416 are also used to pay IMRT claims. Some carriers may pay for these procedures if done on dates when 77301 or 77418 are not reported. *PLEASE NOTE: CMS' final rules have not been fully clarified.*

#### **PHYSICIAN PROFESSIONAL COMPONENT**

The IMRT code for treatment delivery (77418) is a technical-only code and does not have a professional component. Hospitals can use it for outpatient services under the ambulatory payment classification (APC) system, and

The best estimate at this time is that up to 40 percent of an average center's patient load could be candidates for IMRT treatment in the future.

**Table 3. Clinical case of early cancer of the prostate. Conventional conformal radiation therapy vs. IMRT full course. Procedures performed in hospital, physician billing-only.**

CPT Code	Descriptors	Number of Conformal Cases	Total Prof RVU Confx	Number of IMRT Cases	Total Prof RVU IMRT
99245	High Level E/M	1	6.02	1	6.02
77263	Treatment Plan	1	4.37	‡1	4.37
77290	Pre-treatment Sim	1	2.12	1	2.12
77295	3-D Sim	1	6.22	*	-
77290	Post Plan Sim	1	2.12	*	-
77300	Basic Dosimetry	6	5.04	*	-
77301	IMRT Dosimetry	*	-	1	11.19
77334	Blocks	6	10.14	6	10.14
77331	Microdosimetry	6	7.08	*	-
77470	Special Procedure	1	2.84	1	2.84
77427	Treatment Mgmt.	8	36.00	9	40.50
	<b>Total RVU</b>		<b>81.95</b>		<b>77.18</b>
	<b>Medicare Payment CF 36.1992</b>		<b>\$2,966</b>		<b>\$2,794</b>

\* Not done with this procedure code

‡Will/may be denied on same date of service – CCI Edits

(Based on 2002 data and APC rates)

freestanding centers can use Medicare Part B for treatment delivery services. The physician component of IMRT treatment is billed as 77427 (weekly physician treatment management). The IMRT treatment planning code 77301 has both a professional and technical component. The technical component will be paid under the APC for hospital outpatient services, and the professional component will be paid under Medicare Part B for freestanding centers.

### PATIENT LOAD

Both hospitals and freestanding centers must treat an adequate number of patients with IMRT to achieve cost amortization.

Prostate and head and neck cancers are currently treated with IMRT more than any other malignant lesions. While most breast cancers can be adequately treated with conventional radiation therapy, IMRT may be used for cancers in the intact left breast close to the chest wall (after

chemotherapy) to spare the heart or lungs. CNS lesions, both in the brain and spinal cord, lend themselves well to treatment with IMRT, and other deep-seated tumors in the gallbladder, pancreas, and rectum are also ideal candidates for this highly selective and accurate therapy.

Carcinoma of the lung is treatable with IMRT if the body is properly immobilized and respiratory gating is practiced; otherwise the portals have to be configured in such a generous fashion that the treatment is little better than 3D-CRT.

IMRT can also be used for the palliative care of lesions that are close to critical structures or which abut areas of previous radiation treatment.

The best estimate at this time is that up to 40 percent of an average center's patient load could be candidates for IMRT treatment in the future. ☐

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