

Comments on

**ICER**

Appraisal of IMRT v 3DCRT for  
Localized Prostate Cancer

Radiation Therapy Alliance  
(RTA)

September 2009

# What is the Radiation Therapy Alliance?

- An organization of radiation therapy providers operating over 200 free-standing facilities in 21 states
- RTA members: 21<sup>st</sup> Century Oncology, Vantage Oncology, OnCure, Physician Oncology Services, Radiation Oncology Services of America
- Mission: collection and dissemination of highest quality research related to the operations and efficacy of free-standing radiation therapy

# What is the Radiation Therapy Alliance?

RTA member physicians have been Presidents and committee leaders among the major organizations in the field:

**ASTRO**

American Society for Therapeutic Radiology and Oncology

**ACRO**

American College of Radiation Oncology

**AFROC**

Association of Freestanding Radiation Oncology Centers

# ICER

## Summary Findings of Economic Model

- Cost of IMRT = \$42,450
- Cost of 3DCRT = \$10,900
- The cost per case of proctitis prevented = \$313,000
- The cost per quality-adjusted life-year (QALY) = \$706,000
- The cost of IMRT to achieve a cost/QALY of \$150,000 = \$19,100

# RTA Concerns

RTA believes critical cost assumptions made in the ICER economic model either were in error or no longer agree with current reimbursement rates

- “Direct Medical Costs” undercounted treatment-related procedures for the delivery of 3DCRT and therefore underestimated 3DCRT costs
- Cost difference between IMRT and 3DCRT has greatly decreased since the reference year (2005) used by the model to determine treatment costs

# Direct Medical Costs

# Direct Medical Costs

## ICER Methodology

- Applicable CPT codes and units for either 3DCRT or IMRT were obtained from a cost-effectiveness report of prostate cancer radiotherapy

(Konski. *Int J Radiat Oncol Biol Phys* 66:408-415, 2006)

- Total RVUs for either treatment were then calculated using the 2005 Medicare Fee Schedule
- Treatment-related costs for either treatment were then calculated by multiplying total RVUs by the 2005 national Medicare conversion factor

# Direct Medical Costs

## Inconsistent Assumptions

- Lesser treatment delivery for 3DCRT v IMRT (39 v 45) with subsequent reductions in:
  - Weekly Physics Consultation
  - Weekly Physician Management
  - Weekly Port Films
- Lack of ultrasound guidance for 3DCRT but not IMRT
- Lack of Special Physics Consultation for 3DCRT but not IMRT

Table 2. Unit cost calculation

	CPT code	3D-CRT	IMRT
Consultation	99244	1	1
Treatment planning	77263	1	1
Conformal simulation	77295	1	
Immobilization device	77334	1	1
Beam modifying device	77334	6	7
Basic calculation	77300	6	7
Port films	77417	8	9
Treatment delivery	77416	39	
Physics consult	77336	8	9
Weekly management	77427	8	9
Simple simulation	77290	2	
Isodose distribution	77315	2	
IMRT treatment delivery	77418		45
Ultrasound for tumor localization	76950		45
CT guidance for placement of radiation fields	76370	1	1
IMRT planning	77301		1
IMRT plan	77263		1
Special physics consult	77370		1
Special treatment procedure	77470		1

*Abbreviations:* CPT = Current Procedural Terminology; 3D-CRT = three-dimensional conformal radiation therapy; IMRT = intensity-modulated radiation therapy; CT = computed tomography.

# Direct Medical Costs

## 3DCRT Costs: ICER and RTA Assumptions

CPT Code	Description	2005 RVUs	ICER Units	RTA Units	3DCRT	
					2005 ICER RVUs	2005 RTA RVUs
76950	Ultrasound Guidance	2.18		45		98.10
77014, TC	CT for Treatment Planning	3.74	1	1	3.74	3.74
77263	Complex Clinical Treatment Planning	4.41	1	1	4.41	4.41
77280	Simple Simulation (Verification)	4.61	2	2	9.22	9.22
77290	Complex Simulation	9.00				
77295	Three Dimensional Simulation	35.67	1	1	35.67	35.67
77300	Basic Calculation	2.26	6	6	13.56	13.56
77301	IMRT Plan	40.36				
77315	Complex Isodose Plan	4.94	2	2	9.88	9.88
77334	Complex Treatment Device (MLCs, Vac-Lok)	5.12	7	7	35.84	35.84
77336	Weekly Medical Physics Consultation	3.14	8	9	25.12	28.26
77370	Special Medical Physics Consultation	3.67		1		3.67
77416	Complex Treatment Delivery	2.46	39	45	95.94	110.70
77417	Port Film	0.63	8	9	5.04	5.67
77418	IMRT Treatment Delivery	18.15				
77427	Weekly Physician's Management	4.54	8	9	36.32	40.86
77470	Special Treatment Procedure	14.61				
99244	Consultation, Level 4	3.66	1	1	3.66	3.66
TOTAL RVUs					278.40	403.24
<b>TOTAL COST</b>					<b>\$10,550.66</b>	<b>\$15,281.79</b>
(\$37.8975/RVU - 2005 Conversion Rate)						

# Direct Medical Costs

## IMRT Costs: ICER and RTA Assumptions

CPT Code	Description	2005 RVUs	ICER Units	RTA Units	IMRT	
					2005 ICER RVUs	2005 RTA RVUs
76950	Ultrasound Guidance	2.18	45	45	98.10	98.10
77014, TC	CT for Treatment Planning	3.74	1	1	3.74	3.74
77263	Complex Clinical Treatment Planning	4.41	1	1	4.41	4.41
77280	Simple Simulation (Verification)	4.61				
77290	Complex Simulation	9.00				
77295	Three Dimensional Simulation	35.67				
77300	Basic Calculation	2.26	7	7	15.82	15.82
77301	IMRT Plan	40.36	1	1	40.36	40.36
77315	Complex Isodose Plan	4.94				
77334	Complex Treatment Device (MLCs, Vac-Lok)	5.12	8	8	40.96	40.96
77336	Weekly Medical Physics Consultation	3.14	9	9	28.26	28.26
77370	Special Medical Physics Consultation	3.67	1	1	3.67	3.67
77416	Complex Treatment Delivery	2.46				
77417	Port Film	0.63	9	9	5.67	5.67
77418	IMRT Treatment Delivery	18.15	45	45	816.75	816.75
77427	Weekly Physician's Management	4.54	9	9	40.86	40.86
77470	Special Treatment Procedure	14.61	1	1	14.61	14.61
99244	Consultation, Level 4	3.66	1	1	3.66	3.66
TOTAL RVUs					1116.87	1116.87
<b>TOTAL COST</b>					<b>\$42,326.58</b>	<b>\$42,326.58</b>
(\$37.8975/RVU - 2005 Conversion Rate)						

# Reduced Cost Difference Between IMRT and 3DCRT

# Reduced IMRT-3DCRT Cost Difference

## 2005 to 2009

- Reimbursement changes since 2005
  - IMRT RVUs have decreased 21% (18.15→14.33)
  - 3DCRT RVUs have increased 160% (2.46→6.40)
  - Conversion factor has decreased 4.8% (37.8975→36.0666)
- Therefore, IMRT:3DCRT cost ratio has declined
  - 2005 IMRT:3DCRT cost = 4.01 (ICER assumptions)
  - 2005 IMRT:3DCRT cost = 2.76 (RTA assumptions)
  - 2009 IMRT:3DCRT cost = 2.35 (ICER assumptions)
  - 2009 IMRT:3DCRT cost = 1.75 (RTA assumptions)



# Summary

- Insufficient assumptions of 3DCRT procedures resulted in an underestimate of 3DCRT costs
- This cost underestimate compounds with RVU and conversion factor changes since 2005 (reference year for this ICER analysis) to further reduce the IMRT:3DCRT cost ratio
- RTA believes these findings may substantially reduce the incremental cost-effectiveness of IMRT for prostate cancer treatment and merit a reanalysis of this study