

Contents

Part I Foundations

I.1	Rationale of Intensity Modulated Radiation Therapy: A Clinician's Point of View	3
	Wilfried De Neve	
I.2	The Potential and Limitations of IMRT: A Physicist's Point of View	11
	Radhe Mohan, Thomas Bortfeld	
I.3	Imaging for IMRT	19
	Peter Remeijer, Marcel van Herk	
I.4	Physical Optimization	31
	Uwe Oelfke, Simeon Nill, Jan J. Wilkens	
I.5	Practical IMRT Planning	47
	Wilfried De Neve, Yan Wu, Gary Ezzell	
I.6	Dose Calculations for IMRT	61
	Jeffrey V. Siebers	
I.7	IMRT Delivery Techniques	73
	Steve Webb	
I.8	Biological Aspects of IMRT Planning and Delivery .	91
	Andrzej Niemierko	
I.9	Image Guided Patient Setup	97
	Dirk Verellen	
I.10	QA-QC of IMRT: European Perspective	117
	Carlos De Wagter	
I.11	QA-QC of IMRT: American Perspective	129
	Jean M. Moran, Ping Xia	

Part II Advanced Image-Guided and Biologically Guided Techniques

- II.1 Imaging Lymph Nodes Using CT and MRI,
Imaging Cancer by PET 145**
Thierry P. Duprez, Emmanuel E. Coche, Max
Lonneux
- II.2 PET and SPECT in IMRT: Future Prospects 171**
Christophe Van de Wiele
- II.3 Magnetic Resonance Imaging for IMRT 177**
Lynn J. Verhey, Cynthia Chuang, Andrea Pirzkall
- II.4 Molecular/Functional Image-guided Intensity
Modulated Radiation Therapy 187**
Lei Xing, Yong Yang, Daniel M. Spielman
- II.5 Biological Optimization 199**
Andrzej Niemierko
- II.6 Advanced Imaging and Guidance System
for Use in Intensity Modulated RT 217**
David A. Jaffray, Kristy K. Brock, Michael B.
Sharpe
- II.7 External Beam Adaptive Radiation Therapy (ART)
on a Conventional Medical Accelerator. 229**
John Wong, Di Yan, David Lockman,
Don Brabbins, Frank A. Vicini, Alvaro Martinez
- II.8 Adaptive Radiation Therapy (ART) Strategies
Using Helical Tomotherapy 235**
Gustavo Hugo Olivera,
Thomas Rockwell Mackie, Kenneth Ruchala,
Weiguo Lu, Jeffrey Kapatoes
- II.9 4D CT Simulation 247**
George T.Y. Chen, Eike R.M. Rietzel

II.10	4D Treatment Planning	259
	Paul J. Keall	
II.11	"4D" IMRT Delivery	269
	Gig S. Mageras, Ellen Yorke, Steve B. Jiang	

Part III Clinical

III.1	IMRT for Paranasal Sinus and Nasal Cavity (Sino-Nasal) Tumors	289
	Wim Duthoy, Wilfried De Neve	
III.2	IMRT for Carcinomas of the Oropharynx and Oral Cavity.	301
	Rupert Schmidt-Ullrich, David Buck, Nesrin Dogan, Jeffrey Siebers, Monica Morris, Yan Wu	
III.3	IMRT for Carcinomas of the Nasopharynx	319
	Benjamin D. Rosenbluth, William W. Chou, Nancy Y. Lee	
III.4	Intensity Modulated Radiotherapy in Cancer of the Larynx.	335
	Maria T. Guerrero Urbano, Catherine H. Clark, Margaret Bidmead, David P. Dearnaley, Kevin J. Harrington, Christopher M. Nutting	
III.5	Central Nervous System, Skull Base and Paraspinal Tumors.	345
	Anita Mahajan, Eric L. Chang	

III.6	IMRT Lung.	359
	Kenneth E. Rosenzweig	
III.7	Breast IMRT.	371
	Douglas W. Arthur, Monica M. Morris, Frank A. Vicini, Nesrin Dogan	
III.8	IMRT for Malignancies of the Upper Abdomen and Retroperitoneum	383
	Jerome C. Landry, Christopher G. Willett, Natia Esiashvili, Mary Koshy	
III.9	Prostate IMRT.	391
	Mark K. Buyyounouski, Eric M. Horwitz, Robert A. Price Jr, Steve J. Feigenberg, Alan Pollack	
III.10	Intensity-modulated Radiation Therapy for Carcinomas of the Uterine Cervix and Endometrium	411
	Patricia J. Eifel	
III.11	Integration of IMRT and Brachytherapy.	423
	Jeffrey F. Williamson	
III.12	High Precision and Unconventional Fractionation IMRT.	439
	Stanley H. Benedict, John Purviance, Danny Song, David E. Wazer	
	Subject Index	455