The field of Radiation Oncology is undergoing immense technological revolution since the last few decades. This has become possible with the advances in medical imaging and use of high-end computers in the process of three-dimensional treatment planning and challenging techniques like intensity-modulated radiation therapy. These highly conformal techniques tailor the dose distribution exactly to the tumor volume, thus enhancing tissue sparing which provides the boon of dose escalation. These new paradigms, which have evolved in the recent past, make demand from the radiation oncologists and radiation physicists to have a clear-cut knowledge in order to practice these innovative techniques for the treatment of cancer.

The textbook 3D Conformal and Intensity Modulated Radiation Therapy - Physics and Clinical Applications, edited by James A. Purdy, Walter H. Grant III, Jatinder R. Palta, E. Brian Butter and Carlos A. Perez, provides a comprehensive overview of the upcoming techniques like 3D CRT and IMRT. The presentations and discussions at the 4th International Conference on 3D Conformal Radiation Therapy and Intensity Modulated Radiation Therapy in the New Millennium that was held in Houston; and the 14th Annual Meeting of the American College of Medical Physics held in Colorado have been contributed by eminent personalities from the field of ‘radiation oncology’ and ‘radiation physics.’ Clinical practices and experiences of various reputed institutions all over the world add to the essence of the book.

In the first few chapters, the editors have concentrated on providing the readers a wide outlook on 3D conformal radiation therapy, which will definitely give a thorough knowledge of basic physics and clinical practices to the freshers in the field. The later part of the book deals with the start-up steps of these treatment modalities, like patient immobilization and virtual simulation. The editors have been keen to provide the readers all the basic concepts of treatment planning algorithms incorporated in various commercially available treatment planning systems, which play a crucial role in calculation and execution of treatment with maximum accuracy. In addition, the tools for quantitative plan evaluation and the current status of TCP and NTCP calculations have also been presented in a detailed fashion. The commissioning and quality assurance of the treatment planning and delivery systems, which are to be rigorously exercised by the radiation physicists, have been dealt in detail.

The pros and cons of online portal imaging, which helps in the management of treatment setup errors, have been discussed elaborately. The clinical experiences of management of prostate, head and neck, pediatric and selected CNS cancers with 3DCRT and IMRT in the leading institutions make the readers understand the practicality of these techniques in the clinic. Advanced topics in IMRT - like criteria of optimization of IMRT plans, the choice of optimum beam configuration, choice of margins for designing IMRT plans and the fractionation strategies, the formalism and algorithms - have been given a novel approach. The way in which helical tomotherapy, the hot topic of radiation oncology, has been analyzed will stimulate oncologists and physicists. The cost benefit of 3DCRT and IMRT has also been closely scrutinized in one of the chapters. The book concludes with a physician’s perspective on new frontiers in radiation oncology. This is a book which has to be read by all those who practice radiation oncology and radiation physics clinically and it is a book to be owned by every radiation oncology department.