
Quality and Safety in Radiation Oncology: Adam P. Dickler, MD, PhD 2016-08-17 Quality and Safety in Radiation Oncology is the first book to provide an authoritative and evidence-based guide to the understanding and implementation of quality and safety procedures in radiation oncology practice. Alongside the rapid growth of technology and radiation treatment options for cancer in recent years, quality and safety standards are not only of the utmost importance but best practices ensuring quality and safety are crucial aspect of modern radiotherapy care. A detailed exploration and review of these standards is a necessary part of radiation oncologist's professional competency, both in the clinical setting and at the study table while preparing for board review and MOC exams. Chapter topics range from fundamental concepts of value and quality to commissioning technology and the use of metrics. They include perspectives on quality and safety from the patient, third-party payers, as well as from the federal government. Other chapters cover prospective testing of quality, training and education, error identification and analysis, incidence reporting, as well as special technology and procedures, including MRI-guided radiation therapy, proton therapy and stereotactic body radiation therapy (SBRT), quality and safety procedures in resource-limited environments, and more. State-of-the-art quality assurance procedures and safety guidelines are the backbone of this unique and essential volume. Physicians, medical physicists, dosimetrists, radiotherapists, hospital administrators, and other healthcare professionals will find this resource an invaluable compendium of best practices in radiation oncology. Key Features: Case examples illustrate best practices and pitfalls Several pages devoted to mammography and breast, gynecological, and musculoskeletal anatomy and dosimetry Extensive chapters on quality assurance, and two end-of-book practice exams, each with 100 additional questions, offer a comprehensive review of the full range of topics.

Comprehensive Brachytherapy: Jack Venselaar 2012-11-08 Modern brachytherapy is one of the most important oncological treatment modalities requiring an integrated approach that utilizes new technologies, advanced clinical imaging facilities, and a thorough understanding of the radiobiological effects on different tissues. Throughout the book, Comprehensive Brachytherapy: Physical and Clinical Aspects is a landmark publication, providing a detailed account of the underlying physics, design, and implementation of the techniques, along with practical guidance for practitioners. Bridging the gap between research and application, this single source brings together the technological basis, radiation dosimetry, quality assurance, and fundamentals of brachytherapy. In addition, it presents discussion of the most recent clinical practice in brachytherapy including prostate, gynecology, breast, and other clinical treatment sites. Along with exploring new clinical protocols, it discusses major advances in imaging, robotics, dosimetry, Monte Carlo-based dose calculation, and optimization.

Radiation Therapy Treatment Effects: Bridget F. Koontz 2017-09-28 Radiation Therapy Treatment Effects is a practical guide to common and uncommon toxicities which occur related to radiation therapy. Organized by anatomic region, from CNS to skin and extremities, it concisely and comprehensively reviews the symptoms, timing, prevention measures, and treatment of acute, delayed, and chronic radiation toxicities and provides evidence-based recommendations for management of both early and late effects. Other important chapters consist of topics such as radiation toxicity management in children, systemic effects of radiation therapy, radioprotection for radiation therapy, risk and prevention of radiation-induced cancers, challenges and approaches to cancer survivorship and how to maximize cancer patient wellness after radiation therapy. This evidence-based handbook of radiation therapy side effects, is an invaluable reference for the daily management of cancer patients and survivors. The topic coverage will assist physicians, APPs, and nurses practicing or training in radiation oncology, other oncology specialties, and primary care providers caring for cancer survivors. Key Features: Provides management recommendations and clinical pearls from topic experts Organized for quick reference by body area and toxicity Numerous tables consolidate important radiation effects for ease of reference Summarizes each known toxicity, its presentation, prevention, and management

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Perez and Brady's Principles and Practice of Radiation Oncology: Edward C. Halperin 2018 The thoroughly updated fifth edition of this landmark work has been extensively revised to better represent the rapidly changing field of radiation oncology and to provide an understanding of the many aspects of radiation oncology. This edition places greater emphasis on use of radiation treatment in palliative and supportive care as well as therapy.

Machine Learning in Radiation Oncology: Issam El Naqa 2015-06-19 This book provides a complete overview of the role of machine learning in radiation oncology and medical physics, covering basic theory, methods, and a variety of applications in medical physics and radiation therapy. An introductory section explains machine learning, reviews supervised and unsupervised learning methods, discusses performance evaluation, and summarizes potential applications in radiation oncology. Detailed individual sections are then devoted to the use of machine learning in quality assurance; computer-aided detection, including treatment planning and contouring; image-guided radiotherapy; respiratory motion management; and treatment response modeling and outcome prediction. The book will be invaluable for students and residents in medical physics and radiation oncology and will also appeal to more experienced practitioners and researchers and members of machine learning communities.

Handbook of Palliative Radiation Therapy: Candace A. Johnston, MD, MPH 2016-11-14 Handbook of Palliative Radiation Therapy is the first practical guide to palliative care in radiation oncology. The editors have assembled an international team of leading radiation oncologists to write this state-of-the-art volume on planning and administering single-fractionated, hypofractionated, and conventional radiation therapy for end-of-life cancer care. The handbook begins with several chapters on the background and efficacy of palliative radiation therapy, along with crucial information on patient selection and assessment of life expectancy. Following these introductory chapters, the bulk of the book contains chapters on site-specific malignancies, containing comprehensive literature reviews, treatment plans, toxicity information, and symptom management. More than 20 color figures enhance the chapter text and illustrate best practices. Written for radiation oncologists, physicists, and other radiation therapy team members, this indispensable text explains how short course regimens can be used to provide better quality care, increase quality of life and convenience, and relieve pain and suffering for advanced stage and end-of-life cancer patients. Key Features: Chapters contain self-assessment questions, clinical cases, pearls, and other elements to bring out key points in the text Discusses strategies for delivering radiation to patients with significant symptoms, such as bleeding, dysphagia, airway obstruction, and other painful and debilitating side effects Includes reviews of tools for assessing life expectancy including Recursive Partitioning Analysis, the TEACHS tool, and other predictive models such as Number of Risk Factors score Explains appropriate considerations when combining palliative radiation therapy with analgesics

Comprehensive Audits of Radiotherapy Practices: International Atomic Energy Agency 2007 The objective of a comprehensive clinical audit is to review and evaluate the quality of all components of the practice of radiotherapy at a centre, with a view to quality improvement. The present guidelines provide an audit methodology for multidisciplinary expert teams to initiate, perform and report on such audits. These guidelines have already been field tested by IAEA teams in Africa, Asia, Europe and Latin America.

Review of Radiologic Physics: Walter Huda 2016-01-20 This completely updated fifth edition of the Review of Radiologic Physics offers a complete review for radiology residents and radiologic technologists preparing for certification. This new edition covers x-ray production and interactions, projection and tomographic imaging, image quality, radiobiology, radiation protection, nuclear medicine, ultrasound, and magnetic resonance—all of the important physics information you need to understand the factors that improve or degrade image quality. Each chapter is followed by 20 questions for immediate self-assessment, and two end-of-book practice exams, each with 100 additional questions, offer a comprehensive review of the full range of topics.

Medical Imaging Systems: Andreas Maurer 2018-08-02 This open access book gives a complete and comprehensive introduction to the fields of medical imaging systems, as designed for a broad range of applications. The authors of the book first explain the foundations of system theory and image processing, before highlighting several modalities in a dedicated chapter. The initial focus is on modalities that are closely related to traditional camera systems such as endoscopy and microscopy. This is followed by more complex image formation processes: magnetic resonance imaging, X-ray projection imaging, computed tomography, X-ray phase-contrast imaging, nuclear imaging, ultrasound, and optical coherence tomography.

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