

Computed Tomography Technologists Lippincott Williams

The only radiation therapy text written by radiation therapists, *Principles and Practice of Radiation Therapy, 4th Edition* helps you understand cancer management and improve clinical techniques for delivering doses of radiation. A problem-based approach makes it easy to apply principles to treatment planning and delivery. New to this edition are updates on current equipment, procedures, and treatment planning. Written by radiation therapy experts Charles Washington and Dennis Leaver, this comprehensive text will be useful throughout your radiation therapy courses and beyond. Comprehensive coverage of radiation therapy includes a clear introduction and overview plus complete information on physics, simulation, and treatment planning. Spotlights and shaded boxes identify the most important concepts. End-of-chapter questions provide a useful review. Chapter objectives, key terms, outlines, and summaries make it easier to prioritize, understand, and retain key information. Key terms are bolded and defined at first mention in the text, and included in the glossary for easy reference. UPDATED chemotherapy section, expansion of What Causes Cancer, and inclusions of additional cancer biology terms and principles provide the essential information needed for clinical success. UPDATED coverage of post-image manipulation techniques includes new material on Cone beam utilization, MR imaging, image guided therapy, and kV imaging. NEW section on radiation safety and misadministration of treatment beams addresses the most up-to-date practice requirements. Content updates also include new ASRT Practice Standards and AHA Patient Care Partnership Standards, keeping you current with practice requirements. UPDATED full-color insert is expanded to 32 pages, and displays images from newer modalities.

This issue of *Radiologic Clinics of North America* focuses on CT Angiography. Articles will include: CT Angiography – A Review and Technical Update; CT Angiography of Thoracic Aorta; CT Angiography of Abdominal Aorta; CT Angiography of the Liver, Spleen, and Pancreas; CT Angiography of the Bowel and Mesentery; CT Angiography of the Renal Circulation; CT Angiography of the Lower Extremities; CT Angiography of the Upper Extremities; Pediatric Considerations in CT Angiography; CT Angiography of the Neurovascular Circulation; Role of MRA in the Era of Modern CT Angiography; CT Angiography for Preoperative Thoracoabdominal Flap Planning; and more!

Now revised to reflect the new, clinically-focused certification exams, *Review of Radiological Physics, Fourth Edition*, 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.

With an emphasis on the pathophysiologic basis of pulmonary disease, *Principles of Pulmonary Medicine, 7th Edition*, by Drs. Steven E Weinberger, Barbara A Cockrill, and Jess Mandel, provides a superbly illustrated introduction to this fast-changing field. This essential text employs a concise and understandable approach, integrating clinical topics with underlying physiologic, pathophysiologic, and basic science concepts critical for medical students, trainees, and those looking for a practical update on both acute and chronic pulmonary diseases

From the discovery of x-rays in 1895 through the emergence of computed tomography (CT) in the 1970s and magnetic resonance imaging (MRI) in the 1980s, non-invasive imaging has revolutionized the practice of medicine. While these technologies have thoroughly penetrated clinical practice, scientists continue to develop novel approaches that promise to push imaging into entirely new clinical realms, while addressing the issues of dose, sensitivity, or specificity that limit existing imaging approaches. *Emerging Imaging Technologies in Medicine* surveys a number of emerging technologies that have the promise to find routine clinical use in the near- (less than five years), mid- (five to ten years) and long-term (more than ten years) time frames. Each chapter provides a detailed discussion of the associated physics and technology, and addresses improvements in terms of dose, sensitivity, and specificity, which are limitations of current imaging approaches. In particular, the book focuses on modalities with clinical potential rather than those likely to have an impact mainly in preclinical animal imaging. The last ten years have been a period of fervent creativity and progress in imaging technology, with improvements in computational power, nanofabrication, and laser and detector technology leading to major new developments in phase-contrast imaging, photoacoustic imaging, and optical imaging.

A comprehensive guide to the practical aspects of nuclear medicine instruments, *Nuclear Medicine Instrumentation, Second Edition* prepares students to become skilled technologists. This informative reference covers nuclear medicine instruments from simple radiation detectors to complex positron emission tomography (PET) scanners, focusing on the operation of the most commonly used instruments and issues that arise in their use. Important Notice: The digital edition of this book is missing some of the images or content found in the physical edition.

The PET and PET/CT Study Guide presents a comprehensive review of nuclear medicine principles and concepts necessary for passing PET specialty board examinations. The practice questions and content are similar to those found on the Nuclear Medicine Technology Certification Board (NMTCB) exam, allowing test takers to maximize their chances of success. The book is organized by test sections of increasing difficulty, with over 650 multiple-choice questions covering all areas of positron emission tomography, including radiation safety; radionuclides; instrumentation and quality control; patient care; and diagnostic and therapeutic procedures. Detailed answers and explanations to the practice questions follow. Supplementary appendices include common formulas, numbers, and abbreviations, along with a glossary of terms for easy access by readers. The PET and PET/CT Study Guide is a valuable reference for nuclear medicine technologists, nuclear medicine physicians, and all other imaging professionals in need of a concise review of the basics of PET and PET/CT imaging.

This three-volume set (CCIS 1367-1368) constitutes the refereed proceedings of the 5th International Conference on Computer Vision and Image Processing, CVIP 2020, held in Prayagraj, India, in December 2020. Due to the COVID-19 pandemic the conference was partially held online. The 134 papers were carefully reviewed and selected from 352 submissions. The papers present recent research on such topics as biometrics, forensics, content protection, image enhancement/super-resolution/restoration, motion and tracking, image or video retrieval, image, image/video processing for autonomous vehicles, video scene understanding, human-computer interaction, document image analysis, face, iris, emotion, sign language and gesture recognition, 3D image/video processing, action and event detection/recognition, medical image and video analysis, vision-based human GAIT analysis, remote sensing, and more.

Leveraging the organization and focus on exam preparation found in the comprehensive text, this Exam Review will help any student to successfully complete the ARRT General Radiography and Computed Tomography exams. The book includes a bulleted format review of content, Registry-style questions with answers and rationales, and a mock exam following the ARRT format. The companion website offers an online testing simulation engine.

Over 1,500 high quality dental radiographs, full color photos, and illustrations clearly demonstrate core concepts and reinforce the essential principles and techniques of oral and maxillofacial radiology. updated Extensive coverage of all aspects of oral radiology for the entire predoctoral curriculum. NEW! Chapter Radiological Anatomy includes all radiological anatomy content allowing students to better visualize and understand normal appearances of structures on conventional and contemporary imaging, side-by-side. NEW! Chapter! Beyond 3D Imaging: introduces applications of 3D imaging such as

stereolith models. UPDATED Comprehensive coverage of diseases affecting the teeth and jaws, relating their pathogenesis to their key imaging features and image interpretation. NEW! New editors Drs. Sanjay Mallya and Ernest Lam along with new contributors bring a fresh perspective on oral radiology. A wide array of radiographs including advanced imaging such as MRI and CT. An easy-to-follow format simplifies the key radiographic features of each pathologic condition, including location, periphery, shape, internal structure, and effects on surrounding structures are placed in context with clinical features, differential interpretation, and management. Expert contributors include many authors with worldwide reputations. Case studies apply imaging concepts to real-world scenarios.

Written specifically for dentists, White and Pharoah's Oral Radiology: Principles and Interpretation 8th Edition incorporates over 1,500 high-quality radiographic images and illustrations to demonstrate core concepts and essential principles and techniques of oral and maxillofacial radiology. The new edition of this bestselling book delivers with state-of-the-art information on oral radiology principles and techniques, and image interpretation. Dental student will gain a solid foundation in radiation physics, radiation biology, and radiation safety and protection before introducing including specialized techniques such as MRI and CT. As well, students will learn how to recognize the key radiographic features of pathologic conditions and interpret radiographs accurately. The 8th edition also includes new chapters on Radiologic Anatomy, Beyond 3D Imaging, and Diseases Affecting the Structure of Bone. A practical guide to using today's technology, this unique text helps your students provide state-of-the-art care! Over 1,500 high quality dental radiographs, full color photos, and illustrations clearly demonstrate core concepts and reinforce the essential principles and techniques of oral and maxillofacial radiology. Updated Extensive coverage of all aspects of oral and maxillofacial radiology includes the entire predoctoral curriculum. A wide array of radiographic images including advanced imaging such as MRI and CT. An easy-to-follow format simplifies the key radiographic features of each pathologic condition, including location, periphery, shape, internal structure, and effects on surrounding structures — placed in context with clinical features, differential diagnosis, and management. Expert contributors include many authors with worldwide reputations. Case studies apply imaging concepts to real-world scenarios. NEW! New editors Sanjay Mallya and Ernest Lam along with new contributors bring a fresh perspective on oral radiology. NEW! Chapter! Beyond 3D Imaging introduces applications of 3D imaging such as stereolith models. NEW! Chapter Radiological Anatomy includes all radiological anatomy content allowing you to better visualize and understand normal appearances of structures on conventional and contemporary imaging, side-by-side. NEW! Coverage of Diseases Affecting the Structure of Bone consolidated into one chapter to simplify foundational basic science information and its applications to radiologic interpretation.

Since its introduction to dentistry, cone beam computed tomography (CBCT) has undergone a rapid evolution and considerable integration into orthodontics. However, despite the increasing popularity of CBCT and progress in applying it to clinical orthodontics, the profession has lacked a cohesive, comprehensive and objective reference that provides clinicians with the background needed to utilize this technology optimally for treating their patients. Cone Beam Computed Tomography in Orthodontics provides timely, impartial, and state-of-the-art information on the indications and protocols for CBCT imaging in orthodontics, clinical insights gained from these images, and innovations driven by these insights. As such, it is the most current and authoritative textbook on CBCT in orthodontics. Additionally, two DVDs include more than 15 hours of video presentations on related subjects from the 39th Annual Moyers Symposium and 38th Annual International Conference on Craniofacial Research. Cone Beam Computed Tomography in Orthodontics is organized to progress sequentially through specific topics so as to build the knowledge base logically in this important and rapidly evolving field. Part I provides the foundational information on CBCT technology, including radiation exposure and risks, and future evolutions in computed tomography. Part II presents the Principles and Protocols for CBCT Imaging in Orthodontics, focusing on developing evidence-based criteria for CBCT imaging, the medico-legal implications of CBCT to the professional and the protocols and integration of this technology in orthodontic practice. Part III provides critical information on CBCT-based Diagnosis and Treatment Planning that includes how to interpret CBCT scans, identify incidental pathologies and the possible other uses of this technology. Part IV covers practical aspects of CBCT's Clinical Applications and Treatment Outcomes that encompasses a range of topics, including root morphology and position, treatment of impacted teeth, virtual surgical treatment planning and outcomes, and more.

Written by a computed tomography technologist, Computed Tomography for Technologists: A Comprehensive Text is the only comprehensive CT text geared to technologists. It is ideally suited for CT courses in radiologic technology programs and for stand-alone CT programs and offers excellent preparation for the CT certification exam administered by the American Registry of Radiologic Technologists. Student-friendly features of the book include highlighted key terms, Key Concepts boxes, Clinical Application boxes, chapter review questions, and suggested readings. Computed Tomography for Technologists: Exam Review is intended to be used as a companion to Computed Tomography for Technologists: A Comprehensive Text. This resource offers excellent preparation for the CT certification exam administered by the American Registry of Radiologic Technologists as well as the CT portion of the general radiography exam from the ARRT. The book includes a bulleted-format review of content, Registry-style questions with answers and rationales, and a mock exam following the ARRT format. This package contains (9780781777513) Computed Tomography for Technologists: A Comprehensive Text and (9780781777964) Computed Tomography for Technologists: Exam Review.

Advances in Imaging Technology Research and Application: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Atomic Force Microscopy. The editors have built Advances in Imaging Technology Research and Application: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Atomic Force Microscopy in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Advances in Imaging Technology Research and Application: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

This volume provides an overview of X-ray technology and the historical development of modern CT systems. The main focus of the book is a detailed derivation of reconstruction algorithms in 2D and modern 3D cone-beam systems. A thorough analysis of CT artifacts and a discussion of practical issues such as dose considerations give further insight into current CT systems. Although written mainly for graduate students, practitioners will also benefit from this book.

Advances in Imaging Technology Research and Application / 2012 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Imaging Technology. The editors have built Advances in Imaging Technology Research and Application / 2012 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Imaging Technology in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Advances in Imaging Technology Research and Application / 2012 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Leading clinicians and researchers from around the world review the full scope of current developments, research, and scientific controversy regarding the principles and applications of cardiac CT. Richly illustrated with numerous black-and-white and color images, the book discusses the interpretation of CT images of the heart in a variety of clinical, physiological, and pathological applications. The authors emphasize current state-of-the-art uses of CT, but also examine developments at the horizon. They also review the technical basis of CT image acquisition, as well as tools for image visualization and analysis.

Doody's Book Review - Score: 95, 4 Stars! Nuclear Medicine Instrumentation is the first text to covers instruments vital to nuclear medicine at a technologist's level. It provides students with concise and straightforward information pertaining to the operation and use of each instrument. It is specifically designed to prepare students for typical scenarios and potential pitfalls they may encounter throughout their careers. Nuclear Medicine Instrumentation is broken into four main parts: • Small Instruments • Gamma Camera • Single Photon Emission Computed Tomography (SPECT) • Positron Emission Tomography (PET) Topics discussed include factors relating to Radiation Measurements, Quality Control of Gamma Cameras, Basic Principles and Image Display Techniques for Single –Photon Emission Computed Technology and much more! Each new print copy of this review guide ncludes an interactive CD-ROM with review questions, answers, and explanations. Please note: Electronic formats of this review guide do not include the CD ROM.

This title offers a concise, practical, and instructional approach to the most common imaging procedures of the abdominal and pelvic organs, gastrointestinal tract, and genitourinary tract. It contains expert guidance on how to accurately read the images and how to perform critical techniques including biopsy and percutaneous drainage.

This book offers a comprehensive and topical depiction of advances in CT imaging. CT has become a leading medical imaging modality, thanks to its superb spatial and temporal resolution to depict anatomical details. New advances have further extended the technology to provide physiological information, enabling a wide and expanding range of clinical applications. The text covers the latest advancements in CT technology and clinical applications for a variety of CT types and imaging methods. The content is presented in seven parts to offer a structure across a board coverage of CT: CT Systems, CT Performance, CT Practice, Spectral CT, Quantitative CT, Functional CT, and Special Purpose CT. Each contain chapters written by leading experts in the field, covering CT hardware and software innovations, CT operation, CT performance characterization, functional and quantitative applications, and CT systems devised for specific anatomical applications. This book is an ideal resource for practitioners of CT applications in medicine, including physicians, trainees, engineers, and scientists.

Featuring all the latest imaging modalities—including ultrasound, MR, and PET/CT—this Second Edition text provides a solid understanding of sectional anatomy and its applications in clinical imaging. Chapters on each body region include patient CT and MR images shown in sequence through multiple planes, followed by clinical cases centered on CT, MR, ultrasound, and PET/CT images. By comparing images from different patients, readers learn to distinguish normal anatomic variations from variations that indicate disease or injury. This edition includes new clinical cases and has a new layout that makes it easier to compare images from several patients. Each chapter ends with clinical application questions.

Ace the ARRT certification exam with the field's most trusted review Maximize your study time -- and your grade -- by focusing on the most important and frequently tested topics 4 STAR DOODY'S REVIEW! "This update is once again a highlight in the review book section for preparing for the registry exam in radiography. Using a compilation of noteworthy sources, the author once again provides students with a complete and valuable guide for registry exam review. This is a must-have book for any future radiographer."--Doody's Review Service The entire radiography curriculum summarized in a concise, readable narrative makes it easy to understand and memorize key concepts 860+ registry-style questions, including a 200-question practice test, prepare you for the exam Answers with detailed explanations and references to major textbooks More than 400 illustrations and clinical images Written by an experienced educator and radiography program director who knows exactly what it takes to pass Essential for certification or recertification An author with 35+ years of teaching experience provides everything you need to excel on the exam coursework Summary boxes provide a convenient overview of must-know information The inside covers feature important formulae, radiation protection facts, conversion factors, body surface landmarks, digital imaging facts, acronyms and abbreviations, radiation quality factors, and minimum filtration requirements Coverage of the latest developments, including digital and electronic imaging A complete 200-question practice exam 440+ chapter-ending questions

Learn everything you need to know about radiation therapy with the only comprehensive text written for radiation therapy students by radiation therapists. This book is designed to help you understand cancer management, improve clinical techniques for delivering doses of radiation, and apply complex concepts to treatment planning and delivery. This edition features enhanced learning tools and thoroughly updated content, including three new chapters to inform you of increasingly important technologies and practices. The up-to-date and authoritative coverage of this text make it a resource you'll want to consult throughout your radiation therapy courses and beyond. Complete coverage of radiation therapy provides all introductory content plus the full scope of information on physics, simulation, and treatment planning. Contributions from a broad range of practitioners bring you the expertise of radiation therapists, physicians, nurses, administrators, and educators who are part of cancer management teams. Chapters on image guided radiation therapy, intensity modulated radiation therapy, and CT simulation keep you up-to-date with emerging technologies. Color inserts show significant procedures and imaging technologies clearly.

This book focuses on interdisciplinary research in the field of biomedical engineering and neuroscience. Biomedical engineering is a vast field, ranging from bioengineering to brain-computer interfaces. The book explores the system-level function and dysfunction of the nervous system from scientific and engineering perspectives. The initial sections introduce readers to the physiology of the brain, and to the biomedical tools needed for diagnostics and effective therapies for various neurodegenerative and regenerative disorders. In turn, the book summarizes the biomedical interventions that are used to understand the neural mechanisms underlying empathy disorders, and reviews recent advances in biomedical engineering for rehabilitation in connection with neurodevelopmental disorders and brain injuries. Lastly, the book discusses innovations in machine learning and artificial intelligence for computer-aided disease diagnosis and treatment, as well as applications of nanotechnology in therapeutic neurology.

Now in its eighth edition, Torres' Patient Care in Imaging Technology is trusted to develop the knowledge and skills that enable students to become safe and sensitive practitioners in every aspect of patient care. The text is designed to present key concepts effectively for beginning students as well as more advanced students and practitioners

who want to improve their skills in patient care and imaging technology. Torres' Patient Care in Imaging Technology is a highly visual, focused, comprehensive text that presents key concepts, current trends, and advances in imaging technology and patient care in an engaging manner. The new edition includes an introductory chapter on radiography and contains expanded coverage of HIPAA and diversity. Two new features: Cultural Considerations boxes and Case Studies with critical thinking questions, build on the text's emphasis on helping students develop the skills needed to think critically and react appropriately in an actual clinical setting. The student-friendly writing style and logical organization allow instructors to cover the essentials of patient care in a limited amount of time. An illustration- and feature-rich approach enhances learning for students of multiple learning styles.

Computer-assisted imaging with radiation (x- and gamma rays) is an integral part of modern medical-diagnostic practice. This imaging technology is also slowly finding its way into industrial applications. Although the technology is well developed, there is a need for further improvement to enhance image quality, reduce artifacts, minimize patient radiation exposure, compete with and complement other imaging methods (such as magnetic resonance imaging and ultrasonics), and accommodate dense and large objects encountered in industrial applications. Scientists and engineers, attempting to progress this technology, are faced with an enormous amount of literature, addressing the imaging problem from various view points. This book provides a single source that addresses both the physical and mathematical aspects of the imaging problem in a consistent and comprehensive manner. Discusses the inherent physical and numerical capabilities and limitations of the methods presented for both the forward and inverse problems Provides information on available Internet resources and software Written in a manner that makes it readable by physicists, mathematicians, engineers and computer scientists – avoids, as much as possible, the use of specialized terminology without clear introduction and definition

With more than 1,000 high-quality radiographs and illustrations, this bestselling book visually demonstrates the basic principles of oral and maxillofacial radiology as well as effective clinical application. You'll be able to diagnose and treat patients effectively with the coverage of imaging techniques, including specialized techniques such as MRI and CT, and the comprehensive discussion of the radiographic interpretation of pathology. The book also covers radiation physics, radiation biology, and radiation safety and protection — helping you provide state-of-the-art care! A consistent format makes it easy to follow and comprehend clinical material on each pathologic condition, including a definition, synonyms, clinical features, radiographic features, differential diagnosis, and management/treatment. Updated photos show new equipment and radiographs in the areas of intraoral radiographs, normal radiographic anatomy, panoramic imaging, and advanced imaging. Updated Digital Imaging chapter expands coverage of PSP plates and its use in cephalometric and panoramic imaging, examining the larger latitudes of photostimulable phosphor receptors and their linear response to the five orders of magnitude of x-ray exposure. Updated Guidelines for Prescribing Dental Radiographs chapter includes the latest ADA guidelines, and also discusses the European Guidelines. Updated information on radiographic manifestations of diseases in the orofacial region includes the latest data on etiology and diagnosis, with an emphasis on advanced imaging. Expert contributors include many authors with worldwide reputations. Cone Beam Computed Tomography chapter covers machines, the imaging process, and typical clinical applications of cone-beam imaging, with examples of examinations made from scans. Evolve website adds more coverage of cases, with more examples of specific issues. Publisher's Note: Products purchased from 3rd Party sellers are not guaranteed by the Publisher for quality, authenticity, or access to any online entitlements included with the product. Covering only what CT technologists need to know, this all-in-one solution helps students develop the knowledge and decision-making skills they need for clinical practice while preparing them for the ARRT registry exam. Organized around the three major ARRT content categories (physics and instrumentation, patient care, and imaging procedures), the fully updated 2nd Edition takes an easy-to-understand approach that combines real-world scenarios, and proven pedagogy to help students master the content of the course. Buy it as an eBook! Fast, smart, and convenient, today's eBooks can transform learning. These interactive, fully searchable tools offer 24/7 access on multiple devices, the ability to highlight and share notes, and much more. NEW! The latest ARRT and ASRT standards are incorporated to fully prepare students for the registry exam. NEW! Up-to-date content on patient radiation dosing includes methods to reduce doses, such as adaptive statistical iterative reconstruction (ASIR) and factors associated with expanded MDCT that contribute to the dose. EXPANDED! The book's robust online student resources now include new audio flashcards, a new audio glossary, and new animations, as well as an image bank and exam simulator. Clinical Application boxes use real-life scenarios to illustrate and explain concepts. In-text learning aids, including key terms, key concepts boxes, review questions, an end-of-the book glossary, and recommended readings, reinforce learning. Examples of Exam Protocols summarize appropriate protocols and procedures for examining major anatomical areas. CT Cross-Sectional Slices, accompanied by shaded diagrams and a reference image, appear in the Cross-Sectional Anatomy section.

Written by the chief physicist at Johns Hopkins University Hospital, this easy-to-read short textbook explains the physics behind multi-detector CT technology, particularly newer, more complex technology. The focus is on principles of physics, effects of scan parameters on image quality, and optimum radiation dosage. The book includes numerous key points summaries and questions to assist in exam preparation.

Since its introduction in the 1970's CT has emerged as a modality of choice because of its high sensitivity in producing accurate diagnostic images. A third of all Computed Tomography (CT) examinations are abdominal CTs which deliver one of the highest doses among common examinations. An increase in the number of CT examinations has raised concerns about the negative effects of ionising radiation as the dose is cumulative over the life span of the individual. Image quality in CT is closely related to the radiation

dose, so that a certain dose with an associated small, but not negligible, risk is a prerequisite for high image quality. Typically, dose reduction in CT results in higher noise and a decrease in low contrast resolution which can be detrimental to the image quality produced. New technology presents a wide range of dose reduction strategies, the latest being iterative reconstruction (IR). The aim of this thesis was to evaluate two different classes of iterative reconstruction algorithms: statistical (SAFIRE) and model-based (ADMIRE) as well as to explore the diagnostic value of a low-dose abdominal CT for optimisation purposes. This thesis included a total of 140 human subjects in four image quality evaluation studies, three of which were prospective studies (Papers I, II and IV) and one retrospective study (Paper III). Visual grading experiments to determine the potential dose reductions, were performed with pairwise comparison of image quality in the same patient at different tube loads (dose) and reconstructed with Filtered back projection (FBP) and SAFIRE strength 1 in a low-dose abdominal CT (Paper I) and FBP and ADMIRE strengths 3 and 5 in a standard dose abdominal CT (Paper II). Paper IV evaluated the impact of slice thicknesses in CT images reconstructed with ADMIRE strengths 3 and 5 when comparing multiplanar reconstruction (MPR) formatted images in a standard dose abdominal CT. Paper III, on the other hand, was an absolute assessment of image quality and pathology between the three phases of a CT Urography (CTU) protocol to explore the diagnostic value of low-dose abdominal CT. The anonymised images were displayed in random order and image quality was assessed by a group of radiologists using image quality criteria from the "European guidelines of quality criteria for CT". The responses from the reviewer assessment were analysed statistically with ordinal logistic regression i.e. Visual Grading Regression (VGR). Results in Paper I show that a small dose reduction (5-9 %) was possible using SAFIRE strength 1 and indicated the need for further research to evaluate the dose reduction potential of higher strengths of the algorithm. In Paper II a 30% dose reduction was possible without change in ADMIRE algorithm strength as no improvement in image quality was observed between tube loads 98- and 140 mAs. When comparing tube loads 42 and 98 mAs, further dose reduction was possible with ADMIRE strength 3 (22-47%). However, for images reconstructed with ADMIRE strength 5, a dose reduction of 34-74% was possible for some, but not all image criteria. Image quality in low-contrast objects such as the liver parenchyma, was affected and a decline in diagnostic confidence was observed. Paper IV showed potential dose reductions are possible with increasing slice thickness from 1 mm to 2 mm (24-35%) and 1 mm to 3mm (25-41%). ADMIRE strength 3 continued to provide diagnostically acceptable images with possible dose reductions for all image criteria assessed. Despite objective evaluations showing a decrease in noise and an increase in contrast to noise ratio, ADMIRE strength 5 had diverse effects on the five image criteria, depending on slice thickness and further dose reductions were limited to certain image criteria. The findings do not support a general recommendation to replace ADMIRE3 with ADMIRE5 in clinical abdominal CT protocols. Paper III studied another aspect of optimisation and results show that visualisation of renal anatomy was as expected in favour of the post-contrast phases when compared to the native phase. Assessment of pathology showed no significant differences between the three phases. Significantly higher diagnostic certainty for renal anatomy was observed for the post-contrast phases when compared to the native phase. Significantly high certainty scores were also seen for the nephrographic phase for incidental findings. The conclusion is that a low-dose series seems to be sufficient as a first-line modality in certain patient groups. This thesis clinically evaluated the effect of IR in abdominal CT imaging and estimated potential dose reductions. The important conclusion from papers I, II and IV is that IR improves image quality in abdominal CT allowing for some dose reductions. However, the clinical utility of the highest strength of the algorithm is limited to certain criteria. The results can be used to optimise the clinical abdominal CT protocol. The conclusion from paper III may increase clinical awareness of the value of the low-dose abdominal protocol when choosing an imaging method for certain patient groups who are more sensitive to radiation.

Datortomografi (DT) används i allt större omfattning vid bilddiagnostik och ger en viss stråldos till patienten. DT är en viktig, snabb och patientvänlig undersökningsteknik. En fördel med denna teknik är att bildmaterialet kan rekonstrueras i olika format för att åskådliggöra anatomin på bästa sätt beroende på vilken frågeställning som ska besvaras. Joniserande strålning från dessa undersökningar anses öka risken för negativa effekter även om risken för den enskilde patienten är mycket liten. Antalet datortomografiundersökningar ökar från år till år vilket kan leda till ökade stråldoser till befolkningen. Optimering av undersökningsteknik och val av undersökning för att minska negativa effekter av röntgenstrålning är därför nödvändig. Det övergripande målet med avhandlingen var att utvärdera bildkvalitet vid en DT-undersökning av buken (då dessa medför en av de högsta stråldoserna bland de vanliga röntgenundersökningarna), att kvantifiera möjlig stråldosminskning med hjälp av iterativa rekonstruktionsalgoritmer och att utvärdera diagnostiska värdet av lågdosundersökningsteknik vid DT-buk. Av de fyra delstudierna var delarbeten I, II och IV prospektiva och delarbete III retrospektivt. För de prospektiva studierna, samlades bildmaterial in vid en klinisk berättigad undersökning av lågdos-DT av buken (delarbetet I), eller standarddos-DT av buken (delarbetet II och IV). Bilder rekonstruerades med standard bildrekonstruktionsalgoritm, filtrerad återprojektion (FBP), och med styrka 1 av den iterativa algoritmen SAFIRE (delarbetet I). I delarbeten II och IV, gjordes bildrekonstruktioner med FBP och med styrka 3 och 5 av den iterativa algoritmen ADMIRE. Aidentifierade bildmaterial för varje patient visades parvis i slumpmässig ordning för ett antal granskare och bildkvaliteten bedömdes med hjälp av europeiska bildkriterier. I den retrospektiva studien, delarbete III, hämtades bildmaterialet från utförda DT-urografiundersökningar från bildarkivet. För varje undersökning visades bilder från varje fas i DT-urografiundersökningen separat i slumpmässig ordning. För samtliga delarbeten, hämtades bildkriterierna från "European Guidelines of Quality Criteria for CT" och modifierades för att passa till varje studie. Granskarnas bedömning analyserades med ordinal logistisk regression så kallad visual grading regression (VGR). Resultat från delarbetet I visade att det fanns en signifikant inverkan av dos (p

The Nurse's 3-Minute Clinical Reference is organized into four sections—Disorders, Treatments, Procedures, and Diagnostic Studies—with entries within each section organized alphabetically. Each Disorders and Procedures entry is six columns on a two-page spread; each Diagnostic Studies and Treatments entry is three columns on one page. Information is provided in brief

bulleted points. Part I covers more than 300 acute and chronic health problems including the newest conditions such as metabolic syndrome. Part II covers more than 50 treatments; Part III, more than 75 procedures; and Part IV, more than 130 diagnostic tests. Entries in each section follow a consistent format.

This book is the second volume in the Recent Advances in Forensic Medicine and Toxicology series. Volume One (9789351525585) published in 2014. Divided into five sections, the text provides specialists and trainees with the very latest advances and information in their field. The book begins with discussion on medical jurisprudence and legal issues covering issues such as medical negligence and medical evidence in victim examination. The next chapters cover clinical forensic medicine describing specific cases, and forensic pathology explaining autopsy for different scenarios. New to this volume, are two final sections which discuss advances in forensic anthropology, examination of skeletal remains, and controversies in forensic testing and investigations. Key points New volume presenting latest advances and information in forensic medicine and toxicology Covers medical jurisprudence, clinical forensic medicine and forensic pathology Volume Two features two new sections on forensic anthropology and forensic science Highly illustrated with forensic photographs, diagrams, tables and boxes

Computed Tomography for Technologists Exam Review Lippincott Williams & Wilkins

This textbook covers the fundamental principles of cardiovascular imaging modalities and their applications for the diagnosis of cardiovascular diseases. The main focus is on the comprehensive diagnosis of clinical conditions/disease entities through the most effective cardiovascular imaging test or combination. The authors discuss the clinical utility and relative value of each test to address specific clinical questions, based on evidence and expert opinion. Each chapter presents information in the following format: overview, discussion of pathophysiology; differential diagnosis/diagnostic evaluation; prognosis; therapeutic guidance with illustration of treatment pathway. A companion Website will offer the full text, ten multiple-choice questions for each chapter, still and cine images, and imaging clips.

With more than 1,000 high-quality radiographs and illustrations, Oral Radiology: Principles and Interpretation, 7th Edition visually demonstrates the basic principles of oral and maxillofacial radiology along with their clinical application. First, you'll gain a solid foundation in radiation physics, radiation biology, and radiation safety and protection. Then you'll learn intraoral and extraoral imaging techniques, including specialized techniques such as MRI and CT. The second half of the book focuses on how to recognize the radiographic features of pathologic conditions and interpret radiographs accurately. This edition also includes new chapters on forensics and cone-beam imaging. Written by oral radiology experts Stuart White and Michael Pharoah, this bestselling book helps you provide state-of-the-art care! An easy-to-follow format simplifies the key radiographic features of each pathologic condition, including location, periphery, shape, internal structure, and effects on surrounding structures - placed in context with clinical features, differential diagnosis, and management. UPDATED information addresses the etiology and diagnosis of diseases and pathologic conditions in the orofacial region. Updated coverage of all aspects of oral radiology includes the entire predoctoral curriculum. A wide array of radiographs including advanced imaging such as MRI and CT. Hundreds of drawings are updated and rendered in full color. Case studies apply imaging concepts to real-world scenarios. Expert contributors include many authors with worldwide reputations. Chapter bibliographies and suggested readings make it easier to conduct further research. NEW chapter on cone-beam imaging keeps you current with emerging field requirements. NEW coverage of cone beam computed tomography (CBCT) includes more of the normal anatomy of cross-sectional images of the maxilla and mandible along with variations of normal anatomy. NEW! An eBook version makes the content interactive and portable, and shows radiographs in high resolution. Strong roots in basic science and research enhance clinical practice. This book is a rich source of information for basic scientists and translational researchers who focus on musculoskeletal tissues and for orthopedic and trauma surgeons seeking relevant up-to-date information on molecular biology and the mechanics of musculoskeletal tissue repair and regeneration. The book opens by discussing biomaterials and biomechanics, with detailed attention to the biologic response to implants and biomaterials and to the surface modification of implants, an important emerging research field. Finite element analysis, mechanical testing standards and gait analysis are covered. All these chapters are strongly connected to clinical applications. After a section on imaging techniques, musculoskeletal tissues and their functions are addressed, the coverage including, for example, stem cells, molecules important for growth and repair, regeneration of cartilage, tendons, ligaments, and peripheral nerves, and the genetic basis of orthopedic diseases. State-of-the-art applications such as platelet rich plasma were included. Imaging is a daily practice of scientists and medical doctors. Recent advancements in ultrasonography, computerized tomography, magnetic resonance, bone mineral density measurements using dual energy X-ray absorptiometry, and scintigraphy was covered following conventional radiography basics. Further extensive sections are devoted to pathology, oncogenesis and tumors, and pharmacology. Structure is always related with function. Surgical anatomy was therefore covered extensively in the last section.

Comprised of 395 essays arranged alphabetically, most on individual objects, artifacts, techniques, and products, this is an up-to-date reference work for all those involved in teaching or researching the history of twentieth-century technology, as well as the serious general reader. The core of each of the main entries is a technical description, within a historical narrative, of about 1,000 words plus illustrations and further reading. There are also about 30 longer survey entries that address broad questions of technological systems, such as the context in which the various technologies were developed, discussions of any controversies and schools of thought, comparisons between different political and economics systems, and the various ways in which different nations have attempted to make and apply science and technology policies.

Computed tomography of the heart and cardiovascular system continues to show an impressive and tremendously successful development. Technical improvements translate into new applications and enhanced diagnostic accuracy and the new diagnostic opportunities may potentially be beneficial for many individuals with known or suspected cardiovascular dis

[Copyright: dd180ae2d33daac5abadb7d7d809264e](https://doi.org/10.1007/978-1-4939-9999-9)