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FAST FACTS FOR
THE RADIOLOGY NURSE
Valerie Aarne Grossman, MALS, BSN, RN, is a registered nurse with more than 3 decades of diverse nursing experience including direct patient care, hospital leadership, professional service, and writing for publication. She has worked in a variety of settings, from the emergency department to intensive care to radiology. She has volunteered her services to such valued groups as the Emergency Nurses Association, the Association for Radiologic & Imaging Nursing, RAD-AID.org, and the National Certification Corporation, as well as serving on such boards as the Research Subject Review Board at the University of Rochester and the New York State Board of Nursing. She is the author of numerous peer-reviewed articles, chapters, books, and online pieces, and is a manuscript reviewer for a number of international publishers. Her passion for direct patient caregivers drives her involvement in projects that improve the tools and information made available for colleagues taking care of patients. She believes that health care providers (especially nurses) are “scientists who touch patients” as well as “scientists who are touched by patients,” and works to provide the intellectual information that feeds their professional curiosity.
FAST FACTS FOR THE RADIOLOGY NURSE
An Orientation and Nursing Care Guide in a Nutshell

Valerie Aarne Grossman, MALS, BSN, RN
Editor

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This book is dedicated to the countless individuals who bestowed on me the privilege of being their nurse. From Jackie, Anne, and Mrs. S. in the early (and most imprintable) years of my nursing career, to journeys that are more recent with Meghan, Shea, Gail, and “Tallahassee ZZ”. You shared your innermost views of the world with me, you trusted your lives to my scientific abilities, you looked at life’s finality with me next to you . . . you changed me . . . I can only hope that I have in some way helped you.

I also dedicate this book to my parents (Marie and John Aarne) and my daughters (Sarah and Nicole Grossman):
You give my days purpose and add color to my life’s rainbow. Thank you for making a difference.
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An increasing number of nurses work in radiology departments or other imaging areas, and this innovative handbook provides a concise yet comprehensive resource addressing the many roles the nurse fills within the imaging areas. This handbook will also serve as an important primer for nurses who are novices in radiology and imaging areas and as a valuable reference for nurses with radiology experience.

An experienced radiology nurse clinician, nurse manager, and published author, Ms. Grossman, editor of *Fast Facts for the Radiology Nurse*, has a passion for nursing and an inexhaustible commitment to elevate her chosen professional specialty of radiology nursing. Ms. Grossman has put together a concise handbook that covers the most basic concepts in radiology nursing and provides information on specific procedures.

This book covers many topics essential to the success of the nurse working in an imaging setting. Radiology nurses are vital to the success of the department’s team, and every radiology nurse needs knowledge of radiation’s ability to show diagnostic information and uses in treatment, but also have an awareness of its potential for harm that necessitates vigilance for safety.

The book offers information regarding the basic skills that a radiology nurse uses in everyday practice. Nurses draw from prior critical care and/or emergency nursing knowledge and assessment skills in radiology, and also learn new skills specific to the imaging environment including vascular access, hemostasis, infection control, physiological monitoring, and documentation. Important information on sedation and analgesia includes medications in easy-to-read tables. Complete sections on caring for patients who
are having computed tomography or magnetic resonance imaging scans as well as interventional radiology procedures are covered with essential information for the reader. Other areas of radiology are also discussed.

“Fast Facts in a Nutshell” boxes, located throughout the book, highlight information that is essential to know. In summary, this handbook is a welcome addition to the resources for radiology nursing, which are few in number compared to other specialties. The handbook’s size makes it easily portable as a bedside reference. A copy of this handbook would be an important addition to any radiology nursing unit’s resources and would be useful in emergency and critical care unit libraries as well.

Kathleen A. Gross, MSN, RN-BC, CRN
Editor, Journal of Radiology Nursing
Preface

Many nurses who enter the imaging arena come from vastly different backgrounds in the profession. I have worked with mental health nurses, pediatric nurses, critical care nurses, and emergency care nurses who have transitioned into radiology nurses. They all bring unique experience to our departments; all have great value. Individually it may be tough; yet being part of a diverse nursing team makes us strong and determined to provide the very best in patient care. As you know, radiology is a great place to work. A bad day in radiology is often better than the best day on the floors. It just is.

Learning to be a radiology nurse takes us out of our “comfort zone” and immerses us in a world developed by physicians and technologists. It’s all about getting great images so that radiologists can make perfect diagnoses for the patients we serve. Yet, when nurses are introduced to the environment, some teams struggle with the diversity of practice styles and goals. The Journal of Radiology Nursing diligently works to provide nurses with up-to-date information regarding our focus of practice. The core curriculum has been developed from the knowledge of a vast nursing team. We utilize information from the American College of Radiology, the Society of Interventional Radiology, and many other organizations to enhance our knowledge. What we as radiology nurses haven't had until now is a book—a book that we can put in our pocket and use to teach newer nurses or one that provides a quick-glance resource for the more seasoned nurse.

Fast Facts for the Radiology Nurse was written to serve the needs of nurses in a variety of imaging settings. Basic information such as vascular access, infection control, teamwork, and sterile technique is covered. Caring for patients from the emergency department
PREFACE

or intensive care unit poses different types of challenges for the radiology nurse, and this book offers ways to provide care safely to these patients as well. Every patient can present a particular challenge in radiology, so there are tips for caring for young patients, older patients, large patients, emotionally stressed patients . . . ideas for nearly all situations.

Much of what we do in radiology centers around computed tomography, magnetic resonance imaging, and interventional radiology (IR) and, therefore, this book focuses heavily on those areas—from safety around contrast, magnets, and radiation to particular information on over 50 different IR procedures we perform for our patients. Contributors with clinical expertise from a variety of settings have assisted with this book, creating a well-researched, reviewed, and polished text for the reader. This book presents all the facts that the radiology nurse needs to be able to jump feet first into the clinical setting.

Valerie Aarne Grossman
Acknowledgments

This book could not have happened if it were not for the passion, perseverance, and belief in the “frontline nurse” that my editor, Elizabeth Nieginski, possesses. There are not enough words in this language to describe her constant support and belief in this project. She granted me the right to enjoy this project, to roll with the punches, to jump those hurdles, and to be proud of what we are giving to our readers.

Following Elizabeth’s excellent leadership was my team of contributors and reviewers. Your passion for excellent care at the bedside translated so nicely into the words contained here. Your critical eyes for what the nursing reader would need to know to provide care to the radiology patient behind every image were precise in every possible manner. It takes a team with high moral standards that believes in the very best of patient care to walk with our patients through their journeys in health, injury, and sickness: You all make a difference for our patients. Thank you for believing in this project!

To my favorite librarians who make every literature search a successful and bountiful one! Bonnie Archer and Lorraine Procello: Your belief in the bedside nurse makes us better at what we do, what we learn, and what we can provide to every patient we serve.

To my writing mentors over the years: Without you, this book wouldn’t exist. Donna Ojanen Thomas, Dr. Frank Edwards, Polly Gerber Zimmermann, Gail Lenehan, Julie Briggs, and Susan Hollis . . . thank you for walking me to the doors of opportunity, and teaching me how to cross those difficult thresholds.
PART

Radiology Foundation
In this chapter, you will discover:

1. The complexity of radiology nursing
2. The essential role of teamwork
3. Safe radiation practices

The world of radiology is changing very quickly. It wasn’t too long ago when the only caregivers in any given radiology department were the radiologist and the technologist. Now, however, there may be a complex team of transporters, unlicensed assistive personnel, nurses, technologists, midlevel providers (nurse practitioners and physician assistants), as well as the radiologists! As the complexity of health care grows, so too does imaging ability. Different modalities, different technologies, and different skill levels must all work in harmony to provide precision images for the radiologist, who will ultimately provide insight into a patient’s condition for the ordering physician. Decreasing reimbursement, increasing regulation, and increasing sophistication combined with the different practice styles and needs of the radiology modalities can
lead to a very confusing nursing environment that is continually changing and ever challenging (Donnelly, Dickerson, Goodfriend, & Muething, 2010).

Nursing is quickly gaining a greater presence in radiology settings. The increasing complexity of procedures within the modalities, as well as patients with more complex health care issues, requires the expertise of motivated nursing professionals. Radiology nurses must be self-motivated, patient focused, and able to work with a diverse team of individuals. Often, nurses in radiology are breaking new ground, discovering new patient care issues, and amending practice to meet new regulations. A radiology nurse must be able to care for the widest range of patients (much like a nurse in the emergency department), from pediatric to geriatric, from trauma to oncology, from self-care to total-care patients . . . there is no routine in radiology. Yet, it is more than that. A radiology nurse must remember that there is a person behind each and every image . . . someone with a life that matters, a story worth sharing. In the chaos of a normal work day, it can sometimes be easy for the nurse to forget how the patient sees his or her visit to radiology: Will this scan show that there is a tumor? Will this ultrasound show that I’m pregnant? Can this interventional radiology procedure stop the bleeding? Our radiology environment is “normal” for us, but to our patients who trust us with their lives it is foreign and scary. It is our role as professionals to guide patients through their time with us in radiology and to treat them with dignity and respect.

**FAST FACTS in a NUTSHELL**

Refrain from the use of personal electronic devices while in the clinical area. This is an infection control risk and may allow the patients/visitors to misperceive where your attention is focused.

**RADIATION SAFETY**

Today’s advancing medical imaging arenas are providing physicians with state-of-the-art technology to see within a body through diagnostic imaging tools. Yet, with that ability comes a degree of risk. It falls to the radiology team to protect not only the patient but also themselves in this environment. Some simple rules should be followed 100% of the time when working with radiation.
in the areas of computed tomography (CT), positron emission tomography (PET), interventional radiology, x-ray, nuclear medicine, mammography, cardiac catheter lab, operating room with a C-arm, or any number of other settings.

The very common term “ALARA” (as low as reasonably achievable) refers to the recommendation that the technologist uses the lowest amount of radiation technique possible to achieve the image that the radiologist needs. This is not a “one-step” process, as there are times when it may involve utilizing other modalities that do not use radiation (ultrasound or magnetic resonance imaging [MRI]). If the best study for the patient is one that uses radiation, then the team must consider increasing the distance from the source of radiation, decreasing the time of exposure to radiation, and using the appropriate shielding of the patient or staff.

- **Time:**
  - Decreasing the amount of exposure time will automatically decrease the dose of radiation to the patient and the provider.
  - Thorough planning of the image or the procedure will be necessary, with streamlined work flow, precise protocols, and operational expertise of the equipment and/or radioactive material by the technologist.

- **Distance:**
  - Increasing the distance from the source of radiation will decrease the exposure dose.

- **Shielding:**
  - Using the appropriate type of shielding will protect the individual from exposure. There are a variety of products available, including lead aprons, lead shielding stands, goggles, thyroid shields, and sterile drapes that cover the patients during procedures (Association of periOperative Registered Nurses, Conner, & Blanchard, 2011).

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**FAST FACTS in a NUTSHELL**

With mounting concerns of the carcinogenic effects of imaging techniques, it is essential for all imaging providers to keep as a priority the safety of staff and patients through utilization of the lowest dose possible for the imaging outcome desired, as well as ALARA.