

Pharmacology Primer for Medications in Nuclear Medicine and Medical Imaging

Geoffrey Currie

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The new *Pharmacology Primer for Medications in Nuclear Medicine and Medical Imaging* is a timely and much-needed book for nuclear medicine technologists and students. The author of this book, Geoffrey Currie, BPharm, MMedRadSc(NucMed), MAppMngt(Health), MBA, PhD, AM, has an impressive curriculum vitae. Dr. Currie is a nuclear medicine professor at Charles Stuart University in Wagga Wagga, Australia.

This book is ideal for those in the practice of nuclear medicine technology. It is a useful textbook for new learners and a valuable reference for the shelf of every nuclear medicine department.

Modern medicine continues to become more technologically complex. Pharmacology has always been an integral part of nuclear medicine and molecular imaging as a tool to evaluate the physiology of various organs and organ systems. The use of different medications to create a physiologic response allows evaluation through functional imaging. Nuclear medicine professionals should understand these processes, be competent in administering these medications, and know what to look for when monitoring patients after administration.

The timing of the publication of this book is ideal. Technologists need to understand the pharmacodynamics and pharmacokinetics of medications used in nuclear medicine exams. Although pharmacology has always been included in the recommended nuclear medicine technology curriculum and scope of practice, there is a debate on the competency of technologists to administer these medications. This book, written specifically for those practicing nuclear medicine technology, is important in assisting them in advocating for this function within the practice.

As an educator, Dr. Currie listed learning outcomes at the beginning of the book and specific learning outcomes and objectives for each chapter. This is especially useful for educators who choose to incorporate this book into their course.

This book is organized into 17 chapters. The first chapter is an introduction to pharmacology. The following 2 chapters break down pharmacology into pharmacodynamics and pharmacokinetics. Chapters 4 and 5 include dose forms and administration, followed by pharmacology variations for different populations (pediatric, geriatric, and female). Chapters 6–9 discuss pharmaceuticals used in specific nuclear medicine procedures. Chapters 10 and 11 cover contrast media used in CT and MRI. Chapters 12–16 cover crash cart medications, pain medications, chemotherapy, over-the-counter medications, and lifestyle and sports drugs. The final chapter covers known interactions with radiopharmaceuticals.

Most pharmaceuticals used in nuclear medicine are included in this book. A separate chapter is dedicated to renal, biliary, and

cardiac medications. Another chapter covers the other interventional medications. A few pharmaceuticals used in nuclear medicine are not included (acid-citrate-dextrose solution, Lugol solution, and recombinant human thyroid-stimulating hormone). Atropine is discussed in the crash cart chapter, not the cardiology chapter. Insulin is reviewed in the lifestyle and sports chapter, which may be because no chapter specific to PET or nuclear medicine therapy (i.e., octreotide, amino acid solutions, or antiemetics) is included.

Including CT and MRI contrast agents in this book is crucial for nuclear medicine professionals. These 2 chapters introduce the contrast agents and then describe their properties, mechanism of action, pharmacokinetics, contraindications, precautions, and adverse reactions. They also highlight concerns associated with extravasation. The MRI chapter includes a brief discussion of nephrogenic systemic fibrosis, which poses a small but significant risk to patients with a history of renal dysfunction.

What makes this textbook comprehensive are the final 5 chapters. As imaging professionals, we will encounter many situations outside the routine scenarios in the nuclear medicine department. The chapter on the crash cart (emergency trolley) includes the many drugs found in a crash cart; their indications, doses (including pediatric doses), and frequencies of administration; and any precautions or contraindications. The chapter on pain management summarizes many medications our patients may be taking when they come to us. The chapter on chemotherapy describes the mode of action, pharmacokinetics, risks, precautions, contraindications, adverse effects, interactions, and dosage of chemotherapeutic agents. The chapters on over-the-counter medications and lifestyle and sports drugs cover many pharmaceuticals that our patients may be taking.

One of this book's many strengths is its figures and tables. The figures are in color and are truly worth a thousand words. Each chapter includes multiple figures to illustrate many of this book's complex concepts. The tables allow for quick reference of the many pharmaceuticals covered.

Overall, this book is an excellent addition to any library. This book helps one quickly identify a medication and discover the most important and relevant information needed. It is also helpful as a comprehensive textbook for students entering the nuclear medicine profession. I would recommend it to nuclear medicine technologists, students, and other professionals (e.g., nursing professionals) working in nuclear medicine or medical imaging departments.

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