

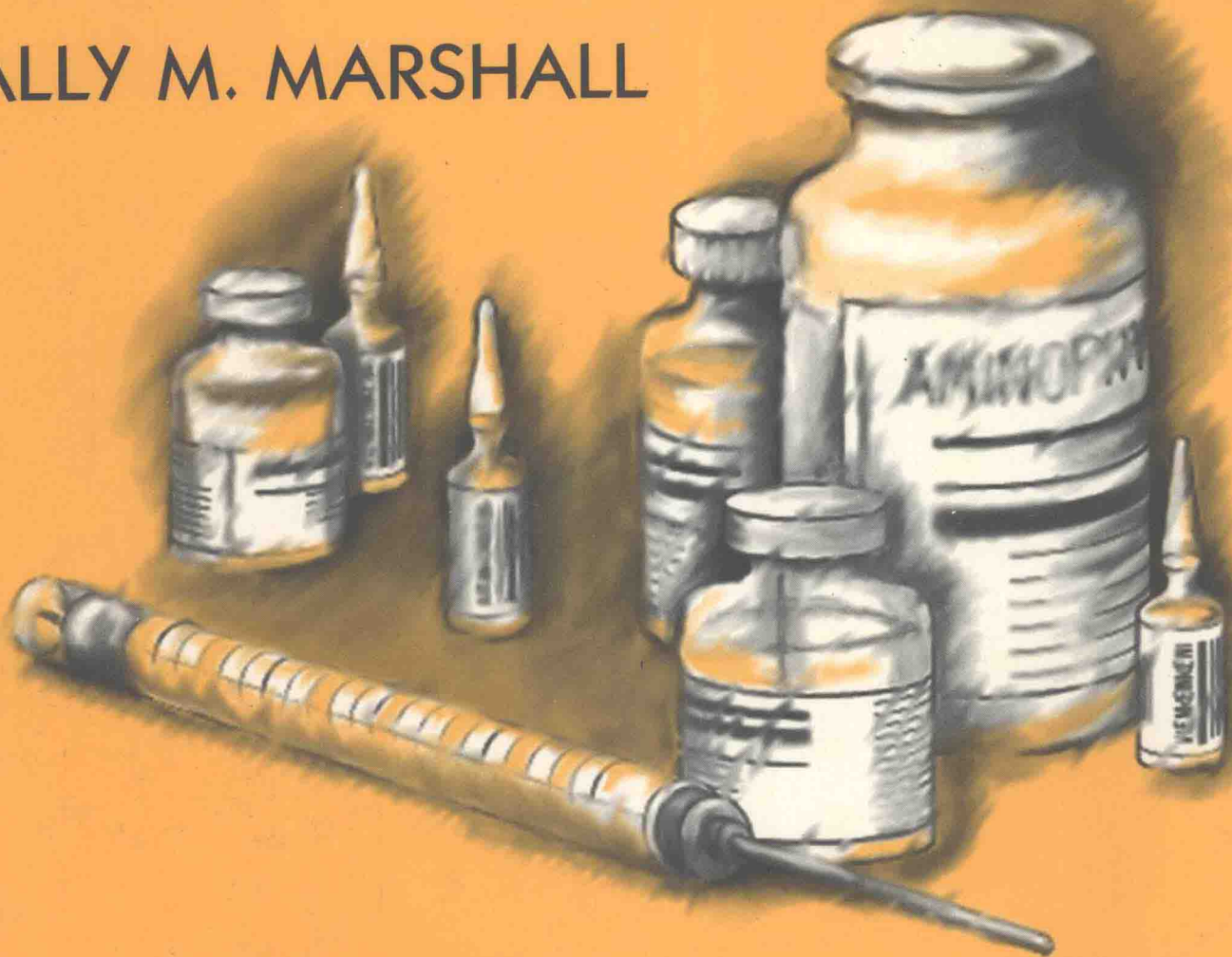
CLINICAL CALCULATIONS

with applications to general and specialty areas

SECOND EDITION

JOYCE L. KEE

SALLY M. MARSHALL



CLINICAL CALCULATIONS

with applications to general and specialty areas

SECOND EDITION

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Notice: The authors of this book have made every effort to ensure that the dosages of drugs are correct and in accordance with the standards accepted at the time of publication. The reader is advised to consult the instruction insert of each drug before administering to ascertain any change in drug dosage, method of administration, or contraindications. Because changes are continually occurring in the field and because of the fundamental importance of the specific circumstances and of the etiology of the patient's condition, it must be the responsibility of treating physicians, relying on their professional experience and their knowledge of the patient, to determine dosages and the best treatment for a patient.

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Last digit is the print number: 9 8 7 6 5 4 3

To My MOTHER
and
To My Children, Drew and Sarah
Sally Marshall

To My Grandchildren
CHRISTOPHER, BRENDA, JESSICA,
and KIMBERLY
Joyce Kee

To
OUR NURSING COLLEAGUES

PREFACE

This text arose from a learning gap that we saw between education and practice. We believe that a bridge is needed for the student in understanding the wide range of clinical calculations used in practice. This book provides a comprehensive application of calculations in nursing practice.

The second edition of *CLINICAL CALCULATIONS with Application to General and Specialty Areas* has expanded on topics in several areas to show the interrelationship between calculations and drug administration. A new chapter on “Reading Drug Labels, Drug Orders, Charting, and Abbreviations” complements the following chapters by explaining the origins of the drug order.

The changes in the second edition include:

- Part I: Basic Math Review, more practice problems on fractions, decimals and percents.
- Twice as many drug labels (more than 125), illustrations, and tables throughout the text.
- More practice problems in each chapter.
- New chapter on reading drug labels, drug orders, medication records, and abbreviations.
- Dimensional analysis as an additional calculation method with practice problems in the chapters on orals and injectables. The basic formula, and ratio and proportion are the major methods used throughout the text.
- Total revision of the chapter on injectables.
- Pediatrics: 25 practice problems including intravenous calculations.
- Critical Care: Factor 15 method for calculating dosages.
- Answers to practice problems at the end of each chapter.
- Additional comprehensive test questions with drug labels.
- CARDS of conversion tables, calculation methods, body weight, body surface area, and calculations for Critical Care practice. These cards can be detached from the book and carried in the nurse’s uniform pocket.

The *Clinical Calculation* book is unique in that it has calculation problems for not only the general patient care areas, but also for the specialty units, pediatrics, critical care, pediatric critical care, labor and delivery and community. The book is useful for nurses in all levels of nursing education who are learning for the first time how to calculate dosage problems, and for beginning practitioners in specialty areas. It also can be used in nursing refresher courses, inservice programs, hospital units, home health care, and other places of nursing practice.

The book is divided into four parts. Part I is the basic math review, written concisely for nursing students to review Roman numerals, fractions, decimals, percentages, and ratio and proportion. A post-math review test fol-

lows. The math test can be taken first, and if the student has a score of 90% or higher, the basic review section can be omitted. Part II covers metric, apothecary, and household systems used in drug calculations; conversion of units; reading drug labels, drug orders, and abbreviations; and methods of calculations. Part III covers calculating drug and fluid dosages for oral, injectable, and intravenous administration. Clinical drug calculations used in specialty areas are found in Part IV. This part includes pediatrics, critical care for adults and children, labor and delivery, and community. There are 3 appendices; temperature conversion, guidelines for administrations of medications (orals, injectables, and intravenous), and nomograms. The index assists in locating content in the text.

Each chapter has a content list, objectives, introduction, and numerous practice problems. The practice problems relate to clinical drug problems that are currently used in clinical settings. Illustrations such as tablets, capsules, medicine cup, syringes, ampules, vials, intravenous bag and bottle, IV tubing, electronic IV devices, and many others are throughout the text.

Calculators may be used in solving dosage problems. Many institutions have calculators available. It is suggested that the nurse work the problem without a calculator and then check the answer with a calculator.

TO THE INSTRUCTOR: A suggestion on how this book may be used by the student: Assign Part I and Part II which covers delivery of medication prior to the class.

JOYCE L. KEE
SALLY M. MARSHALL

TO THE READER

Consult the product information contained in the package insert of each drug before administering the medication.

Wyeth-Ayerst Laboratories

Eli Lilly and Company

Bristol-Myers Squibb Company

Mead-Johnson Pharmaceuticals

DuPont Pharmaceuticals

Smith Kline Beecham Pharmaceuticals

Parke-Davis Company

Warner-Chicott Laboratories

Warner-Lambert Company

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We wish to extend our sincere appreciation to the many nurse educators, clinical nurse practitioners, students that assisted by reviewing and testing the content in the first edition, physicians in specialty areas, and to the hundreds of evaluations of the first edition. We extend our sincere thanks to the numerous faculty persons in school of nursing who have adopted this text and gave valuable suggestions for the second edition.

We wish to especially thank Adrienne Woods for her suggestions and use of her book, *Nurses' Drug Handbook*, by Spratto and Woods. Also our thanks to Phyllis Stallard, Assistant Professor, Neumann College; Kay McLean, Neonatal ICU, Medical Center of Delaware; Nancy Murry, Pediatric Nurse Practitioner and Gretchen Pierce, Urgent Care Department, A.I. DuPont Institute.

Our deepest appreciation to the pharmaceutical companies for permission to use their drug labels and syringes, and manufacturers of health related equipment for their displays. The pharmaceutical companies who extended their courtesy to the book include:

Wyeth-Ayerst Laboratories (Drug labels, Tubex syringes)

Eli Lilly and Company

Bristol-Myers Squibb Company

Mead-Johnson Pharmaceuticals

DuPont Pharmaceuticals

Smith Kline Beecham Pharmaceuticals

Parke-Davis Company

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To the staff at W. B. Saunders, especially Daniel Ruth, editor, Nursing Books, for their suggestions and assistance.

We wish to extend our appreciation and love to our husbands, Edward D. Kee and Robert F. Marshall, for their support and suggestions.

JOYCE L. KEE

SALLY M. MARSHALL

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