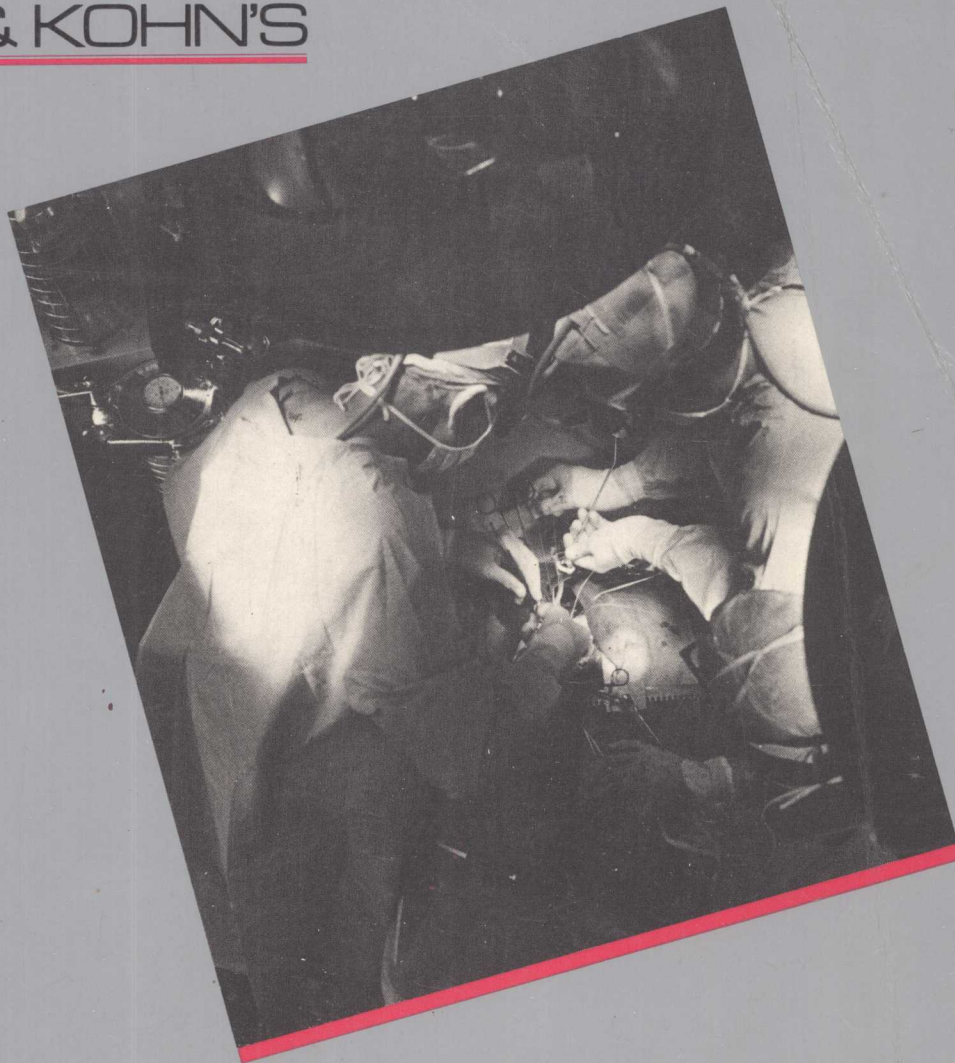


BERRY & KOHN'S



INTRODUCTION TO
**OPERATING
ROOM
TECHNIQUE**

LUCY JO ATKINSON
MARY LOUISE KOHN

SIXTH EDITION

BERRY AND KOHN'S INTRODUCTION TO OPERATING ROOM TECHNIQUE

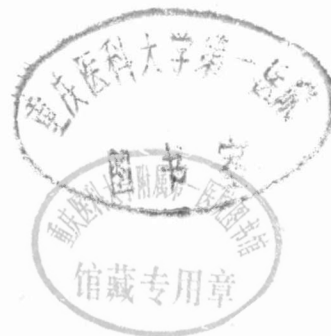
SIXTH EDITION

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As new medical and nursing research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required. The editors and the publisher of this work have made every effort to ensure that the drug dosage schedules herein are accurate and in accord with the standards accepted at the time of publication. Readers are advised, however, to check the product information sheet included in the package of each drug they plan to administer to be certain that changes have not been made in the recommended dose or in the contraindications for administration. This recommendation is of particular importance in regard to new or infrequently used drugs.

BERRY AND KOHN'S INTRODUCTION TO OPERATING ROOM TECHNIQUE

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To the memory of Edna Cornelia Berry,
whose devotion to teaching was surpassed
only by her devotion to the
care of surgical patients in the operating room.

PREFACE TO THE SIXTH EDITION

The sixth edition of this internationally established text is sincerely dedicated to the memory of Edna Cornelia Berry, the original senior author. To the many students and operating room nurses who were privileged to work with her and to know her personally, she was a positive role model and mentor. To thousands of others, she was a teacher through four editions of this text. Miss Berry passed away in 1983 at the age of 86. Her professional life was devoted to the care of her patients and to the nurturing of all practitioners of operating room nursing.

The current authors have maintained the fundamental purposes of this text: to develop an understanding of the principles of sterile and aseptic techniques and the necessity for their application in all operative procedures; and to develop an understanding of the physiological and psychological impact of surgical intervention on the surgical patient as a unique individual.

Following publication of the fifth edition, Miss Berry commented, "This text is now more than an introduction to operating room technique." Although the authors have retained this title, indeed the content was expanded and has been updated in this edition to include current technology and trends in operating room nursing practice.

As technology has become more complex, many operative procedures not envisioned when this text was originally published in 1955 are frequently on the daily schedule of operations. Likewise, specialization within surgical practice has fostered specialization in nursing practice in many operating room suites. *The focus on teamwork remains unchanged*, however. A new chapter is added to this edition describing the multidisciplinary team approach specifically to head and neck surgery.

The practice setting has changed for many operating room nurses and surgical technologists. Because of the increasing trend toward postoperative recovery in the home rather than hospital setting, a chapter is devoted to ambulatory care. This includes consideration of the pre-, intra-, and postoperative care of surgical patients operated in an ambulatory care facility.

Whether in a hospital or ambulatory care setting, the concept of perioperative nursing extends the role of the nurse. A new chapter delineating this professional role emphasizes the nursing process as the mechanism for care of all surgical patients. Although this role is conceptually valid, it is difficult to implement in some clinical settings. Perioperative nursing is a worthy objective of professional operating room nurses, however. Inclusion of the chapter

devoted to this concept will help learners and practitioners understand the correlation between theory and practice.

The technical component of patient care in the operating room cannot be overlooked and, therefore, is emphasized throughout this text. This edition retains the general format and accepted principles and practices of previous editions. Although it is assumed the reader has a foundation in the basic sciences, some microbiology, anatomy and physiology, and behavioral science concepts are included for reference and clarification. The material has been resequenced to reflect current emphasis on the need to understand use and care of sophisticated instrumentation to ensure patient safety and quality care, to minimize risks of legal liability in rendering care, and to effect cost containment ultimately for the patient. Some chapters have been divided to more accurately reflect current surgical specialization and practices, e.g., thoracic and vascular surgery, patient monitoring for many specialties.

This text is addressed to all learners of operating room technology, be they students in formal basic or postgraduate educational programs or graduate nurses or surgical technologists developing skills in a new or different area of specialization. To give encouragement to those entering the field of operating room nursing, in whatever capacity, the new last chapter of this edition presents some of the challenges and realities of practice.

Everyone who works in an operating room is responsible and accountable to self, to employer, but primarily to the patient. The authors hope this text will continue to serve as a reference resource for all who are involved in the intraoperative phase of the surgical patient's care. Knowledge is the basis on which skills are developed. References cited in bibliography were current at the time of preparation of this edition. But it is incumbent on every practitioner to keep up with current literature on a regular basis.

The authors sincerely appreciated the recommendations offered by Beverly Baker, C.S.T., Gerald B. Goethals, B.S.N., and Carol Tyler, B.S., CNOR, who reviewed the previous edition, and Edgar Montgomery, C.S.T., who reviewed both the fifth edition and part of the manuscript for this edition. We gratefully acknowledge and give sincere appreciation to the professors/instructors who reviewed the entire manuscript for the sixth edition: Joyce Borndahl, R.N., Moraine Park Technical Institute, Fond du Lac, Wisconsin, Betty Fitzgerald, B.A., CNOR, University of South Alabama, Mobile, and Claire Olson, M.S., CNOR, Nassau Community College, Garden City, New York.

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The authors also wish to acknowledge Anita Rogoff, illustrator for previous editions, and Maura Wright for illustrations added to this edition. Appreciation is extended to Grace M. Plumbo, Carole A. Loboda, and Joan A. Bozoklian for assistance with typing of the manuscript.

*Lucy Jo Atkinson
Mary Louise Kohn*

PREFACE TO THE FIRST EDITION

The material in this text is the outgrowth of the coauthors' experience in the operating room—one as instructor of students, the other as head nurse with some responsibility for instructing and guiding students. It is an adaptation of the instructor's teaching outline for which there have been many requests.

The aim of the book is to facilitate the nurse's study of aseptic technique and care of the patient in the operating room. Although this text is intended primarily for the student, the authors hope it may prove useful to the graduate nurse as well.

Since it is assumed that the student has studied pathological conditions necessitating surgical treatment, these conditions are not discussed. When applicable, and as a matter of emphasis, there is a reiteration of principles of sterile technique and safety factors for the patient. It is hoped this will aid in fixing the principles as patterns of thought and work.

While operative routines vary in different hospitals, underlying principles are the same. Consequently, basic principles are stressed and the authors have endeavored to keep the material as general as possible. Principles must be adapted to suit the situations found in individual hospitals. Specific linen, equipment, and procedures are mentioned merely to serve as a framework upon which to demonstrate principles or as samples for points of departure. However, the specific examples mentioned are workable procedures that have evolved. They are kept as uncomplicated as possible for student teaching and for use in the practical situation.

Instruments for operations are not listed and few are mentioned, because each hospital has its instrument lists, standardized for each case, to which students can refer.

Emphasis is placed upon meeting the psychological as well as the physical needs of the surgical patient. An endeavor is made where possible to correlate briefly the preoperative and postoperative care with the operative procedure, to give the student a complete concept of patient care.

The frequent use of the imperative mood is for the purpose of brevity, organization, and emphasis. Questions and assignments in each chapter are to aid the student in reviewing the material, in recalling pertinent facts, and in applying the principles to her specific situation.

Obviously, if the student starts scrubbing for cases with an older nurse after her first day or two in the operating room and if her operating-room theory is

given concurrently with the practice, much of the material in this book will have been covered by individual instruction before class discussion.

The authors have attempted to maintain simplicity and brevity, and to present a concise outline for preliminary study. They suggest that the student supplement this material by reference reading.

The authors wish to express their grateful appreciation and thanks to those persons who by their interest and cooperation supported them:

To Miss Edythe Angell, Supervisor of the Operating Rooms at University Hospitals of Cleveland, for helpful suggestions during the preparation of the manuscript and for reading, critically, the entire manuscript. We are gratefully indebted to her because we have learned from her much of what appears in this text.

To Miss Janet McMahon, Educational Director, School of Anesthesia, University Hospitals of Cleveland, for valuable assistance in preparing Chapter 21. Also, to Dr. Edward Depp, Anesthesiologist, Euclid-Glenville Hospital, Cleveland, who offered suggestions on this chapter and reviewed it.

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To Mrs. Geraldine Mink, Librarian, for her assistance; to Mrs. Leona Peck for her patience in typing the manuscript and for her helpful suggestions; to Miss Ruth Elmenthaler and Miss Margaret Sanderson of the operating-room staff for their assistance in making the photographs; and to Mrs. Anita Rogoff for drawing the illustrations.

Edna Cornelia Berry

Mary Louise Kohn

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INTRODUCTION FOR THE LEARNER

MODERN SURGERY

Health is a personal and economic asset. Needs are altered in proportion to one's ability to function normally. *Optimal health* has been defined as the best an individual can feel and function in the particular circumstances or with a disease process. *Disease* is a failure of the adaptive mechanisms to adequately counteract stimuli or stresses, resulting in disturbance in function or structure of any part, organ, or system of the body. *Illness* is often a composite of many reactions or diseases.

Since time immemorial, human beings have searched for the causes of illnesses and ways to relieve suffering. To participate as a health care worker increases one's awareness of some basic facts of life:

1 No one is immune to suffering, but to alleviate it is worth the effort and cost, for life is priceless.

2 One should not try to face suffering alone; let others help.

3 Vulnerability is an important component of life. Anne Morrow Lindberg's insight is most applicable. "Suffering is always individual . . . to suffer is to be alone. . . . To suffering must be added mourning, understanding, patience, love, openness, and the willingness to remain vulnerable."*

*AM Lindberg, *Hour of Gold, Hour of Lead: Diaries and Letters of Anne Morrow Lindberg 1929-1932*, New York: Harcourt Brace Jovanovich, 1973, p. 212.

Fifty years ago only a small percentage of hospitalized patients were admitted for operations. Today, surgical intervention, one step in the total process of restoring or maintaining health, offers hope to a population of all ages with conditions that can be treated surgically. The number of operations performed and anesthetics administered increases annually. This is due to the population explosion, the increased incidence of congenital abnormalities, the ever-increasing number of aged persons, and the rapid progress in all facets of medicine. Many former contraindications to surgery have changed. Because of better diagnostic and supportive services and drug therapies, many persons are now considered candidates for surgery.

The word *surgery* designates the branch of medicine that encompasses preoperative care, intraoperative judgment and management, and postoperative care of patients. Surgery as a discipline is total care of illness with an extra modality of treatment, the *operation*, for correction of deformities and defects, repair of injuries, diagnosis and cure of disease processes, relief of suffering, and prolongation of life. At the time of operation, pathologic conditions are documented and treated. Surgical intervention encompasses more than technical performance of an operative procedure. In fact, the operation may constitute a minor part of the total therapy for surgical patients.

Surgical science has progressed far beyond what was envisioned years ago. Modern surgery is safer

and surer than ever before. Reliable diagnostic techniques and equipment enable physicians to more precisely measure the effects of illness and injury and to more accurately make diagnoses and predict surgical outcomes. Surgeons and equipment manufacturers consult together constantly to develop and perfect instrumentation. Improvement in the knowledge and management of the surgical patient's nutritional and physiological condition, plus the many complex, precise skills of the surgeon are also beneficial to the effectiveness and safety of surgical care. Specialization in all areas of medicine, and increasingly in nursing too, brings to patient care a vast augmentation of available consultative services for helping to determine what is wrong, what needs to be done, and how best to do it. Some of the greatest gains have been in methods of preparing patients for operation, and of caring for them postoperatively in the rehabilitation period. These new methods of patient care are based on the premise that each patient is a unique individual requiring individualized care. Exceptionally rapid advances have been made in the development of safe anesthesia, which is so vital to a favorable surgical outcome.

Patients come to the operating room for a variety of reasons, including:

- 1 To preserve life, e.g., relief of intestinal obstruction or decompression of a skull fracture
- 2 To maintain dynamic bodily equilibrium, e.g., removal of a diseased kidney
- 3 To undergo diagnostic procedures, e.g., breast biopsy, bronchoscopy
- 4 To prevent infection and to promote healing, e.g., burn debridement
- 5 To obtain comfort and to ensure the ability to earn a living, e.g., elective herniorrhaphy

Most, but not all, operations are performed in hospitals. Many are performed in surgeons' offices or in independent, nonhospital-based, free-standing surgical facilities if they are not complex enough to require hospitalization of the patients. Not all patients operated on in a hospital-contained operating room unit are admitted to the hospital. Surgeons view postoperative activity as beneficial rather than hazardous for surgical patients. Consequently, operation on an ambulatory care or an outpatient basis is feasible and safe for carefully selected patients. Ambulatory surgery is discussed in more detail in Chapter 5. Although reference will be made throughout this text to *hospital*, the practices and procedures described are applicable in all surgical care settings.

The types of operations performed in a hospital or other facility vary according to the expertise of the surgeons on the staff, the community in which the facility is located, and the equipment available. The daily schedule of operations is as variable as the type of facility and the types of operations performed. Regardless of the circumstances that bring patients to the operating room (OR), the intraoperative phase of care becomes an integral part of nursing service, filling a need that cannot be met by the individual patient or his or her family. In the operating room you must accept the challenge of this critical phase of nursing care upon which the patient's ultimate recovery is so dependent. Nursing care of patients undergoing surgical intervention as the therapeutic modality of choice is carried out at two levels: professional and technical.

PROFESSIONAL NURSING

Characteristics of a Profession

The characteristics of a profession are that:

- 1 It defines its own rules and code of ethics.
- 2 It sets its own standards and conducts its own affairs and self-regulation.
- 3 It identifies and develops its own body of knowledge unique to its role, through research.
- 4 It engages in periodic self-evaluation and peer review to control and alter its practices and behaviors.

The members of a profession must act responsibly in accord with their commitment to public trust and service. However, professional conduct is not synonymous with ritualism, detachment, or denial of feeling. Simply stated the word *profession* implies a combination and coordination of knowledge, skills, and ideals that are communicated through a highly specialized educational discipline. In this way education sets the standards for practice.

Professional Nursing

Professional nursing is dedicated to the promotion of optimal health for all human beings in their various environments. In addition to performing many other roles including teaching health-seeking behaviors, promoting preventive medicine, taking part in patient rehabilitation, and participating in nursing research, the professional nurse in the acute-care setting performs functions that

are primarily curative and restorative in nature. The professional nurse practitioner's role, as reflected in the *Standards of Nursing Practice* developed by the American Nurses' Association (ANA), includes nursing diagnosis as a basis for planning, providing, directing, collaborating in, and evaluating direct patient care.

As a helping profession, nursing's ideal characteristics include the ability and commitment to respond with compassion to human needs and society's expectations for health care services. If we deny humanity to others, we dehumanize ourselves as well. Professional nurses are committed to life, health, and death with dignity. In practice, they help each client/patient to attain his or her highest possible level of general health. Nurses are morally responsible and legally accountable for the quality of their practice.

Professional and legal standards extend the nurse's responsibility and accountability beyond procedural steps. Their purpose is to fulfill the profession's obligation to provide and improve practice. Standards and recommended practices have been established by professional organizations, federal and state governments, the Joint Commission on the Accreditation of Hospitals (JCAH), and other voluntary agencies. Definitions, standards, and recommended practices give guidance to nursing service and nursing education. They have been progressively elevated and are continually assessed, maintained, and improved.

Data have shown that care tends to move to the lowest level of preparation of personnel. Therefore, the better prepared the staff, the higher the quality of care given. Professional education should be built upon a solid base of general education in liberal arts, humanities, and natural and behavioral sciences. The nurse, educated to assess the total patient, is an indispensable member of the OR professional team. A person with quality education approaches challenges creatively and with confidence that solutions can be found. As changes occur with surprising rapidity, and nursing develops as a profession in its own right, its responsibilities to the patient, to itself, and to its correlated professions increase as well. The source of professional authority is an understanding of the role functions of the professional.

Operating Room Nursing

New developments are constantly taking place in the field of surgery. As diagnostic and supportive

services have become increasingly complex, so have operative procedures. Intricate procedures have become part of daily operating room routine. It is therefore essential that nurses have extensive specialized technological knowledge and skills. They also must have the theory-based critical judgment and intellectual skills needed to apply a humanistic approach to their responsibilities as patient advocates. Concurrently, the role of the OR nurse is expanding as nurses relinquish non-nursing activities in order to accept newer nursing responsibilities. Nursing care of surgical patients extends behind and beyond the doors of the operating room.

Professional nursing in the operating room has been defined as "the identification of the physiological, psychological and sociological needs of the patient, and the implementation of an individualized program of nursing care that coordinates the nursing actions, based on a knowledge of the natural and behavioral sciences, in order to restore, or maintain, the health and welfare of the patient before, during, and after surgical intervention."*

The professional operating room nurse practitioner, a duly licensed registered nurse, is legally responsible for the nature and quality of the nursing care patients receive during surgical intervention, i.e., the operation itself. The scope of operating room nursing practice encompasses those nursing activities that assist the individual surgical patient in a conscious or unconscious state. These activities are directed toward providing continuity of care through preoperative assessment and planning, intraoperative intervention, and postoperative evaluation. The program for nursing care prescribes:

- 1 What nursing actions are to be performed
- 2 How the nursing actions are to be done
- 3 When these actions are to be performed
- 4 Where these actions are to be performed
- 5 Who is to perform the nursing actions†

Nursing actions, the functions of professional nursing, provide the foundation of the nursing

*AORN Statement Committee: Definition and objective for clinical practice of professional operating room nursing, AORN J 10(5):48, Nov 1969.

†Association of Operating Room Nurses and American Nurses' Association Division on Medical-Surgical Nursing Practice: *Standards of Perioperative Nursing Practice*, Kansas City, Missouri: American Nurses' Association, 1981. Reprinted with permission of ANA.