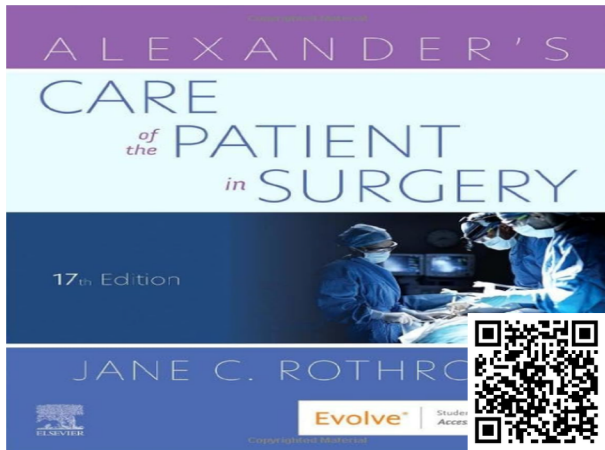


Alexander's Care of the Patient in Surgery 17th Edition PDF

Visit the link below to download the full version of the ebook

[DOWNLOAD NOW](#)



Scan to Download
or Type the Link

ebook.ac/alexander17e

ALEXANDER'S
CARE
of the PATIENT
in SURGERY

17th Edition



JANE C. ROTHROCK

Evolve®

YOU'VE JUST PURCHASED MORE THAN A TEXTBOOK!

Enhance your learning with Evolve Student Resources.

These online study tools and exercises can help deepen your understanding of textbook content so you can be more prepared for class, perform better on exams, and succeed in your course.



Activate the complete learning experience that comes with each NEW textbook purchase by registering with your scratch-off access code at

<http://evolve.elsevier.com/Rothrock/Alexander/>

If your school uses its own Learning Management System, your resources may be delivered on that platform. Consult with your instructor.

If you rented or purchased a used book and the scratch-off code at right has already been revealed, the code may have been used and cannot be re-used for registration. To purchase a new code to access these valuable study resources, simply follow the link above.

Place
Sticker
Here

REGISTER TODAY!



You can now purchase Elsevier products on Evolve!
Go to evolve.elsevier.com/shop to search and browse for products.

Contents

UNIT I Foundations for Practice

- 1 Concepts Basic to Perioperative Nursing, 1**
- 2 Patient Safety and Risk Management, 16**
- 3 Workplace Issues and Staff Safety, 39**
- 4 Infection Prevention and Control, 53**
- 5 Anesthesia, 103**
- 6 Positioning the Patient for Surgery, 139**
- 7 Sutures, Sharps, and Instruments, 174**
- 8 Surgical Modalities, 199**
- 9 Wound Healing, Dressings, and Drains, 241**
- 10 Postoperative Patient Care and Pain Management, 256**

UNIT II Surgical Interventions

- 11 Gastrointestinal Surgery, 285**
- 12 Surgery of the Biliary Tract, Pancreas, Liver, and Spleen, 341**
- 13 Hernia Repair, 374**
- 14 Gynecologic and Obstetric Surgery, 398**
- 15 Genitourinary Surgery, 454**
- 16 Thyroid and Parathyroid Surgery, 527**

- 17 Breast Surgery, 547**
- 18 Ophthalmic Surgery, 568**
- 19 Otorhinolaryngologic Surgery, 614**
- 20 Orthopedic Surgery, 664**
- 21 Neurosurgery, 753**
- 22 Reconstructive and Aesthetic Plastic Surgery, 808**
- 23 Thoracic Surgery, 852**
- 24 Vascular Surgery, 878**
- 25 Cardiac Surgery, 911**

UNIT III Special Considerations

- 26 Pediatric Surgery, 995**
- 27 Geriatric Surgery, 1066**
- 28 Trauma Surgery, 1089**
- 29 Integrative Health Practices, 1116**

APPENDIX A Laboratory Values, 1132

Illustration Credits, 1137

Index, 1144

Special Features, 1191

for more ebook/ testbank/ solution manuals requests:

email 960126734@qq.com

This page intentionally left blank

17th Edition

ALEXANDER'S
CARE
of PATIENT
the
in SURGERY

for more ebook/ testbank/ solution manuals requests:

email 960126734@qq.com

This page intentionally left blank

17th Edition

ALEXANDER'S CARE *of the* PATIENT *in* SURGERY

Jane C. Rothrock, PhD, RN, CNOR, FAAN

Adjunct Professor, Perioperative Programs
Delaware County Community College
Media, Pennsylvania

Associate Editors

Donna McEwen, RN, BSN, CNOR(E) (Deceased)

Instructional Designer Consultant
Optum Operations Training
Optum/UnitedHealthcare
San Antonio, Texas

**Sharon Ann Van Wicklin, PhD, RN, CNOR,
CRNFA(E,) CPSN-R, PLNC, FAAN, ISPAN-F**

Perioperative and Legal Nurse Consultant
Self-employed
Aurora, Colorado;
Editor-in-Chief
Plastic and Aesthetic Nursing
International Society of Plastic and Aesthetic Nurses
Beverly, Massachusetts



ELSEVIER

3251 Riverport Lane
St. Louis, Missouri 63043

ALEXANDER'S CARE OF THE PATIENT IN SURGERY,
SEVENTEENTH EDITION

ISBN: 978-0-323-77680-6

Copyright © 2023 by Elsevier Inc. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission in writing from the publisher. Details on how to seek permission, further information about the Publisher's permissions policies and our arrangements with organizations such as the Copyright Clearance Center and the Copyright Licensing Agency, can be found at our website: www.elsevier.com/permissions.

This book and the individual contributions contained in it are protected under copyright by the Publisher (other than as may be noted herein).

Notice

Practitioners and researchers must always rely on their own experience and knowledge in evaluating and using any information, methods, compounds or experiments described herein. Because of rapid advances in the medical sciences, in particular, independent verification of diagnoses and drug dosages should be made. To the fullest extent of the law, no responsibility is assumed by Elsevier, authors, editors or contributors for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions, or ideas contained in the material herein.

Previous editions copyrighted 2019, 2015, 2011, 2007, 2003, 1999, 1995, 1991, 1987, 1983, 1978, 1972

International Standard Book Number: 978-0-323-77680-6

Senior Content Strategist: Sandy Clark
Senior Content Development Manager: Lisa Newton
Senior Content Development Specialist: Laura Selkirk
Publishing Services Manager: Julie Eddy
Senior Project Manager: Jodi Willard
Design Direction: Patrick Ferguson

Printed in India

Last digit is the print number: 9 8 7 6 5 4 3 2 1



Working together
to grow libraries in
developing countries

www.elsevier.com • www.bookaid.org

Contributors

Sheila L. Allen, BSN, RN, CNOR, CRNFA(E)

Clinical Educator
Self-employed
Baton Rouge, Louisiana

Chapter 27: Geriatric Surgery

Jacqueline R. Bak, EdD, MSN, RN, CNOR, RNFA

Director of Perioperative Programs
Allied Health and Nursing
Delaware County Community College
Media, Pennsylvania

Chapter 9: Wound Healing, Dressings, and Drains

Kay A. Ball, PhD, RN, CNOR, CMLSO, FAAN

Adjunct Professor, Nursing Department
Otterbein University;
Perioperative Consultant
Lewis Center
Westerville, Ohio

Chapter 8: Surgical Modalities

Amanda A. Buchanan, MSN, MBA, RN, CNOR

RN Clinical Integration Specialist
Perioperative Services
Clinical Quality Integration
Henry Mayo Newhall Hospital
Valencia, California

Chapter 14: Gynecologic and Obstetric Surgery

Mary Michaela Cromb, BSN

Retired
Optum Operations Training
Optum/United HealthCare
San Antonio, Texas

Chapter 3: Workplace Issues and Staff Safety

Chapter 7: Sutures, Sharps, and Instruments

Chapter 19: Otorhinolaryngologic Surgery

Richard G. Cuming, EdD, MSN, RN, NEA-BC, FAAN

Chief Nurse Executive
ChristianaCare;
President
ChristianaCare HomeHealth
Wilmington, Delaware

Chapter 1: Concepts Basic to Perioperative Nursing

Cateria Davis-Bruno, MSN, CNOR

Senior Director of Surgical and Procedural Services
Perioperative Services
Lakeland Regional Health System;
Adjunct Clinical Instructor, Nursing
Polk State College
Lakeland, Florida

Chapter 25: Cardiac Surgery

Carol A. Devlin, MSN, RN, RNFA, CNOR, RWJF FON Scholar, Stratton Scholar

Instructor
Jefferson College of Nursing
Thomas Jefferson University
Philadelphia, Pennsylvania

Chapter 6: Positioning the Patient for Surgery

Britta E. DeVolder, BSN, MBA, RN, CSSM, CNOR

Chief Nursing Officer, Surgical Services
Community Surgery Center of Glendale
Glendale, California

Chapter 11: Gastrointestinal Surgery

Helen Dickson, MSN, RN, CNOR, RNFA

Adjunct Faculty, Perioperative Nursing
Delaware County Community College
Media, Pennsylvania;
RN Administrator
Premier at Exton Surgery Center
Exton, Pennsylvania

Chapter 20: Orthopedic Surgery

Francesca Maria Drake, BSN, RN, RNFA, CNOR

Clinical Nurse Expert and Team Lead of Plastic, Oral, and
Reconstructive Surgery
Operating Room
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania;
Registered Nurse First Assistant
Operating Room
Riddle Hospital
Media, Pennsylvania

Chapter 26: Pediatric Surgery

Maria Carmencita Abella Duffy, BSN, RN, CNOR

Self-employed
Chicago, Illinois

Chapter 16: Thyroid and Parathyroid Surgery

David P. Gawronski, MSN, RN, CNOR, CST

Clinical Nurse

Ambulatory Surgery Center, Operating Room
Holy Cross Health
Fort Lauderdale, Florida

Chapter 28: Trauma Surgery

Sarah J. Germanovich, MSN, RN, CNOR, TCRN

Clinical Practice Leader

Operating Room

Thomas Jefferson University Hospital
Philadelphia, Pennsylvania

Chapter 21: Neurosurgery

Mary Hillanbrand, DNP, RN, CNOR, CNS-CP (Emeritus)

Owner, Executive Director

EBP Nurse Consultants

Smithfield, Virginia

Chapter 2: Patient Safety and Risk Management

Cecil A. King, MS, RN

RN Medical Case Manager

Infectious Disease Clinical Services

Cape Cod Healthcare

Hyannis, Massachusetts

Chapter 4: Infection Prevention and Control

Rachael Larner, BSN, MSN, RN

Evansville, Indiana

Chapter 29: Integrative Health Practices

Helene P. Korey Marley, BSN, RN, CNOR, CRNFA

Clinical Service Coordinator

Operating Room

Pennsylvania Hospital

Philadelphia, Pennsylvania

Chapter 15: Genitourinary Surgery

Maribeth L. Massie, PhD, MS, CRNA

Program Director/Assistant Professor

Nurse Anesthesiology

Columbia University School of Nursing

New York, New York

Chapter 5: Anesthesia

Donna McEwen, BSN, RN, CNOR(E) (Deceased)

Instructional Designer Consultant

Optum Operations Training

Optum/UnitedHealthcare

San Antonio, Texas

Chapter 19: Otorhinolaryngologic Surgery

Rosalyn McGrath, BSN, MSN, RN, CNOR

Nursing Professional Development Specialist

Perioperative Services

Hospital of the University of Pennsylvania

Philadelphia, Pennsylvania

Chapter 23: Thoracic Surgery

Maureen P. Murphy, MSN, RNFA

Certified Registered Nurse Practitioner, Otolaryngology

Registered Nurse, Perioperative

Nurse Practitioner, Hospital Medicine

Thomas Jefferson University Hospital

Philadelphia, Pennsylvania;

Registered Nurse First Assistant, Perioperative

Capital Health

Pennington, New Jersey

Chapter 21: Neurosurgery

Heidi Nanavati, MSN, FNP-BC, CNOR, RNFA

Nurse Practitioner/Registered Nurse First Assistant

Orthopedic Surgery

Idaho Shoulder to Hand Specialists

Boise, Idaho;

Adjunct Faculty

Delaware County Community College

Media, Pennsylvania

Chapter 6: Positioning the Patient for Surgery

Janice A. Neil, PhD, RN, CNE

Associate Professor Emeritus

College of Nursing

East Carolina University

Greenville, North Carolina

*Chapter 12: Surgery of the Biliary Tract, Pancreas, Liver,
and Spleen*

Chapter 16: Breast Surgery

Jan Odom-Forren, PhD, RN, CPAN, FASPAN, FAAN

Associate Professor

College of Nursing

University of Kentucky

Lexington, Kentucky;

Perianesthesia Nursing Consultant

Louisville, Kentucky

*Chapter 10: Postoperative Patient Care and Pain
Management*

Susan M. Scully, MSN, RN, CNOR

Clinical Expert

Perioperative Complex

Children's Hospital of Philadelphia

Philadelphia, Pennsylvania;

Robotics Coordinator

Perioperative Services

Capital Health – Hopewell

Pennington, New Jersey

Chapter 26: Pediatric Surgery

James D. Smith Jr., BSN

RN First Assistant, Surgery
Missouri Baptist Medical Center
St. Louis, Missouri

Chapter 13: Hernia Repair

Lisa Spruce, DNP, RN, CNS-CP, CNOR, ACNS, ACNP, FAAN

Director, Evidence-Based Perioperative Practice
Nursing Practice
Association of PeriOperative Registered Nurses
Denver, Colorado

Patient Engagement Exemplar boxes

Kathy Trotter, DNP

Associate Professor
School of Nursing,
Duke University;
Nurse Practitioner
Duke Breast Program
Duke Health
Durham, North Carolina

Chapter 17: Breast Surgery

Sharon Ann Van Wicklin, PhD, RN, CNOR, CRNFA(E), CPSN-R, PLNC, FAAN, ISPAN-F

Perioperative and Legal Nurse Consultant
Self-employed
Aurora, Colorado;
Editor-in-Chief
Plastic and Aesthetic Nursing
International Society of Plastic and Aesthetic Nurses
Beverly, Massachusetts

Chapter 18: Ophthalmic Surgery

Chapter 22: Reconstructive and Aesthetic Plastic Surgery

Margaret Emily Vance, MSN, RN, CNOR

Clinical Nurse Education Specialist
Nursing Education/Operating Room
Pennsylvania Hospital—Penn Medicine
Philadelphia, Pennsylvania

Chapter 25: Cardiac Surgery

Dana M. Whitmore, MSN, RN, CNOR

Clinical Nurse Educator
Operating Room
Thomas Jefferson University Hospital
Philadelphia, Pennsylvania

Chapter 21: Neurosurgery

Patricia Wieczorek, MSN, RN, CNOR

Coordinator of Perioperative Nursing Programs
Perioperative Services
The Johns Hopkins Hospital
Baltimore, Maryland

Chapter 24: Vascular Surgery

Clinical Consultants

Lori DiMaggio Beayon, MSN, RN

Lead Clinical Nurse
Surgery
The Johns Hopkins Hospital
Baltimore, Maryland

Chyna Davison, BSN, RN

Staff Nurse
Azura Surgery Center
Philadelphia, Pennsylvania

Adam Flick, BSN, RN

Operating Room Nurse
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania

Lily Gutnik, MPH, MD

Breast Surgical Oncology Fellow
Section of Breast Surgery
Department of Surgery
Duke University Medical Center
Durham, North Carolina

Gail J. Keyser, MSN, CNOR

Nurse Manager
Cardiothoracic Surgery
Children's Hospital of Philadelphia
Philadelphia, Pennsylvania

Sean P. Lerner, DO

Staff Physician
Midwest Ear, Nose, and Throat Surgery
Evansville, Indiana

Jason R. Miller, DPM, FACFAS

Associate Professor
Department of Surgery
Temple University
Philadelphia, Pennsylvania;
Director
Pennsylvania Intensive Lower-Extremity Fellowship
Residency Director
TowerHealth/Phoenixville Hospital
Malvern, Pennsylvania

Christopher E. Otto, MSN, RN, CHFN, PCCN, CCRN

Executive Director
Delaware Nurses Association;
Perioperative Registered Nurse
ChristianaCare
Newark, Delaware

Reviewers

Rebecca Hall, MS, CRCST, CSA, CST, FAST

Surgical First Assistant/Sterile Processing Program
Coordinator
Health and Wellness
Delta College
University Center, Michigan

Trudy Hebb, BScN, MHI, RN, CPN(C), CCNE

Faculty
Perioperative Nursing Program
Interprofessional Practice and Learning
Nova Scotia Health Authority
Halifax, Nova Scotia, Canada

Jillian Richardson, BN, RN, CPN(C)

Academic Coordinator
Department of Interprofessional Simulation and Learning
MacEwan University
Edmonton, Alberta, Canada

Lyanne Faucher Sinclair, BN, MN, RN, CPN(C)

Program Head
School of Nursing
Saskatchewan Polytechnic
Regina, Saskatchewan, Canada

for more ebook/ testbank/ solution manuals requests:

email 960126734@qq.com

This page intentionally left blank

About the Author

JANE C. ROTHROCK, PhD, RN, CNOR, FAAN



Dr. Jane Rothrock has practiced and taught perioperative nursing since 1969. In 1979 she joined the faculty of Delaware County Community College, where she is now an Adjunct Professor in the college's Perioperative Programs. Her current responsibilities include entry-level, postbasic RN education for perioperative nursing. During her more than 40-year tenure at the college, Jane has helped educate more than 4500 registered nurses in the professional practice of perioperative patient care.

Jane's decades of experience include being not only a faculty member but also an author, editor, and speaker. She has taught at the University of Pennsylvania, served as an OR director, and acted as a preceptor for many graduate students. She has authored five perioperative nursing textbooks, published more than 50 articles, and presented on a host of topics to nursing audiences across the United States and internationally. Jane is an AORN past president and chaired AORN's Project Team on Professional Practice Issues, its Project Team on a Professional Practice Model for Perioperative Nursing, and its Perioperative Academic Curriculum Task Force. She also served as an evidence reviewer for AORN's Evidence-based Recommended Practices for Perioperative Patient Care.

Jane has received numerous professional awards and remains very active in both nursing and community organizations. Jane is a past vice chair of NOLE, a past member of the ANCC Magnet Commission, a past president of the ASPAN Foundation, and a past president of the AORN Foundation Board of Trustees. She served on ASPAN's first National Clinical Guideline Panel to develop a Guideline on Prevention of Unplanned Hypothermia in Adult Surgical Patients. In 2000 Jane became a Fellow of the American Academy of Nursing (FAAN). In 2016 she was elected Professor Emerita at Delaware County Community College.

Jane began her nursing education with a diploma from Bryn Mawr School of Nursing. She went on to earn her BSN and MSN from the University of Pennsylvania and became the first recipient of a doctoral degree from Widener University in suburban Philadelphia, earning her PhD in nursing in 1987.

for more ebook/ testbank/ solution manuals requests:

email 960126734@qq.com

This page intentionally left blank

Preface

This updated 17th edition of *Alexander's Care of the Patient in Surgery* reflects new and essential key concepts in perioperative nursing practice and an increased sophistication and complexity in surgical procedures. Its multimedia resource, first introduced in the 13th edition, strongly enhances the elemental goal of this textbook: to provide a comprehensive foundational reference that will assist perioperative practitioners to meet the needs of patients they care for safely, cost-effectively, and efficiently during the perioperative continuum.

As the standard in perioperative nursing for more than 50 years, *Alexander's Care of the Patient in Surgery* is written primarily for professional perioperative nurses, but it is also useful for surgical technologists, nursing students, healthcare industry representatives, medical students, interns, residents, and government officials concerned with healthcare issues. Perioperative nurses, RN first assistants, clinical nurse specialists, nurse practitioners, surgeons, and educators from many geographic areas of North America have served as contributors and reviewers for this text. In doing so, they provide a vast range of perioperative patient care knowledge, procedural information, and wisdom.

This thoroughly revised edition highlights current surgical techniques and innovations. More than 1000 illustrations, including new photographs and drawings, help familiarize the reader with contemporary procedures, methods, and equipment. Classic illustrations, particularly of surgical anatomy, remain to enhance the text. This edition has features highlighting patient engagement and patient-centered communication, Enhanced Recovery After Surgery (ERAS) protocols, and an expanded emphasis on robotic-assisted surgery. Each chapter contains a summary of Key Points and a Critical Thinking Question. There is a thorough laboratory values appendix where readers can review normal lab values and ranges. Readers will again find Ambulatory Surgery Considerations; Evidence for Practice; Patient, Family, and Caregiver Education; Patient Safety; Research Highlights; Sample Plan of Care; and Surgical Pharmacology features, updated to reflect the most current evidence-based practices.

Enhanced in the 17th edition is the Evolve website. With its learner resources, readers are able to access animations, Agency for Healthcare Research and Quality (AHRQ) case studies, answers to the critical thinking questions, interactive study questions, OR Live links, and scenario packets.

Also enhanced in the 17th edition are resources for instructors and clinical educators. Instructor resources contain a lesson plan for each chapter with the following elements: case studies, learning objectives, suggested content for lectures and class activities, clinical learning scenarios for each covered surgical procedure, PowerPoint lecture slides with speaker notes, and an image collection of more than 1000 images to use in teaching. Instructors and clinical educators will also find a test bank with more than 750 questions as well as more than 50 customizable competency assessments for use

in clinical settings or simulation laboratories as learners practice new perioperative nursing skills and techniques. Overall, this textbook imparts state-of-the-art information and resources to reflect contemporary practice and to promote delivery of comprehensive perioperative patient care.

Unit I, Foundations for Practice, provides information about basic principles and patient care requisites essential for all recipients of perioperative patient care. The nursing process, a model for developing therapeutic nursing interventional knowledge, reflects a method that includes the identification of desired patient outcomes. Interest in patient outcomes and their improvement is an essential element of perioperative nursing care. The collection of health data requires clear identification of contributions to patient outcomes and quantification of these contributions. Perioperative nurses must link their interventions to outcomes. This relationship is presented in Chapter 1 and explicated in each Sample Plan of Care throughout the text.

Research Highlights continue to be included in every chapter and reflect the steady increase in the amount and quality of research relevant to perioperative patient care. As current findings of new research are important to use in clinical practice, the editors and authors of *Alexander's Care of the Patient in Surgery* are committed to supporting this research–practice relationship. The Research Highlights will help perioperative nurses implement research findings in their practice and patient care activities.

Chapter 1 also sets the stage for an emphasis on patient, family, and caregiver education and discharge planning throughout the text. Chapters 11 through 29 in Units II and III address specific patient, family, and caregiver education and discharge planning relevant for patients undergoing one or more of the respective specialty surgical procedures. As the responsibilities of perioperative nurses increase with regard to those important care components, it is imperative that we effectively educate patients, their families, and their caregivers. As length of stay in healthcare facilities continues to decrease, patients, families, and caregivers need detailed information to deal appropriately with postoperative needs after discharge. Pain management, addressed in Chapter 10, also appears in many of the chapters on surgical specialties because all perioperative nurses recognize its importance in patient discharge planning.

Chapter 2 focuses on patient safety and risk management, including a review of the use of social media and patient privacy issues. As members of the perioperative team face increasing workloads and workplace stress, this 17th edition emphasizes the need for workplace safety in Chapter 3. When pressure in the surgical suite mounts, perioperative team members may feel the need to work rapidly, even if it means taking shortcuts. The chapter on workplace safety stresses the need for personal safety at work and explores such issues as noise in the OR, active-shooter situations, workplace violence, and bullying. The remaining chapters in Unit I focus on important perioperative precepts guiding infection

prevention; anesthesia; patient positioning; sutures, sharps, and instruments; surgical modalities; wound healing; and caring for the postoperative patient in the PACU and on the transfer unit.

The chapters in *Unit II, Surgical Interventions*, include more than 400 contemporary and traditional specialty surgical interventions, with descriptions of open approaches, minimally invasive surgical procedures, and robotic-assisted surgery. Each chapter provides a helpful review of pertinent anatomy and details the steps of the most common surgical procedures associated with the specialty. Perioperative nursing considerations are again presented within the nursing process framework. Sample Plans of Care for each surgical specialty aim to help perioperative nurses plan, implement, and evaluate individualized perioperative patient care. Each of these chapters also provides an example of Evidence for Practice related to the surgical specialty. Perioperative nurses will find a continuing emphasis on evidence-based nursing as a means to provide care that is effective and yields improved outcomes. The integration of evidence-based practice with the perioperative nurse's individual clinical expertise is the foundation of perioperative patient care. Improving the quality of patient care and effecting safe outcomes are at the heart of all our efforts to achieve excellence in whatever setting we encounter the patient who is undergoing an operative or other invasive procedure.

The inclusion of Surgical Pharmacology reflects an ongoing emphasis on medication safety in the United States. Medication errors can occur anywhere in the medication-use system, from prescribing to administering a drug. *Alexander's Care of the Patient in Surgery* supports the nationwide health professional education campaign that aims to reduce the number of common but preventable sources of medication errors. Providing information about select medications and dosages used in surgical specialties, the Surgical Pharmacology feature is intended to promote safe medication practices and to avoid serious, even potentially fatal, consequences of medication errors by perioperative practitioners.

To further facilitate the perioperative nurse's focus on safe patient care, Patient Safety features in each chapter succinctly review practices to assist perioperative practitioners in developing a core body of knowledge about safe patient care. This feature is designed to raise awareness about applications to increase patient safety and to simultaneously foster communication and ongoing dialogue in perioperative practice settings about recommended patient safety strategies and the need to implement robust process improvement initiatives. In so doing, we hope to improve quality and safety overall in perioperative patient care.

Also included in the 17th edition is information on ERAS protocols. These protocols aim to increase efficiency during all phases of perioperative patient care, decrease length of stay for surgery

patients, and lower the cost of care, while improving outcomes. As applicable to the chapter content, Enhanced Recovery After Surgery features address the evidence-based strategies and merits of such protocols.

The unique needs of pediatric, geriatric, and trauma surgery patients are presented in *Unit III, Special Considerations*. The "Integrative Health Practices" chapter was introduced in the 12th edition. Perioperative nurses frequently encounter patients who use such therapies, some of which are nonpharmacologic and some of which involve medications. This chapter explores alternative medical systems, mind-body interventions, biologically based therapies, manipulative and body-based methods, and energy therapies. Treatments and systems within each category are discussed.

Many expert perioperative practitioners, RN first assistants, clinical nurse specialists, and educators have contributed to this 17th edition, and I owe a debt of gratitude to all of them for sharing their expertise in the development of this text. I give ongoing thanks to my partner, Alan Zulick, Esquire, for his help during copyediting. I also acknowledge the valuable assistance of editors, reviewers, photographers, and illustrators who have contributed their time and expertise to the revision of this text. The team I had the privilege of working with at Elsevier is talented and eager to support perioperative practitioners in their commitment to excellence in patient care. Laura Selkirk, I would clone you and give you as a gift to all my nurse editor colleagues if I could—you walk the entire journey with each edition of this book with supreme aplomb! Donna McEwen, one of my Associate Editors, was not only a masterful editor but also an instructional design expert. Her wit and wisdom are sorely missed. Donna's death left a hole in our hearts. Sharon Van Wicklin is a powerful and talented Associate Editor. The Evolve website is the elegant and robust feature that it is due to her acumen and talent. Mickey Cromb is a registered nurse and instructional designer who developed the test bank. Clearly, I work with a team to be admired and esteemed for their contributions to this edition. I could not have done it without them.

Alexander's Care of the Patient in Surgery is written by and for perioperative nurses. Its premise is underscored by the clear understanding that perioperative nursing is a caring and intellectual endeavor that requires critical thinking, clinical reasoning, technical acumen, and patient advocacy to improve patient outcomes. With the multimedia package accompanying this 17th edition, *Alexander's Care of the Patient in Surgery* invites you to journey with us as we meet the challenges and opportunities of perioperative nursing in the 21st century.

Jane C. Rothrock

Contents

UNIT I Foundations for Practice

1 Concepts Basic to Perioperative Nursing, 1

Richard G. Cuming

Overview of Perioperative Nursing Practice, 1
Standards of Perioperative Nursing Practice, 2
Evidence-Based Practice, 9
Performance Improvement, 10
Perioperative Nursing Roles, 11

2 Patient Safety and Risk Management, 16

Mary Hillanbrand

Evolution of Perioperative Patient Safety, 16
Major Professional Association and Government
Regulatory Safety Activities, 17
Nonprovider Members of the Perioperative Patient
Safety Team, 22
Perioperative Nursing Safety Issues, 22
Risk Management, 22

3 Workplace Issues and Staff Safety, 39

Mary Michaela Cromb

Safe Patient Handling and Movement, 39
Slips, Trips, and Falls, 41
Sharps Safety and Bloodborne Pathogens, 43
Transmission-Based Precautions, 43
Responding to Exposure, 44
Environment of Care Safety, 45
Medication Safety, 48
Radiation Safety, 48
Surgical Smoke Safety, 49
Fatigue and Burnout, 50
Workplace Violence, 50
Incivility/Bullying, 50

4 Infection Prevention and Control, 53

Cecil A. King

Causes of Infection, 53
Infection Prevention in the Perioperative Setting, 64
Aseptic Practices to Prevent Infection, 86

5 Anesthesia, 103

Maribeth L. Massie

Anesthesia Providers, 103
Patient Safety, 103

Awareness During Anesthesia, 105
Distractions in the OR, 105
Preoperative Preparation, 105
Types of Anesthesia Care, 108
Perioperative Monitoring, 109
Anesthesia Machines and Anesthetic Gases, 112
General Anesthesia, 114
Regional Anesthesia, 126
Monitored Anesthesia Care, 130
Moderate Sedation/Analgesia, 130
Local Anesthesia, 130
Pain Management, 131
Fluid Management, 132
Temperature Control, 135
Malignant Hyperthermia, 135
Perioperative Nursing Considerations, 136

6 Positioning the Patient for Surgery, 139

Carol A. Devlin and Heidi Nanavati

Anatomic and Physiologic Considerations, 139
PERIOPERATIVE NURSING CONSIDERATIONS, 155
Operating Room Beds and Accessories, 158
Standard Surgical Positions, 160

7 Sutures, Sharps, and Instruments, 174

Mary Michaela Cromb

Suture, 174
Sharps, 178
Suturing Technique and Wound Closure, 179
Hemostasis, 183
Instruments, 184
Perioperative Nursing Considerations, 192

8 Surgical Modalities, 199

Kay A. Ball

Minimally Invasive Surgery Overview, 199
Video Technology, 210
Practices and Potential Risks During Minimally
Invasive Surgery, 218
Energies Used During Surgery, 220

9 Wound Healing, Dressings, and Drains, 241

Jacqueline R. Bak

Anatomy, 241
Etiology of Wounds, 242
Types of Wound Closure, 242

Phases of Wound Healing, 244
 Factors Affecting Wound Healing, 244
 Wound Classification, 245
 Antimicrobial Prophylaxis, 247
 Patient, Family, and Caregiver Education and Discharge Planning, 248
 Wound Management, 249
 Dressings, 252
 Drains, 254

10 Postoperative Patient Care and Pain Management, 256

Jan Odom-Forren
 Perianesthesia Considerations, 256
 Perianesthesia Complications, 259
 Discharge from the Postanesthesia Care Unit, 274
 Admission to the Ambulatory Surgery Phase II Unit, 276
 Admission to the Surgical Unit, 278
 Postoperative Nursing Considerations, 278
 Patient, Family, and Caregiver Education and Discharge Planning, 280

UNIT II Surgical Interventions

11 Gastrointestinal Surgery, 285

Britta E. DeVolder
 SURGICAL ANATOMY, 285
 PERIOPERATIVE NURSING CONSIDERATIONS, 288
 SURGICAL INTERVENTIONS, 298
 Laparotomy, 298
 Minimally Invasive Surgery: Laparoscopy, 303
 Abdominal Access: Closed Technique, 303
 Abdominal Access: Cutdown or Hasson Technique, 304
 Abdominal Access: Direct Visual Entry, 304
 Single-Incision Laparoscopic Surgery, 305
 Robotic-Assisted Laparoscopy, 305
 Natural Orifice Transluminal Endoscopic Surgery, 307
 Gastrointestinal Endoscopy, 307
 Surgery of the Esophagus, 311
 Surgery of the Stomach, 316
 Bariatric Surgery, 322
 Surgery of the Small Bowel, 325
 Surgery of the Colon, 327
 Surgery of the Rectum, 336

12 Surgery of the Biliary Tract, Pancreas, Liver, and Spleen, 341

Janice A. Neil
 SURGICAL ANATOMY, 341
 PERIOPERATIVE NURSING CONSIDERATIONS, 343

SURGICAL INTERVENTIONS, 350
 Surgery of the Biliary Tract, 350
 Surgery of the Pancreas, 359
 Surgery of the Liver, 365
 Surgery of the Spleen, 371

13 Hernia Repair, 374

James D. Smith, Jr.
 SURGICAL ANATOMY, 374
 Inguinal Hernias, 374
 Femoral Hernias, 376
 Obturator Hernias, 377
 Ventral Hernias, 379
 Umbilical Hernias, 380
 Epigastric Hernias, 380
 Spigelian Hernias, 380
 PERIOPERATIVE NURSING CONSIDERATIONS, 380
 SURGICAL INTERVENTIONS, 385
 Surgery for Repair of Groin Hernias, 385
 Surgery for Repair of Hernias of the Anterior Abdominal Wall, 393

14 Gynecologic and Obstetric Surgery, 398

Amanda A. Buchanan
 SURGICAL ANATOMY, 398
 Female External Genital Organs (Vulva), 398
 Pelvic Cavity, 400
 Bony Pelvis, 401
 Pelvic Floor, 401
 PERIOPERATIVE NURSING CONSIDERATIONS, 402
 Lasers in Gynecologic Surgery, 412
 SURGICAL INTERVENTIONS, 413
 Vulvar Surgery, 413
 Gynecologic Surgery Using Vaginal Approach, 415
 Gynecologic Surgery Using Minimally Invasive Techniques, 426
 Gynecologic Surgery Using the Abdominal Approach, 435
 Surgery for Conditions Affecting Fertility, 443
 Obstetric Surgery, 446
 Abdominal Surgery During Pregnancy, 449

15 Genitourinary Surgery, 454

Helene P. Korey Marley
 SURGICAL ANATOMY, 454
 PERIOPERATIVE NURSING CONSIDERATIONS, 458
 SURGICAL INTERVENTIONS, 467
 Diagnostic and Endoscopic Procedures, 467
 Surgery of the Penis and the Urethra, 469
 Surgery of the Scrotum and Testicles, 477
 Surgery of the Prostate Gland, 480
 Surgery of the Bladder, 498
 Surgery of the Ureters and Kidneys, 514

16 Thyroid and Parathyroid Surgery, 527

Maria Carmencita Abella Duffy

SURGICAL ANATOMY, 527
 Thyroid Gland, 527
 Parathyroid Gland, 528
 PERIOPERATIVE NURSING CONSIDERATIONS, 529
 SURGICAL INTERVENTIONS, 537
 Unilateral Thyroid Lobectomy, Subtotal
 Lobectomy, Bilateral Subtotal Lobectomy,
 Near-Total Thyroidectomy, and Total
 Thyroidectomy, 537
 Thyroidectomy, 538
 Substernal or Intrathoracic Thyroidectomy, 541
 Minimally Invasive Thyroidectomy, 541
 Thyroglossal Duct Cystectomy, 541
 Parathyroidectomy, 542

17 Breast Surgery, 547

Kathy Trotter and Janice A. Neil

SURGICAL ANATOMY, 547
 Benign Lesions of the Breast, 548
 Breast Cancer in Men, 548
 Breast Cancer in Women, 548
 Screening Technologies, 550
 Diagnostic Techniques, 552
 Surgical Treatment Considerations, 553
 PERIOPERATIVE NURSING CONSIDERATIONS, 555
 SURGICAL INTERVENTIONS, 560
 Biopsy of Breast Tissue, 560
 Incision and Drainage for Abscess, 560
 Breast-Conserving Surgery, 561
 Lymph Node Biopsy, 561
 Axillary Lymph Node Dissection, 562
 Subcutaneous Mastectomy, 563
 Simple Mastectomy, 564
 Modified Radical Mastectomy, 564

18 Ophthalmic Surgery, 568

Sharon Ann Van Wicklin

SURGICAL ANATOMY, 568
 Structures of the Eye, 568
 Refractive Apparatus, 571
 Refractive Errors, 571
 PERIOPERATIVE NURSING CONSIDERATIONS, 572
 SURGICAL INTERVENTIONS, 588
 Surgery of the Lens, 588
 Surgery of the Retina, 593
 Surgery for Patients With Glaucoma, 600
 Surgery of the Conjunctiva, 602
 Surgery of the Cornea, 603
 Surgery of the Lacrimal Gland and
 Apparatus, 605
 Surgery of the Eyelids, 607
 Surgery of the Globe and Orbit, 609

19 Otorhinolaryngologic Surgery, 614

Mary Michaela Cromb and Donna McEwen

SURGICAL ANATOMY, 614
 Ear Anatomy, 614
 Nasal Anatomy, 616
 Throat Anatomy, 616
 Proximal Structures, 620
 DIAGNOSTIC STUDIES, 621
 Audiogram, 621
 Imaging, 621
 PERIOPERATIVE NURSING CONSIDERATIONS, 622
 SURGICAL INTERVENTIONS, 633
 Otologic Procedures, 633
 Rhinologic (Nasal) Procedures, 643
 Oral Cavity/Pharyngeal/Laryngeal/Neck
 Procedures, 647

20 Orthopedic Surgery, 664

Helen Dickson

SURGICAL ANATOMY, 664
 Anatomic Structures, 664
 Vertebrae, 665
 Shoulder and Upper Extremity, 665
 Wrist and Hand, 667
 Pelvis, Hip, and Femur, 667
 Knee, Tibia, and Fibula, 668
 Ankle and Foot, 671
 PERIOPERATIVE NURSING CONSIDERATIONS, 671
 SURGICAL INTERVENTIONS, 684
 Allografts and Autografts, 684
 Electrical Stimulation, 685
 Fractures and Dislocations, 686
 Surgery of the Shoulder, 689
 Surgery of the Humerus, Radius, and Ulna, 693
 Surgery of the Hand, 699
 Surgery of the Hip and Lower Extremity, 701
 Surgery of the Lower Leg (Distal Femur, Tibia,
 and Fibula), 707
 Surgery of the Ankle and Foot, 716
 Pelvic Fractures and Disruption, 719
 Total Joint Arthroplasty, 719
 Arthroscopy, 739
 Surgery of the Spine, 746

21 Neurosurgery, 753

Maureen P. Murphy, Dana M. Whitmore, and Sarah J. Germanovich

SURGICAL ANATOMY, 753
 Brain and Adjacent Structures, 753
 Spine, Spinal Cord, and Adjacent Structures, 767
 PERIOPERATIVE NURSING CONSIDERATIONS, 775
 SURGICAL INTERVENTIONS, 790
 Minimally Invasive and Specialized Neurosurgery
 Techniques, 790

Surgical Approaches to the Brain, 793
Surgery of the Brain and Cranium, 793
Surgery of the Spine, 802

22 Reconstructive and Aesthetic Plastic Surgery, 808

Sharon Ann Van Wicklin

SURGICAL ANATOMY, 809
PERIOPERATIVE NURSING CONSIDERATIONS, 809
SURGICAL INTERVENTIONS, 816
Reconstructive Plastic Surgery, 817
Aesthetic Surgery, 838

23 Thoracic Surgery, 852

Rosalyn McGrath

SURGICAL ANATOMY, 852
PERIOPERATIVE NURSING CONSIDERATIONS, 854
SURGICAL INTERVENTIONS, 862
Endoscopy (Diagnostic or Therapeutic), 862
Lung Surgery, 868

24 Vascular Surgery, 878

Patricia Wieczorek

SURGICAL ANATOMY, 878
Arterial Disease, 881
Venous Disease, 883
PERIOPERATIVE NURSING CONSIDERATIONS, 885
SURGICAL INTERVENTIONS, 894
Arterial Surgical Interventions, 894
Venous Surgical Interventions, 907

25 Cardiac Surgery, 911

Cateria Davis-Bruno and Margaret Emily Vance

SURGICAL ANATOMY, 911
PERIOPERATIVE NURSING CONSIDERATIONS, 916
SURGICAL INTERVENTIONS, 958
Extracorporeal Circulation Procedures, 958
Pericardiectomy, 960
Surgery for Coronary Artery Disease, 960
Surgery for Heart Failure, 968
Surgery for the Mitral Valve, 968
Surgery for the Tricuspid Valve, 973
Surgery for the Pulmonary Valve, 975
Surgery for the Aortic Valve, 975
Surgery for the Thoracic Aorta, 979
Assisted Mechanical Circulation, 984
Heart and Heart-Lung Transplantation, 986
Surgery for Conduction Disturbances, 990

Children With Autism Spectrum Disorder, 998
Lesbian, Gay, Bisexual, Transgender, and Queer Youth, 998
PERIOPERATIVE NURSING CONSIDERATIONS, 998
SURGICAL INTERVENTIONS, 1006
Vascular Access, 1007
Minimally Invasive Surgery, 1007
Fetal Surgery, 1012
Metabolic and Bariatric Surgery in Adolescents, 1015
General Surgery: Gastrointestinal Procedures, 1015
General Surgery: Hernias, 1022
General Surgery: Abdominal Procedures, 1024
General Surgery: Resection of Tumors, 1027
Genitourinary Surgery, 1028
Otorhinolaryngologic Procedures, 1034
Neurosurgical Procedures, 1037
Orthopedic Procedures, 1038
Plastic and Reconstructive Surgery, 1042
Pediatric Ophthalmic Surgery, 1047
Trauma, 1051
Surgery for Congenital Heart Disease, 1054

27 Geriatric Surgery, 1066

Sheila L. Allen

PERIOPERATIVE NURSING CONSIDERATIONS, 1068
COMMON SURGICAL INTERVENTIONS IN GERIATRIC PATIENTS, 1083
Thyroid Surgery, 1084
Abdominal Surgery, 1084
Hernia Surgery, 1084
Genitourinary Surgery, 1085
Ophthalmic Surgery, 1085
Orthopedic Surgery, 1085
Vascular and Cardiovascular Surgery, 1086
Additional Considerations, 1086

28 Trauma Surgery, 1089

David P. Gawronski

PERIOPERATIVE NURSING CONSIDERATIONS, 1091
SURGICAL INTERVENTIONS, 1105
Damage Control Surgery, 1105
Injuries of the Head and Spinal Column, 1105
Injuries of the Face, 1108
Injuries of the Eye, 1108
Injuries of the Neck, 1108
Injuries of the Chest and Heart, 1108
Injuries of the Abdomen, 1110
Injuries of the Genitourinary System, 1111
Injuries of the Skeletal System, 1112
Hypothermia, 1113
Thermal Injuries, 1113
Organ and Tissue Procurement, 1113

29 Integrative Health Practices, 1116

Rachael Lerner

Integrative Health Practice Categories, 1116

UNIT III Special Considerations

26 Pediatric Surgery, 995

Susan M. Scully and Francesca Maria Drake

PEDIATRIC SURGICAL ANATOMY, 995
Psychologic Development, 997

Integrative Health Practice Therapies, 1119
Integrative Health Practices for Enhanced Recovery
After Surgery, 1129
Integrative Health Practices and Perioperative
Patient Care, 1129

APPENDIX A Laboratory Values, 1132

Illustration Credits, 1137

Index, 1144

Special Features, 1191

for more ebook/ testbank/ solution manuals requests:

email 960126734@qq.com

This page intentionally left blank

17th Edition

ALEXANDER'S
CARE
of PATIENT
the
in SURGERY

for more ebook/ testbank/ solution manuals requests:

email 960126734@qq.com

This page intentionally left blank

CHAPTER 1

Concepts Basic to Perioperative Nursing

RICHARD G. CUMING

Overview of Perioperative Nursing Practice

Perioperative nursing is the nursing care provided to patients before, during, and after surgical and invasive procedures. Nurses practice this specialty in surgical suites, ambulatory surgery centers, endoscopy suites, laser centers, interventional radiology departments, mobile surgical units, and physicians' offices across the United States and the world. Perioperative nursing includes a broad array of cutting-edge innovations, such as remote surgery, virtual endoscopy, robotics, computerized navigation systems, transplanted tissue and organs, biologic materials that are absorbed to replace worn-out body parts, and radiofrequency identification (RFID). In this high-tech era, perioperative patient care is very different from the way it was in the past.

In the past, the term *operating room (OR) nursing* was used to describe the care of patients in the immediate preoperative, intraoperative, and postoperative phases of the surgical experience (Fig. 1.1). This term implied that nursing care activities were limited to the physical confines of the OR. The term may have contributed to stereotypical images of the OR nurse who took care of the OR and its equipment but had little, if any, interaction or nursing responsibility for medicated and anesthetized patients in the surgical suite. With such an image, nurses practicing outside the OR had difficulty crediting important elements of the nursing process and patient care accountability to nurses who practiced “behind the double doors” of the surgical suite.

Today *perioperative nursing* implies the delivery of comprehensive patient care within the preoperative, intraoperative, and postoperative periods of the patient's experience during operative and other invasive procedures by using the framework of the nursing process. In doing so, the perioperative nurse assesses the patient by collecting, organizing, and prioritizing patient data; establishes nursing diagnoses/problems; identifies desired patient outcomes; develops and implements a plan of nursing care; and evaluates that care in terms of outcomes achieved by and for the patient. Throughout the process, the perioperative nurse functions both independently and interdependently. As with nurses in other specialties, the perioperative nurse collaborates with other healthcare professionals, makes appropriate nursing referrals, and delegates and supervises other personnel in providing safe and efficient patient care.

When nurses practice perioperative nursing in its broadest sense, care may begin in the patient's home, a clinic, a physician's office, the patient care unit, the presurgical care unit, or the preoperative holding area. After the surgical or invasive procedure, care may continue in the postanesthesia care unit (PACU), and evaluation

of patient outcomes may extend onto the patient care unit, in the physician's office, in the patient's home, in a clinic, or through written or telephone patient surveys.

When nurses practice perioperative nursing in its more limited sense, patient care activities may be confined to the common areas of the surgical suite. Assessment and data collection may take place in the preoperative holding area, whereas evaluation may take place on discharge from the OR. Regardless of the way nurses practice perioperative nursing in a healthcare setting, it is based on the nursing process and foundations of professional nursing practice.

The perioperative nurse functions as a patient advocate during times of vulnerability. This specialty requires a broad knowledge base, instant recall of nursing science, an intuitive ability to be guided by nursing experience, diversity of thought and action, and great stamina and flexibility. Whether a generalist or a specialist, the perioperative nurse depends on knowledge of surgical anatomy, physiologic alterations and their consequences for the patient, intraoperative risk factors, potential for and prevention of patient injury, and psychosocial implications of surgery for the patient, family, and caregiver. This knowledge enables the perioperative nurse to anticipate needs of the patient and surgical team and rapidly initiate safe and appropriate nursing interventions. This too is part of patient advocacy, that is, doing for the patient what needs to be done to provide a safe and caring environment. The Association of periOperative Registered Nurses (AORN) has asserted the significance of such safety by reaffirming that staffing of healthcare personnel must ensure that patients undergoing surgical and invasive procedures have a perioperative nurse as circulator in the OR, and that the core activities of perioperative nursing care (assessment, diagnosis, outcomes identification, planning, and evaluation) be completed by a perioperative registered nurse (AORN, 2019).

A significant part of perioperative nursing is the delivery of science-based care. Such care implies an understanding of the rationale for certain activities and interventions; knowledge of how and when to implement them; and the skills to evaluate safety, cost-effectiveness, and outcomes of the care delivered. This knowledge empowers the perioperative nurse to anticipate and prepare for steps of the surgical procedure and understand their concomitant implications for the patient and the surgical team. Scientific nursing interventions; critical thinking and clinical reasoning; and caring, comforting behaviors are at the heart of perioperative nursing. Unit II of this book focuses on surgical procedures common to inpatient and ambulatory settings. Each chapter in Unit II contains a Sample Plan of Care with suggested nursing interventions. A fundamental assumption throughout this book is that perioperative nursing is



FIG. 1.1 *The Agnew Clinic*, by Thomas Eakins, 1889. In this painting, reforms and advancements in surgical techniques and procedures are apparent. Surgeons wear gowns, instruments are sterilized, ether is used, and the patient is covered. An operating room nurse is a prominent member of the team.

a blend of technical and behavioral care and that critical thinking underpins caring for patients professionally. Quality nursing care is dependent on nurses' ability to think critically (Raymond, Profetto-McGrath, Myrick, & Streat, 2018). Critical thinking requires purposeful, outcomes-directed thought and is driven by patient need. It is based on the nursing process and nursing science. Further, critical thinking requires knowledge, skills, and experience guided by professional standards and ethics and grounded in constant reevaluation, self-correction, and persistent effort to improve.

Perioperative Patient Focused Model

AORN has developed a model to describe the important relationship between the patient and the perioperative nursing care provided. The Perioperative Patient Focused Model (AORN, 2015) consists of domains or areas of nursing concern including nursing diagnoses/problems, nursing interventions, and patient outcomes. These domains are in continuous interaction with the health system that encircles the focus of perioperative nursing practice—the patient (AORN, 2015).

Three of these domains (behavioral responses, patient safety, and physiologic responses) reflect phenomena of concern to perioperative nurses and comprise the nursing diagnoses, interventions, and outcomes that surgical patients or their families experience. The fourth domain, the health system, comprises structural data elements and focuses on clinical processes and outcomes.

The model illustrates the dynamic nature of the perioperative patient experience and the nursing presence throughout that process. Working in a collaborative relationship with other members of the healthcare team and the patient, the nurse establishes desired outcomes, identifies nursing diagnoses/problems, and provides nursing care. The nurse intervenes within the context of the healthcare system to help the patient achieve the highest attainable health outcomes (physiologic, behavioral, and safety) throughout the perioperative experience.

The model emphasizes the outcomes-driven nature of perioperative patient care. Perioperative nurses possess a unique understanding of desired outcomes that apply to all surgical patients. In contrast to some nursing specialties in which nursing diagnoses are derived from signs and symptoms of a condition, much of perioperative nursing care is preventive in nature and based on knowledge of risks inherent to patients undergoing surgical and invasive procedures. Perioperative nurses identify these risks and potential problems in advance and direct nursing interventions toward prevention of undesirable outcomes, such as injury and infection. Thus the plans of care in this book begin with Desired Outcomes. Based on an individual patient assessment, the perioperative nurse identifies risks and relevant nursing diagnoses/problems. This information guides nursing interventions for each patient. From admission through discharge and home follow-up, the perioperative nurse plays a major role in managing the patient's care. Research based on AORN's Perioperative Patient Focused Model continues to test and validate the contributions of perioperative nurses to patient outcomes in the variety of settings in which this nursing specialty is practiced.

Standards of Perioperative Nursing Practice

Perioperative nursing is a systematic, planned process performed in a series of integrated steps. For professional nursing, national standards establish the full expectations of the professional role within which nurses practice. In the 1960s, the American Nurses Association (ANA) engaged in standards development. First published in 1973, these standards helped shape nursing practice. Specialty nursing organizations, including AORN, have worked with the ANA to develop their own standards and guidelines using the ANA framework. This collaboration has resulted in the use of common language and a consistent format for the profession.

Perioperative Nursing Practice Standards

AORN (2015) has developed a set of standards for perioperative nursing (Box 1.1). These standards are authoritative statements that define and enumerate the responsibilities for which perioperative nurses are accountable. The standards represent a comprehensive approach to meeting the healthcare needs of surgical patients and relate to nursing activities, interventions, and interactions. They are used to explain clinical, professional, and quality objectives in perioperative nursing. The *Guidelines for Perioperative Practice* contain recommendations for implementing perioperative patient care based on a comprehensive appraisal of both research and non-research evidence. They complement the *Standards of Perioperative Nursing*, which are based on and describe the application of the nursing process in perioperative nursing. The guidelines include the collection and analysis of health data, identification of expected outcomes, planning and implementation of patient care, and evaluation of the effects of this care on patient outcomes.

AORN's (2015) *Standards of Perioperative Nursing* require, in part, that the perioperative nurse evaluate the effectiveness of nursing practice and the quality of that practice. These standards also require perioperative nurses to evaluate their own practice. Achieving certification (certified nurse, operating room [CNOR]), pursuing lifelong learning, and maintaining competency and current knowledge in perioperative nursing are hallmarks of the professional. The guidelines focus on the importance of evidence-based practice (EBP) and participation in the generation of new knowledge through research. The pace and complexity of advances in surgical procedures, minimally invasive surgery, robotics, new

BOX 1.1**Standards of Perioperative Nursing**

- *Focus*: providing perioperative patient care and performing professional role responsibilities
- *Responsibility*: each perioperative nurse, with appropriate working conditions and resource support
- *Underlying themes*:
 - Perioperative nursing care is individualized to unique patient needs and situations.
 - Care is provided in the broad context of injury prevention.
 - Cultural, racial, and ethnic diversity, along with the patient's preferences and goals, is always taken into account when planning and providing perioperative nursing care.
- *Conceptual framework for practice*: The Perioperative Patient Focused Model
- *Nursing process underpinning*: assessment, diagnosis/problem, planning, implementing the plan of care, and evaluating the patient's progress toward outcomes
- *Quality and appropriateness of practice emphasis*: systematically evaluated
- *Evaluation of own practice*: in the context of current professional standards, rules, and regulations
- *Collegiality*: demonstrated when interacting with peers, colleagues, and others
- *Collaboration*: takes place with the patient and other designated personnel when practicing professional nursing

Modified from and reprinted with permission from *Guidelines for Perioperative Practice*. Copyright © 2022, AORN, Inc. All rights reserved.

technologies, professional nursing issues, ongoing healthcare reform measures, continuing changes in evidence-based recommendations for practice, and the burgeoning body of nursing research demand constant professional education and development. Perioperative professionals must continue to research patient outcomes, link nursing interventions to outcomes, and develop methods that conserve resources when implementing interventions.

Nursing Process

Looking at nursing as a process brings it into perspective as a system of critical thinking that provides the foundation for nursing actions (Fig. 1.2). The focus of the nursing process is the patient, and prescribed nursing interventions are those that meet patient needs. Using the nursing process directs the perioperative nurse's focus on the patient by using clinical skills and knowledge to care for the patient and make independent judgments and clinical decisions. Use of the nursing process, nursing plans of care, clinical pathways, and best practices (discussed later in this chapter) is an integral part of patient care.

In its simplest form, the nursing process consists of the following six steps: assessment, nursing diagnosis/problem, outcome identification, planning, implementation, and evaluation. The process is dynamic and continual. Certain responsibilities are inherent in the nursing process: (1) providing culturally and ethnically sensitive, age-appropriate care; (2) maintaining a safe environment; (3) educating patients and their families; (4) ensuring continuity and coordination of care through discharge planning and referrals; and (5) communicating information.

Assessment

Assessment is the collection and analysis of relevant health data about the patient. Sources of data may be a preoperative interview

Assessment...

Review medical record, validate important findings, corroborate with patient. Analyze, interpret, and prioritize information.

Nursing Diagnosis...

Synthesize data collected; then label clinical judgment about the patient as a nursing diagnosis. Can be actual or risk for. Based on patient assessment and perioperative nurse's clinical reasoning and critical thinking.

Outcome Identification...

Because perioperative nursing is largely preventive, generic outcomes have been identified that apply to all patients undergoing an operative or other invasive procedure. Additional outcomes are identified based on individual patient assessment and nursing diagnosis. Some outcomes are mutually formulated by the nurse and patient. Guide implementation of nursing interventions. Should be specific, realistic, and measurable.

Planning...

Incorporate information into a plan for the patient's care. Identify nursing interventions to achieve identified outcomes.

Implementation...

Carry out nursing plan of care. Gather equipment and supplies; participate in/guide/supervise patient preparation, transfer to OR bed, anesthesia induction, antimicrobial skin preparation, draping, patient positioning, time-out, monitoring of physiologic alterations during surgery, and patient discharge (transfer from OR bed, hand off to PACU or other postoperative unit).

Evaluation...

Determine whether outcomes were met; use outcome statements. Incorporate outcomes that have been met and those that are pending in hand-off report to nurse in PACU discharge area.

FIG. 1.2 The steps of the nursing process are interrelated, forming a continuous cycle of thought and action. *OR*, Operating room; *PACU*, postanesthesia care unit.

with the patient and the patient's family; review of the planned surgical or invasive procedure; review of the patient's medical record; review of the results of diagnostic tests; and consultation with the surgeon and anesthesia provider, inpatient unit nurses, or other personnel. Data collection focuses on these major elements: (1) the patient's current diagnosis, physical status, and psychosocial status (including literacy, language skills, and spiritual, ethnic, cultural, and lifestyle information relevant to the delivery of patient-specific care); (2) previous hospitalizations or surgical interventions and serious illnesses; and (3) the planned surgical or invasive procedure

PATIENT SAFETY

Involving Patients in Marking the Surgical Site

Perioperative nurses value the goal of patient safety. One way to facilitate this goal is to improve involvement of patients in their care through information and education. TJC's NPSGs and its Speak Up campaigns are safety initiatives that encourage patients and their advocates to take an active role in their healthcare. *Speak Up™ For Safe Surgery* offers a patient the following information about marking the surgical site and the time-out:

- A healthcare professional will mark the spot on your body on which the surgeon will operate. Make sure that only the correct part and nowhere else is marked. This helps avoid mistakes.
- Marking usually happens when you are awake. Sometimes you cannot be awake for the marking. If this happens, a family member or friend or another healthcare worker can watch the marking. They can make sure that your correct body part is marked.
- Your neck, upper back, or lower back will be marked if you are having spine surgery. The surgeon will check the exact place on your spine in the OR after you are asleep.
- Ask your surgeon whether they will take a "time-out" just before your surgery. This is done to make sure the surgeon does the right surgery on the right body part on the right person.

NPSG, National Patient Safety Goals; OR, operating room; TJC, The Joint Commission. Modified from The Joint Commission. (2020). *Speak Up™ For Safe Surgery* (website). <https://www.jointcommission.org/resources/for-consumers/speak-up-campaigns/for-safe-surgery>. (Accessed April 25, 2021).

and the patient's understanding of this plan. Implementing patient-centered care requires the perioperative nurse to encourage the patient's active involvement in their care as part of patient safety. Of primary importance are the understanding of the scheduled procedure by the patient and their family and the patient's participation in activities such as marking the surgical site (Patient Safety) (the Universal Protocol for Preventing Wrong Site, Wrong Procedure, and Wrong Person Surgery, along with other National Patient Safety Goals, is discussed in [Chapter 2](#)) ([The Joint Commission \[TJC\], 2022](#)). The perioperative nurse also assesses risk factors that may contribute to negative outcomes.

The perioperative nurse proactively reports any concerns (e.g., abnormal laboratory values, or issues related to the patient's lack of understanding of the planned procedure) to the surgeon, documents all data collected, and notes any referrals that they make.

Assessment formats vary among institutions but always include the physiologic and psychosocial aspects of the patient. In some settings, the assessment is done in stages by one or more perioperative nurses. A perioperative nurse may perform an assessment in the presurgical care unit or by telephone before the day of surgical admission. In such cases, the nurse in the OR verifies parts of the assessment previously done and completes the remainder. For a perioperative nurse caring for a healthy patient, assessment may mean only a thoughtful, brief review of the assessments previously done; a short patient interview; review of the medical record and surgical procedure; and a mental rehearsal of the resources and knowledge necessary to support the patient successfully through an operative procedure or any other invasive procedure. At other times, the perioperative nurse assesses all aspects of the patient and the patient's condition thoroughly.

When developing guidelines for preoperative assessment; patient, family, and caregiver education; and discharge planning, the perioperative nurse considers the following:

- What is the best EBP?
- Is relevant, concise patient information already available to the perioperative nursing staff?
- Is enough information available for perioperative nurses to consider patient care needs when preparing the OR (e.g., special equipment, accessory items, instruments, sutures)?
- Is enough time available to initiate a meaningful perioperative nurse–patient interaction?
- Are surgical patients satisfied with their perioperative nursing care (do they express feelings of comfort and satisfaction regarding their care in the surgical setting)? Do they have knowledge of the perioperative nurse's role?
- Is there continuity of care between the perioperative unit and other nursing care areas?

Being able to exchange information about patients in face-to-face meetings, by telephone, or by written messages is helpful for unit and perioperative nurses. A thorough assessment made and recorded by the preoperative nurse can accompany patients to the OR and serve as a guide for the perioperative nurse, who then completes a more focused preoperative patient assessment. With the growing number of ambulatory surgery procedures, preoperative assessment is often integrated with preadmission testing. Some institutions hold group preoperative sessions. These not only help nurses get to know the patients, but also permit nurses to impart information on common routines, reactions, sensations, and nursing procedures that will take place preoperatively, intraoperatively, and postoperatively. The perioperative setting determines the type of interaction that occurs. The use of preoperative phone calls and online questionnaires has gained wide acceptance. The important point is that some form of assessment; patient, family, and caregiver education; and discharge planning are done. The facility and nursing staff determine how to accomplish this.

Assessment requires that the nurse know and understand the patient as a feeling, thinking, and responsible individual who is a candidate for a surgical or invasive procedure. Data identified through assessment help the perioperative nurse meet unique patient needs throughout the surgical intervention. Based on data collected, recorded, and interpreted during patient assessment, the perioperative nurse then formulates a nursing diagnosis/problem statement.

Nursing Diagnosis/Patient Problem

Nursing diagnosis is the process of identifying and classifying data collected in the assessment in a way that provides a focus for planning nursing care. Nursing diagnoses have evolved since they were first introduced in the 1950s. Today they are identified, named, and classified according to human response patterns and functional health patterns. The authoritative organization responsible for delineating the accepted list of nursing diagnoses is the North American Nursing Diagnosis Association International (NANDA-I). Each NANDA-I–approved nursing diagnosis has a set of components including a definition of the diagnostic term, its defining characteristics (i.e., the pattern of signs and symptoms or cues that make the meaning of the diagnosis clear), and its related or risk factors (i.e., causative or contributing factors that are useful in determining whether the diagnosis applies to a particular patient). For perioperative patients, many nursing diagnoses are "risk" or "potential" diagnoses, which means they are not evidenced

- Mini-thoracotomy, in cardiac surgery, 942, 942f, 991, 991f
- Minocycline, for chemical pleurodesis, 866t
- Miotics, 577t–583t
- Miscarriage
definition of, 423b
supporting patients through, 423b
- Mitomycin, 577t–583t, 601–602
- Mitral regurgitation, 969
annuloplasty for, 969, 970f
valvuloplasty for, 969, 971f
- Mitral stenosis (MS), 968–969
- Mitral valve, 923t
anatomy of, 914, 914f, 915f
bioprostheses, 930–931
repairs, 968–969
rings and bands for, 935f
surgery for, 968–973
- Mitral valve replacement (MVR), 969–973, 971b–972b, 974f
sternal retractors for, 927, 928f
- Mitral valvuloplasty, 969
- Mixed hearing loss, 621t
- Mobile army surgical hospital (MASH) units, 1089
- Moderate hypothermia, 1113
- Moderate sedation/analgesia, 108–109, 130
- Modified Heller myotomy, 313
- Modified radical mastectomy, 564–566, 565f
- Modular Austin-Moore endoprosthesis, for femoral head, 706f
- Mohs surgery, 818–819
- Moisture, 139–145
- Monitored anesthesia care, 108, 130
- Monitoring
anesthetic, 109–112, 109b–110b
in cardiac surgery, 937–940
in neurosurgery, 781
in thoracic surgery, 858
in vascular surgery, 888
- Monochromatic light, 226–227
- Monofilament, 175f
- Monofocal IOL, 590b
- Mons pubis, 398
- Motor cortex, 757
- Motor vehicle collision (MVC), 1091, 1091f
- Mouth, 616, 617f
- Movement assessment, 1094b
- Moxifloxacin, 577t–583t
- Multidrug-resistant organisms (MDROs), 53–54
- Multidrug-resistant tuberculosis (MDR-TB), 61–62
- Multifilament, 175f
- Multifocal intraocular lens, 590b
- Multifocal IOL, 590b
- Multimodal analgesia, 297
in perioperative setting, 861b
- Multiplanar procedure, 718
- Munro Scale, 142
- Mupirocin, for otorhinolaryngologic surgery, 629t–630t
- Murmurs, 914
- Muscles, 664
of eye, 568, 569f
intercostal, 852, 853f
laryngeal, 619, 619f
of neck, 620
- Musculoskeletal disorders (MSDs)
incidence of, 40
work-related, 39–40
- Musculoskeletal system. *See also* Orthopedic surgery
in elderly, 1072
injuries to, traumatic, 1094b
- Mushroom catheter, 464, 464f
- Music therapy, 1122–1123, 1123b
- Mycobacterium chimaera*, 62
associated with heater-cooler systems, 951b
- Mycoplasma, 85
- Mydriatics, 577t–583t
- Myelin sheath, 754f
- Myelography, 778
- Myelomeningocele, 1037–1038, 1037f
fetal surgery for, 1012, 1012f, 1013t
- Myocardial ischemia, in cardiac surgery, 955t–956t
- Myocardial pacing electrodes, insertion of, 992
- Myocardial protection, in cardiac surgery, 950–951
- Myocardium
anatomy of, 911, 913f
contraction and relaxation of, 914, 915f
- Myocutaneous flaps, 662
for breast reconstruction, 828–829
- Myoma, pedunculated cervical, 423–424
- Myomectomy, 438, 438f
- Myometrium, 400
- Myopia, 571, 572f
- Myringotomy, for otologic surgery, 634–636, 635f, 636f
- Myxedema coma, 1084
- N**
- Nail fixation with, for tibial shaft fracture, 693–695, 694f, 709–710, 715f
- Nares, 616
- Naropin. *See* Ropivacaine
- Narrow angle glaucoma, 600
- Nasal cartilage, 616, 616f
- Nasal cavity, 616, 616f
- Nasal decolonization, 59
- Nasal fracture, closed reduction of, 644, 645f, 833
- Nasal polypectomy, 646–647, 646f
- Nasal polyps, 646, 646f
- Nasal septum, 616, 616f
submucous resection of, 644, 644f
- Nasal sinuses, 616, 617f
surgery of, 644–647
balloon sinuplasty as, 646, 646f
Caldwell-Luc with antrostomy as, 647, 647f
endoscopic transnasal repair of cerebrospinal fluid leak as, 647
functional endoscopic, 645–646, 645f
nasal polypectomy as, 646–647, 646f
- Nasolacrimal duct procedures, 606
- Nasopharynx, 617, 618f
- Nasoseptoplasty, 644, 644f
- National Center for Complementary and Alternative Medicine (NCCAM), 1116, 1117b
- National Institute for Occupational Safety and Health (NIOSH), 40
lifting equation, 41
- National Institutes of Health (NIH), 19
- National Patient Safety Goals (NPSGs), 17–18
- National Pressure Ulcer Advisory Panel guidelines, 140t
- National Surgical Quality Improvement Project (NSQIP), 344b
- Native tissue repairs, 387
- Natriuretic peptides, 917
- Natural orifice transluminal endoscopic surgery (NOTES), 203–204, 204b, 307
- Naturopathic medicine, 1118
- Navicular bone, 667, 671, 672f
- Near-infrared fluorescence, 544b
- Nearsightedness, 571, 572f
- Near-total thyroidectomy, 537–538
- Neck
giant neck mass, fetal surgery for, 1013t
lymphatic system of, 620, 620f, 621f
musculature of, 620
radical dissection of, 659–661, 660f
modified, 661, 661f
surgery for
draping for, 631
positioning in, 627
traumatic injury to, 1108
- Necrotic bowel, 1018f
- Necrotizing enterocolitis, 1018, 1018f
- Needle(s), 127, 127f, 178–179
ablation, transurethral, 486
holders, 186
for pediatric surgery, 1004
- Needle (wire)-localization breast biopsy (NLBB), 560
- Needle localization, in mammography, 551–552
- Needlestick injuries (NSIs), 179
- Negative pressure wound therapy, 250, 250f
closed-incision, 296b
for patients with diabetes, 824b
- Negativity, 140
- Neglect, 1001, 1001b
- Neobladder, orthotopic ileocolic, 510–512
- Neosporin, for burn therapy, 821t
- Nepafenec, 577t–583t
- Nephrectomy
home care after, 466b
laparoscopic, 518–519, 519f
laparoscopic partial, 519–520
open approach to, 517–518, 518f
radical, 520
- Nephroblastoma, 1027–1028
- Nephrolithotomy, percutaneous, 516
- Nephroureterectomy, 517
- Nerve blocks
ocular, 584–585
peripheral, 128–129

- Nerves, of eye, 568
- Nerve supply, of female reproductive system, 402
- Nervous system
- anatomy of, 753
 - assessment of, 775–790, 776*t*
 - diagnostic procedures in, 776–778, 776*f*, 777*f*
 - in elderly, 1074–1075
- Neuralgia, trigeminal, 767
- Neural tracts, 772*f*
- Neurectomy, 387
- Neuroblastoma, 1028
- resection of, 1028
- Neurocognitive dysfunction, in cardiac surgery, 955*t*–956*t*
- Neuroendoscopy, 790
- Neuroleptic malignant syndrome (NMS), 136
- Neuromas
- acoustic, 640
 - intradural, 770
- Neuromuscular blocking drugs, 120–121
- Neurons, 775
- Neurosurgery, 753–807
- anesthesia concerns in, 782–783
 - approaches to brain, 793
 - of brain and cranium, 793–802
 - for arteriovenous malformation, 799
 - cranioplasty, 802
 - craniotomy, 795–797, 796*f*, 797*f*
 - epidural or subdural hematoma evacuation, 795
 - for intracranial aneurysm, 797–799, 798*f*
 - retromastoid craniectomy for
 - microvascular decompression of trigeminal nerve, 801
 - suboccipital craniectomy for posterior fossa exploration, 799–801, 800*f*
 - for suprasellar and parasellar tumors, 799
 - transsphenoidal hypophysectomy, 801
 - ventricular catheter and shunt placement for hydrocephalus, 793–795, 794*f*
 - draping for, 785
 - dressings in, 787
 - endovascular, 790–791
 - equipment for, 779–781, 780*f*, 781*f*, 782*f*
 - hemostasis and visualization during, 785–787, 786*f*, 787*f*, 788*t*
 - instrumentation, implants, and supplies in, 781–782, 782*f*
 - lumbar and ventricular drains for, 783
 - microneurosurgery and, 790
 - minimally invasive, 790–793
 - neuroendoscopy and, 790
 - neuromonitoring during, 783
 - patient, family, and caregiver education and discharge planning in, 788–789, 789*b*
 - pediatric, 1037–1038
 - perioperative nursing considerations in, 775–790
 - assessment in, 775–790, 776*t*, 777*f*
 - implementation in, 779–787
 - outcome identification in, 778, 779*b*
 - patient problems, 778
 - planning in, 778–779
- Neurosurgery (*Continued*)
- positioning for, 783–785, 784*b*
 - preliminary procedures in, 782–783
 - skin preparation for, 785
 - of spine, 802–806
 - anterior cervical decompression and fusion, 802–803, 803*f*
 - anterior thoracic approach for, 804
 - intrathecal pump therapy, 806
 - laminectomy, 804–805, 805*f*
 - laminotomy, 805
 - posterior cervical approach for, 803–804
 - spinal cord stimulators, 805–806
 - stereotactic, 792
 - radiosurgery and, 791
 - surgical anatomy in, 753
 - brain and, 756–761, 757*f*, 758*f*, 759*f*
 - cerebral blood supply and, 762–764, 763*f*
 - cranial nerves and, 764–767, 766*f*, 768*t*
 - meninges and, 755–756
 - peripheral nerves and, 772–775
 - scalp and, 753–754, 754*f*
 - spine, spinal cord, and adjacent structures, 767–775
 - surgical pharmacology in, 788*t*
 - sutures in, 787
- Neurotransmitter inhibitors, 462*t*–463*t*
- Neurovascular status, musculoskeletal traumatic injury, 1094*b*
- Neutral plasma coagulator, 238
- Neutral zone, 193
- New York Heart Association's Functional Classification System (NYHA Classes), 916, 916*b*
- Nipple-areolar complex (NAC), 548, 563
- Nipple discharge, 548
- Nipple, reconstruction of, 828*f*, 829, 831*f*
- Nipple-sparing mastectomy (NSM), 561*b*
- Nipple-sparing techniques, 563
- Nissen fundoplication procedure, 315, 315*f*
- Nitrous oxide (N₂O), 599–600
- N95 mask
- filtration, fit, and proper, respirator use, 45*b*
 - plastic handle reduces pressure injury, 44*f*
- Noise, 47–48
- Nonabsorbable suture, 175–177
- characteristics of, 176*t*
 - classification, 176
- Nonagenarians, 1085–1086
- Noncemented hip reconstruction, 722–725, 723*f*–725*f*
- Noncritical items, 74
- Nondepolarizing muscle relaxants, 115*t*–119*t*, 121
- Noninflatable (semirigid) prosthesis, penile, 475
- Nonperforating towel clamp, 186
- Nonphacoemulsification ECCE, 592
- Nonproliferative diabetic retinopathy (NPDR), 594
- Nonsteroidal antiinflammatory drugs (NSAIDs), topical, 577*t*–583*t*
- Nontoothed forceps, 185–186
- Nontoxic nodular goiter, 537
- Nonwoven wrappers, 77
- Norcuron. *See* Vecuronium
- Norfloracin, 577*t*–583*t*
- Normal-pressure hydrocephalus (NPH), 762
- North American Nursing Diagnosis Association International (NANDA-I), 4–5
- Norwood procedure, 1060–1062, 1061*f*
- Nose
- anatomy of, 616, 616*f*, 617*f*
 - foreign-body removal from, 1035–1036
- Nothing-by-mouth (NPO), 108
- No-touch technique, 193
- Nurse(s)
- advanced practice registered, 14
 - circulating, 13
 - clinical nurse specialist, 14
 - emerging roles of, 14
 - as patient advocate, 1
 - registered nurse first assistant, 7–8, 13
- Nurse anesthetist, 103
- Nurse educator, 999*b*
- Nursing diagnosis, 3*f*, 4–5
- Nursing informatics, 14
- Nursing Interventions Classification (NIC), 181
- Nursing process, 3–10, 3*f*, 4*b*, 5*b*, 6*b*, 6*f*, 7*b*, 8*b*, 9*b*, 10*b*
- assessment of, 3–9
 - evaluation, 3*f*, 9, 10*b*
 - implementation, 3*f*, 6–9, 8*b*, 9*b*
 - nursing diagnosis, 3*f*, 4–5, 5*b*
 - outcome identification, 3*f*, 5, 5*b*
 - planning, 3*f*, 5–6, 6*f*
- Nursing roles, perioperative, 11–14
- Nutritional status
- in elderly, 1070
 - in otorhinolaryngologic surgery, 623
- Nylon suture, 176
- O**
- Obesity
- abdominoplasty and, 842–844
 - bariatric surgery in, body contouring after, 844, 845*f*
 - hernia, perioperative nursing care, 394*b*
 - positioning in, 153–154, 153*b*
 - traumatic injury and, 1102
 - weight reduction surgery, 322–325
 - adjustable gastric band and gastric balloons, 322
 - biliopancreatic diversion configuration, 324*f*
 - complications of, 324*t*
 - duodenal switch, 324*f*
 - laparoscopic Roux-en-Y gastric bypass (LRYGB), 322–325, 323*f*
 - laparoscopic sleeve gastrectomy (LSG), 323
 - Roux limb, retrocolic and retrogastric position., 323*f*
- Oblique fracture, 686, 687*f*
- of femoral shaft, 707*f*

- Oblique inguinal incision, 300–302
incision complications, 302–303
nerve injury, 302–303
wound dehiscence, 302
McBurney incision, 300
subcostal incision, 300–301, 301*f*
thoracoabdominal incision, 301, 301*f*
transverse incisions, 302
- Oblique muscles, 568
- Obstetric surgery, 446–449
abdominal, 449–451
cervical cerclage in, 447–449, 449*f*
instrumentation for, 407
perioperative nursing considerations to, 402–412
positioning for, 407–409
prepping for, 409
surgical anatomy in, 398–400, 398*f*, 399*f*
surgical pharmacology for, 447*b*–448*b*
- Obstructed pathways, 42
- Obstruction, airway, 873*f*
- Obstructive sleep apnea, 652, 652*f*
perianesthesia complications, 261
- Obturator hernia
anatomy and limits, 378*f*
bowel obstruction in, 377*b*
characteristics, 377–379
- Obturator nerve, 151
- Occipital bone, 754–755, 755*f*, 756*f*
- Occluding clamps, 186
- Occupational exposure, to bloodborne pathogens, 64–72
- Occupational Safety and Health Administration (OSHA), 49
- Ochsners, 186
- Octogenarians, 1085–1086
- Ocular regional block, 584–585, 584*f*
- Oculomotor nerve, 568, 765, 766*f*, 768*t*
- Oculoplastics, 1047
- Off-pump coronary artery bypass graft surgery, 917*b*, 960
- Ofloxacin, 577*t*–583*t*
- Olecranon, 667
fracture of, 697, 697*f*
osteotomy of, for distal humeral fracture, 680, 697
- Olfactory nerve, 764, 768*t*
- Olfactory tract, 766*f*
- Oligodendroglioma, 760
- Omentum, 286
- Omphalocele, 1024, 1024*f*
repair of, 1025
- Oophorectomy, 443–444, 443*f*, 444*f*
- Oophorocystectomy, 443–444, 443*f*, 444*f*
- Open abdominal incisions, 298–299, 298*f*
- Open-angle glaucoma, 600
- Open approach cholecystectomies, 341
- Open breast biopsy, 560
- Open commissurotomy, 968–969
- Open fetal surgery, 1012*f*, 1014–1015, 1014*b*, 1014*f*
- Open fractures, 686
- Open neck procedures, laryngeal, 656–663
- Open reduction
for developmental dysplasia of the hip, 1039
of mandibular fractures, 835–836
- Open reduction and internal fixation (ORIF), 689, 690*f*
for distal humeral fracture, 696–697
- Open repair, in descending thoracic aortic aneurysm, 984, 985*f*–986*f*
- Open surgery *vs.* minimally invasive surgery, 199*t*
- Open-tension free 3-D Cooper's ligament repair, 391, 391*f*
- Open thoracostomy, 874–875
- Open thyroidectomy, 539–541, 539*f*
minimally invasive, 541
- Open ventral hernia repair, 395–396
components separation technique, 395*f*
operative procedure, 396
- Open wound, of thorax, 859*f*
- Operating room (OR)
for cardiac surgery, 926
admission to, 937
nursing, 1, 2*f*
for otorhinolaryngologic surgery, 621
- Operating room (OR) bed
Andrews, 676, 676*f*
fracture, 676, 677*f*
positioning, 158–159
- Operating room (OR) nursing, 1
- Operating room (OR) nursing textbooks, 16
- Operative laparoscope, 200*f*
- Operative scopes, endoscopes, 200
- Ophthalmic artery, 571
thromboembolic events in, 883
- Ophthalmic surgery, 568
ambulatory considerations, 589*b*
anesthesia for, 577*t*–583*t*, 584–585, 584*f*
cataract extraction as, 588–592, 588*f*, 592*f*
for conjunctiva, 602–603
conjunctival lacerations/excisions, 602
excisional biopsy as, 603
pterygium excision as, 602–603, 603*f*
of cornea, 603–605
laceration of, repairs for, 603
refractive procedures for, 603
transplantation (keratoplasty), 603–604, 605*f*
draping for, 586, 586*f*
dressings for, 586–587
equipment for, 585
of eyelids, 607–609
blepharoplasty, 607
chalazion, incision and curettage of, 607, 607*f*
dermatochalasis repair, 608
ectropion repair, 608, 609*f*
entropion repair, 607–608, 608*f*
excisional biopsy, 609
traumatic lacerations, 609
for unilateral/bilateral ptosis, 608–609, 610*f*
in geriatric patients, 1085
for glaucoma, 600, 600*f*
surgery for, 600–602
- Ophthalmic surgery (*Continued*)
canaloplasty as, 602
drainage devices in, 602, 602*f*
iridectomy as, 600–601, 600*f*
trabeculectomy as, 601–602, 601*f*
of globe and orbit, 609–613
enucleation, 610–612, 612*f*
evisceration, 612
exenteration, 612–613
instillation of eyedrops in, 584, 584*f*
instrumentation for, 586
intraocular lens in, 590*b*, 590*f*
of lacrimal gland and apparatus, 605–607
medications for, 577*t*–583*t*
administration of, 576–584
patient-centered care in, 587*b*
patient positioning, 585
patient safety in, 573–575
performing preoperative surgical site antisepsis, 585–586
perioperative nursing considerations in, 572–588
assessment, 572–588
evaluation, 587
implementation, 573–587
outcome identification, 573
patient and family education and discharge planning, 587–588, 588*b*
patient problems, 573
planning, 573
plan of care in, 574*b*
preventing infection in, 575
of retina
laser treatment in diabetic retinopathy as, 595, 595*f*
retinopexy, 599–600, 599*f*
scleral buckling, 598–599, 598*f*
vitrectomy as, 595–598, 596*f*, 597*f*
vitreoretinal, 593–595
surgical anatomy in, 568
surgical pharmacology in, 577*t*–583*t*
- Ophthalmic sutures, 586
- Opioids
adult dosing data, 272*b*
nurses' knowledge and promotion of safe use, 277*b*
unused medication disposal options, 277*f*
- Optic glioma, craniotomy for, 799
- Optic nerve, 571, 765, 766*f*, 768*t*
- Optic tract, 765
- Optiwave refractive analysis (ORA), 589–590
- Oral cavity, 616–617, 617*f*
surgery for, 647–648, 648*f*
draping for, 631
patient and family education and discharge planning, 632–633, 633*b*–634*b*
positioning in, 627
- Orbicularis oculi muscle, 568, 584
- Orbit
functional endoscopic sinus surgery and, 646
surgery of, 609–613
enucleation, 610–612, 612*f*
evisceration, 612
exenteration, 612–613

- Orbital-craniofacial surgery, 1045–1047
 Orbital floor fractures, reduction of, 833–834, 834f
 Orbital septum, 605–606
 Orchiectomy, 480
 Orchiopexy, 1032, 1033f–1034f
 Organ of Corti, 615–616
 Organ transplantation
 cultural considerations in, 364b
 order of allocation, 364
 Oropharynx, 617, 618f
 Orthognathic surgery, elective, 836
 Orthopedic surgery, 664
 allografts and autografts, 684–685
 anatomy in, 664–665, 665f
 anatomic structures in, 664–665, 665f, 666f
 of ankle and foot, 671, 672f
 of knee, tibia, and fibula, 668–671, 670f, 671f, 672f
 of pelvis, hip, and femur, 667–668, 668f, 669f, 670f
 of shoulder and upper extremity, 665–667, 666f, 667f
 of vertebrae, 665
 of wrist and hand, 667, 668f
 of ankle and foot, 716–719
 arthroscopy
 ambulatory, 740b
 of the ankle, 745–746
 of the elbow, 744–745
 of knee, 739–743
 of the shoulder, 743–744, 745f
 bone banking in, 683
 draping in, 677
 electrical stimulation and, 685–686, 685f
 equipment and supplies for, 677–681
 fractures and dislocations in, 686–689
 in geriatric patients, 1085–1086
 of the hand, 699–701
 of hip and lower extremity, 701–707
 of humerus, radius, and ulna, 693–699
 implants for, 681
 instruments and accessory items for, 681–682
 of lower leg, 707–716
 pediatric, 1038–1042
 of pelvic fractures and disruption, 719, 719t
 perioperative nursing considerations in, 671–684
 assessment, 671–684
 evaluation, 683
 implementation, 675–683
 outcome identification, 673
 patient, family, and caregiver education and discharge, 683–684
 patient problems, 673
 planning, 673–675, 674b–675b
 positioning and positioning aids in, 675–677, 676f, 677f
 protective measures for, 683
 of shoulder, 689–693
 of spine, 746–751
 surgical prep in, 677
 Orthopedic surgery (*Continued*)
 total arthroplasty in
 ankle, 738, 738f
 elbow, 736–738, 737f
 metacarpal, 739, 739f
 metatarsal, 738–739
 shoulder, 734–736, 735f–736f
 total joint arthroplasty in, 679b, 719–739, 721b
 hip, 719–739
 knee, 727–731, 729f–731f
 Orthopedic trauma, standardized practice in, 1113b
 Ortho-phthalaldehyde (OPA), 84
 Orthotopic ileocolic neobladder, 510–512
 Os coxae, 667
 Osmolality, 135
 Osmosis, 132–133
 Osseointegrated bone-anchored hearing implants, 642–643
 Ossicular chain
 reconstruction of, 639–640
 tympanoplasty in, 637
 Ossicular discontinuity, 637
 Osteoblasts, bone healing and, 685
 Osteomalacia, 686
 Osteomyelitis, 674
 Osteopathic medicine, 1119
 Osteoporosis, fractures due to, 686
 Osteotomy, of olecranon, for distal humeral fracture, 680, 697
 Other potentially infectious material (OPIM), 67–68
 Otitis media, acute, 633f, 634–635
 Otitis media with effusion (OME), 634–635
 Otoconia, 615–616
 Otologic surgery, 633–643
 assistive hearing devices and, 641–643
 cochlear implantation as, 641–642, 641f
 draping for, 630–631
 endaural approach to, 633, 633f
 labyrinthectomy as, 640
 mastoidectomy as, 637–638
 middle cranial fossa approach to, 640–641
 myringotomy in, 634–636, 635f, 636f
 osseointegrated bone-anchored hearing implants, 642–643
 ossicular chain reconstruction as, 639–640
 patient and family education and discharge planning, 632–633, 633b–634b
 postauricular approach to, 633f, 634
 removal of acoustic neuroma as, 640–641
 stapedotomy as, 638–639, 639f
 transcanal approach to, 633–634
 transmastoid, translabyrinthine approach to, 640
 tympanoplasty in, 636–637
 Otoplasty, 1044–1045, 1045f
 Otorhinolaryngologic surgery, 614
 adenoidectomy, 654
 anatomy in, 614–616
 cranial nerves, 620
 diagnostic studies, 621
 audiogram, 621
 Otorhinolaryngologic surgery (*Continued*)
 of ear, 614–616, 614f, 615f
 imaging, 621–622
 lymphatic system, 620, 620f, 621f
 nasal, 616, 616f
 perioperative nursing considerations in, 622–633
 of throat, 616–620
 anesthesia in, 627
 equipment and instrumentation for, 631–632
 imaging
 computed tomography, 621
 conventional radiology, 621
 magnetic resonance imaging, 622
 ultrasound imaging, 622
 implant-based drug delivery in, 642b
 intraoperative neuromonitoring (IONM) in, 628–630
 laryngeal, 647–663, 655f
 medications in, 629t–630t
 of oral cavity and pharynx, 647–648, 647f, 648f
 pediatric, 1034–1037
 choanal atresia repair, 1036
 excision of branchial cleft cyst/remnant/sinus tract, 1036
 foreign-body removal, 1035–1036, 1035f
 recurrent respiratory papillomatosis, 1036–1037
 perioperative nursing considerations in, 622–633
 assessment, 621t, 622–633
 evaluation, 632
 implementation, 624–632
 outcome identification, 623–624
 patient and family education and discharge planning, 632–633, 633b–634b
 planning, 624, 625b
 positioning in, 626–627
 preparation of operating room for, 626
 postoperative pain management, 635b
 preparation of operative site in, 627–628
 of salivary gland, 648–654
 surgical microscope for, 631–632
 3-D printing in, 661b
 tonsillectomy as, 653–654, 654f
 uvulopalatopharyngoplasty as, 652–653, 653f
 Otosclerosis, 638
 Outcome identification, 3f, 5, 5b
 Ovarian cystectomy, 431–432
 Ovaries
 anatomy of, 400
 cancer of, 404, 405f
 cytoreductive surgery of, 438–439
 salpingectomy for, 405b
 Oviducts, 400, 400f
 Oxidized regenerated cellulose, 788t
 Oxygenators, in cardiopulmonary bypass, 948–949
 Oxygen rich environment, risk of fire in, 628b

- Oxymetazoline hydrochloride, for
otorhinolaryngologic surgery,
629*t*–630*t*
- Oxytocics, 447*t*–448*t*
- Oxytocin, 447*t*–448*t*
- Ozone sterilizer, 209–210
- P**
- Packaging and sterilizer loading, 77–79
- Packaging, suture
color codes, 178
types of, 177–178
- Packing, for epistaxis, 643, 643*f*
- Paget disease, 686
- Pain
acute, 268–274, 269*f*, 270*f*
ambulatory surgery and, 411*b*
assessment and reassessment, 271*b*
assessment of
in musculoskeletal injury, 1094*b*
in otorhinolaryngologic surgery, 623
chest, 916
educating patients about medications for,
273*b*
management
postoperative, 635*b*
misconceptions about, 274*t*
older adults and, 1069*b*, 1082*b*
in peripheral vascular disease, 883
recommendations in patients undergoing
total hip arthroplasty, 274*b*
spinal, 772
- Pain management
anesthesia for, 131–135
in children, 1004–1005
for orthopedic surgery, 680–681
- Pain relief, nonpharmacologic measures of,
1076*b*
- Palatine tonsils, 617
- Palpation, 1119*b*
- Palpebral fissure, 568
- Pancreas
anatomy, 343
arterial and venous blood supply of, 342*f*
arterial supply to, 343*f*
blood supply of, 343
body of, 343
donor organs/tissues, 363*b*
glucagon, 343
head of, 343
hormones, 343
insulin, 343
islet cell transplantation, 365*b*
islets/islands of Langerhans, 343
and kidney transplants, 364*f*
laparoscopic pancreatic cyst-gastrostomy,
360–361
musculature of, 342–343
pancreaticoduodenectomy (Whipple
procedure), 361–362, 361*b*
prognosis, 341
robotic-assisted surgery, 354*b*
Roux-en-Y loop of jejunum, 364–365
secretions, 343
- Pancreas (*Continued*)
surgery of, 359–365
tail of, 343
transplantation, 362
with drainage of bladder, 364*f*
pancreaticoduodenocystostomy, 364*f*
whole-organ pancreatic transplantation,
363–365
- Pancreatectomy, 1027
- Pancreaticoduodenectomy (Whipple
procedure), 361–362, 361*b*
- Pancreaticoduodenocystostomy, 364*f*
- Panendoscopy, 656
- Pan-retinal photocoagulation, 595
- Pantaloon hernia, 376
- Papaverine, 462*t*–463*t*
in cardiac surgery, 939*t*–940*t*
in vascular surgery, 891*t*
- Papillary carcinoma, of thyroid, 538*b*
- Papilloma, intraductal, of breast, 548, 549*t*
- Paraesophageal hiatal hernia repair, 314
- Paramedian incision, 300
- Paranasal sinuses, 616, 616*f*
- Paraphimosis, circumcision for, 1029
- Pararenal fat, 454–455
- Parasellar tumors, craniotomy for, 799
- Parasternotomy, 961*t*
- Parathyroidectomy, 542–545
PTH-guided, 545
sestamibi-guided, 545
- Parathyroid gland
anatomy of, 528, 530*f*
dysfunction of, 533*b*
preoperative testing of, 531–532
- Parathyroid hormone (PTH), 528, 530*f*
- Parathyroid surgery, 527
assessment of, 529–537
evaluation of, 536
implementation of, 534–536
outcome identification of, 533
patient and family education and discharge
planning of, 536–537, 536*b*
patient problems, 533
planning of, 533
preoperative testing of, 531–532
sample plan of care of, 535*b*
skin preparation for, 535–536
surgical pharmacology, 534*b*
- Parecoxib sodium, 682–683
- Parietal bone, 754–755, 755*f*, 756*f*
- Parkinson disease, deep brain stimulation for,
792*b*
- Parotidectomy, 649–652, 651*f*, 652*f*
- Parotid gland, 617
- Pars plana, 595
- Pars plana lensectomy, 597*f*
- Partial gastrectomy, 318–319
- Partial mastectomy, 561
- Partial ossicular replacement prosthesis
(PORP), 637, 639
- Partial penectomy, 472–473
- Partial rib resection, 874
- Partial-thickness burns, 820
- Passivation, 184
- Pasteurization, 84
- Patch(es)
for cardiac surgery, 929, 929*f*
for carotid endarterectomy, 904, 905*f*
- Patella, 669
fractures of, 711–712
realignment of, 712
recurrent dislocation of, correction of, 712
- Patellar tendon graft, for anterior cruciate
ligament repair, 742–743, 744*f*
- Patellectomy, 711–712
- Patent ductus arteriosus, 1058, 1059*f*
closure of, 1058–1059, 1060*f*
thoracoscopic surgery for, 1010
- Pathologic fracture, 686, 687*f*
- Patient and family education
in ambulatory surgery, 537*b*
in breast surgery, 558–560, 559*b*
reduction mammoplasty, 847*b*, 848*b*
for bronchoscopy, 864*b*
in cardiac surgery, 956–957, 957*b*
for casts, 679*b*
family learning centers and child life
specialist in, 999*b*
in genitourinary surgery, 465, 466*b*
in geriatric surgery, 1083
integrated health practices, 1125*b*
in neurosurgery, 788–789
in ophthalmic surgery, 587–588, 588*b*
in orthopedic surgery, 683–684
in otorhinolaryngologic surgery, 632–633,
633*b*–634*b*
in pediatric surgery, 1005–1006, 1006*b*
in plastic surgery, 816
in thoracic surgery, 861–862, 862*b*
in thyroid and parathyroid surgery, 536–537
in vascular surgery, 893–894, 894*b*,
895*b*–896*b*
- Patient autonomy, 34
- Patient care equipment, 69
- Patient care ergonomics programs, 41
- Patient-centered care, 4
communication in, 532*b*, 1124*t*
in ophthalmic surgery, 587*b*
- Patient-controlled analgesia (PCA), in pediatric
patient, 1005
- Patient discharge instructions, 66*b*
- Patient education, to prevent surgical site
infection, 67*b*
- Patient engagement exemplar
clinical empathy in, 810*b*
healthcare literacy, 778*b*
- Patient safety, 39*b*
advance directives, 34
definition, 16
emphasis on systems, 17
in geriatric surgery, 1079*b*
HIPAA Privacy Rule, 33
as individual responsibility, 16–17
with integrated health practices, 1129*b*
patient autonomy, 34
perioperative, 16–17
in perioperative patient focused model, 2
in perioperative patient safety issues, 4*b*

Patient safety (*Continued*)

- protected health information (PHI), 33
- reconciling count discrepancies, 27*b*
- social media and, 33
- surgical checklists, 17
- timing of and recommendations for surgical counts, 196*b*
- wound healing, 245*b*
- Patient Self-Determination Act (PSDA), 34
- Patient skin antisepsis, 93–96
- Patties, 786, 787*f*
- Pavlik harness, 1039
- Pectoralis major flaps, 662, 662*f*
 - for head and neck reconstruction, 662
- Pectus excavatum, correction of, 1009–1010, 1009*f*
- Pediatric patient
 - abuse and neglect of, 1001, 1001*b*
 - child-centered care, 1003*b*
 - psychologic development of, 997–998
 - surgical anatomy of, 995
 - trauma, 1102
- Pediatric surgery, 995
 - abdominal, 1024–1027
 - ambulatory, 1000*b*
 - anatomy in, 995
 - anesthetic considerations for, 1004
 - for congenital heart disease, 1054–1063
 - fetal, 1012–1015, 1013*t*
 - gastrointestinal, 1015–1022
 - genitourinary, 1028–1034
 - for hernias, 1022–1024
 - informed consent and, 1000–1001
 - instrumentation for, 1003–1004
 - metabolic and bariatric surgery, 1015, 1015*b*
 - minimally invasive, 1007–1012
 - laparoscopic fundoplication, 1008–1009, 1009*f*
 - laparoscopic pyloromyotomy, 1007–1008, 1008*f*
 - pectus excavatum, correction of, 1009–1010, 1009*f*
 - robotic-assisted laparoscopic pyeloplasty, 1011–1012, 1011*f*
 - robotic-assisted laparoscopic surgery, 1010–1011, 1010*b*
 - neurosurgical, 1037–1038
 - ophthalmic, 1047–1051
 - orthopedic, 1038–1042
 - otorhinolaryngologic, 1034–1037
 - pain management, 1004–1005
 - perioperative nursing considerations in, 998–1006
 - assessment, 998–1006, 998*t*, 1000*f*
 - evaluation, 1005
 - implementation, 1003–1005
 - outcome identification, 1001–1002
 - patient, family, and caregiver education and discharge planning, 1005–1006, 1006*b*
 - patient problems, 1001
 - planning, 1002–1003, 1002*b*, 1002*f*
 - plastic and reconstructive, 1042–1047
 - resection of tumors, 1027–1028

Pediatric surgery (*Continued*)

- sutures for, 1004
 - for trauma, 1051–1054, 1052*t*, 1054*f*, 1054*t*
 - for tumor, 1027–1028
 - vascular access for, 1007
- Pedicle fixation, of the spine, 747–748, 747*f*
- Pedicle flaps, 825
- Pedicle, renal, 455–456
- Pedunculated cervical myoma, 423–424
- Pelvic brim, 401
- Pelvic cavity, 400–401
- Pelvic diaphragm, 401
- Pelvic exenteration, 440–443, 441*f*, 442*f*, 443*f*
- Pelvic fascia, 401
- Pelvic floor, 401–402, 401*f*
- Pelvic lymphadenectomy
 - radical cystectomy with, 508–509, 510*b*, 511*f*
 - radical retropubic prostatectomy with, 491–492, 493*f*–494*f*
- Pelvic osteotomy, for developmental dysplasia of the hip, 1039*f*, 1040
- Pelvis, 667–668, 668*f*
 - bony, anatomy of, 401
 - fractures and disruption of, 719, 719*t*
 - renal, 455
- Pendulous urethra, 457–458
- Penectomy, 472–473, 473*f*, 474*f*
- Penetrating keratoplasty, 604–605
- Penetrating trauma, 1092
- Penile carcinoma, laser ablation of, 469–470
- Penile epispadias, 1031
- Penile implant, 473–476, 475*f*, 476*f*, 477*f*, 478*f*
- Penile urethra, 457–458
- Penis
 - anatomy of, 458
 - circumcision of, 470, 470*f*
 - deep dorsal and emissary vein ligation of, 476
- Pepcid. *See* Famotidine
- Peptic ulcer, repair of perforated, 316
- Peracetic acid, 84
- Percutaneous aortic valve, 931, 934*f*
- Percutaneous coronary interventional (PCI) therapies, 922
- Percutaneous endoscopic gastrostomy tube insertion, 310–311
- Percutaneous nephrolithotomy, 516
- Percutaneous pinning
 - closed reduction with, 689, 689*f*
 - of fractures, 689, 689*f*
- Perfluorocarbon (PFC) exchange, 597*f*
- Perforated peptic ulcer repair, 316
- Perforator, for drilling burr holes, 781–782
- Performance improvement, 10–11, 11*b*
- Perianesthesia complications
 - acute pain, 268–274, 269*f*, 270*f*
 - adult dosing data, opioid analgesics, 272*b*
 - aspiration, 268, 268*t*
 - cardiovascular
 - dysrhythmias, 262–263
 - hypertension, 262
 - hypotension, 262
 - hypovolemia, 262

Perianesthesia complications (*Continued*)

- cognitive function, disturbances in, 264–265
- delirium, 265*f*
- dosing data, nonopioid analgesics, 271*b*–272*b*
- nurses' knowledge and promotion of safe use, opioids, 277*b*
- postoperative nausea and vomiting, 265–268
- postoperative nursing considerations, 278–280, 278*b*
- respiratory, 259–262
 - airway obstruction, 259–261, 259*f*
 - bronchospasm, 261
 - laryngospasm, 261
 - obstructive sleep apnea, 261
- thermoregulation and temperature abnormalities
 - hyperthermia, 264
 - hypothermia, 263–264
- Peribulbar block, 584–585, 584*f*
- Pericardiectomy, 960
- Pericardiocentesis, 1108–1109
- Pericardium, traumatic injury to, 1108–1109, 1109*f*
- Perineal prostatectomy
 - radical, 492–495, 495*f*, 496*f*–497*f*
 - simple, 488–490, 489*f*
- Perineal repair, 419, 419*f*
- Perineal sling, male, 506
- Perioperative care, 39
- Perioperative nurse, 1–2, 2*f*
- Perioperative nursing, 2*f*
 - assessment and data collection, 1
 - concepts basic to, 1–14
 - considerations in hernia, 380–385
 - assessment, 380–381
 - caregiver education, 385
 - discharge planning, 385
 - evaluation, 384–385
 - family care, 385
 - implementation, 382–384
 - intraoperative, 383–384
 - obese patient, 394*b*
 - operating room, 382
 - outcomes identification, 381–382, 383*b*
 - patient care, 385
 - patient engagement, 382*b*
 - patient problems, 381
 - patient safety, 382*b*
 - planning, 382
 - preprocedure check-in, 382
 - sign-in, 382–383
 - sign-out, 384
 - time-out, 383
 - delivery of comprehensive patient care, 1
 - delivery of science-based care, 1–2
 - evidence-based practice (EBP), 2–3
 - functions, 1
 - individual patient assessment, 2
 - overview of, 1–2
 - perioperative patient focused model, 2
 - phenomena of concern to, 2
 - in postanesthesia care unit (PACU), 1
 - practice standards, 2–3

- Perioperative nursing (*Continued*)
 quality nursing care, 1–2
 standards of, 2, 3*b*
 understanding of desired outcomes, 2
 Perioperative Nursing Data Set (PNDS), 8
 nursing interventions, 8*b*
 performance improvement, 10–11, 11*b*
 Perioperative nursing practice
 evidence-based, 9–10, 12*f*
 nursing process in, 3–10, 3*f*, 4*b*, 5*b*, 6*b*, 6*f*, 7*b*, 8*b*, 9*b*, 10*b*
 nursing roles in, 11–14, 12*f*, 13*b*
 overview of, 1–2, 2*f*
 standards of, institutional, 9
 Perioperative nursing responsibilities, for
 preventing patient infection, 248*b*
 Perioperative nursing roles, 11–14, 12*f*, 13*b*
 emerging, 14
 Perioperative nursing safety issues, 22–32
 clinical documentation, 23
 communication and teamwork, 22–23
 handoffs/handovers, 23
 handover process throughout perioperative continuum, 24*b*
 team, nonprovider members of, 22
 unintended retention of foreign objects, 24
 wrong person surgery, 23
 wrong procedure, 23
 wrong site, 23
 Perioperative patient focused model, 2
 standards of, 2–9
 Perioperative peripheral neuropathies
 prevention, 152*b*
 Perioperative staff, 39
 Perioperative team members, 70
 Perioperative vision loss (PVL), 154–155
 Periosteal elevator, 874*f*
 Periosteum, 664, 754*f*
 Peripheral arterial disease (PAD), 882–883
 Peripheral iridectomy, 600–601, 600*f*
 Peripheral nerve blocks, 128–129
 Peripheral nerves, 772–775
 Peripheral nervous system (PNS), 753
 Peripheral neuropathies, 146–152
 Peripheral vascular disease, 883
 Peritoneal lavage, 1095
 Peritoneum, pelvic, 400
 Periurethral-transurethral injection, of bulking agents, 468–469
 Permanent pacemaker, insertion of, 991–992
 Permissible exposure level, 82–83
 Persistent disinfectants, 99*b*–100*b*
 Personal measures, 64–67
 Personal protective equipment (PPE), 58, 69–71
 CDC recommendations, 20
 Pezzet catheter, 464, 464*f*
 Pfannenstiel incision (suprapubic), 302, 302*f*
 Phacoemulsification, 585, 592*f*
 Phalanges
 of foot, 671, 672*f*
 of hands, 667, 668*f*
 Pharyngeal flap, creation of, 1044
 Pharyngeal tonsils, 617
 Pharyngoesophageal (Zenker) diverticulum
 excision, 313–314
 Pharynx, 285–286, 617–619, 618*f*
 GI surgery, 285–286
 surgery for, 647–648, 647*f*, 648*f*
 draping for, 631
 positioning in, 627
 tonsillectomy as, 653–654, 654*f*
 uvulopalatopharyngoplasty, 652–653, 653*f*
 Phase II blockade, 120–121
 Phenolics, 85
 Phenylephrine, 462*t*–463*t*, 577*t*–583*t*
 Phimosis, circumcision for, 1029
 Phone calls, preoperative, 4
 Phonosurgery, 655
 Photoacoustic effect, 227
 Photochemical effect, 227
 Photodynamic therapy, 310
 Photographic/video imaging, in urology, 465
 Photorefractive keratectomy (PRK), 589–590, 603
 Photosensitive vaporization, of prostate, 485
 Phototherapeutic keratectomy, 604
 Phototherapeutic keratectomy (PTK), 604
 Photothermal effect, 227
 Physical characteristics, 174
 Physical examination, in cardiac surgery, 919
 Physical monitor, 76, 76*t*
 Physical status, assessment of, in
 otorhinolaryngologic surgery, 622
 Physician Orders for Life-Sustaining Treatment (POLST) Paradigm, 1086
 Physiologic response, in perioperative patient focused model, 2
 Piaget stage, of cognition, 997, 997*t*
 Pia mater, 754*f*, 756
 Piercing towel clamp, 186
 Pilocarpine hydrochloride, 577*t*–583*t*
 Pilonidal cyst
 identification, 338*f*
 rectum surgery, 337–338
 and sinus excision, 337–338
 Pineal region tumors, 760–761
 Pin fixation, in closed reduction, 689
 Pinna, 614
 Pituitary adenomas, 761
 Pituitary tumor, craniotomy for, 799
 Plain gut suture, 175
 Planning, 3*f*, 5–6, 6*f*
 Plasma, reference intervals for clinical chemistry, 1132–1134
 Plasma sterilization system, 209–210
 Plastic and reconstructive surgery, pediatric, 1042–1047
 Plastic reconstructive repair, vaginal, 415–420, 415*f*
 Plate and screw fixation
 in closed reduction, 689
 for tibial shaft fracture, 709, 711*f*
 Plating, of fracture, 688–689, 688*f*
 Pledgeted suture, 892, 893*f*
 Pledgets, for cardiac surgery, 929*f*
 Plethysmography, sequential volume, 887
 Pleural effusion, 875, 875*f*
 Pleurodesis, chemical, 866*t*
 PNET. *See* Primitive neuroectodermal tumor
 Pneumatic drills, for otorhinolaryngologic surgery, 632
 Pneumatic-powered instruments, 812–813
 Pneumatic retinopexy, 599, 599*f*
 Pneumatic tourniquet, 677
 Pneumonectomy, 869–870
 Pneumonia, in cardiac surgery, 955*t*–956*t*
 Pneumoperitoneum, 189
 Pneumoplasty, 872
 Pneumothorax, 858–859
 Point-of-use treatment, 74
 Poly ADP-ribose polymerase (PARP) enzyme inhibitors, 555
 Polybutester suture, 177
 Polyester fiber suture, 177
 Polyethylene glycol, 183
 Polymethyl methacrylate (PMMA), 682
 suture, 183
 total joint arthroplasty and, 719–720
 Polymyxin B, for burn therapy, 821*t*
 Polypectomy, nasal, 646–647, 646*f*
 Polypharmacy, 1072
 Poly(ADP-ribose) polymerase (PARP), 555
 Polypropylene suture, 177
 Polyps, cervical, 423–424, 425*f*
 Polytetrafluoroethylene (PTFE) sutures, 928
 in vascular surgery, 892
 Polyurethane, 183
 Polyvinyl chloride (PVC) sheeting, 97
 Pons, 758*f*, 759*f*
 Ponsky technique, percutaneous endoscopic gastrostomy tube insertion, 310–311
 Pontocaine. *See* Tetracaine
 Popliteal artery, above-knee, exploration of, 899–900
 Popliteal (Baker) cyst excision, 713
 Population, aging, 11–14, 1066, 1067*f*
 Porcine valves, 930–931, 931*f*, 933*t*–934*t*
 Port insertion, for breast cancer treatment, 553*b*
 Portoenterostomy, hepatic, 1025–1026, 1026*f*
 Positioning, 126
 aids, for orthopedic surgery, 675–677, 676*f*, 677*f*
 in ambulatory surgery settings, 141*b*
 anatomic and physiologic considerations in, 139–155
 for arthroscopy of the knee, 740*f*
 assessment, 155
 for breast cancer surgery, 557
 for cardiac surgery, 941
 evaluation, 157
 for eye injuries and perioperative vision loss, 154–155
 for genitourinary surgery, 461
 for geriatric surgery, 1080–1081
 implementation, 157
 mattress materials, 159–160
 in morbidly obese patients, 153*b*
 for neurosurgery, 783–785, 784*b*
 obesity in, 153–154

Positioning (*Continued*)

operating room beds, 158–159
 for orthopedic surgery, 675–677
 for otorhinolaryngologic surgery, 626–627, 627f
 outcome identification, 155–156
 perioperative nursing considerations, 155–158
 pressure injury, 140–145
 problem list, 155
 removing jewelry and body piercings, 158b
 for respiratory system, 153
 shared responsibility in, 155b
 for shoulder surgery, 689–690
 skin and underlying tissue, 139–145
 spinal anesthesia and, 126–127
 standard surgical positions
 accessories, 161t
 arm support, 168–169
 chest and trunk support, 169, 169f
 cross-chest strap stabilization technique, 164f
 Fowler (sitting) position, 167–168, 167f
 fracture bed position, 164
 head support, 169–170
 jackknife (Kraske) position, 170, 170f
 lateral chest position, 172
 lateral kidney position, 172–173
 lateral (lateral recumbent/lateral decubitus) position, 171–173, 171f
 axillary roll in, 172f
 lithotomy position, 164–167, 165f
 prone kneeling, 170–171, 171f
 in prone position, 168–171
 reverse Trendelenburg, 164
 robotic-assisted surgery, 163b
 semi-Fowler (beach chair) position, 167
 supine, 160–163
 Trendelenburg position, 163–164
 using Wilson laminectomy frame, 168f
 in vacuum-packed positioning device, 163f
 for thoracic surgery, 856
 for thyroid surgery, 534–535
 for vascular surgery, 889–890
 for vascular system, 152–153

Positive pressure, 73

Postanesthesia care unit (PACU), 142, 256, 349

ABCs, 257

admission to
 ambulatory surgery phase II unit, 276–278
 inpatient unit, 279b
 surgical unit, 278

bowel elimination, 280

discharge from, 274–276

evaluation, 259

fast-tracking ambulatory surgery patient, 276–278

handoff patterns in, 256b

head-to-toe assessment, 258f

immediate postoperative patient care in, 260b

Postanesthesia care unit (PACU) (*Continued*)

implementation, 259

initial assessment, 257, 258b

major body systems assessment, 258f

outcome identification, 259

of pediatric patient, 1005

perianesthesia complications, 259–274
 cardiovascular, 262
 respiratory, 259–262

perianesthesia considerations
 admission to, 256–257
 assessment, 256–257

planning, 259

recovery room/postanesthesia room, 256

standardized handoff, 256

for thoracic surgery, 860

unused opioid medication disposal options, 277f

urinary function, 280

Postauricular approach, to otologic surgery, 633f, 634

Postbariatric surgery body contouring, 844

Postcardiotomy delirium, in cardiac surgery, 955t–956t

Postdischarge nausea and vomiting (PDNV), 265

Postdural puncture headache, 126–127

Posterior cervical approach, for neurosurgery, 803–804

Posterior chamber lenses, 590b

Posterior cruciate ligament, repair of, arthroscopic, 743

Posterior fossa exploration, suboccipital craniectomy for, 799–801, 800f

Posterior leaflet, 969

Posterior sagittal anorectoplasty (PSARP), 1020–1021, 1023f

Posterior segment vitrectomy, 595–598, 596f

Posterior urethra, 457–458

Posterior vitrectomy, 585

Posterior vitreous detachment (PVD), 593

Posterolateral thoracotomy, 961t

Postinfarction ventricular septal defect, 966–968, 968f

Postoperative cleaning, 98–99

Postoperative nausea and vomiting (PONV), 265–268
 in adults, 266f
 antiemetic pharmacology, 267b
 aromatherapy for, 1122b
 fourth consensus guidelines for management, 266b
 pathways for, 267f
 perianesthesia complications, 265–268

Postoperative nursing considerations, 278–280, 278b

Postoperative visual loss (POVL), 154–155

Potassium imbalance, anesthesia and, 135

Pouches, sterilization, 78

Povidone-iodine solution
 for ophthalmic surgery, 585
 for otorhinolaryngologic surgery, 628, 640

Power, 227, 227f

Powered instrumentation, for
 otorhinolaryngologic surgery, 632

Powered surgical instruments

 for neurosurgery, 781

 for orthopedic surgery, 682

Prakrit, 1117–1118

Preadmission testing (PAT), 106

Preanesthesia clinic (assessment unit), 105

Prednisolone acetate, 577t–583t

Preganglionic neurons, 775

Pregnancy
 hypovolemic shock in, 1101, 1102t
 trauma patients, 1100–1102, 1102t

Preload, 922b

Premature ventricular contractions (PVCs), 262

Premedication, before anesthesia, 106b, 107–108, 107b

Preoperative anxiety, 1122b

Preoperative assessment, 3f, 4

Preoperative evaluation clinic (PEC), 105

Preoperative telephone interview, 106

Preoxygenates, 121

Prepping, for cardiac surgery, 941

Preprocedure cleaning, 98

Presbycusis, 1075

Presbyopia, 571

Preschooler, perioperative care of, 1003

Pressure, 139–145

Pressure alopecia, 145

Pressure dressings, in plastic surgery, 813

Pressure equalization tubes (PETs), 634–635

Pressure injuries (Pis), 29, 140, 822
 positioning, 140–145
 stage 1, 146f
 stage 2, 146f

Pressure ulcer, 140

Prevacuum pump, 80

Priapism
 definition of, 474
 surgical management of, 473

Primary anastomosis, in repair of atresia of the esophagus, 1016, 1016f

Primary assessment, in traumatic injury, 1092–1093

Primary open-angle glaucoma, 600

Primary suture line, 180

Primitive neuroectodermal tumor (PNET), 761

Prions, 63

Proactive risk assessments, 16

Procedures in standards of care, 9

Process challenge device (PCD), 76

ProDisc, 750f

Progesterone, 400

Progesterone-binding breast cancer, 555, 555f

Proliferative diabetic retinopathy (PDR), 594

Prone position, 784–785
 Andrews bed for, 676, 676f
 kneeling, 170–171, 171f
 for orthopedic surgery, 676, 676f
 surgical positions in, 168–171

Proparacaine, 577t–583t, 584

Propofol, 1101t

Prosencephalon, 756–757

Prostate cancer, 481
 screening of, 482t

- Prostatectomy
 laparoscopic radical, 495–498, 498f
 robotic-assisted, 498, 499b
 perineal
 radical, 492–495, 495f, 496f–497f
 simple, 488–490, 489f
 retropubic
 radical, 491–492, 493f–494f
 simple, 486–487, 486f, 487f
 suprapubic, 487–488, 488f
 Prostate gland
 anatomy of, 456f, 458
 core needle biopsy prostatic for, 481–484
 photoselective vaporization of, 485
 surgery of, 480–498
 transrectal-guided ultrasound of, 466b
 transrectal seed implantation for, 490–491, 492f
 transurethral incision of, 485
 transurethral microwave therapy/
 transurethral needle ablation in, 486
 Prostatic urethra, 457–458
 glandular hyperplasia of, 480–481
 Prostheses
 computer-generated, for cranioplasty, 802
 femoral head, 705–706, 706f
 penile, 473–475, 476f
 prosthesis-patient mismatch, 930
 total joint arthroplasty and, 719
 valve, 930–932, 930f, 931f, 932f, 933t–934t, 934f, 935f, 936t
 vascular, 891–892, 892f
 Prosthesis-patient mismatch, 930
 Prosthetic material, for cardiac surgery, 929–930, 929f, 930f
 Prosthetics, 388
 Protamine sulfate
 in cardiac surgery, 939t–940t
 in vascular surgery, 891t
 Protected health information (PHI), 33
 Protective eyewear displays wavelength, 232f
 Prothrombin, 341–342
 Proximal aortic anastomoses, 964–965, 966f
 Pseudoaneurysm, 881
 Psychologic development, of child, 997–998, 997t
 Psychoneuroimmunology, 1123–1124, 1124t
 Pterional craniotomy, 796–797, 796f, 797f
 Pterygium, 602
 excision of, 602–603, 603f
 PTH-guided parathyroidectomy, 545
 Ptosis (blepharoptosis) surgery, 1049, 1050f
 Ptosis, unilateral/bilateral, 608–609, 610f
 Pull-through, for Hirschsprung disease, 1020, 1021f
 Pulmonary angiography, 923t
 Pulmonary artery (PA), 923t
 Pulmonary artery wedge pressure, 923t
 Pulmonary embolus, in cardiac surgery, 955t–956t
 Pulmonary flow, 923t
 Pulmonary function tests, 855, 855t
 Pulmonary vascular resistance, 923t
 Pulmonary veins, 923t
 Pulmonic valve
 anatomy of, 914, 915f
 surgery for, 975
 Pulses, assessment in musculoskeletal injury, 1094b
 Pump(s), 740, 741f
 Puncture headache, postdural, 126–127
 Puncture, inadvertent dural, 128
 Pupil, 570
 Purkinje system, 913–914
 Purse-string suture, 180, 180f
 for enterocele repair, 416–419, 418f
 Putamen, 758–759, 759f
 Putterman conjunctivo-müllerectomy, 1050f
 Pyeloplasty, dismembered, 517
 Pyelostomy, 516
 Pyelotomy, 516
 Pyloric stenosis, for laparoscopic
 pyloromyotomy, 1007–1008, 1008f
 Pyloroplasty, 316
 Pyramidal lobe, of thyroid gland, 527
- Q**
 Qi gong, 1120t
 Quality improvement (QI) programs, 11
 Quaternary ammonium compounds, 85
 Quats, 85
 Quinolones, 577t–583t
- R**
 Radial artery
 anastomoses between, and cephalic vein, 906f
 in coronary artery bypass grafts with arterial
 and venous conduits, 963, 963f
 Radial forearm flap, 662, 662f
 Radial nerve, 147–148
 Radiation safety, 48–49
 Radical cystectomy, with pelvic
 lymphadenectomy, 508–509, 510b, 511f
 Radical hysterectomy, 439–440, 439f, 440f
 Radical lymphadenectomy, 480
 Radical mastoidectomy, 638
 modified, 638
 Radical neck dissection, 659–661, 660f
 modified, 661, 661f
 Radical nephrectomy, 520
 Radical prostatectomy
 laparoscopic, 495–498, 498f
 robotic-assisted, 498, 499b
 perineal, 492–495, 495f, 496f–497f
 retropubic, 491–492, 493f–494f
 Radioactive seed placement, 560
 Radiofrequency ablation (RFA), 310
 Radiofrequency tonsillectomy, 654
 Radiographic intervention, in orthopedic
 surgery, 677
 Radiography, chest, 920, 920f
 Radiologic intervention, during neurosurgery, 781
 Radiology, in traumatic injury, 1095
 Radionuclide imaging, 920–921
 Radiosurgery, stereotactic, in neurosurgery, 791
- Radius
 head of
 dislocation of, fracture of proximal
 third of ulna with, 698–699, 699f
 excision of, 698
 surgery for, 693–699
 Random pattern flaps, 825
 Ranitidine (Zantac), 108
 Rapid response team (RRT), 936–937
 Rapid-sequence induction and intubation
 (RSII), 1100, 1101t
 Rat-tooth standard forceps, 188f
 Reanastomoses, 367
 Recipient heart, 987, 990f
 Recipient operating room, 367
 Reconstructive plastic surgery, 809, 817–838
 anesthesia for, 814
 of breast, 825–829
 for burns, 819–822
 types, 820b
 draping for, 816
 dressings in, 813
 equipment in, 812–813, 812f, 813f
 excisional debridement and, 821
 flaps and, 825
 gender confirmation surgery, 836–838
 implant materials in, 813–814
 implementation in, 810–816
 maxillofacial, 826b, 832–836, 834f, 835f
 microsurgery and, 829–832
 replantation of amputated body part, 830–832
 toe-to-hand transfer, 832, 833f
 Mohs surgery and, 818–819
 for neck, 661–663, 662f
 perioperative nursing considerations in, 809–816
 assessment in, 809–816
 evaluation in, 816
 outcome identification in, 810
 patient and family education and
 discharge planning in, 816
 patient problems in, 810
 planning in, 810, 811b
 preparation for OR, 812
 for pressure injury, 822
 regional analgesia for, 815b
 skin and tissue grafting and, 822–825
 skin cancer and, 817–818
 skin preparation for, 815–816
 surgical anatomy in, 809
 sutures in, 813
 tissue engineering and, 824–825
 Recording systems, 214
 Recovery room/postanesthesia room, 256
 Rectocele, 415f, 416
 Rectocele repair, 416, 417f
 Rectovaginal fascia, 288
 Rectovaginal fistula repair, vaginal approach, 420, 420f
 Rectovesical fascia, 288

- Rectum
 anatomy of, 287
 cancer, abdominoperineal resection, 334*f*
 surgery of
 foreign body removal, 338–339
 hemorrhoidectomy, 336–337
 pilonidal cyst and sinus excision, 337–338
- Rectus muscles, 569*f*, 599
- Rectus sheath, 380*f*
- Recurrent laryngeal nerve (RLN), 527, 540*b*
- Recurrent respiratory papillomatosis, 1036–1037
- Reduction
 closed, 686–687
 for developmental dysplasia of the hip, 1039
 of fractures
 mandibular, 835–836, 836*f*
 maxillary, 834–835, 835*f*
 zygomatic, 834
 of fractures of the patella, 711–712
- Reduction mammoplasty, 847–848, 847*b*, 847*f*, 848*b*, 849*f*
- Referrals for breast surgery, patient, 559*b*
- Reflection, 227
- Reflexology, 1120*t*
- Reflux, gastroesophageal, 1008
- Refractive apparatus, of eye, 571, 571*f*
- Refractive corneal procedures, 603
- Refractive errors, 571
- Refractive keratotomy, 591
- Regenerative tissue matrix, 813–814, 814*f*
- Regional analgesia for plastic surgery, 815*b*
- Regional anesthesia
 in reconstructive and aesthetic plastic surgery, 814
- Registered nurse first assistant (RNFA), 7–8, 13
- Registered nurses (RNs), 60
- Registration and listing with FDA, 210
- Reglan. *See* Metoclopramide
- Regurgitation, in heart valve, 914
- Reiki, 1119, 1120*t*
- Reimplantation, ureteral, 515
- Renal insufficiency, in cardiac surgery, 955*t*–956*t*
- Replantation, of amputated body part, 830–832
- Report(s), 860
- Reprocessing single-use devices, 209–210
- Reprocessors, 209–210
- Resident microorganisms, 89
- Residual volume (RV), 854, 855*t*
- Respiratory hygiene, 69
- Respiratory status, assessment of, in otorhinolaryngologic surgery, 622
- Respiratory system
 in elderly, 1073–1074
 perianesthesia complications, 259–262
 airway obstruction, 259–261, 259*f*
 bronchospasm, 261
 laryngospasm, 261
 obstructive sleep apnea, 261
 positioning for, 153
- Respiratory viruses, 62
- Rest pain, in peripheral vascular disease, 883
- Restricted zone, 73
- Resuscitative endovascular balloon occlusion of the aorta (REBOA), 1102–1103, 1103*b*
- Retention (stay) sutures, 180
- Retina
 anatomy of, 570–571
 surgery of
 laser treatment in diabetic retinopathy as, 595, 595*f*
 retinopexy, 599–600, 599*f*
 scleral buckling, 598–599, 598*f*
 vitrectomy as, 595–598, 596*f*, 597*f*
 vitreoretinal, 593–595
- Retinal detachment, 593, 598*f*
- Retinal disorders, 1051, 1052*f*
- Retina wrinkle, 594
- Retinopathy
 diabetic, 593–594, 595*f*
 nonproliferative diabetic, 594
 of prematurity (ROP), 1051, 1052*f*
- Retinopexy, 599–600, 599*f*
- Retractile testis, 1032
- Retractors, 187
 and accessory instruments, 206–207, 208*f*
 rib, 869–870, 870*f*
 sternal and rib, 927, 928*f*
- Retrobulbar block, 584, 584*f*
- Retrograde cardioplegia, 959
- Retrograde cerebral perfusion, 951
- Retrograde infusion, 950
- Retromastoid craniectomy, for microvascular decompression of trigeminal nerve, 801
- Retropubic prostatectomy
 radical, 491–492, 493*f*–494*f*
 simple, 486–487, 486*f*, 487*f*
- Revascularization, of penile arteries, 476–477
- Reverse cutting needle, 179
- Reverse Trendelenburg surgical positions, 164
- Revision arthroplasty, knee, 732–734
- Rewarming, 263
- RFID technology, 195*b*
- Rhegmatogenous retinal detachment, 595
- Rhinologic surgery, 643–647
 anesthesia for, 627
 closed reduction of nasal fracture as, 644, 645*f*
 draping for, 630–631
 nasoseptoplasty or submucous resection of the septum as, 644, 644*f*
 patient and family education and discharge planning, 632–633, 633*b*–634*b*
 positioning for, 626–627
 rhinoplasty, 841
 of sinus, 644–647
 balloon sinuplasty as, 646, 646*f*
 Caldwell-Luc with antrostomy as, 647, 647*f*
 endoscopic transnasal repair of cerebrospinal fluid leak as, 647
 functional endoscopic, 645–646, 645*f*
 nasal polypectomy as, 646–647, 646*f*
 treatment of epistaxis as, 643, 643*f*
- Rhinoplasty, 841
- Rhombencephalon, 756–757
- Rhytidectomy (facelift), 839–841, 839*f*, 840*f*
- Rib, anatomy of, 852, 853*f*
- Rib approximator, 869–870, 870*f*
- Rib retractors, 869–870, 870*f*, 927, 928*f*
- Rib stripper, 874*f*
- Rifampin, 475
- Right atrium (RA), 911, 912*f*, 923*t*
- Right corpus cavernosum, 458
- Right ventricle (RV), 911, 912*f*, 923*t*
- Rigid bronchoscope, bronchoscopy using, 863–864
- Rigid container sterilization systems, 77
- Rigid endoscopes, 200*f*
- Rigid sterilization, 79
- Rigid ureteropyeloscopy, 469*f*
- Ringed forceps, 186
- Ring forceps, 188*f*
- Rings, annuloplasty, 935*f*
- Rinsing, 74–75
 for biologic heart valves, 932, 936*t*
- Risk factors
 for atherosclerosis, 883*b*
 for breast cancer, 547
- Risk management
 definition, 16
 freedom from negligent treatment, 32
 patient privacy, 33
 patient rights, 32
- Robotically assisted unicompartmental knee arthroplasty, 727*b*
- Robotic-assisted laparoscopy, 305–307, 306*b*
- Robotic-assisted radical prostatectomy, 498, 499*b*
- Robotic-assisted surgery, 32
 gallbladder, 354*b*
 hernia, 384*b*
 surgical positions, 163*b*
- Robotic instruments, 190*b*
- Robotic LESS (R-LESS), 434
- Robotic mitral valve surgery, totally endoscopic, 971*b*–972*b*
- Robotics/robotic-assisted surgery, 647
 gynecologic, 433–434, 433*b*
 pediatric, 1010–1011, 1010*b*
 thoracic, 867*b*
 thyroid and neck dissection, 538*b*
 transoral, 648*b*
- Robot invasion, 306*b*
- Rocuronium, 1101*t*
- Rods
 for femoral shaft fracture, 707
 for fracture fixation, 689
 spinal
 Cotrel-Dubousset system procedure as, 748–749
 with Isola instrumentation, 749
- Roles, perioperative nursing, 11–14
 emerging, 2
- Room decontamination systems, 99
- Root cause analysis (RCA), 16, 18, 19*b*
- Ropivacaine, 115*t*–119*t*, 127
- Rotational flap, 825
- Rotator cuff tear, 692
- Round bones, 664

- Round ligaments, of uterus, 400
 Roux limb, retrocolic and retrogastric position., 323*f*
 RRT. *See* Rapid response team
 “Rule of nines,” in burn injury, 820*f*
 Russell-Taylor rod fixation for femoral shaft fracture, 706
 rVSV-ZEBOV (Ervebo), 62
- S**
- S pouch, ileoanal endorectal pull-through, 336*f*–337*f*
 Sacks-Vine technique, percutaneous endoscopic gastrostomy tube insertion, 311
 Sacrococcygeal teratoma (SCT)
 fetal surgery for, 1013*t*
 resection of, 1028, 1029*f*
 Safe injection practices, 69–70
 Safe Patient Handling and Movement (SPHM), 39–41, 42*b*
 equipment and devices, 42*b*
 ergonomic principles for, 42*b*
 Safe specimen handling, 28*b*
 Safety, 230–237
 anesthesia and, 103–105
 anesthetic monitoring standards, 109*b*–110*b*
 in cardiac surgery, 926
 chest thoracotomy tube, 860*b*
 electrosurgery, 225
 intraoperative head fixation system, 784*b*
 ophthalmic surgery and, 573–575, 573*b*
 risk of fire in oxygen-rich environment, 628*b*
 in robotic-assisted thoracic procedures, 867*b*
 tourniquet use and, 678*b*
 Safety-engineered devices, 193
 Safety of ambulatory plastic surgery, 808*b*
 Sagittal suture, 1038
 Sagittal synostosis, 1038
 Saline
 breast implants, unfilled, 845–846
 chilled, for malignant hyperthermia, 136
 for genitourinary surgery, 462*t*–463*t*
 Saline-filled breast implants, 827
 Salivary glands, 616
 surgery of, 648–654
 excision of submandibular gland as, 649, 650*f*
 parotidectomy as, 649–652, 651*f*, 652*f*
 Salpingo-oophorectomy, 404*f*, 436–438
 Salpingostomy, 430–431, 430*f*
 “SAMPLE” history, 1094
 Sample laser log, 236*f*
 Saphenous vein
 in coronary artery bypass grafts with arterial and venous conduits, 964, 964*f*
 grafts
 cryopreserved, 892
 for femoropopliteal and femorotibial bypass, 899–900
 inversion stripping of, 907, 909*f*
 Scale for Muscle Strength Grading, 775, 776*t*
 Scalene triangle, 875*f*
 Scalp anatomy, 753–754, 754*f*
 Scaphoid, 667, 668*f*
 Scapula, 666, 666*f*
 Scar revision, 838, 838*f*
 Scattering, 227
 School-age child, perioperative care of, 1003
 Schuster procedure, 1024
 Schwann cell, 754*f*
 Schwannomas
 intradural, 772
 vestibular, 640, 767
 Sciatic nerve, 151, 151*f*
 Scientifically based care, 1–2
 Scintigraphy, thyroid, 531
 Scissors, 185
 Sclera, 569
 buckling of, 598–599, 598*f*
 Scoliosis, 748–749, 748*f*
 Scott Triggers Tool, 142
 Screening
 technologies, for breast cancer, 550–552, 551*t*
 for thyroid dysfunction, 531*b*
 Screw fixation
 cannulated, for femoral neck fractures, 705, 705*f*
 for carpal fracture, 700–701, 700*f*
 in closed reduction, 688, 688*f*
 for femoral shaft fracture, 706–707
 for humeral shaft fracture, 693–695, 694*f*
 for intertrochanteric fracture, 702–704, 703*f*
 for Monteggia fracture, 698–699, 699*f*
 pedicle, of the spine, 747–748, 747*f*
 for tibial plateau fracture, 707–709
 Screw joints, 186
 Scrotum
 anatomy of, 458
 surgery of, 477–480
 Scrub nurse/person, 13
 Scrub sinks, 73
 Sealants, in cardiac surgery, 939*t*–940*t*
 Secondary assessment, in traumatic injury, 1093
 Secondary cataracts, 588
 Secondary suture line, 180
 Second-degree burns, 820
 Sektorectomy-sectionectomy, 365–366
 Sedation
 herbal interaction with, 1128
 pediatric, 1004
 Seddon classifies nerve injuries, 146–152
 Seed implantation, transrectal, 490–491, 492*f*
 Segmental resection, 870–871, 871*f*
 Seizure, mapping of, deep brain stimulator and, 792*b*
 Selective relaxant binding agent (SRBA), 121
 Self-gloving, 93
 Self-gowning, 91, 91*f*
 Sella turcica, 755, 756*f*
 Sellick maneuver, 1100
 Semibox/aseptic joints, 186
 Semicircular canals, 614*f*, 615–616
 Semicritical items, 74
 Semi-Fowler (beach chair) position, 167
 Semilateral position, for cardiac surgery, 941
 Seminal vesicles, 458
 Semipermeable membrane, 132–133
 Semirestricted zone, 73
 Semirigid ureteroscope, 200*f*
 Semisynthetic adhesives, 183
 Sensation, assessment in musculoskeletal injury, 1094*b*
 Sensorineural hearing loss, 621*t*
 Sensory cortex, 757
 Sensory information, 1003
 Sentinel Event Policy, 17
 Sentinel events, 17–18
 Sequential volume plethysmography, in vascular surgery, 887
 Serous retinal detachment, 593–594
 Serum, reference intervals for clinical chemistry, 1132–1134
 Sestamibi-guided parathyroidectomy, 545
 Sestamibi scan, 532, 532*f*
 Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). *See* COVID-19 pandemic
 Severe hypothermia, 1113
 Sex reassignment surgery (SRS), 474*b*
 Sexual abuse, 1001*b*
 SF6 gas, in retinopexy, 599–600
 Sharps
 body, 179
 closed-eye needle, 178
 disposal, 194
 injury during surgery, 192–194
 and miscellaneous items, 196–197
 needles, 178–179
 point, 179
 safety and bloodborne pathogens, 43
 swaged, 179
 Shear, 139–145, 140*f*
 Shelf life, 85
 Shields, corneal, 586–587
 Shirodkar cerclage, 447, 449*f*
 Shock, hypovolemic, 1101, 1102*t*
 Short arm cast, 680*f*
 Short bones, 664, 666*f*
 Shoulder
 anatomy of, 665–667
 arthroscopy of, 743–744, 745*f*
 positioner, 675, 676*f*
 set, 682
 surgery of, 689–693
 for clavicular fracture, 690–692
 for correction of acromioclavicular joint separation, 689–690, 691*f*
 for correction of humeral head fracture, 693, 694*f*
 for correction of recurrent anterior dislocation of the shoulder, 692–693, 693*f*
 for correction of rotator cuff tear, 692
 for correction of sternoclavicular dislocation, 690
 positioning for, 690, 692*f*
 total arthroplasty of, 734–736, 735*f*–736*f*
 deltopectoral approach to, 734
 reverse, 734–736

- Shunt
 carotid artery, 903–905, 905*f*
 carotid endarterectomy with, 905, 905*f*
 ventricular
 failure of, 795
 for hydrocephalus, 793–795, 794*f*
- Sigmoid colon, 287–288
 with end-to-end rectosigmoidostomy, 332–333
- Sigmoidocystoplasty, 510
- Silastic band, 445, 446*f*
- Silicone oil, in vitrectomy, 597
- Silk suture, 176
- Silo placement, gastroschisis repair, 1024–1025, 1025*f*
- Silver nitrate, for chemical pleurodesis, 866*t*
- Silver sulfadiazine, for burn therapy, 821*t*
- Silver tsunami, 1067–1068
- Simple mastectomy, 564, 564*f*
- Simple perineal prostatectomy, 488–490, 489*f*
- Single-incision laparoscopic cholecystectomy, 353
- Single-incision laparoscopic surgery (SILS), 203, 204*f*, 305
- Single-lung transplantation (SLT), 876–877
- Single-photon emission computed tomography (SPECT), 532
- Single two-stage cannulation, 958
- Single-use only items, 85–86
- Single-use *versus* reusable, 209
- Single venous cannulation, 947*f*
- Sinoatrial (SA) node, 913–914, 914*f*
- Sinuplasty, balloon, 646, 646*f*
- Sinusitis, 644–645
- Sinus tract, branchial cleft, 1036
- Site verification, in vascular surgery, 888
- Skeletal system, traumatic injuries to, 1112
- Skeletal traction, 678–679, 678*f*
- Skene ducts, 399
- Skene glands, 399
- Skin
 anatomy, 241–242, 242*f*
 antisepsis, 96*f*
 collagen, 242
 dermis, 242
 epidermis, 241
 injuries to, in child abuse and neglect, 1001*b*
 lipids, 241
 physical examination of, in cardiac surgery, 919
 preparation of
 for breast surgery, 557, 558*f*
 for neurosurgery, 785
 for plastic surgery, 815–816
 for thyroid and parathyroid surgery, 535–536
 for vascular surgery, 890, 890*f*
 sebaceous, 241
 subcutaneous layer, 242
 and underlying tissue, positioning, 139–145
- Skin cancer, Mohs surgery for, 818–819
- Skin color, assessment in musculoskeletal injury, 1094*b*
- Skin grafts, 822–825
 dermatomes for removal of, 812, 812*f*
 full-thickness, 822–824, 822*f*
 for pressure injury, 822
 split-thickness, 822–824, 822*f*, 823*f*
 harvesting of, 812, 812*f*, 824*f*
 for pressure injury, 822
 for vaginal reconstruction, 421, 422*f*
- Skin maceration, 139–145
- Skin meshers, 812, 812*f*
- Skin-sparing techniques, 563
- Skin staples, suture application of, 182*f*
- Skin substitutes, 251
 permanent and temporary, 251*t*
- Skin temperature, assessment in
 musculoskeletal injury, 1094*b*
- Skin traction, 678, 678*f*
- Skull
 anatomy of, 754–755, 755*f*, 756*f*
 cranioplasty for repair of, 802
 fractures of, 755
- Skull clamps, 779–780, 780*f*, 783, 784*b*
- Slide and cinch pusher, 189
- Sliding hernias repair, 391, 392*f*
- Sling bladder
 male perineal, 506
 pubovaginal, with autograft, 503–504
 tension-free vaginal tape, 504
 transvaginal, with bone anchor, 504–505
- Slips, trips, and falls (STFs), 39–43
 causes and prevention, 41–43
 improper footwear, 43
 inadequate lighting, 43
 obstructed pathways, 42
 uneven floor surfaces, 42
 wet floors, 41
 reduction programs, 43
- “Slush machine,” 514
- Small bowel
 resection of, 326
 surgery of
 appendectomy, 325
 end ileostomy, 326
 intestinal transplantation, 326–327
 Meckel diverticulectomy, 325
- Small intestine
 blood supply to, 287
 lymphatics of, 287
- “Smart” electronic suture, 178*b*
- Smoke evacuation, 234–236, 235*b*, 236*b*
 centralized systems, laser, 235
 contaminated filter being removed from, 235, 235*f*
 electrosurgery pencil, 235, 235*f*
 individual, 234–236, 235*f*
 in-line filter, 234–236, 234*f*
- Smoking history, 855
- “Sniffing” position, 121
- Snoring, 652
- Social determinants of health (SDOH), 281*b*
- Social media and patient safety, 33
- Society for Ambulatory Anesthesia (SAMBA), 265
- Society of Healthcare Epidemiology of America (SHEA), 63
- Sodium hyaluronate viscoelastic preparation, 577*t*–583*t*
- Sodium imbalance, anesthesia and, 135
- Sodium-potassium pump, 135
- Soft tissue instrument sets, 682
- Somatosensory-evoked potential (SSEP), 152
- Somatostatin, 286
- Sonohysterograms, 403
- Sorbitol, 462*t*–463*t*
- Spaulding classification system, 74
- Specimens, in parathyroidectomy, 544*b*
- Spectrum wavelengths, electrosurgery, 226*t*
- Speech, after laryngectomy, 658
- Spermatocoele, 479
- Spermatocoelectomy, 479
- Sphenoethmoidal recess, 616
- Sphenoid bone, 754–755, 755*f*, 756*f*
- Spica cast, 680, 680*f*, 1039, 1039*f*
- Spigelian hernia
 characteristics, 380, 380*f*
 surgery for repair, 396
- Spina bifida, 1037
- Spinal accessory nerve, 767, 768*t*
- Spinal anesthesia, 126–127, 385*b*
- Spinal column, traumatic injury to, 1105–1108, 1106*b*
- Spinal cord, 757*f*, 768–770, 771*f*, 772*f*
- Spinal cord stimulators, 805–806
- Spinal cord tumors, 770–772
 intradural, laminectomy for, 804–805, 805*f*
- Spinal fusion
 anterior cervical decompression and, 802–803, 803*f*
 anterior, with Isola instrumentation, 749
 posterior, 748
- Spinal nerves, 770, 773*f*
- Spine
 discharge planning for, 789*b*
 epidural abscess of, 772
 intervertebral disk disease of, 772, 774*f*
 intractable pain in, 772
 magnetic resonance imaging of, 777*f*
 surgery of, 746–751, 802–806
 anterior cervical decompression and fusion, 802–803, 803*f*
 anterior thoracic approach for, 804
 artificial disk replacement as, 749–750
 artificial disk replacement for degenerative disk disease, 749–750, 750*f*
 intrathecal pump therapy, 806
 laminectomy, 804–805, 805*f*
 laminotomy, 805
 lumbar laminectomy as, 746–747
 minimally invasive, 747, 747*f*
 pedicle fixation as, 747–748, 747*f*
 posterior cervical approach for, 803–804
 spinal cord stimulators, 805
 for treatment of back pain, 746–747
 vertebroplasty and kyphoplasty, 750–751
 trauma to, 770
 for treatment of scoliosis, 748–749
 tumors of, 770–772
 x-ray of, 776*f*

- Spiral fractures, 686, 687*f*
 of femoral shaft, 707*f*
- Spleen
 arterial and venous blood supply of, 342*f*
 blood reservoir, 343
 function, 343
 phagocytosis of microorganisms, 343
 robotic-assisted surgery, 354*b*
 splenectomy. *See* Splenectomy
 surgery of, 371–372
 splenectomy (open approach), 371–372
 traumatic injury of, 1110, 1110*t*
- Splenectomy
 laparoscopic, 371–372
 open approach, 371–372
- Splints, 680
- Splint, Thomas, 678–679, 679*f*
- Split-thickness skin grafts, 822–824, 822*f*, 823*f*
 for foot and ankle wound, 824*b*
 harvesting of, 812, 812*f*, 824*f*
- Sponge(s), absorbable gelatin, 786, 787*f*, 788*t*
- Spring clip, 445, 445*f*
- Squamous cell carcinoma, 817, 818*f*
- Stab avulsions, of varicosities, 907–908, 908*f*
- Stab wound, 254, 1092
- Staff safety, in cardiac surgery, 926
- Staging
 of breast cancer, 554*f*, 554*t*
 of lung cancer, 868
- Stainless steel cabinets, 73
- Stainless steel suture, 177
- Standard precautions, 69
- Standards of care, institutional, 9
- Standards of perioperative nursing practice, 2–10, 3*b*, 3*f*, 4*b*, 5*b*, 6*b*, 6*f*, 7*b*, 8*b*, 9*b*, 10*b*
- Standard surgical positions
 accessories, 161*t*
 arm support, 168–169
 chest and trunk support, 169, 169*f*
 cross-chest strap stabilization technique, 164*f*
 Fowler (sitting) position, 167–168, 167*f*
 fracture bed position, 164
 head support, 169–170
 jackknife (Kraske) position, 170, 170*f*
 lateral chest position, 172
 lateral kidney position, 172–173
 lateral (lateral recumbent/lateral decubitus) position, 171–173, 171*f*
 axillary roll in, 172*f*
 lithotomy position, 164–167, 165*f*
 prone kneeling, 170–171, 171*f*
 in prone position, 168–171
 reverse Trendelenburg, 164
 robotic-assisted surgery, 163*b*
 semi-Fowler (beach chair) position, 167
 supine, 160–163
 Trendelenburg position, 163–164
 using Wilson laminectomy frame, 168*f*
 in vacuum-packed positioning device, 163*f*
- Stapedectomy, 638, 639*f*
- Stapedius muscle, 615
- Stapedotomy, 638–639, 639*f*
- Stapes, 614*f*, 615
- Staphylococcus aureus* (MRSA), 241
- Staplers/stapling
 in fetal surgery, 1014–1015, 1014*f*
 in thoracic surgery, 858
- Staples, 182
- Stapling, 187–189
- Steam flush/pressure pulse, 80
- Steam sterilization, 79–82
- Steam sterilizer, 80
 loading, 79*f*
- Steep Trendelenburg position, for gynecologic surgery, 407, 433*b*
- Stenosis
 aortic, fetal surgery for, 1014
 intracranial, 790–791
- Stensen duct, 617
- Stent(s), 878, 878*b*
- Stentless porcine bioprostheses, 931*f*, 933*t*–934*t*
- Stereotactic procedures, in neurosurgery, 792
- Stereotactic radiosurgery, 791
- Sterile storage, 85
- Sterile technique
 gloves
 assisted-gloving/open-gloving procedure, 93, 95*f*
 at/beyond the fingertips, 93
 donning, 92–93
 self-gloving, 93, 94*f*
 wrist level, 93
 gowns
 assisted gowning, 92, 92*f*
 donning, 91–92
 and gloves, 91
 nonscrubbed perioperative team member, 92
 self-gowning, 91, 91*f*
 single-use and reusable, 91
 transferring sterile solutions, 87*f*
- Sterility assurance level (SAL), 75–76
- Sterilization, 74–86
 definition, 75–76
 effective steam, 80
 ethylene oxide, 82–83, 209–210
 liquid chemical, 209–210
 low-temperature hydrogen peroxide, 83
 ozone sterilizer, 209–210
 packaging and sterilizer loading, 77–79
 plasma system, 209–210
 pouches, 78
 quality monitoring of, 76–77
 rigid, 79
 rigid container systems, 77
 steam, 79–82
 wrappers, 77
- Sternal retractors, 927, 928*f*
- Sternoclavicular joint, 666
 dislocation of, correction of, 690
- Sternotomy, 991, 991*f*
 median, 941–942, 942*f*
 mini, 941, 942*f*
- Sternum
 anatomy of, 852, 853*f*
 wire closure of, 928, 929*f*
- Steroids, for ophthalmic surgery, 577*t*–583*t*
- Steroids, for otorhinolaryngologic surgery, 629*t*–630*t*
- Stillbirth, supporting patients through, 423*b*
- Stirrups
 for cystoscopy, 467
 of ear, 615
- St. Jude Medical bileaflet tilting disk valve prosthesis, 930*f*, 932*t*
- Stomach, 286
 GI surgery, 286
 surgery of
 gastrojejunostomy, 316–318, 317*f*
 partial gastrectomy, 318–319
 perforated peptic ulcer repair, 316
 pyloroplasty, 316
- Storage systems, 214–215
- Strabismus, eye muscle surgery for, 1047–1049, 1048*b*, 1048*f*
- Strangulated hernia, 374, 390
- Stress, before cardiac surgery, 936
- Stress test, 919–920
- Stretchers, eye surgery, 585
- Stringer, 79
- Strips, 182
- Stroke, 883
 in cardiac surgery, 955*t*–956*t*
- Stroke volume, 923*t*
- Stroke volume index, 923*t*
- Stroma, 569–570
- Structure for skull, 754–755, 755*f*
- Stryker navigation total knee arthroplasty, 731–732, 732*f*
- Subarachnoid injection, of anesthetic, 128
- Subarachnoid space, 754*f*
- Subcostal incision, 300–301, 301*f*
- Subcutaneous mastectomy, 563–564
- Subcutaneous tissue of scalp, 753
- Subcuticular sutures, 180
- Subdural hematoma, 764, 765*f*, 766*f*, 1105, 1105*f*
- Subglottis, 619
- Sublingual gland, 616
- Subluxation, 686
 in developmental dysplasia of the hip, 1039
- Submandibular gland, 617
 excision of, 649, 650*f*
- Suboccipital craniectomy, for posterior fossa exploration, 799–801, 800*f*
- Substantia nigra, 758–759, 759*f*
- Substernal thyroidectomy, 541
- Substitution cystoplasty, 509–512
- Subtenon block, 585
- Subthalamic nucleus, 759, 759*f*
- Subthalamus, 759
- Subtotal gastrectomy, stapled Billroth II anastomosis, 319*f*
- Subtotal lobectomy, 537–538
- Succinylcholine, 115*t*–119*t*, 120–121, 1101*t*
 malignant hyperthermia from, 135
- Sucking wound, of thorax, 859*f*
- Suction curettage, 422–423, 424*f*, 425*f*
- Suction, for neurosurgery, 786
- Sugammadex, 115*t*–119*t*, 121

- Sulci, 757
- Superficial infection, 54*b*
- Superior gluteal artery perforator (SGAP) flap, 828
- Superior meatus, 616, 617*f*
- Superior muscles, abdominal wall, 299*f*
- Superior vena cava, cannulation of, 943, 947*f*
- Supine position, 677
 - for cardiac surgery, 941
 - for neurosurgery, 784
 - for otorhinolaryngologic surgery, 626
 - surgical positions, 160–163
 - for thoracic surgery, 856
- Supplements, for cardiovascular disease, 917*b*
- Support system, assessment of, in
 - otorhinolaryngologic surgery, 623
- Supracondylar fractures
 - of femur, 709–711, 711*f*
 - of humerus, 695–697
- Supraglottis, 619
- Suprapatellar pouch, 671
- Suprapubic cystolithotomy, 501, 501*f*
- Suprapubic cystostomy, 498–500, 500*f*
- Suprapubic incision, 302, 302*f*
- Suprapubic prostatectomy, 487–488, 488*f*
- Suprasellar tumors, craniotomy for, 799
- Supraspinatus syndrome, 692
- Surgical adhesives, 182–183
- Surgical attire, 88, 88*f*
- Surgical capsule, prostatic, 480–481
- Surgical consent form, informed consent and, 34–35
- Surgical gloves, 194
- Surgical gut suture, 175
- Surgical hand antisepsis, 89–91
 - using surgical hand rub, 90–91
 - using surgical hand scrub, 89–90, 90*f*
- Surgical intensive care unit (SICU) nurse, 349
- Surgical liaison, 14
- Surgical microscope
 - in ophthalmic surgery, 585
 - for otorhinolaryngologic surgery, 631–632
- Surgical Pharmacology box, 56
- Surgical positions
 - accessories, 161*t*
 - arm support, 168–169
 - chest and trunk support, 169, 169*f*
 - cross-chest strap stabilization technique, 164*f*
 - Fowler (sitting) position, 167–168, 167*f*
 - fracture bed position, 164
 - head support, 169–170
 - jackknife (Kraske) position, 170, 170*f*
 - lateral chest position, 172
 - lateral kidney position, 172–173
 - lateral (lateral recumbent/lateral decubitus) position, 171–173, 171*f*
 - axillary roll in, 172*f*
 - lithotomy position, 164–167, 165*f*
 - prone kneeling, 170–171, 171*f*
 - in prone position, 168–171
 - reverse Trendelenburg, 164
 - robotic-assisted surgery, 163*b*
 - semi-Fowler (beach chair) position, 167
 - supine, 160–163
- Surgical positions (*Continued*)
 - Trendelenburg position, 163–164
 - using Wilson laminectomy frame, 168*f*
 - in vacuum-packed positioning device, 163*f*
- Surgical safety checklist (SSC) electronic, 17
- Surgical site
 - infections, preoperative hair removal for, 890*b*
 - marking of
 - in neurosurgery, 785
 - in orthopedic surgery, 671–684
 - Universal Protocol for, 673*b*
 - in vascular surgery, 888
- Surgical site infections (SSIs)
 - after breast cancer surgery, 557*b*
 - antimicrobial prophylaxis, 247
 - bloodborne pathogens, 58
 - caregiver education, 248–249
 - CDC recommendations, 246*b*
 - discharge planning, 248–249
 - epidemiology of, 241*b*
 - family care, 248–249
 - microorganisms and, 56–58
 - in mini-invasive urological surgery, 53*b*
 - multidrug-resistant organisms, 58–64
 - pathogenesis of, 54–56
 - patient care, 248–249
 - patient education to prevent, 67*b*
 - perioperative considerations, 59–60
 - postoperative, 241
 - prevention, 54*b*, 241
 - and control, 54*b*
 - prevention of
 - in lower limb trauma, 1097*b*
 - rates of, 53
 - reportable infections, 245*b*
 - resistant to selected antimicrobial agents, 59*t*
- Surgical site marking, 26*b*
- Surgical smoke safety, 49–50
- Surgical soft goods, 196*b*
- Surgical specimen management, 27–29
- Surgical suite design, 72–73
- Surgical technologist (ST), 7–8
- Surgicel, 788*t*
- Suspension laryngoscopy, 655
- Suture(s)
 - application of skin staples, 182*f*
 - biologic sealants, 182–183
 - for cardiac surgery, 928, 929*f*
 - endoscopic suturing and knot tying, 182
 - fibrin sealants, 182–183
 - general considerations for, 181
 - handling suture materials, 181, 181*f*
 - knot-tying techniques, 181–182
 - ligature, 174
 - materials, 174
 - absorbable, 175
 - antimicrobial suture, 177
 - barbed suture, 177
 - bioactive sutures, 177
 - capillarity, 174
 - characteristics of, 174–175
 - chromic surgical gut, 175
 - coating, 174
- Suture(s) (*Continued*)
 - configuration, 174
 - diameter (size), 174
 - elasticity, 174
 - emerging developments in, 177
 - engineered sutures, 177
 - handling characteristics, 174–175
 - knot strength, 174
 - memory, 174
 - monofilament, 175*f*
 - multifilament, 175*f*
 - nonabsorbable suture, 175–177
 - nylon, 176
 - physical characteristics, 174
 - plain gut, 175
 - polybutester, 177
 - polyester fiber, 177
 - polypropylene, 177
 - properties of, 174
 - selection of, 174
 - silk, 176
 - stainless steel, 177
 - surgical gut, 175
 - suture anchor, 177
 - synthetic absorbable suture, 175
 - tensile strength, 174
 - tissue-reaction characteristics, 175–177
 - types of, 175–177
 - in neurosurgery, 787
 - opening primary suture packets, 181
 - ophthalmic, 586
 - packaging
 - color codes, 178
 - types of, 177–178
 - for pediatric surgery, 1004
 - for plastic surgery, 813
 - polymethyl methacrylate (PMMA), 183
 - purse-string, 1025
 - sharps
 - body, 179
 - closed-eye needle, 178
 - needles, 178–179
 - point, 179
 - swaged, 179
 - for skin graft fixation, 823*f*
 - “smart” electronic, 178*b*
 - staples, 182
 - surgical adhesives, 182–183
 - suturing, 174
 - robotic, 190*b*
 - synthetic and semisynthetic adhesives, 183
 - technique and wound closure
 - continuous suture, 180
 - interrupted suture, 180
 - primary suture line, 180
 - purse-string suture, 180, 180*f*
 - retention (stay) sutures, 180
 - secondary suture line, 180
 - subcuticular sutures, 180
 - suture selection, 179–180
 - in vascular surgery, 892, 893*f*
 - in Wies procedure, 608*f*
 - wound closure strips, 182
 - zipper closure, 182

- Suture anchor, 177
 - Suture material, for orthopedic surgery, 682
 - Suture selection, 179–180
 - Suturing, 174
 - robotic, 190*b*
 - Suturing and stapling instruments, 205–206, 205*f*
 - Sylvian fissure, 757
 - Sympathectomy, endoscopic thoracic, 866–868, 868*f*
 - Synarthrotic joints, 664
 - Syndactyly
 - definition of, 1045
 - repair of, 1045, 1045*f*
 - Synovial joints, 664
 - Synovial membrane, 671
 - Synthetic absorbable suture, 175
 - Synthetic and semisynthetic adhesives, 183
 - Systemic circulatory system, 911–912
 - Systemic flow, 923*t*
 - Systemic vascular resistance, 923*t*
 - Systems review, in cardiac surgery, 919
 - Systolic blood pressure, 1054*b*
- T**
- Tagamet. *See* Cimetidine
 - Tail of Spence, 547
 - Talc, for chemical pleurodesis, 866*t*
 - Taper needles, 179
 - Targeted decolonization, 59*b*
 - Tarsal bones, 671
 - Tarsal plates, of eye, 568
 - Tarsometatarsal joint arthrodesis, 718
 - Tarsus (inferior/superior), 568
 - Tattoo removal, 841
 - Team member role, 236–237
 - Tears, 569*b*
 - Technetium, for sentinel lymph node breast biopsy, 562
 - Teflon patches, for cardiac surgery, 929, 929*f*
 - Telencephalon, 756–757
 - Temperature regulation, pediatric, 996
 - Temporal bone, 754–755, 755*f*, 756*f*
 - Temporal lobes, 755
 - herniation of, 1105, 1106*f*
 - Temporoparietal fascial (TPF) flaps, for head and neck reconstruction, 662
 - Tendons, 664
 - Teniae coli, 288
 - Tenotomy, 1040
 - Tensile strength, suture, 174
 - Tension banding, for olecranon fractures, 697, 698*f*
 - Tension-free inguinal hernia repair, 389*f*
 - Tension-free vaginal tape sling, 504
 - Tension pneumothorax, 859
 - Tensor tympani muscle, 615
 - Tentorium cerebelli, 757*f*
 - Teratoma, 761
 - sacroccygeal, fetal surgery for, 1013*t*, 1028, 1029*f*
 - Terminal cleaning, 99
 - Terminal rectum, 288
 - Terminal sterilization, 81–82
 - Testes, anatomy of, 458
 - Testicles, surgery of, 477–480
 - Testicular biopsy, 479–480
 - Testicular torsion, 1034
 - Testosterone, 458, 480
 - Test pack, 76
 - Tetracaine, 577*t*–583*t*, 584
 - for otorhinolaryngologic surgery, 629*t*–630*t*
 - Tetralogy of Fallot, 1057–1058, 1058*f*, 1059*f*
 - Textiles, 69
 - Thalamotomy, transthoracic, 804
 - Thalamus, 754*f*, 759, 759*f*
 - The Joint Commission (TJC), 16–17
 - data collection, 18
 - national patient safety goals, 18
 - root cause analysis (RCA), 18
 - sentinel events, 17–18
 - Universal Protocol (UP), 18
 - Therapeutic touch, 1119, 1120*t*
 - Thermal injuries, 1113
 - Thermal injury, burns as, 820
 - Thermoregulation, 142
 - for geriatric surgery, 1081
 - and temperature abnormalities
 - hyperthermia, 264
 - hypothermia, 263–264
 - Thigh free flap, anterolateral, 662–663, 662*f*
 - Thigh lift, 846*f*
 - Third-degree burns, 820
 - Thomas splint, 678–679, 679*f*
 - Thoracic aorta
 - aneurysm
 - ascending, 980–982, 981*f*
 - descending, 982–984
 - surgery for, 979–984
 - traumatic rupture of, 1109–1110, 1110*t*
 - Thoracic aortic aneurysmectomy, 979
 - Thoracic insufficiency syndrome, 1040–1041, 1040*f*
 - Thoracic outlet syndrome, decompression for, 875–876, 875*f*
 - Thoracic surgery, 852
 - ambulatory, 862*b*
 - anatomy in, 852–854, 853*f*, 854*f*
 - biopsy in, 872–873
 - blood replacement therapy in, 858
 - bronchoscopy
 - electromagnetic navigation, 865
 - using rigid bronchoscope, 863–864, 864*b*
 - chest drainage systems in, 858–859, 859*f*
 - decompression for thoracic outlet syndrome in, 875–876, 875*f*
 - decortication, 873–874, 873*f*
 - documentation in, 859–860
 - drainage of empyema in, 874
 - draping for, 856–858
 - endoscopy in, 862–868
 - equipment for, 858
 - excision of mediastinal lesion in, 876
 - hand-off report in, 860
 - instrumentation for, 858
 - intercostal drainage, 875, 875*f*
 - interventions, 862
 - lung surgery and, 868–877
 - lung transplantation in, 876–877
 - Thoracic surgery (*Continued*)
 - lung volume reduction surgery, 872, 873*f*
 - mediastinoscopy, 865
 - monitoring during, 858
 - partial rib resection in, 874–875
 - patient and family education and discharge planning, 861–862, 861*b*, 862*b*, 863*b*
 - perioperative nursing considerations for, 854–862
 - assessment, 854–855, 855*t*
 - evaluation, 860–861
 - implementation, 856–860
 - outcome identification, 856
 - patient problems, 855–856
 - planning, 856, 857*b*
 - pharmacology, 866*t*
 - pneumectomy in, 869–870
 - positioning for, 856
 - postprocedural concerns in, 860, 861*b*
 - robotic-assisted, 867*b*
 - segmental resection, 870–871, 871*f*
 - sympathectomy, endoscopic, 866–868, 868*f*
 - thoracotomy, 868, 869*f*, 870*f*
 - video-assisted, 865–866
 - wedge resection, 871–872, 872*f*
 - Thoracoabdominal incisions, 301, 301*f*, 514, 961*t*
 - Thoracolumbar myelomeningocele, 1037*f*
 - Thoracoscopic surgery, for patent ductus arteriosus, 1010
 - Thoracoscopy, 862
 - Thoracostomy, 874–875
 - Thoracotomy, 868, 869*f*, 870*f*
 - in emergency department for trauma patient, 1102–1103, 1103*f*
 - patient and family education in, 862
 - position, for cardiac surgery, 941
 - positioning for, 856
 - Thoratec Heartmate left ventricular assist device, 984–986, 988*f*
 - Thorax, 852, 853*f*
 - 3-D printing in otorhinolaryngologic surgery, 661*b*
 - Throat, 616–620
 - Thrombin, 788*t*
 - Thromboembolism prophylaxis, 154
 - Thrombolysis, intra-arterial, for acute ischemic stroke, 791
 - Thyroglossal duct cystectomy (TDC), 541–542, 543*f*
 - Thyroid adenomas, 528, 529*f*
 - Thyroid cartilage, 618*f*, 619
 - Thyroid dysfunction
 - screening for, 531*b*
 - symptoms and signs of, 529*b*
 - Thyroidectomy, 538–541
 - home care after, 536*b*
 - intrathoracic, 541
 - minimally invasive, 541, 541*f*
 - video-assisted, 541, 542*f*
 - near-total, 537
 - open, 539–541, 539*f*
 - robotic, 538*b*
 - substernal, 541
 - total, 537

- Thyroid gland, 527–528, 528*f*
 anatomy of, 527–528, 527*f*
 cancer of, 530–531
 Thyroid hormones, 527
 Thyroid isotope scan, 531
 Thyroiditis, Hashimoto, 537
 Thyroid lobectomy
 subtotal, 537–538
 unilateral, 537–538
 Thyroid nodules, 531
 Thyroid storm, 533, 534*b*, 534*t*
 Thyroid surgery, 527
 assessment of, 530–532
 in geriatric patients, 1084
 implementation of, 534–536
 minimally invasive, 541, 541*f*
 video-assisted, 541, 542*f*
 outcome identification of, 533
 patient problems, 533
 perioperative nursing considerations of, 529–537
 planning of, 533
 positioning for, 534–535
 preoperative testing, 531–532
 robotics in, 538*b*
 sample plan of care of, 535*b*
 skin preparation for, 535–536
 surgical pharmacology, 534*b*
 Thyrotoxic crisis, 533
 Thyroxine (T_4), 527
 Tibia, 668–671, 670*f*, 671*f*
 fractures of
 plateau, 707–709
 shaft, 713–716, 715*f*
 Tibial nerve, 151
 Tic douloureux, 767
 Tilting disk valve prosthesis, 930*f*
 Time-out, 108, 461
 Tissue
 effects, electrosurgery, 221–222
 engineering, 824–825
 grafting of, 822–825
 Tissue engineering, 824–825
 Tissue expanders, for breast reconstruction, 826–827, 827*f*
 Tissue fusion devices, 813
 Tissue interaction, 227–228, 228*t*
 Tissue-reaction characteristics, 175–177
 Tissue response monitoring, electrosurgery, 223
 Titanium
 in hip and knee implants, 720
 for ossicular chain reconstruction, 639
 TMVR. *See* Transcatheter mitral valve replacement
 Tobramycin, 577*t*–583*t*
 Tocolytics, 447*t*–448*t*
 Toddler, perioperative care of, 1003
To Err Is Human, 17
 Toe-to-hand transfer, 832, 833*f*
 Tongue carcinoma, 647, 647*f*
 Tonsil, 617
 carcinoma of, 647, 648*f*
 Tonsillectomy, 653–654, 654*f*
 radiofrequency, 654
 Toothed forceps, 185–186
 Topical anesthesia
 for bronchoscopy, 863
 for laryngeal surgery, 627
 for ophthalmic surgery, 577*t*–583*t*, 584
 for reconstructive and aesthetic plastic surgery, 814
 Topical thrombin, 683
 Toric intraocular lens, 590*b*
 Torus tubarius, 616
 Total abdominal hysterectomy, 435–436, 437*f*
 Total artificial heart (TAH), 986
 Total ear reconstruction, 1044
 Total gastrectomy, 319–322, 320*f*–321*f*
 Total hip and knee arthroplasty, 681*b*
 Total intravenous (IV) anesthesia, 119–120
 Total joint arthroplasty, 679*b*, 719–739, 721*b*
 ankle, 738, 738*f*
 elbow, 736–738, 737*f*
 enhanced recovery after, 684*b*
 hip, 720–727, 723*f*–725*f*
 knee, 727–731, 729*f*–731*f*
 revision, 732–734
 Stryker navigation, 731–732, 732*f*
 unicompartmental, robotically assisted, 727*b*
 metacarpal, 739, 739*f*
 metatarsal, 738–739
 shoulder, 734–736, 735*f*–736*f*
 deltpectoral approach to, 734
 reverse, 734–736
 Total knee set, 682
 Total lung capacity (TLC), 855*t*
 Totally endoscopic robotic mitral valve surgery, 971*b*–972*b*
 Totally extraperitoneal patch (TEP) repair
 inguinal hernia, 391–393
 posterior rectus sheath access, 393*f*
 Total ossicular replacement prosthesis (TORP), 637, 639
 Total penectomy, 473, 474*f*
 Total pulmonary resistance, 923*t*
 Total spinal anesthesia, 126
 Total thyroidectomy, 537
 Touch, therapeutic, 1119, 1120*t*
 Tourniquet, pneumatic, 677
 Towel clamps, 186
 Toxic anterior segment syndrome (TASS), 575–576, 576*b*
 Toxicity, local anesthetic systemic, 128*b*, 129
 Trabeculae, 665
 Trabeculectomy, 601–602, 601*f*, 1050
 Trabeculotomy, 1050
 Trachea, 618*f*, 620
 Tracheal shift, 855
 Trachelorrhaphy, 421
 Tracheoesophageal fistula (TEF), 1007
 Tracheostomy, 656–657, 657*f*
 Tractional retinal detachment, 593
 Traction, in orthopedic surgery, 678–679, 678*f*
 Traditional aortic valve replacement, 975, 976*f*, 977*f*
 Traditional perioperative roles, 13
 Traffic control, 73
 Transabdominal incision, 514
 Transabdominal preperitoneal patch (TAPP)
 repair
 inguinal hernia, 391
 Transcanal approach, for otologic surgery, 633–634
 Transcatheter aortic valve implantation, 975
 Transcatheter aortic valve replacement (TAVR), 978–979, 978*f*
 Transcatheter mitral valve replacement (TMVR), 971
 Transcondylar fractures, of humerus, 695–696, 696*f*
 Transduodenal sphincteroplasty, 359
 Transesophageal echocardiography (TEE), 888
 in cardiac surge, 920–921, 921*t*
 Transfeminine bottom surgery, 436*b*
 Transfeminine top surgery, 436*b*
 Transgender, 474*b*
 Transhiatal esophagectomy, 311–312
 Transient ischemic attack (TIA), 883
 Transient microorganisms, 89
 Translabyrinthine approach, to otologic surgery, 641
 Transmasculine bottom surgery, 436*b*
 Transmasculine top surgery, 436*b*
 Transmissible spongiform encephalopathies (TSEs), 63
 Transmission, 227
 Transmission-based precautions, 43–44, 71–72
 personal protective equipment, 43–44
 eye protection, 44
 follow-up, 45
 gloves and gowns, 44
 respiratory protection, 44
 Transoral robotic surgery (TORS), 647, 648*b*
 Transparency and disclosure, 35–36
 Transperineal biopsy, prostate, 484
 Transplantation
 corneal, 603–604, 605*f*
 heart, 986, 990*f*
 heart-lung, 987–990
 kidney, 520–524, 520*f*
 from cadaveric donor, 522–523, 522*f*
 from living donor, 520–522
 recipient of, 523–524
 Transporting contaminated instruments, 74
 Transposition flaps, 825
 Transrectal-guided ultrasound of prostate, 466*b*
 Transrectal seed implantation, 490–491, 492*f*
 Transrectal ultrasound-guided biopsy, prostate, 483, 483*f*
 Transsphenoidal hypophysectomy, 801
 Transthoracic esophagectomy, 312
 Transurethral incision of the prostate (TUIP), 485
 Transurethral microwave therapy (TUMT), 486
 Transurethral needle ablation (TUNA), 486
 Transurethral resection of prostate gland (TURP), 484–485, 485*f*
 Transurethral ureteropyeloscopy, 469, 469*f*
 Transvaginal sling, bone anchor with, 504–505

- Transvenous (endocardial) pacing electrodes, insertion of, 992
- Transverse colectomy, 332
- Transverse colon, 287–288
- Transverse fractures, 686, 687*f*
of femoral shaft, 707*f*
- Transverse incisions, 302
- Transverse loop colostomy, 329*f*
- Transverse rectus abdominis myocutaneous flap, for breast reconstruction, 829, 830*f*
- Transwomen, 473
- Trattner triple-lumen double-balloon urethrographic catheter, 464
- Trauma centers, 1089
- Traumatic cataracts, 588
- Traumatic hernia, 374
- Trauma/trauma surgery, 1089, 1089*f*
abdominal, 1110–1111
acceleration injury, 1091
ambulatory considerations, 1092*b*
anesthesia implications, 1100
assessment of
 ABCDE, 1092–1093
 admission, 1096–1097
 preliminary, 1091–1105
 secondary, 1093
autotransfusion in, 1099
in bariatric patients, 1102
blast injuries, 1092, 1093*t*
bullet trauma, 1092, 1092*f*
cataracts and, 588
chest and heart, 1108–1110
compartment syndrome with, 1095, 1096*f*, 1096*t*
damage control surgery, 1105
deceleration injury, 1091
diagnostic procedures in, 1095–1096, 1096*f*, 1096*t*
in emergency department, 1102–1103, 1103*b*, 1103*f*
end-of-life care, 1105
evaluation of, 1104
evidence preservation in, 1099–1100
eye injury, 1108
facial injury, 1108
focused assessment with sonography, 1095
genitourinary injury, 1111–1112, 1111*f*, 1111*t*, 1112*f*
geriatric, 1102
“golden hour” in, 1089
head and spinal column, 1105–1108
hypothermia, 1113
implementation, 1097–1104
intervention, successive, 1103
laboratory test in, 1094–1095
mechanism of injury, 1091–1105
motor vehicle collision (MVC), 1091, 1091*f*
multiple procedures in, 1097
neck injury, 1108
organ and tissue procurement, 1113–1114
outcome identification, 1097
patient and family education and discharge planning, 1104
- Trauma/trauma surgery (*Continued*)
patient problems, 1097
pediatric, 1051–1054, 1052*t*, 1054*f*, 1054*t*, 1102
penetrating injury, 1092
perioperative nursing considerations, 1091
planning, 1097, 1098*b*
in pregnancy, 1100–1102, 1102*t*
procedure preparation, 1098–1099
skeletal, 1112
spinal, 770
stab and impalement wounds, 1092
thermal, 1113
venous thromboembolism prophylaxis, 1100
- Trendelenburg position, 163–164
- Triamcinolone acetonide, for otorhinolaryngologic surgery, 629*t*–630*t*
- Triangle of Calot, 342–343
- Triangular needles, 179
- Tricompartmental implants, for knee, 727
- Tricuspid valve, 923*t*
anatomy of, 914, 914*f*, 915*f*
surgery for, 973–975
- Trigeminal nerve, 620, 766*f*, 767, 768*t*
microvascular decompression of, 801
- Trigone, 456–457
- Tri-incisional esophagectomy, 312–313
- Triiodothyronine (T₃), 527
- Trimalar fracture, 834
- Trimethoprim-sulfamethoxazole, 57*t*
- Triple arthrodesis, 716–717
- Triple endoscopy, laryngeal surgery with, 656
- Trisegmentectomy, 365–366
- Trocar cystostomy, 501
- Trocar system, 202–204, 203*f*
- Trochlea, 667, 667*f*
- Trochlear nerve, 765, 766*f*, 768*t*
- Tropicamide, 577*t*–583*t*
- True aneurysms, 881
- True latex allergy, 93
- True pelvis, 401
- True prostatic capsule, 458
- True vocal cords, 619
- Trypan Blue, 577*t*–583*t*
- T-tubes, 367–369
- Tubal ligation, 444–446, 445*f*, 446*f*
- Tubal occlusion, laparoscopic, 445–446
- Tube grafts, 929–930, 929*f*
- Tubes, myringotomy, 634–635, 636*f*
- Tuboplasty, 444
- Tumor(s)
of brain, 759–760, 799
 endovascular embolization for, 790
of cranial nerves, 760
laryngeal, 654–663, 655*f*
parasellar, 799
pediatric, 1027–1028
 Wilms, 1027–1028, 1028*f*
pituitary, 799
of spine, 770–772
suprasellar, 799
- Tumor, node, metastasis (TNM)
breast cancer, 553
in lung cancer, 868
- Tuohy needle, 127
- Turbinate bones, 616, 617*f*
- Turbulent blood flow, 880–881
- Twin reversed arterial perfusion (TRAP)
sequence, 1013*t*
- Twin-to-twin transfusion syndrome (TTTS), 1012, 1013*t*
- Two-arm spring forceps, 185–186
- Tympanic membrane, 614*f*, 615, 615*f*
myringotomy tubes in, 636*f*, 637
- Tympanoplasty, 636–637
- Tympanostomy, 634–635
- ## U
- Ulna, 667, 667*f*
fracture of proximal third of, with radial head dislocation, 698–699, 699*f*
surgery for, 693–699
transposition of, 697–698
- Ulnar nerve, 148
- Ulnar neuropathy, 150
- Ultra-high-molecular-weight polyethylene (UHMWPE) joint implant, 720
- Ultrasonic aspirator, 781
- Ultrasonic cleaners, 75
- Ultrasonic device surgery, 237–238, 237*f*
- Ultrasonic lithotripsy system, 501, 501*f*
- Ultrasound, 622
in neurosurgery, 778
of thyroid nodule, 531
in vascular surgery, 887
- Ultraviolet light disinfection, 99*b*–100*b*
- Umbilical hernia
characteristics, 380
pediatric, repair of, 1022
surgery for repair, 394
- Undescended testis, 1032
- Uneven floor surfaces, 42
- Unfilled saline breast implants, 845–846
- Unicompartmental implants, for knee, 727
- Unilateral thyroid lobectomy, 537
- Unintentionally retained surgical items
multidisciplinary approach, 194–195
preventing, 194
RFID technology to prevent, 195*b*
surgical soft goods, 195–196
- Unipolar implant, for femoral head repair, 684–685, 706*f*
- Universal decolonization, 59*b*
- Universal precautions, 68
- Universal Protocol (UP), 18, 26*b*, 673*b*
- Unlicensed assistive personnel (UAP), 7–8
- Unrestricted zone, 73
- Unsafe devices, corrections and removals of, 210
- Upper extremity, 129
anatomy of, 665–667, 666*f*, 667*f*
neuropathies, 147–150
- Upper respiratory tract infection, anesthesia and, 106
- Ureteral catheters, for genitourinary surgery, 463, 464*f*
- Ureteral reimplantation, 515
- Ureterectomy, 515

Ureterocutaneous transplant, 515
 Ureteroenterostomy, 515
 Ureterolithotomy, 515–516
 Ureteroplasty, 517
 Ureteropyeloscopy, 469, 469f
 irrigating fluids during, 469
 transurethral, 469, 469f
 Ureterosigmoid anastomosis, 515
 Ureterostomy, 514–515
 Ureteroureterostomy, 515
 Ureterovaginal fistula, 420
 Ureters
 anatomy of, 400
 surgery of, 514–525
 Urethra
 anatomy of, 399
 traumatic injury to, 1112, 1112f
 Urethral catheters, for genitourinary surgery,
 463, 464f
 Urethral dilation, 470–471, 471f
 Urethral meatotomy, 470
 Urethral patch graft, 472
 Urethroplasty, 471–472, 1030
 Urethrotomy, internal, 470–471
 Urethrovaginal fistula repair, vaginal approach
 to, 419–420, 419f
 Urethrovaginal septum, 401
 URFOs prevention, 25–27
 Urinary bladder
 anatomy of, 456–457, 456f, 457f
 evacuation of, 457
 Urinary diversions
 continent, 513–514
 cutaneous, 512–513, 513f
 Urinary function, 280
 Urinary stress incontinence, 420–421
 Urinary system, in elderly, 1074
 Urinary tract obstruction, 514, 514f
 Urine, 454
 reference intervals for clinical chemistry,
 1134–1135
 Urticaria, 131
 Uterine hysterotomy, for open fetal surgery,
 1014–1015
 Uterosacral ligaments, 401
 Uterus
 anatomy of, 400
 dilation and curettage of, 412b
 ligaments of, 400–401
 Uvulopalatopharyngoplasty, 652–653, 653f

V

Vacuum-assisted closure (VAC). *See* Negative-pressure wound therapy
 Vacuum-packed positioning device, 163f
 Vagina
 anatomy of, 401
 cancer of, 405
 construction of, 421, 422f
 plastic reconstructive repair of, 415–420,
 415f
 Vaginal hysterectomy, 425–426, 427f
 laparoscopic-assisted, 432–433
 Vaginoplasty, 436b
 Vagus nerve, 766f, 768t
 Valve prostheses, in cardiac surgery, 930–932,
 930f, 931f, 932f, 933t–934t, 934f,
 935f, 936t
 Valve surgery, risks and complications of, 973b
 Valvular angiography, 923t
 Valvulotomes, 892, 892f
 Vancomycin, 57t
 Vancomycin-resistant enterococci, 241
 Vaping, 999b
 Varicocelectomy, 479
 Varicoceles, 479
 Varicose veins
 endovenous laser ablation for, 909b
 excision and stripping of, 907–909, 908f,
 909f
 surgery, 895b–896b
 Vascular access
 for cardiac surgery, 936–937
 for pediatric surgery, 1007
 Vascular clamps, 927, 927f
 Vascular disease, peripheral, 883
 Vascular foot conditions, 885
 Vascular injection, of anesthetic, 128
 Vascular malformations, of central nervous
 system, 764
 Vascular monitoring equipment, for vascular
 surgery, 892
 Vascular prostheses, 891–892, 892f
 Vascular resistance, 923t
 Vascular supply, of female reproductive system,
 402
 Vascular surgery, 878
 anatomy for, 878–881
 arterial, 894–907
 documentation for, 893
 draping for, 890
 in geriatric patients, 1086
 instrumentation for, 893
 intraoperative monitoring in, 888
 medications and solutions in, 890–891, 891t
 monitoring equipment for, 892
 perioperative nursing considerations for,
 885–894
 assessment, 885–888, 885b
 implementation, 888–893
 outcome identification, 888
 planning, 888, 889b
 positioning for, 889–890
 preoperative tests in, 886–888
 prostheses in, 891–892, 892f
 site verification in, 888
 skin preparation for, 890, 890f
 sutures in, 892, 893f
 venous, 907–909
 Vas deferens, 458
 Vasectomy, 478
 Vasopressin
 for genitourinary surgery, 462t–463t
 for gynecologic and obstetric surgery,
 447t–448t
 Vasovasostomy, 478, 479f

VATS. *See* Video-assisted thoracoscopic surgery
 Vecuronium, 1101t
 Veganism, 1118–1119
 Veins
 anatomy of, 878–881, 879f–880f, 881f, 882f
 autogenous, grafting, 892, 892f
 central retinal, 571
 cerebral, 763
 varicose, 907
 Vein solution, in cardiac surgery, 939t–940t
 Vena cava filter insertion, 895b–896b, 907,
 908f
 Venae cavae, 923t
 Venous cannulation, 943, 947f, 948f
 Venous conduits, coronary artery bypass grafts
 with, 962–965, 963f, 964f, 965f, 966f
 Venous disease, 883–885
 Venous insufficiency, 883
 Venous malformations, 764
 Venous surgical interventions, 907–909
 vein excision and stripping, 907–909, 908f,
 909f
 vena cava filter insertion in, 907, 908f
 Venous thromboembolism (VTE)
 in gynecologic oncology surgery, 407b
 prevention in older patients, 1079b
 prophylaxis in trauma patient, 1100
 Ventilation, 73–74
 Ventilator, failure to wean from, in cardiac
 surgery, 955t–956t
 Ventral hernia, 374, 379–380
 enhanced recovery after surgery, 380, 381b
 laparoscopic repair, 394–395
 operative procedure, 395
 procedural considerations, 395
 open repair, 395–396
 components separation technique, 395f
 operative procedure, 396
 repair, 381b, 394
 Ventricles, of heart, 911, 912f
 Ventricular aneurysmectomy, 965–968
 postinfarction, 966–968, 968f
 Ventricular assist device, 984–986, 988f
 Ventricular catheter and shunt placement, for
 hydrocephalus, 793–795, 794f
 Ventricular drains, for neurosurgery, 783
 Ventricular septal defect, 1056–1057, 1056f,
 1057f
 Ventricular shunt, failure, 795
 Ventricular system, cerebrospinal fluid and,
 761–762
 Ventriculoatrial shunt insertion, 1038, 1039f
 Ventriculography, 921–922, 923t
 Ventriculoperitoneal shunt, 793–795, 794f
 insertion, 1038
 Venules, 881f
 Veracity and fidelity, 35
 Veress needle, 189
 Verification
 in pediatric surgery, 1000, 1000f
 perioperative in orthopedic surgery,
 671–684, 673b
 site, in vascular surgery, 888

- Versed. *See* Midazolam
 VerSys hip system, 726
 Vertebrae, anatomy of, 665
 Vertebral column, 665, 767–768, 769*f*
 fractures of, 770
 Vertebroplasty, 750–751
 Vertical expandable prosthetic titanium rib (VEPTR), 1041–1042, 1041*f*
 Vertical incisions, 299–300
 oblique inguinal incision, 300–302
 paramedian incision, 300
 Vertigo, 640
 Vesical fistulas repair, 501–503, 502*f*
 Vesicointestinal fistulas, 501
 Vesicoureteral reflux, 1032
 repair of, 1032–1034
 Vesicourethral suspension, 503
 Vesicovaginal fistula repair, 419, 419*f*
 transperitoneal (transvesical) approach, 502–503
 vaginal approach, 501–502, 502*f*
 Vestibular labyrinth, 615
 Vestibular schwannomas, 640, 760, 767
 Vestibulocochlear nerve, 620, 766*f*
 Vest-over-pants repairs, 394
 Veterans Administration Medical Center (VAMC), 40
 Veterans Health Administration medical centers, 19*b*
 Video-assisted thoracic surgery, technological innovation in, 858*b*
 Video-assisted thoracoscopic surgery (VATS), 865–866
 robotic-assisted, 867*b*
 Videoconferencing, 215
 Video imaging, in urology, 465
 Video monitors, 214
 Videoscopes, 200
 Video technology, 210–218
 evolution of, 210–212
 glossary, 211*b*
 visualization systems, 212–215, 212*f*
 camera, cable, and control unit, 212–213, 213*f*
 couplers (adapters), 213–214
 recording systems, 214
 robotics, 215–218, 216*f*, 217*b*
 storage systems, 214–215
 video monitors, 214
 Vigilance, 32
 Virchow's triad, 883
 Virulence factors, 56
 Visceral pleura, 852
 Visible light disinfection, 99*b*–100*b*
 Vision, 568
 optic nerve in, 765
 Visualization, during neurosurgery, 785–787, 786*f*, 787*f*, 788*t*
 Vital capacity, 854
 Vital signs, pediatric, 998*t*
 Vitamin K, 341–342
 Vitrectomy, 595–598, 596*f*, 597*f*
 of anterior segment, 593
 posterior segment, 595–598, 596*f*
 Vitrectomy machine, 585
 Vitrector machine, 1049
 Vitreoretinal surgery, 593–595
 Vitreous humor
 anatomy of, 570
 posterior vitreous detachment and, 593
 Vocal cords, 619
 Voiding, 456–457
 Voiding cystourethrogram (VCUG), 1032
 Vomiting, aromatherapy for, 1122*b*
 Voretigene neparvovec-rzyl (Luxturna), 1047*b*
 V-Pro Max 2 sterilizers, 83*f*
 Vulva
 anatomy of, 398–399, 399*f*
 cancer of, 405, 406*f*
 surgery of, 413–415
 Vulvectomy
 patient and family education for, 412*b*
 radical, 413*f*, 414–415
 simple, 413–414
 superficial, 413
W
 Wada test, 778
 Wandering maneuver, in minimally invasive spine surgery, 747*f*
 Warming, forced-air, 135
 Warm ischemia time, 521
 Waste anesthetic gases (WAGs), 45–46
 Water imbalance, anesthesia and, 135
 Wavefront-guided LASIK surgery, 603
 Wedge resection, 871–872, 872*f*
 Weight loss. *See* Bariatric surgery
 Weight reduction. *See* Bariatric surgery
 Weitlaner retractor, 189*f*
 Wertheim radical hysterectomy, 439–440, 439*f*, 440*f*
 Wet floors, 41
 Wetting solution, for liposuction, 843*f*
 Wharton duct, 617
 Whipple procedure, 361–362, 361*b*
 White balancing, 202
 White matter, 757, 759*f*, 768–770
 Wies procedure, for entropion, 607–608, 608*f*
 Wilms tumor, resection of, 1027–1028, 1028*f*
 Wilson laminectomy frame, 168*f*
 Wire closure, of sternum, 928, 929*f*
 Wire fixation, in closed reduction, 689
 Wire localization, in mammography, 551–552, 552*f*
 Women, cardiovascular disease and, 916, 917*b*
 Wood lamp, 813
 Workplace safety, 40
 Workplace violence, 50
 Work practice controls, 193–194
 World Health Organization (WHO)
 checklists in surgery, 25*b*
 clean care, 21
 World Health Organization (WHO) (*Continued*)
 guidelines for safe surgery, 27
 guidelines on hand hygiene in health care, 21
 5 Moments for Hand Hygiene campaign, 21, 21*f*
 surgical safety checklist, 17, 21–22, 22*f*
 Wound(s)
 classification, 245–247
 drains for, 254, 255*f*
 etiology of, 242
 home care of
 after breast surgery, 559*b*
 management
 acellular extracellular matrix scaffolds, 252*t*
 debridement, 249
 growth factors, 251
 hydrotherapy and hydrosurgery, 250–251, 251*b*
 hyperbaric oxygenation, 249–250
 negative-pressure wound therapy, 250, 250*f*
 scaffolds, 252
 skin substitutes, 251
 post-discharge follow-up and, 242*b*
 postoperative care, 249*b*
 Wound closure
 continuous suture, 180
 contraction, 242
 delayed primary closure/tertiary intention, 242
 granulation, 242
 interrupted suture, 180
 primary intention, 242
 primary suture line, 180
 purse-string suture, 180, 180*f*
 retention (stay) sutures, 180
 secondary intention, 242
 secondary suture line, 180
 strips, 182
 subcuticular sutures, 180
 suture selection, 179–180
 types of, 242–244
 Wound dehiscence, 302
 oblique inguinal incision, 302
 Wound healing, 278–280
 clean-contaminated wounds (class II), 247
 clean wounds (class I), 247
 contaminated wounds (class III), 247
 definition, 241
 dirty/infected wounds (class IV), 247
 factors affecting, 244–245
 inflammatory phase, 244
 patient safety, 245*b*
 processes, 243*f*
 proliferative phase, 244
 remodeling phase, 244
 terminology, 247*b*
 Wound protector devices, 300*b*
 Wrappers, sterilization, 77
 Wrist, anatomy of, 667, 668*f*

Wrist level gloves, 93
Wrong-site surgery (WSS) highlights, 17

X

Xenograft, 820
Xenon bulbs, 202
Xiphoid process, 852, 853^f
X-ray, chest, 855

Y

Yoga, 1118
Yttrium-aluminum-garnet (YAG) laser, 590

Z

Zaire ebolavirus species, 62
Zemuron. *See* Rocuronium
Zenker diverticulum excision, 313–314

Zipper closure suture, 182
Zonules, 570, 570^f
Z-plasty, for scar revision, 838, 838^f
Zuckermandl fascia, 454–455
Zygomatic fractures, reduction of, 834