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9th EDITION

Medical-Surgical Nursing

CONCEPTS FOR INTERPROFESSIONAL COLLABORATIVE CARE

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PREFACE

The first edition of this textbook, entitled *Medical-Surgical Nursing: A Nursing Process Approach,* was a groundbreaking work in many ways. The following eight editions built on that achievement and further solidified the book's position as a major trendsetter for the practice of adult health nursing. Now, in its ninth edition, "Iggy" charts the cutting-edge approach for the future of adult nursing practice—an approach reflected in its current title: *Medical-Surgical Nursing: Concepts for Interprofessional Collaborative Care.* The focus of this new edition continues to help students learn how to provide safe, quality nursing care that is patient-centered, evidence-based, and interprofessionally collaborative. In addition to print formats as single- and two-volume texts, this edition is now available in a variety of electronic formats.

The subtitle for this ninth edition was carefully chosen to emphasize the interprofessional nature of today's care, in which the nurse serves as a central role in collaboration with the patient, family, and members of the interprofessional health care team in acute care, community-based, and home settings. This approach reflects the National Academy of Medicine, The Joint Commission, the Quality and Safety Education for Nurses (QSEN) Institute, and the 2010 *Future of Nursing* report that unanimously have called for all health professionals to coordinate and deliver safe, evidence-based, patient-centered care as a collaborative team.

KEY THEMES FOR THE 9TH EDITION

The key themes for this edition strengthen this text's conceptual focus on safety, quality care, patient-centeredness, and clinical judgment to best prepare the student for interprofessional practice in medical-surgical health settings. Each theme is outlined and described below.

- **Enhanced Focus on Professional Nursing and Health Concepts.** This edition uniquely balances a focus on concepts, and a conceptual approach to teaching and learning, with important underpinnings of content. Prelicensure programs that embrace concept-based nursing curriculum, system-focused curriculum, or a hybrid approach will find this edition easy to use. To help students connect previously learned concepts with new information in the text, Chapters 1 and 2 addresses the main concepts used in this edition, giving a working definition upon which the students will reflect and build as they learn new material. These unique features build on basic concepts learned in nursing fundamentals courses, such as gas exchange and safety, to help students make connections between foundational concepts and interprofessional patient care for medical-surgical conditions. For continuity and reinforcement, a list of specific Priority and Interrelated Nursing Concepts is highlighted at the beginning of each chapter. This placement is specifically designed to help students better understand the priority and associated needs that the nurse will address when providing safe, evidence-based, patient-centered care for individuals with selected health problems. When these concepts are discussed in the body of each chapter, they are presented in small capital letters (e.g., IMMUNITY) to help students relate and apply essential concepts to provide more focused nursing care.
- **Emphasis on Key Exemplars.** For each priority concept listed in selected chapters, the authors have identified key exemplars. The nursing and interprofesional collaborative care for patients experiencing these exemplar diseases and illnesses is discussed through the lens of the priority and interrelated concepts. In addition, patient problems are presented as a collaborative problem list rather than merely presenting nursing diagnoses.
- **Prioritized Focus on the Core Body of Knowledge and QSEN Competencies.** This edition not only continues to emphasize need-to-know content for the RN level of practice but also includes a continuing emphasis on Quality and Safety Education for Nurses (QSEN) Institute core competencies. Clinical practice settings emphasize the critical need for safe practices and quality improvement to provide interprofessional patient-centered care that is evidence-based. Many hospitals and other health care agencies have formally adopted these QSEN competencies as core values and goals for patient care, and many nursing programs have used these same competencies to build prelicensure nursing curriculum. To help prepare students for the work environment as new graduates, as well as to highlight the foundational underpinning of safety and quality into all nursing actions, this edition prioritizes a focus on these competencies.
- **Emphasis on Patient Safety.** Patient safety is emphasized throughout this edition, not only in the narrative but also in **Nursing Safety Priority boxes** that enable students to immediately identify the most important care needed for patients with specific health problems. These highlighted features are further classified as an Action Alert, Drug Alert, or Critical Rescue. We also continue to include our leading-edge Best Practice for Patient Safety & Quality Care charts to emphasize the most important nursing care. **Highlighted yellow text** also demonstrates the application of The Joint Commission's National Patient Safety Goals initiatives (http://www.jointcommission.org/standards_information/npsgs.aspx) and Core Measures content into everyday nursing practice. The Joint Commission's National Patient Safety Goals initiatives are also set in **boldface type** for further emphasis.
- **Focus on Patient-Centered Care.** Patient-centered care is enhanced in the ninth edition in several ways. The ninth edition continues to use the term "patient" instead of "client" throughout. Although the use of these terms remains a subject of discussion among nursing educators and health care organizations, we have not defined the patient as a dependent person. Rather, the patient can be an individual, a family, or a group—all of whom have rights that are respected in a mutually trusting nurse-patient relationship. Most health care agencies and professional organizations use "patient" in their practice and publications, and most professional nursing organizations support the term.
- **Focus on Gender Considerations.** To increase our emphasis on patient-centered care, **Gender Health Considerations**

focus on important gender-associated information that impacts nursing care. Differences in patient values, preferences, and beliefs are addressed in **Chapter 73, Care of Transgender Patients**. Along with other individuals in the LGBTQ population, the health needs of transgender patients have gained national attention through their inclusion in *Healthy People 2020* and The Joint Commission's standards. This chapter, first introduced in the eighth edition, continues to provide tools to help prepare students and faculty to provide safe, evidence-based, patient-centered care for transgender patients who are considering or who have undergone the gender transition process.

- **Emphasis on Evidence-Based Practice.** The ninth edition focuses again on the importance of *using best current evidence in nursing practice* and how to locate and use this evidence to improve patient care. **Evidence-Based Practice boxes** offer a solid foundation in this essential component of nursing practice. Each box summarizes a useful research article and explains the implications of its findings for practice and further research, as well as a rating of the level of evidence based on a well-respected scale.
- **Focus on Quality Improvement.** The QSEN Institute emphasizes, and clinical practice agencies require, that all nurses have *quality improvement* knowledge, skills, and attitudes. To help prepare students for that role, this edition includes unique **Quality Improvement boxes.** Each box summarizes a quality improvement project published in the literature and discusses the implications of the project's success in improving nursing care. The inclusion of these boxes disseminates information and research and helps students understand that quality improvement begins at the bedside as the nurse identifies potential evidence-based solutions to practice problems.
- **Emphasis on Clinical Judgment.** Stressing the importance of clinical judgment skills via prioritization and delegation helps to best prepare students for practice and the NCLEX® Examination. As in the eighth edition, the ninth edition emphasizes the importance of nursing clinical judgment to make timely and appropriate decisions and prioritize care. To help achieve that focus, all-new case-based **Clinical Judgment Challenges** based primarily on QSEN core competencies are integrated throughout the text. Selected Clinical Judgment Challenges highlight ethical dilemmas, as well as delegation and supervision issues. These exercises provide clinical situations in which students can use evolving nursing clinical judgment to help prepare them for the fast-paced world of medical-surgical nursing. Suggested answer guidelines for these Clinical Judgment Challenges are provided on the companion Evolve website (http://evolve.elsevier.com/Iggy/).

  Dr. Christine Tanner's clinical judgment framework (Tanner, 2006) is integrated more deeply in this edition to help students apply selected concepts in the Disorders chapters. The components of this model match Tanner's terminology to each nursing process heading, thereby helping students use nursing judgment to provide safe, quality care by:
  - Assessment: Noticing
  - Analysis: Interpreting
  - Planning: Implementation and Responding
  - Evaluation: Reflecting
- **Emphasis on Preparation for the NCLEX® Examination.** An enhanced emphasis on the NCLEX Examination and consistency with the 2016 NCLEX-RN® test plan has been refined in this edition. The ninth edition emphasizes "readiness"—readiness for the NCLEX Examination, readiness for disaster and mass casualty events, readiness for safe drug administration, and readiness for the continually evolving world of genetics and genomics. An increased number of new **NCLEX Examination Challenges** are interspersed throughout the text to allow students the opportunity to practice test-taking and decision making. Answers to these Challenges are provided in the back of the book, and their rationales are provided on the Evolve website (http://evolve.elsevier.com/Iggy). In a world that needs more nurses than ever before, it is more critical than ever that students be ready to pass the licensure examination on the first try. To help students and faculty achieve that outcome, **Learning Outcomes** at the beginning of each chapter continue to be consistent with the competencies outlined in the detailed 2016 NCLEX-RN® Test Plan. The ninth edition continues to include an innovative end-of-chapter feature called **Get Ready for the NCLEX® Examination!** This unique and effective learning aid consists of a list of **Key Points** *organized by Client Needs Category* as found in the NCLEX-RN Test Plan. Relevant QSEN and Nurse of the Future competency categories are identified for selected Key Points.
- **New Focus on Care Coordination and Transition Management.** This edition includes a priority focus on continuity of care via a Care Coordination and Transition Management section in each Disorders chapter. Literature continues to emphasize the importance of care coordination and transition management between acute care and community-based care (Lattavo, 2014). To help students prepare for this role, the ninth edition of our text provides coverage focusing on Home Care Management, Self-Management Education, and Health Care Resources.

CLINICAL CURRENCY AND ACCURACY

To ensure currency and accuracy, we listened to students and faculty who have used the previous editions, focusing on their impressions of and experiences with the book. A thorough literature search of current best evidence regarding nursing education and clinical practice helped us validate best practices and national health care trends to shape the focus of the ninth edition.

In-depth reviews of every chapter were commissioned and conducted by a dedicated panel of instructors and clinicians across the United States and Canada. A well-respected interventional radiologist ensured the accuracy of diagnostic testing procedures and associated patient care. The input from these experts guided us in revising chapters into their final format.

The results of these efforts are reflected in the ninth edition's:

- Strong, consistent focus on NCLEX-RN® Examination preparation, clinical judgment, safe patient-centered interprofessional care, pathophysiology, drug therapy, quality improvement, evidence-based clinical practice, and care coordination and transition management
- Foundation of relevant research and best practice guidelines
- Emphasis on critical "need to know" information that entry-level nurses must master to provide safe patient care

With the amount of information that continues to evolve in health care practice and education, it is easy for a book to become larger with each new edition. The reality is that today's nursing students have a limited time to absorb and begin to apply essential information to provide safe medical-surgical nursing care. Materials in this edition were carefully scrutinized to determine what the essential information was that students will actively *use* when providing safe, patient-centered, interprofessional, quality nursing care for adults.

OUTSTANDING READABILITY

Today's students must maximize their study time to read information and quickly understand it. The average reading level of today's learner is 10th to 11th grade. To achieve this level of readability without reducing the quality or depth of material that students need to know, this text uses a direct-address style (where appropriate) that speaks directly to the reader, and sentences are as short as possible without sacrificing essential content. The new edition has improved consistency of difficulty level from chapter to chapter. The result of our efforts is a medical-surgical text of consistently outstanding readability in which content is clear, focused, and accessible.

EASE OF ACCESS

To make this text as easy to use as possible, we have maintained our approach of having smaller chapters of more uniform length. Consistent with our focus on "need to know" material, we chose exemplars to illustrate concepts of care versus detailing every health disorder. The focused ninth edition contains 74 chapters.

The overall presentation of the ninth edition has been updated, including more current, high-quality photographs for realism, as well as design changes to improve accessibility of material. The design of the ninth edition includes appropriate placement of display elements (e.g., figures, tables, and charts) for a chapter flow that enhances text reading without splintering content or confusing the reader. Additional ease-of-access features for this edition include tabbed markings for the answer key, glossary, and index for quick reference. To increase the smoothness of flow and reader concentration, side-turned tables and charts or tables and charts that span multiple pages are infrequently used. Drug tables have been reformatted for consistency and ease of use.

We have maintained the unit structure of previous editions, with vital body systems (cardiovascular, respiratory, and neurologic) appearing earlier in the book. In these three units we continue to provide complex care content in separate chapters that discuss managing critically ill patients with coronary artery disease, respiratory health problems, and neurologic health problems.

To break up long blocks of text and highlight key information, we continue to include streamlined yet eye-catching headings, bulleted lists, tables, charts, and in-text highlights. Key terms are in boldface color type and are defined in the text to foster the learning of need-to-know vocabulary. A glossary is located in the back of the book. Current bibliographic resources at the end of each chapter include research articles, nationally accepted clinical guidelines, and other sources of evidence when available for each chapter. Classic sources from before 2011 are noted with an asterisk (*).

A PATIENT-CENTERED, INTERPROFESSIONAL COLLABORATIVE CARE APPROACH

As in previous editions, we maintain in this edition a collaborative, interprofessional care approach to patient care. In the real world of health care, nurses, patients, and all other providers who are part of the interprofessional team *share* responsibility for the management of patient problems. Thus we present information in a collaborative framework with an increased emphasis on the interprofessional nature of care. In this framework we make no *artificial* distinctions between medical treatment and nursing care. Instead, under each Interprofessional Collaborative Care heading we discuss how the nurse coordinates care and transition management while interacting with members of the interprofessional team.

This edition includes newly redesigned patient-centered Concept Maps that underscore the interprofessional care approach. Each Concept Map contains a case scenario. It then shows how a selected complex health problem is addressed. Each Concept Map spells out the steps of the nursing process and related concepts to illustrate the relationships among disease processes, priority patient problems, collaborative management, and more.

Although our approach has a focus on interprofessional care, the text is first and foremost a *nursing* text. We therefore use a nursing process approach as a tool to organize discussions of patient health problems and their management. Discussions of *major* health problems follow a full nursing process format using this structure:

- [Health problem]
- Pathophysiology
  - Etiology (and Genetic Risk when appropriate)
  - Incidence and Prevalence
- Health Promotion and Maintenance (when appropriate)
- Interprofessional Collaborative Care
  - Assessment: Noticing
  - Analysis: Interpreting
  - Planning and Implementation: Responding
    - [Collaborative Intervention Statement (based on priority patient problems)]
    - Planning: Expected Outcomes
    - Interventions
  - Care Coordination and Transition Management
    - Home Care Management
    - Self-Management Education
    - Health Care Resources
  - Evaluation: Reflecting

The Analysis sections list the priority patient problems associated with major health problems and disorders. The ninth edition identifies priority collaborative patient problems or needs as the basis for the interprofessional plan of care. These collaborative patient problems pair more clearly with the title's focus than the previous use of NANDA-I language, which addresses primarily nursing-oriented patient problems. With its concentration on collaborative patient problems or needs, the ninth edition aligns with the language of clinical practice.

Discussions of less common or less complex disorders follow a similar, yet abbreviated, format: a discussion of the problem itself (including pertinent information on pathophysiology) followed by a section on interprofessional collaborative care of patients with the disorder. To demonstrate our commitment to

providing the content foundational to nursing education, and consistent with the recommendations of Benner and colleagues through the Carnegie Foundation for the Future of Nursing Education, we highlight essential pathophysiologic concepts that are key to understanding the basis for collaborative management.

Integral to the interprofessional care approach is a narrative of who on the health care team is involved in the care of the patient. When a responsibility is primarily the nurse's, the text says so. When a decision must be made jointly by various members of the team (e.g., by the patient, nurse, health care provider, and physical therapist), this is clearly stated. When health care practitioners in different care settings are involved in the patient's care, this is stated.

ORGANIZATION

The 74 chapters of *Medical-Surgical Nursing: Concepts for Interprofessional Collaborative Care* are grouped into 16 units. Unit 1, Foundations for Medical-Surgical Nursing, provides fundamental information for the health care concepts incorporated throughout the text. Unit 2 consists of three chapters on concepts of emergency and trauma care and disaster preparedness.

Unit 3 consists of three chapters on the management of patients with fluid, electrolyte, and acid-base imbalances. Chapters 11 and 12 review key assessments associated with fluid and electrolyte balance, acid-base balance, and related patient care in a clear, concise discussion. The chapter on infusion therapy (Chapter 13) is supplemented with an online Fluids & Electrolytes Tutorial on the companion Evolve website.

Unit 4 presents the perioperative nursing content that medical-surgical nurses need to know. This content provides a solid foundation to help the student better understand the interprofessional care required for the surgical patient regardless of setting. Emphasis is placed on continuous assessment during the perioperative period to prevent complications and improve outcomes as we continue to see an increase in ambulatory care.

Unit 5 provides core content on health problems related to immunity. This material includes information on inflammation and the immune response, altered cell growth and cancer development, and interventions for patients with connective tissue disease, HIV infection, and other immunologic disorders, cancers, and infections.

The remaining 11 units cover medical-surgical content by body system. Each of these units begins with an Assessment chapter and continues with one or more Nursing Care chapters for patients with selected health problems, highlighted via exemplars, in that body system. This framework is familiar to students who learn the body systems in preclinical foundational science courses such as anatomy and physiology.

MULTINATIONAL, MULTICULTURAL, MULTIGENERATIONAL FOCUS

To reflect the increasing diversity of our society, *Medical-Surgical Nursing: Concepts for Interprofessional Collaborative Care* takes a multinational, multicultural, and multigenerational focus. Addressing the needs of both U.S. and Canadian readers, we have included examples of trade names of drugs available in the United States and in Canada. Drugs that are available only in Canada are designated with the Canadian maple leaf symbol(🍁). When appropriate, we identify specific Canadian health care resources, including their websites. In many areas, Canadian health statistics are combined with those of the United States to provide an accurate "North American" picture.

To help nurses provide quality care for patients whose preferences, beliefs, and values may differ from their own, numerous **Cultural/Spiritual Considerations** and **Gender Health Considerations boxes** highlight important aspects of culturally competent care. Chapter 73 is dedicated to the special health care needs of transgender patients.

Increases in life expectancy and aging of the baby-boom generation contribute to a steadily increasing older adult population. To help nurses care for this population, the ninth edition continues to provide thorough coverage of the care of older adults. Chapter 3 offers content on the role of the nurse and interprofessional team in promoting health for older adults, with coverage of common health problems that older adults may experience, such as falls and inadequate nutrition. The text includes many **Nursing Focus on the Older Adult** charts**.** Laboratory values and drug considerations for older patients are also included throughout the book. Charts specifying normal physiologic changes to expect in the older population are found in each Assessment chapter, and **Considerations for Older Adults boxes** emphasize key points for the student to consider when caring for these patients. A new feature for the ninth edition is **Veterans' Health Considerations**. An increasing number of veterans of wars have multiple physical and mental health problems and require special attention in today's health care environment.

ADDITIONAL LEARNING AIDS

The ninth edition continues to include a rich array of learning aids geared toward adult learners that help students quickly identify and understand key information while serving as study aids.

- Written in "patient-friendly" language, **Patient and Family Education: Preparing for Self-Management charts** provide teaching information that nurses must know to safely transition patients and their families back to the community environment of care.
- **Laboratory Profile charts** summarize important laboratory test information commonly used to evaluate health status. Information typically includes the normal ranges of laboratory values (including differences for older adults, when appropriate) and the significance of abnormal findings.
- The streamlined **Common Examples of Drug Therapy charts** summarize important information about commonly used drugs. Charts include U.S. and Canadian trade names for typically used drugs along with nursing implications and rationales (rationales are indicated by italic type).
- **Key Features charts** highlight the clinical signs and symptoms of important health problems based on pathophysiologic concepts.
- **Evidence-Based Practice boxes**, provided in many chapters, give synopses of recent nursing research articles and other scientific articles applicable to nursing. Each box provides a summary of the research, its level of evidence (LOE), and a brief commentary with implications for nursing practice and future research. This feature helps students identify strengths and weaknesses of evidence while seeing how research guides nursing practice.

- **Quality Improvement boxes** offer anecdotes of recent nursing articles that focus on this important QSEN competency and how nurses at the bedside have an active hand in shaping best practice. Similar to the Evidence-Based Practice boxes, these features provide a brief summary of the research with commentary on the implications for practice.
- As in the previous editions, **Home Care Assessment charts** serve as a convenient summary of essential assessment points for patients who need follow-up home health nursing care.
- Subtypes of **Clinical Judgment Challenges** (CJCs) emphasize the six QSEN core competencies: Patient-Centered Care, Teamwork and Collaboration, Evidence-Based Practice, Quality Improvement, Safety, and Informatics.

AN INTEGRATED MULTIMEDIA RESOURCE BASED ON PROVEN STRATEGIES FOR STUDENT ENGAGEMENT AND LEARNING

Medical-Surgical Nursing: Concepts for Interprofessional Collaborative Care, 9th edition, is the centerpiece of a comprehensive package of electronic and print learning resources that break new ground in the application of proven strategies for student engagement, learning, and evidence-based educational practice. This integrated multimedia resource actively engages the student in problem solving and practicing clinical decision-making skills.

Resources for Instructors

For the convenience of faculty, all Instructor Resources are available on a streamlined, secure instructor area of the Evolve website (http://evolve.elsevier.com/Iggy/). Included among these Instructor Resources are the ***TEACH for Nurses* Lesson Plans.** These Lesson Plans focus on the most important content from each chapter and provide innovative strategies for student engagement and learning. This ninth edition *TEACH for Nurses* product incorporates numerous interprofessional activities that give students an opportunity to practice as an integral part of the health care team. Lesson Plans are provided for each chapter and are categorized into several parts:

Learning Outcomes
Teaching Focus
Key Terms
Nursing Curriculum Standards
  QSEN
  Concepts
  BSN Essentials
Student Chapter Resources
Instructor Chapter Resources
Teaching Strategies

Additional Instructor Resources provided on the Evolve website include:

- A completely revised, updated, high-quality **Test Bank** consisting of more than 1750 items, both traditional multiple-choice and NCLEX-RN® "alternate-item" types. Each question is coded for correct answer, rationale, cognitive level, NCLEX Integrated Process, NCLEX Client Needs Category, and new key words to facilitate question searches. Page references are provided for Remembering (Knowledge)-level and Understanding (Comprehension)-level questions. (Questions at the Applying [Application] and above cognitive level require the student to draw on understanding of multiple or broader concepts not limited to a single textbook page, so page cross references are not provided for these higher-level critical thinking questions.) The Test Bank is provided in the Evolve Assessment Manager and in ExamView and ParTest formats.
- An electronic **Image Collection** containing all images from the book (approximately 550 images), delivered in a format that makes incorporation into lectures, presentations, and online courses easier than ever.
- **PowerPoint Presentations**—a completely revised collection of more than 2000 slides corresponding to each chapter in the text and highlighting key materials with integrated images and Unfolding Case Studies. Audience Response System Questions (three discussion-oriented questions per chapter for use with iClicker and other audience response systems) are included in these slide presentations. Answers and rationales to the Audience Response System Questions and Unfolding Case Studies are found in the "Notes" section of each slide.

Also available for adoption and separate purchase:

- Corresponding chapter-by-chapter to the textbook, ***Elsevier Adaptive Quizzing (EAQ)*** integrates seamlessly into your course to help students of all skill levels focus their study time and effectively prepare for class, course exams, and the NCLEX® certification exam. ***EAQ*** is comprised of a bank of high-quality practice questions that allows students to advance at their own pace—based on their performance—through multiple mastery levels for each chapter. A comprehensive dashboard allows students to view their progress and stay motivated. The educator dashboard, grade book, and reporting capabilities enable faculty to monitor the activity of individual students, assess overall class performance, and identify areas of strength and weakness, ultimately helping to achieve improved learning outcomes.
- ***Simulation Learning System (SLS) for Medical-Surgical Nursing*** is an online toolkit designed to help you effectively incorporate simulation into your nursing curriculum, with scenarios that promote and enhance the clinical decision-making skills of students at all levels. It offers detailed instructions for preparation and implementation of the simulation experience, debriefing questions that encourage critical thinking, and learning resources to reinforce student comprehension. Modularized simulation scenarios correspond to Elsevier's leading medical-surgical nursing texts, reinforcing students' classroom knowledge base, synthesizing lecture and clinicals, and offering the remediation content that is critical to debriefing.

Resources for Students

Resources for students include a revised, updated, and retitled Study Guide, a Clinical Companion, Elsevier Adaptive Learning (EAL), Virtual Clinical Excursions (VCE), and Evolve Learning Resources.

The ***Study Guide*** has been completely revised and updated and features a fresh emphasis on clinical decision making, priorities of delegation, management of care, and pharmacology.

The pocket-sized ***Clinical Companion*** is a handy clinical resource that retains its easy-to-use alphabetical organization and streamlined format. It includes "Critical Rescue," "Drug Alert," and "Action Alert" highlights throughout based on

the Nursing Safety Priority features in the textbook. National Patient Safety Goals highlights have been expanded as a QSEN feature, focusing on one of six QSEN core competencies while still underscoring the importance of observing vital patient safety standards. This "pocket-sized Iggy" has been tailored to the special needs of students preparing for clinicals and clinical practice.

Corresponding chapter-by-chapter to the textbook, ***Elsevier Adaptive Learning (EAL)*** combines the power of brain science with sophisticated, patented Cerego algorithms to help students to learn faster and remember longer. It's fun, it's engaging, and it constantly tracks and adapts to student performance to deliver content precisely when it's needed to ensure core information is transformed into lasting knowledge.

Virtual Clinical Excursions**,** featuring an updated and easy-to-navigate "virtual" clinical setting, is once again available for the eighth edition. This unique learning tool guides students through a virtual clinical environment and helps them "learn by doing" in the safety of a "virtual" hospital.

Also available for students is a dynamic collection of Evolve Student Resources, available at http://evolve.elsevier.com/Iggy/. The Evolve Student Resources include the following:

- Review Questions for the NCLEX® Examination
- Answer Guidelines for NCLEX® Examination and Clinical Judgment Challenges
- Interactive Case Studies
- Concept Maps (digital versions of the 12 Concept Maps from the text)
- Concept Map Creator (a handy tool for creating customized Concept Maps)
- Fluid & Electrolyte Tutorial (a complete self-paced tutorial on this perennially difficult content)
- Key Points (downloadable expanded chapter reviews for each chapter)
- Audio Glossary
- Audio Clips and Video Clips
- Content Updates

In summary, *Medical-Surgical Nursing: Concepts for Interprofessional Collaborative Care,* 9th edition, together with its fully integrated multimedia ancillary package, provides the tools you will need to equip nursing students to meet the opportunities and challenges of nursing practice both now and in an evolving health care environment. The only elements that remain to be added to this package are those that you uniquely provide—your passion, your commitment, your innovation, *your nursing expertise.*

Donna D. Ignatavicius
M. Linda Workman
Cherie R. Rebar

To all the nursing educators who are passionate about teaching, and to all the nursing students who are passionate about learning.
To my husband, Charles, who has endured countless hours of loneliness while I've worked on this project, and to Stephanie, my daughter, who has educated me about the special needs of the LGBTQ community. Thank you!
DONNA

To students everywhere.
To John, still my one.
LINDA

To Michael…you are my everything.
To Gillian…all I do is for you, my beautiful girl.
To Mom and Dad…thank you for roots and wings.
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To Carolyn, Laura, Nicole, Tracy, and Tracie…my kindred spirits.
To all who study, teach, and practice nursing….you are my heroes.
CHERIE

ABOUT THE AUTHORS

Donna D. Ignatavicius received her diploma in nursing from the Peninsula General School of Nursing in Salisbury, Maryland. After working as a charge nurse in medical-surgical nursing, she became an instructor in staff development at the University of Maryland Medical Center. She then received her BSN from the University of Maryland School of Nursing. For 5 years she taught in several schools of nursing while working toward her MS in Nursing, which she received in 1981. Donna then taught in the BSN program at the University of Maryland, after which she continued to pursue her interest in gerontology and accepted the position of Director of Nursing of a major skilled-nursing facility in her home state of Maryland. Since that time, she has served as an instructor in several associate degree nursing programs. Through her consulting activities, faculty development workshops, and international nursing education conferences (such as Boot Camp for Nurse Educators®),Donna is nationally recognized as an expert in nursing education. She is currently the President of DI Associates, Inc. (http://www.diassociates.com/), a company dedicated to improving health care through education and consultation for faculty. In recognition of her contributions to the field, she was inducted as a charter Fellow of the prestigious Academy of Nursing Education in 2007 and received her Certified Nurse Educator credential in 2016.

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ACKNOWLEDGMENTS

Publishing a textbook and ancillary package of this magnitude would not be possible without the combined efforts of many people. With that in mind, we would like to extend our deepest gratitude to many people who were such an integral part of this journey.

For the ninth edition, we welcomed section editor Nicole M. Heimgartner to assist in our revision process. Nicole has worked with our team in contributor and ancillary roles over the past editions. Within this edition, she updated and reviewed selected chapters of the text to provide her expertise.

Our contributing authors once again provided excellent manuscripts to underscore the clinical relevancy of this publication. We give special gratitude to Deanne Blach, who revised our Concept Maps, and to Dr. Richard Lintner, who provided expertise in interventional radiologic procedures and associated care. Our reviewers—expert clinicians and instructors from around the United States and Canada—provided invaluable suggestions and encouragement throughout the development of book.

The staff of Elsevier has, as always, provided us with meaningful guidance and support throughout every step of the planning, writing, revision, and production of the ninth edition. Executive Content Strategist Lee Henderson worked closely with us from the early stages of this edition to help us hone and focus our revision plan while coordinating the project from start to finish. Senior Content Development Specialist Laura Goodrich then worked with us to bring the logistics of the ninth edition from vision to publication. Laura also held the reins of our complex ancillary package and worked with a gifted group of writers and content experts to provide an outstanding library of resources to complement and enhance the text.

Senior Project Manager Jodi Willard was, as always, an absolute joy with whom to work. If the mark of a good editor is that his or her work is invisible to the reader, then Jodi is the consummate editor. Her unwavering attention to detail, flexibility, and conscientiousness helped to make the ninth edition consistently readable, while making the production process incredibly smooth. Also, a special thanks to Publishing Services Manager Jeff Patterson.

Designer Brian Salisbury is responsible for the beautiful cover and the new interior design of the ninth edition. Brian's work on this edition has cast important features in exactly the right light, contributing to the readability and colorful beauty of this edition.

Our acknowledgments would not be complete without recognizing our dedicated team of Educational Solutions Consultants and other key members of the Sales and Marketing staff who helped to put this book into your hands.

Donna D. Ignatavicius
M. Linda Workman
Cherie R. Rebar

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CHAPTER 1

Overview of Professional Nursing Concepts for Medical-Surgical Nursing

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PRIORITY AND INTERRELATED CONCEPTS

The priority concepts for this chapter are:

- Patient-Centered Care
- Safety
- Teamwork and Interprofessional Collaboration
- Evidence-Based Practice
- Quality Improvement
- Informatics and Technology
- Clinical Judgment
- Ethics
- Health Care Organizations
- Health Care Disparities

LEARNING OUTCOMES

Safe and Effective Care Environment

1. Briefly describe the scope of medical-surgical nursing.
2. Explain the current priority focus on patient safety and quality of care.
3. Identify the purpose and function of the Rapid Response Team (RRT).
4. Differentiate the six core Quality and Safety Education for Nurses (QSEN) competencies that interprofessional health care team members need to provide safe, patient-centered care.
5. Identify six major ethics principles that help guide decision making and clinical judgment.
6. Communicate patient values, preferences, and expressed needs to other members of the interprofessional health care team for effective collaboration.
7. Outline the five rights of the delegation and supervision process.
8. Describe the SBAR procedure for successful hand-off communication in health care agencies.
9. Describe the nurse's role in the systematic quality improvement process.
10. Identify three ways that informatics and technology are used in health care.
11. Outline the major differences in types of health care organizations.

Psychosocial Integrity

12. Explain why many minority populations such as members of the LGBTQ community are at risk for health care disparities.
13. Identify the role of the nurse when communicating with LGBTQ patients.

Medical-surgical nursing, sometimes called *adult health nursing,* is a specialty practice area in which nurses promote, restore, or maintain optimal health for patients from 18 to older than 100 years of age (Academy of Medical-Surgical Nurses [AMSN], 2012). A separate chapter on care of older adults is part of this textbook because the majority of medical-surgical patients in most health care settings are older than 65 years (see Chapter 3). In addition, special features throughout the book highlight the unique needs of older adults.

To be consistent with the most recent health care literature, the authors use the term *patient* rather than *client* (except in NCLEX Examination Challenge questions where *client* is used to reflect that licensure examination). To be patient-centered, be sure to refer to individuals according to the policy of the

health care organization and the individual's preference. The *family* refers to the patient's relatives and significant others in the patient's life whom the patient identifies and values as important.

Medical-surgical nursing is practiced in many types of settings, such as acute care agencies, skilled nursing facilities, ambulatory care clinics, and the patient's home, which could be either a single residence or group setting such as an assisted living facility. The role of the nurse in these settings includes care coordinator and transition manager, caregiver, patient educator, leader, and patient and family advocate. To function in these various roles, nurses need to have the knowledge, skills, attitudes, and abilities (KSAs) to keep patients and their families safe.

This chapter reviews 10 nursing concepts needed for effective professional practice. Six of the 10 concepts are Quality and Safety Education for Nurses core competencies. The additional four concepts are also essential to nursing practice and are typically introduced in foundations or fundamentals of nursing courses. For more information about these concepts, see your foundations or fundamentals of nursing textbook.

QUALITY AND SAFETY EDUCATION FOR NURSES CORE COMPETENCIES

The Institute of Medicine (IOM, now the National Academy of Medicine [NAM]), a highly respected U.S. organization that monitors health care and recommends health policy, published many reports during the past 20 years suggesting ways to improve patient safety and quality care. One of its reports, *Health Professions Education: A Bridge to Quality,* identified five broad core competencies for health care professionals to ensure patient safety and quality care (Institute of Medicine [IOM], 2003). All of these competencies are interrelated and include:

- Provide *patient-centered care.*
- *Collaborate* with the interdisciplinary health care team.
- Implement *evidence-based practice.*
- Use *quality improvement* in patient care.
- Use *informatics* in patient care.

Several years later, the QSEN initiative, now called the *QSEN Institute,* validated the IOM (NAM) competencies for nursing practice and added *safety* as a sixth competency to emphasize its importance. More information about the QSEN Institute can be found on its website at www.qsen.org.

In addition to emphasizing these six QSEN competency concepts, the authors selected four professional nursing concepts to integrate throughout the text. This chapter reviews these 10 nursing concepts, and includes the concept definition, scope, and attributes (characteristics) for each one. Each concept review then ends with examples of how the concept is used in practice. The 10 concepts reviewed in this chapter are:

- Patient-centered care
- Safety
- Teamwork and interprofessional collaboration
- Evidence-based practice
- Quality improvement
- Informatics and technology
- Clinical judgment
- Ethics
- Health care organizations
- Health care disparities

PATIENT-CENTERED CARE

Definition of Patient-Centered Care

To be competent in patient-centered, the nurse recognizes "the patient or designee as the source of control and full partner in providing compassionate and coordinated care based on respect for [the] patient's preferences, values, and needs" (Quality and Safety Education for Nurses [QSEN], 2011). Implied in this widely used definition is the need for the nurse to be culturally competent when caring for diverse patients and their families. The Joint Commission, a major accrediting organization for health care agencies, uses the term *family-centered care* to emphasize the importance of including the patient's support system as part of interprofessional collaboration.

Scope of Patient-Centered Care

Patient-centered care has been a focus of health professions' education and research for several decades. Prior to this period of time, patients in inpatient facilities and their families often had little to no input into their health care. Many health care professionals believed that they were better-prepared than patients to make care decisions and did not consistently include the patient and family in this process. The Joint Commission and other organizations called for the rights of patients or their designees (e.g., family members, guardians) to make their own informed decisions. The IOM (now NAM) further emphasized the need for all health care agencies to place patients and their families at the center of the interprofessional team to make mutual decisions based on patient preferences and values.

Attributes of Patient-Centered Care

The attributes, or characteristics, of patient-centered care were identified by researchers as a result of a classic medical study (Frampton, et al., 2008). These attributes include:

- Respect for patients' values, preferences, and expressed needs
- Coordination and integration of care
- Information, communication, and education
- Physical comfort
- Emotional support and alleviation of fear and anxiety
- Involvement of family and friends
- Transition and continuity
- Access to care

Showing respect for the patient and family's preferences and needs is essential to ensure a holistic or "whole person" approach to care. To help illustrate the importance of culture and spirituality, and prepare nursing students for a multicultural society, this text includes *Cultural/Spiritual Considerations* features to highlight this important information. Additional features that focus on the culture and needs of special populations include:

- *Considerations for Older Adults*
- *Gender Health Considerations*
- *Veterans' Health Considerations*

Canadian nursing practice includes culture from a safety perspective. Promoting safety requires nursing practice that respects and nurtures the unique and dynamic characteristics of patients and families to meet their needs, preferences, values, and rights (Doane & Varcoe, 2015). Cultural safety is part of relational inquiry and practice and is valued in Canada as a major attribute in professional nursing.

TABLE 1-1 Examples of Integrative (Complementary and Alternative) Therapies Used in Health Care Organizations

- Pet therapy
- Massage therapy
- Guided imagery
- Biofeedback
- Exercise and fitness programs
- Nutritional supplements
- Massage therapy
- Health-focused television
- Music therapy
- Acupuncture
- Acupressure
- Disease management programs

Examples of Context of Patient-Centered Care to Nursing and Health Care

Patient-centered care is a major emphasis in all health care settings. For example, many health care organizations integrate complementary and alternative medicine (CAM) as a supplement to traditional health care to meet the preferences of patients and their families. This *integrative care* model is in response to the increasing use of these therapies by consumers to maintain health and help manage chronic health issues, such as joint pain, back pain, and anxiety or depression (Halm & Katseres, 2015). Integrative care reflects nursing theories of caring, compassion, and holism to *respect the diverse preferences and needs* of patients and their families. Examples of these therapies are listed in Table 1-1. Specific complementary and integrative therapies are highlighted throughout this text as appropriate.

Patients want to have their *basic physical care and comfort needs* met. For example, patients in a variety of settings often experience acute and/or chronic pain. Nurses continually assess the patient's pain management needs and implement interventions to relieve or reduce pain in a timely manner. Chapter 4 describes pain assessment and interventions in detail.

After discharge from a hospital or other inpatient setting, patients also have a need for individualized coordinated care. Many patients discharged from a hospital, especially older adults, are readmitted within 30 days at a cost of more than $4 billion due to lack of coordinated care (Polster, 2015; Stubenrauch, 2015). **Care coordination** is the deliberate organization of and communication about patient care activities between two or more members of the health care team (including the patient) to facilitate appropriate and continuous health care to meet that patient's needs (Lamb, 2014). One of the most important members of the health care team who assists with care coordination is the case manager (CM) or discharge planner, who is typically a nurse or social worker in health care agencies.

The purpose of the **case management** process is to provide quality and cost-effective services and resources to achieve positive patient outcomes. In collaboration with the nurse, the CM coordinates inpatient and community-based care before discharge from a hospital or other facility. Part of that process may involve communicating with other CMs who are employed by third-party health care payers (e.g., Medicare) to keep patients from being readmitted to the hospital.

In addition to coordination and access of care following hospital discharge, transitions of care (also called transition management) are essential to prevent adverse events and hospital readmissions. **Transition management** involves safe and seamless movement of patients among health care settings, health care providers, and the community for ongoing care to meet patient needs. The Joint Commission (2013) recommends these components for effective care coordination and transition management:

- Understandable discharge instructions for the patient and family
- Explanation of self-care activities
- Ongoing or emergency care information
- List of community and outpatient (ambulatory care) resources and referrals
- Knowledge of the patient's language, culture, and health literacy
- Medication reconciliation (also a Joint Commission National Patient Safety Goal)

Medication reconciliation is a formal evaluative process in which the patient's actual current medications are compared to his or her prescribed medications at time of admission, transfer, or discharge to identify and resolve discrepancies. The types of information that clinicians use to reconcile medications include drug name, dose, frequency, route, and purpose. This comparison addresses duplications, omissions, and interactions and the need to continue current medications. Medication discrepancies can cause negative patient outcomes, including rehospitalizations for medical complications. A quality improvement project by Ruggerio et al. (2015) demonstrated the effectiveness of a medication reconciliation process by increasing the accuracy of information provided to patients at discharge in a large metropolitan hospital system (see the Quality Improvement box).

In this text the authors use the heading *Care Coordination and Transition Management* to describe the specific activities, including medication reconciliation and discharge health teaching that are essential for patients with selected health problems and their families. Nurses play a major role in coordinating this care with the interprofessional team to promote safe, quality care.

SAFETY

Definition of Safety

Safety is the ability to keep the patient and staff free from harm and minimize errors in care. Health care errors by providers, nurses, and other professionals have been widely reported for the past 20 years. Many of these errors resulted in patient injuries or deaths, and increased health care costs. A number of national and international organizations implemented new programs and standards to combat this growing problem.

Scope of Safety

Safety is essential for patients, staff members, and health care organizations. Although most literature discusses safety for patients, safety for members of the staff and interprofessional team is equally important. The scope of safety can be described as *unsafe*, possibly causing harm or even death, or *safe* to prevent harm or negative outcomes. Nurses have accountability for and play a key role in promoting safety and preventing errors, including "missed nursing care," the necessary care that should have been provided by one or more nurses.

Patient harm and errors generally occur as a result of (Benner et al., 2010):

- Lack of clear or adequate communication among patient, family, and members of the interprofessional health care team

QUALITY IMPROVEMENT QSEN

Improving Medication Reconciliation With a Nurse-Led Protocol

Ruggerio, J., Smith, J., Copeland, J., & Boxer, B. (2015). Discharge time out: An innovative nurse-driven protocol for medication reconciliation. *MEDSURG Nursing, 24*(3), 165–172.

Medication reconciliation is a requirement for agencies accredited by The Joint Commission to ensure consistency between admission medications and those prescribed at discharge. A retrospective medical record review by nurse leaders at a large East Coast metropolitan hospital found a 77.9% discrepancy rate between admission and discharge medication reconciliation forms. Physician staff, most often residents, completed these forms before patient discharge. Three problem areas were identified: medication omissions, changes in doses at discharge without prescriptions, and omission of core measures requirements.

An oversight interprofessional team was formed to decrease these problems; the Define Measure Analyze Improve Control (DMAIC) methodology was used to guide the improvement process. A decision was made to transfer the responsibility of medication reconciliation from physician staff to nursing staff. All nurses on the pilot unit were educated on how to complete the reconciliation forms accurately during a patient discharge time-out. As a result of implementation and follow-up for 20 months, the discharge discrepancies decreased from 77.9% to 21.2%. These data showed the benefit of the new nurse-led protocol for discharge medication reconciliation.

Commentary: Implications for Practice and Research

In 2011 the Institute of Medicine (now the National Academy of Medicine) called on nurses to lead and coordinate collaborative improvement initiatives to transform their practice and the health care systems in which they work. This project was consistent with this goal by empowering nurses to identify and improve problems that affect patient safety. But the limitation of this project is that it is unknown whether the decrease in errors was the result of awareness of the issue or if using nurses rather than medical residents improved accuracy. More research is needed to answer this question.

- Lack of attentiveness and patient monitoring
- Lack of clinical judgment
- Inadequate measures to prevent health complications
- Errors in medication administration
- Errors in interpreting authorized provider prescriptions
- Lack of professional accountability and patient advocacy
- Inability to carry out interventions in an appropriate and timely manner
- Lack of mandatory reporting

Attributes of Safety

Patient and staff safety is a major priority for professional nurses. Best safety practices reduce error and harm through established protocols, memory checklists, and systems such as bar-code medication administration (BCMA) (Fig. 1-1). Maintaining safety requires that nurses and other health care professionals use these systems and practices consistently and as specified to achieve positive outcomes. Working around these systems (often called *work-arounds)* is not acceptable and can increase the risk of error to patients and/or staff.

FIG. 1-1 Example of a bar-code medication administration (BCMA) system. (Courtesy Zebra Technologies).

Three types of *Nursing Safety Priority* boxes are found throughout this text to emphasize its importance in daily practice. These features delineate safety based on patient and/or staff need. For example, *Nursing Safety Priority: Critical Rescue* emphasizes the need for action for potential or actual life-threatening problems. *Nursing Safety Priority: Action Alert* boxes focus on the need for action but not necessarily for life-threatening situations. But safety alerts are essential to ensure optimal outcomes. As the name implies, *Nursing Safety Priority: Drug Alert* boxes specify actions needed to ensure safety related to drug administration, monitoring, or related patient and family education.

Examples of Context of Safety to Nursing and Health Care

In 2002 The Joint Commission (TJC) published its first annual **National Patient Safety Goals (NPSGs).** These goals require health care organizations to focus on specific priority safety practices, many of which involve establishing nursing and health system approaches to safe care. Since that time, TJC continues to add new goals each year. NPSGs address high-risk issues such as safe drug administration, prevention of health care–associated infections, and communication effectiveness among the interprofessional team. When appropriate, this textbook highlights related NPSGs. A complete list of the latest goals can be found on the TJC website at www.jointcommission.org.

The Joint Commission (TJC) requires that health care organizations create a culture of safety. A **culture of safety** provides a blame-free approach to improving care in high-risk, error-prone health care organizations using interprofessional collaboration. Patients and families are encouraged to become safety partners in protecting patients from harm. In this environment, nurses and other interprofessional health team members should not hesitate to report and document errors or missed care using appropriate internal organizational documents for risk management, quality improvement, and staff education purposes. These variations in the standard of care are often referred to as **adverse events**. The Joint Commission requires that health care organizations report serious adverse events, known as *sentinel events*. A sentinel event is a severe variation in the standard of care that is caused by

human or system error and results in an avoidable patient death or major harm.

TEAMWORK AND INTERPROFESSIONAL COLLABORATION

Definition of Teamwork and Interprofessional Collaboration

To provide patient- and family-centered care, the nurse "functions effectively within nursing and interprofessional teams, fostering open communication, mutual respect, and shared decision-making to achieve quality patient care" (QSEN, 2011). Therefore the knowledge and skills needed for this competency are effective communication and team functioning. Communication is an essential process for evaluating patient care together using an interprofessional (IP) plan of care. To help meet this purpose, health care organizations have frequent and regular IP meetings and conduct IP patient care rounds.

Scope of Teamwork and Interprofessional Collaboration

In this textbook the interprofessional health care team includes the patient, family, nurses, unlicensed assistive personnel (UAP such as nursing assistants), and other health professionals and their assistants needed to provide appropriate and safe, evidence-based care. Other older terms used for these members include the *interdisciplinary* or multidisciplinary team, depending on health care organization, context, or setting. Although there are many health care team members, some health care professionals work more closely with nurses than others. For example, the physician or other health care provider and medical-surgical nurse collaborate frequently in a given day regarding patient care. The occupational therapist may not work as closely with the nurse unless the patient is receiving rehabilitation services. Collaboration with the rehabilitation team is discussed in Chapter 6.

Attributes of Teamwork and Interprofessional Collaboration

In 2011 the Interprofessional Education Collaborative (IPEC) Expert Panel published competencies to guide health professionals in education and practice; these competencies were updated in 2016. The four general competencies include:

- *Values/Ethics for Interprofessional Practice:* Work with individuals of other professions to maintain a climate of mutual respect and shared values.
- *Role-Responsibilities:* Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and populations served.
- *Interprofessional Communication:* Communicate with patients, families, communities, and other health professionals in a responsive and responsible manner that supports a team approach to the maintenance of health and the treatment of disease.
- *Teams and Teamwork:* Apply relationship-building values and the principles of team dynamics to perform effectively in different team roles to plan and deliver patient-/population-centered care that is safe, timely, efficient, effective, and equitable.

Specific competencies for each of these general statements are delineated in the IPEC report. Examples of *Interprofessional Communication* are listed in Table 1-2.

TABLE 1-2 Interprofessional Communication Competencies

CC1. Choose effective communication tools and techniques, including information systems and communication technologies, to facilitate discussions and interactions that enhance team function.
CC2. Organize and communicate information with patients, families, and health care team members in a form that is understandable, avoiding discipline-specific terminology when possible.
CC3. Express one's knowledge and opinions to team members involved in patient care with confidence, clarity, and respect, working to ensure common understanding of information and treatment and care decisions.
CC4. Listen actively and encourage ideas and opinions of other team members.
CC5. Give timely, sensitive, instructive feedback to others about their performance on the team, responding respectfully as a team member to feedback from others.
CC6. Use respectful language appropriate for a given difficult situation, crucial conversation, or interprofessional conflict.
CC7. Recognize how one's own uniqueness, including experience level, expertise, culture, power, and hierarchy within the health care team, contributes to effective communication, conflict resolution, and positive interprofessional working relationships.
CC8. Communicate consistently the importance of teamwork in patient-centered and community focused care.

Data from Interprofessional Education Collaborative Expert Panel. (2016). *Core competencies for interprofessional collaborative practice: Report of an expert panel* (2nd ed.). Washington, D.C.: Interprofessional Education Collaborative.

Examples of Context of Teamwork and Interprofessional Collaboration to Nursing and Health Care

Electronic mail (e-mail) allows for quick communication among health care professionals to enhance collaboration and coordination of care. *However, it should not replace face-to-face and phone communication.*

Communication

Poor communication between professional caregivers and health care agencies causes many medical errors and patient safety risks. **In 2006 The Joint Commission began to require systematic strategies for improving communication. Two years later, another National Patient Safety Goal mandated that nurses communicate continuing patient care needs such as pain management or respiratory support to post-discharge caregivers for safe transition management.**

To improve communication between staff members and health care agencies, procedures for hand-off communication were established. An effective procedure used in many agencies today is called *SBAR* (pronounced S-Bar) or similar method. **SBAR** is a formal method of communication between two or more members of the health care team. The SBAR process includes these four steps:

- **S**ituation: Describe what is happening at the time to require this communication.
- **B**ackground: Explain any relevant background information that relates to the situation.
- **A**ssessment: Provide an analysis of the problem or patient need based on assessment data.
- **R**ecommendation/**R**equest: State what is needed or what the desired outcome is.

Several modifications of SBAR include I-SBAR, I-SBAR-R, and SBARQ. In these methods the "I" reminds the individual to *identify* himself or herself. The last "R" stands for the *response* that the receiver provides based on the information given. The "Q" represents any additional questions that need to be answered. Be sure to follow the established documentation and reporting protocols in your health care organization.

TeamSTEPPS is also a systematic communication approach for interprofessional teams that was designed to improve safety and quality. STEPPS stands for **S**trategies and **T**ools to **E**nhance **P**erformance and **P**atient **S**afety. Adapted from the aviation industry, this model reminds professionals that mistakes can cause negative outcomes, including death (Haynes & Strickler, 2014). In addition to SBAR, these common communication tools as part of TeamSTEPPS are very effective for promoting patient safety and teamwork:

- *CUS words:* State "I'm **c**oncerned; I'm **u**ncomfortable; I don't feel like this is **s**afe."
- *Check backs:* Restate what a person said to verify understanding by all team members.
- *Call outs:* Shout out important information (such as vital signs) for all team members to hear at one time.
- *Two-challenge rule:* State a concern twice as needed; if ignored, follow the chain of command to get the concern addressed.

Delegation and Supervision

As a nursing leader you will delegate certain nursing tasks and activities to unlicensed assistive personnel (UAP) such as patient care technicians (PCTs) or nursing assistants (NAs). **Delegation** is the process of transferring to a competent person the authority to perform a selected nursing task or activity in a selected patient care situation. This process requires precise and accurate communication. *The nurse is always accountable for the task or activity that is delegated!*

An important process that is sometimes not consistently performed by busy medical-surgical nurses is supervision of the UAP to whom the task or activity has been delegated. **Supervision** is guidance or direction, evaluation, and follow-up by the nurse to ensure that the task or activity is performed appropriately. Examples of delegated tasks are turning and positioning, vital signs, and intake and output measurements.

Be sure to follow these five rights when you delegate and supervise a nursing task or activity to a UAP:

- *Right task:* The task is within the UAP's scope of practice and competence.
- *Right circumstances:* The patient care setting and resources are appropriate for the delegation.
- *Right person:* The UAP is competent to perform the delegated task or activity.
- *Right communication:* The nurse provides a clear and concise explanation of the task or activity, including limits and expectations.
- *Right supervision:* The nurse appropriately monitors, evaluates, intervenes, and provides feedback on the delegation process as needed.

Other activities or patient care responsibilities may be assigned by a registered nurse (RN) to another RN or to a licensed practical or vocational nurse (LPN/LVN). Each state designates which tasks may be safely delegated and assigned to nursing team members. Interventions that you can typically delegate or assign in any state are indicated throughout this text. Some of the *Clinical Judgment and NCLEX Examination Challenges* throughout this book will test your understanding of the delegation and supervision process.

EVIDENCE-BASED PRACTICE

Definition of Evidence-Based Practice

Evidence-based practice (EBP) is the integration of the best current evidence and practices to make decisions about patient care. It considers the patient's preferences and values and one's own clinical expertise for the delivery of optimal health care (Melnyk & Fineout-Overholt, 2015; QSEN, 2011).

Scope of Evidence-Based Practice

The best source of evidence is research. Fig. 1-2 shows the level of evidence (LOE) pyramid that is commonly used to rate the quality (strength) or scope of available evidence. The highest levels of evidence are systematic reviews and integrative or meta-analysis studies. In these studies the researcher conducts a thorough literature search for appropriate studies and then analyzes findings of those studies to determine which best practices answer the research question. The types of research in nursing may be limited in some areas and may not reflect the highest or best level of evidence. Some nursing research is designed as small, descriptive studies to explore new concepts. The findings of these studies cannot be generalized, but they provide a basis for future larger and better-designed research.

Evidence-Based Practice boxes are found throughout the text to provide the most current research that serves as a basis for nursing practice. Each of these features presents a brief summary

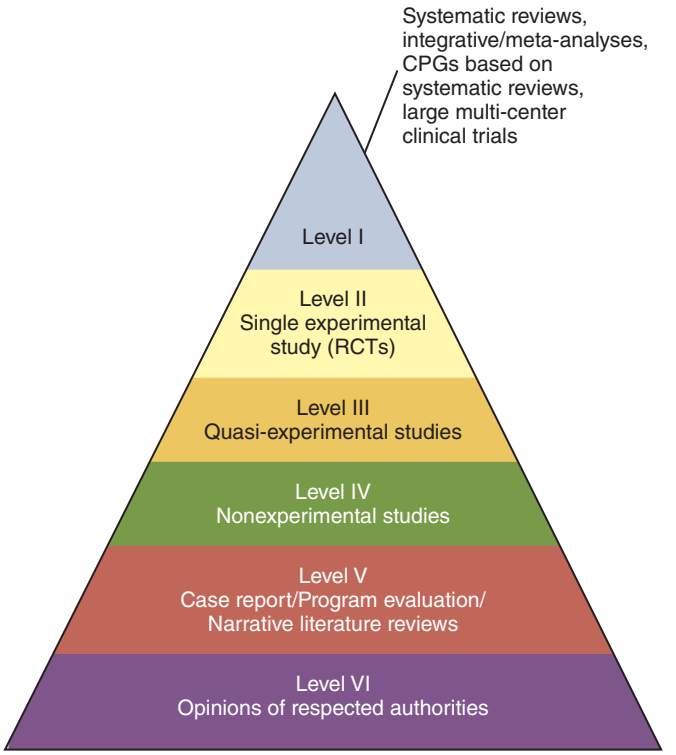

FIG. 1-2 Levels (strength) of evidence. Level 1 is the strongest evidence. (©2010. Rona F. Levin & Jeffrey M. Keefer.)

of the research, identifies the LOE using the scale in Fig. 1-2, and concludes with a "Commentary: Implications for Practice and Research" discussion to help you apply the findings of the study to daily nursing practice.

Attributes of Evidence-Based Practice

EBP promotes safety for patients, families, staff, and health care systems because it is based on reliable studies, guidelines, consensus, and expert opinion. However, recall that a best practice identified through research or clinical practice guideline may not be consistent with the patient's or family's personal preferences or beliefs. Nurses must respect the values of the patient or designee at all times even if those values differ from their own or those of the interprofessional health care team.

Examples of Context of Evidence-Based Practice to Nursing and Health Care

Health care organizations receiving Medicare and/or Medicaid funding are obligated to follow the evidence-based interprofessional Core Measures to ensure that best practices are followed for selected health problems. Examples of Core Measures are highlighted throughout this textbook, such as those related to heart failure, stroke, venous thromboembolism, and acute myocardial infarction.

In addition to complying with federal mandates and those outlined by The Joint Commission (TJC), many hospitals have achieved or are on the path to achieve the American Nurses Credentialing Center's Magnet Recognition. This highly desired recognition requires nurses to demonstrate how best current evidence guides their practice. Many hospitals have nursing research departments with experts to facilitate this process. Using research to guide practice is a way to continuously improve the quality of care, as described as part of the following concept.

QUALITY IMPROVEMENT

Definition of Quality Improvement

Quality improvement (QI), sometimes referred to as *continuous quality improvement (CQI),* is a process in which nurses and the interprofessional health care team use indicators (data) to monitor care outcomes and develop solutions to change and improve care. This process is also sometimes called the *evidence-based practice improvement (EBPI)* process because the best sources of evidence are used to support the improvement or change in practice.

Scope of Quality Improvement

When a patient care or system issue is identified as needing improvement, specific systematic QI models such as the **Plan-Do-Study-Act (PDSO)** or the FOCUS-PDCA are typically used. The steps of the PDSO model include (Sutton & Suhayda, 2015):

1. Identify and analyze the problem (Plan).
2. Develop and test an evidence-based solution (Do).
3. Analyze the effectiveness of the test solution, including possible further improvement (Study).
4. Implement the improved solution to positively impact care (Act).

The steps of the more specific FOCUS-PDCA model are:

- **F**ind a process to improve.
- **O**rganize a team.
- **C**larify the current process.
- **U**nderstand variations in current process.
- **S**elect the process to improve.
- **P**lan the improvement.
- **D**o the improvement.
- **C**heck for results.
- **A**ct to hold the gain.

A QI project using the FOCUS-PDCA model was successfully conducted by a group of nurses to improve communication during morning rounds on a medical-surgical unit. The QI team developed a written communication tool for each patient that included a place for the staff nurse to list primary concerns for the patient. The physicians and other primary health care providers used the same tool to outline the goals and plan of care for the day. The results of this project improved daily communication between nurses and physicians, which led to improved patient care and safety (Perry et al., 2016).

Another method called the DMAIC model is gaining popularity as it more clearly delineates each QI step and includes the need to continue the new intervention or change over time. The steps of this model are:

1. **D**efine the issue or problem.
2. **M**easure the key aspects of the current process for the issue (collect data).
3. **A**nalyze the collected data.
4. **I**mprove or optimize the current process by implementing an evidence-based intervention/solution.
5. **C**ontrol the future state of the intervention to ensure continuity of the process.

Attributes of Quality Improvement

As a medical-surgical nurse, you will be expected to be involved in the QI process on your unit or in your agency. You will need the knowledge and skills to:

- Identify indicators to monitor quality and effectiveness of health care.
- Access and evaluate data to monitor quality and effectiveness of health care.
- Recommend ways to improve care processes.
- Implement activities to improve care processes.

Examples of Context of Quality Improvement to Nursing and Health Care

This textbook features *Quality Improvement* boxes that summarize articles on QI projects and end with a "Commentary: Implications for Practice and Research" discussion. These features will help you learn how nurses get involved in QI and the benefits to patients, staff, and health care systems or patient care units. An example of how one hospital unit improved practice using the DMAIC model to improve medication reconciliation is summarized in the *Quality Improvement* box in this chapter. Additional information about the QI process can be found in nursing leadership and management resources.

INFORMATICS AND TECHNOLOGY

Definition of Informatics and Technology

Informatics and technology are the access and use of information and electronic technology to communicate, manage knowledge, prevent error, and support decision making (QSEN, 2011).

Scope of Informatics and Technology

Most health care settings have information technology (IT) departments. The largest application of health care informatics is use of the electronic health record (EHR) (also called *electronic patient record [EPR]* or *electronic medical record [EMR]*) for documenting nursing and interprofessional care. Computers may be located at the nurses' work station, at the patient's bedside (point of care [POC]), or near the nurses' station. Handheld mobile devices or laptops are also popular because of their ease of use and portability.

Attributes of Informatics and Technology

Although safety and quality of health care are the major purposes of informatics and technology, patient and family privacy may be at risk unless precautions are implemented. For example, staff and students may take photos of patients to show their family and friends about the health problems for which they care. In some cases these photos are posted on social media such as Facebook. *This action is a violation of patient privacy and confidentiality.*

Examples of Context of Informatics and Technology for Nursing and Health Care

Another major purpose of informatics is for retrieval of data for evidence-based practice and quality improvement. The Internet provides ways to search for multiple sources of information very efficiently. However, all data sources must be evaluated for their credibility and reliability.

New technologies for patient, staff, and resource (inventory) management are used in health care agencies to promote patient safety and improve efficiency. An example of these technologies is radiofrequency identification (RFID). RFID allows any person or object to be tracked electronically. Bar-code medication administration (BCMA) systems (see Fig. 1-1) and Smart IV pumps are other examples of systems used to ensure safety through technology.

Nurses need to be involved in decisions about introducing new or advanced health care technologies into the health care agency. They should also be included in designing technology that improves the effectiveness and efficiency of health care while providing for patient and staff privacy.

CLINICAL JUDGMENT

Definition of Clinical Judgment

Clinical judgment is the process that nurses and other members of the interprofessional team use to make decisions based on interpretation of the patient's needs or problems. The nursing process, critical thinking, and a variety of reasoning patterns help the medical-surgical nurse make clinical decisions while being respectful of the patient's and family's cultural diversity, age, gender, and lifestyle choices. This textbook presents many *Clinical Judgment Challenges* and *NCLEX Examination Challenges* to help you practice how to use clinical judgment to make appropriate decisions based on current evidence as available.

Scope of Clinical Judgment

Appropriate or "sound" clinical judgment (also referred to as *sound judgment*) leads to positive patient or staff outcomes. By contrast, inappropriate or "poor" judgment results in negative outcomes that can pose a risk to patient or staff safety. In her classic systematic review, Tanner (2006) concluded that sound clinical judgment is influenced by how well the nurse knows the patient's typical response pattern and the situational context or culture of the nursing care unit. Reflection on nursing practice is often triggered by poor clinical judgment and is essential for developing knowledge and improving reasoning.

The worst result of poor judgment is a growing health care crisis referred to as *failure to rescue*. **Failure to rescue** is the inability of nurses or other interprofessional health team members to save a patient's life in a timely manner when a health care issue or medical complication occurs. Patients often have beginning or subtle signs and symptoms 2 to 3 days before cardiopulmonary arrest or multiple organ failure. Failure to rescue occurs when those signs and symptoms are not noticed or accurately interpreted and therefore action to improve the patient's condition is not implemented (Garvey, 2015).

Attributes of Clinical Judgment

According to Tanner, clinical judgment involves specific reasoning and critical thinking skills. In this edition of the text, each of these skills is paired with the steps of the nursing process for all exemplar health problems as follows:

- Assessment: Noticing
- Analysis: Interpreting
- Planning and Implementation: Responding
- Evaluation: Reflecting

Examples of Context of Clinical Judgment to Nursing and Health Care

To improve patient safety and prevent failure to rescue, most hospitals have a Rapid Response Team (RRT), also called the *Medical Emergency Team (MET)*. **Rapid Response Teams** save lives and decrease the risk for harm by providing care *before* a medical emergency occurs by intervening rapidly when needed for patients who are *beginning* to clinically decline. Members of an RRT are critical care experts who are on-site and available at any time. Although membership varies among agencies, the team may consist of an intensive care unit (ICU) nurse, respiratory therapist, **intensivist** (physician who specializes in critical care), and/or **hospitalist** (family practice physician or internist employed by the hospital). In other hospitals acute care nurse practitioners or medical residents may be part of the team. The team responds to emergency calls, usually from clinical nurses, according to established agency protocols and policies (Allen et al., 2015). Patient families may also activate the RRT.

The Joint Commission's National Patient Safety Goals also include the need for early intervention for patients who are clinically changing. They require each health care organization to establish criteria for patients, families, or staff to call for additional assistance in response to an actual or perceived change in the patient's condition.

ETHICS

Definition of Ethics

According to the American Nurses Association (ANA), ethics is "a theoretical and reflective domain of human knowledge that addresses issues and questions about morality in human choices, actions, character, and ends (ANA, 2015, p. xii). *Applied*

TABLE 1-3 Examples of Provisions of the ANA Code of Ethics

- The nurse practices with compassion and respect for the inherent dignity, worth, and unique attributes of every person.
- The nurse promotes, advocates for, and protects the rights, health, and safety of the patient.
- The nurse has authority, accountability, and responsibility for nursing practice; makes decisions; and takes action consistent with the obligation to promote health and to provide optimal care.
- The nurse owes the same duties to self as to others, including the responsibility to promote health and safety, preserve wholeness of character and integrity, maintain competence, and continue personal and professional growth.
- The nurse collaborates with other health professionals and the public to protect human rights, promote health diplomacy, and reduce health disparities.

professional nursing ethics is about considering what is right and wrong when using clinical judgment to make clinical decisions.

Scope of Ethics

Clinical decisions are either ethical or not ethical and are based on one or more of six principles described under Attributes of Ethics. Ethics is also described by the type of ethics or setting in which these decisions are made. For example, *organizational* ethics refers to the ethical practices of health care organizations. Applied nursing ethics is a type of *professional* ethics that are used in practice by individual nurses. Examples of the provisions of the ANA Code of Ethics are listed in Table 1-3.

Attributes of Ethics

Respect for people is the basis for six essential *ethical principles* that nurses and other health care professionals should use as a guide for clinical decision making. Respect implies that patients are treated as autonomous individuals capable of making informed decisions about their care. This patient **autonomy** is also referred to as *self-determination* or *self-management.* When the patient is not capable of self-determination, you are ethically obligated to protect him or her as an advocate within the professional scope of practice, according to the American Nurses Association (ANA) Code of Ethics for Nurses (ANA, 2015).

The second ethical principle is **beneficence,** which promotes positive actions to help others. In other words, it encourages the nurse to do good for the patient. **Nonmaleficence** emphasizes the importance of preventing harm and ensuring the patient's well-being. Harm can be avoided only if its causes or possible causes are identified. As described earlier in this chapter, patient safety is currently a major national focus to prevent deaths and injuries.

Fidelity refers to the agreement that nurses will keep their obligations or promises to patients to follow through with care. **Veracity** is a related principle in which the nurse is obligated to tell the truth to the best of his or her knowledge. If you are not truthful with a patient, his or her respect for you will diminish, and your credibility as a health care professional will be damaged.

Social justice, the last principle, refers to equality and fairness; that is, all patients should be treated equally and fairly, regardless of age, gender identity, sexual orientation, religion, race, ethnicity, or education. For example, a patient who cannot afford health care receives the same quality and level of care as one who has extensive insurance coverage. An older patient with dementia is shown the same respect as a younger patient who can communicate. A Hispanic patient who can communicate only in Spanish receives the same level of care as a Euro-American patient whose primary language is English. More information on ethics and ethical principles can be found in your fundamentals textbook.

Examples of Context of Ethics to Nursing and Health Care

Nurses and other members of the interprofessional team are involved in many ethical decisions and dilemmas in daily practice. Examples of these dilemmas include issues surrounding advance directives and aggressive treatment options. Some of the *Clinical Judgment Challenges* in this book relate to common ethical issues in medical-surgical nursing.

HEALTH CARE ORGANIZATIONS

Definition of Health Care Organizations

Health care organizations (HCOs) are purposely designed and structured systems in which health care is provided by members of nursing and interprofessional teams (Giddens, 2016).

Scope of Health Care Organizations

HCOs are classified by their ownership (e.g., private versus public), financial purpose, and mission. For example, public HCOs are owned by county, state, provincial, and federal governments; they are usually nonprofit and supported by tax revenue. Private institutions are typically owned by companies or organizations. Many of these agencies are for-profit HCOs, but others are nonprofit or not-for-profit. Some HCOs are large research and teaching institutions such as Johns Hopkins in Baltimore, MD. Others are rural or small community hospitals.

HCOs can be single institutions or part of larger systems. For example, a single nursing home or assisted-living facility may be privately owned and not part of a network. By contrast, a large hospital system may house acute care, chronic care, rehabilitative care, ambulatory care, and skilled care in one or multiple locations.

HCOs also vary by mission or purpose; some offer generalized services, whereas others offer more specialized services. For example, free-standing rehabilitation facilities limit their services to care of patients with rehabilitative needs. Critical Care Access Hospitals (CAHs) are specially designated HCOs that must meet the following criteria:

- Be located in a rural area at least 35 miles away from any other hospital
- Have no more than 25 inpatient beds
- Maintain an annual average patient length of stay of no more than 96 acute inpatient hours
- Offer 24-hour, 7 day–a-week emergency care

Patients served by a CAH either have common stable health problems or are referred to larger hospitals once their conditions are stabilized.

In some cases HCOs restrict the population they serve based on mission or purpose. For example, Veterans Administration

(VA) hospital systems provide services only for active or retired military patients. U.S. Indian Health Services HCOs provide care for American Indians.

Attributes of Health Care Organizations

An HCO is characterized by its:

- Mission and philosophy
- Organizational structure
- Workforce (health care and ancillary)
- Patients
- Services provided

These characteristics allow the agency to provide safe, quality patient care that the public or local community can trust.

Examples of Context of Health Care Organizations to Nursing and Health Care

Nurses often choose to work in an HCO based on its characteristics. For example, if a nurse prefers working with specialized populations such as veterans, he or she usually seeks employment in the VA system. If the nurse desires to work in a large teaching institution, he or she would need to work in an urban area where these HCOs are located. Opportunities for career advancement and continuing education may also be more readily available in larger institutions.

HEALTH CARE DISPARITIES

Definition of Health Care Disparities

Health care disparities are differences in patient access to or availability of appropriate health care services.

Scope of Health Care Disparities

A major focus of the U.S. *Healthy People 2020* initiative is to decrease health care disparities caused by poor communication, health care access, health literacy, and health care provider biases and discrimination. Although progress has been made over the past few decades, many minority populations have a high incidence of chronic disease and mortality as a result of health care disparities (Neumayer & Plumper, 2016). The National Center on Minority Health and Health Disparities of the National Institutes of Health leads and coordinates the efforts to reduce these disparities in the United States. Similar organizations in other countries exist for this same purpose.

Attributes of Health Care Disparities

Many factors affect patient access to quality health care services, including geographic location, cultural variables, and resources. For instance, some individuals live in very rural areas that do not have quality health care services. In other cases the care is available, but the individual may not have transportation to get to the provider or value the need for regular preventive health care. Language barriers may also prevent the individual from accessing services. For example, many older individuals in Hispanic communities do not speak English, and most health care professionals do not speak Spanish. This communication barrier and possible mistrust of primary care providers can prevent access to needed health services.

Some individuals remain uninsured or underinsured and cannot afford health care services. "Working poor" patients may have health insurance but their copayments are too high to seek services. Copayments for a health care provider office visit may be as high as $50 or more. Medication copayments can range from $5 to over $100 per prescription, depending on which type of insurance the patient has. These expenses are usually not a priority over other personal financial needs such as food and rent.

Examples of Context of Health Care Disparities to Nursing and Health Care

Entire groups of people are vulnerable or likely to experience an inability to access available health care for a variety of reasons. Health care professionals may have biases and beliefs about certain cultures and groups that prevent them from being effective in developing an appropriate individualized plan of care. Examples of these groups include older adults, ethnic minorities, and the lesbian, gay, bisexual, transgender, and queer and/or questioning (LGBTQ) population.

Special Needs of Older Adults

Older adults are a growing subset of the adult population as the baby boomers turn 60 to 70. This group of young older adults is different from previous generations as they aged. Many are working well past 65 years of age and have very active social lives. Chapter 3 in this text is dedicated to the special health care needs of older adults, especially those between 70 and over 100 years old.

Special Needs of Ethnic Minorities

Early health care research focused on promoting health or managing health problems among affluent Euro-Americans. More recent research has included implications for or differences in care based on ethnicity or gender. Health care disparities have been identified as they affect various groups and populations. As mentioned earlier in this chapter, many *Cultural/Spiritual Considerations* features are integrated throughout this textbook to highlight differences in care needed to meet the special health needs of individuals from a variety of racial and ethnic groups.

Special Needs of the LGBTQ Population

Nurses today have been made aware of cultural variations and learned how to incorporate these differences to individualize patient care. However, one group that is seldom addressed in the nursing literature is the LGBTQ population (Pettinato, 2012). This terminology is widely accepted by the LGBTQ community and is commonly used, although *LGBT* may be seen more often in health care literature. Queer and/or questioning individuals prefer not having strict labels on their sexualities or genders. Another term that may also be used is *LGBTQI* to include intersex individuals. Intersex individuals have sexual or reproductive organs that are not clearly male or female or may have a combination of both male and female organs.

Many studies provide evidence that LGBTQ individuals do not feel comfortable with or trust health care professionals because of previous discrimination (IOM, 2011). The *Healthy People 2020* initiative added a category for these individuals because of health disparities in this population and the need to improve LGBTQ health. The complete document can be found on www.healthypeople.gov/2020. This textbook includes special health needs of this population as part of its *Gender Health Considerations* features. A separate chapter in this book on transgender health helps students learn about the special needs of transgender patients.

The health care system, like other facets of society, often overlooks sexualities and genders that are alternative to the standard of heterosexuality and clearly delineated maleness or femaleness. As a health care professional, it is essential to not be restricted by rigid standards of identity. A good way of rethinking concepts of sexuality and gender is to think of each as existing along a spectrum rather than categorizing people into heterosexual/homosexual and male/female.

To begin to gain trust and show respect for the LGBTQ patient, health care professionals need to know their patient's sexual orientation and gender identity. Do not assume that every patient is heterosexual or clearly gendered. *Include questions about gender identity and sexual activity as part of your patient's health assessment.* Table 1-4 lists recommended patient interview questions about sexual orientation, gender identity, and health care.

TABLE 1-4 Recommended Patient Interview Questions About Sexual Orientation, Gender Identity, and Health Care

- Do you have sex with men, women, both, or neither?
- Does anyone live with you in your household?
- Are you in a relationship with someone who does not live with you?
- If you have a sexual partner, have you or your partner been evaluated about the possibility of transmitting infections to each other?
- If you have more than one sexual partner, how are you protecting both of you from infections such as hepatitis B, hepatitis C, or HIV?
- Have you disclosed your gender identity and sexual orientation to your health care provider?
- If you have not, may I have your permission to provide that information to members of the health care team who are involved in your care?
- Whom do you consider to be your closest family members?

HIV, Human immune deficiency virus.

GET READY FOR THE NCLEX® EXAMINATION!

KEY POINTS

Review these Key Points for each NCLEX Examination Client Needs Category.

Safe and Effective Care Environment

- Medical-surgical nursing is a specialty practice that requires a broad knowledge base and clinical skills to meet the needs of adult patients in a variety of settings.
- Medical-surgical nurses help meet human needs of adult patients such as mobility and gas exchange in a caring, respectful relationship.
- **The Joint Commission requires that health care organizations create a culture of safety by following the National Patient Safety Goals (NPSGs).**
- Rapid Response Teams (RRTs) save lives and decrease the risk for patient harm before a respiratory or cardiac arrest occurs. **QSEN: Safety**
- Remember to always observe for slow and sudden changes in patient condition, especially changes in vital signs and mental status.
- A vital role of the nurse is as an advocate to empower patients and their families to have control over their health care and function as safety partners. **QSEN: Safety**
- Examples of the provisions of the ANA Code of Ethics for Nurses are listed in Table 1-3.
- Six essential ethical principles to consider when making clinical decisions are autonomy, beneficence, nonmaleficence, fidelity, veracity, and social justice. **Ethics**
- Nurses collaborate by communicating patient's needs and preferences with members of the interprofessional health care team to establish an individualized approach to care. **QSEN: Teamwork and Collaboration**
- The SBAR procedure or similar established method is used for successful hand-off communication between caregivers and between health care agencies.
- When delegating a nursing task to unlicensed assistive personnel (UAP), the nurse is always accountable to ensure that the task was performed safely and accurately. **QSEN: Safety**
- Evidence-based practice (EBP) is the integration of best current evidence to make decisions about patient care. It considers the patient's preferences and values and one's own clinical expertise.
- Nurses are active participants in the systematic quality improvement (QI) process in their health care agency and used one of several QI models to improve care and promote patient safety. **QSEN: Quality Improvement**
- Informatics and technology are used for patient documentation, electronic data access, and health care resource tracking. **QSEN: Informatics**
- Health care organizations vary by size, mission, financial goal, and purpose; some are single agencies and others are part of large networks in multiple locations. **Health Care Organizations**

Psychosocial Integrity

- Nurses must show respect and compassion for the uniqueness of every individual to ensure patient-centered and family-centered care.
- Health care disparities are differences in the access or availability of health care; members of minority groups and other vulnerable populations are particularly at risk for health disparities. **Health Care Disparities**
- The lesbian, gay, bisexual, transgender, queer and/or questioning (LGBTQ) population typically does not trust health care professionals; use sensitive questioning about sexual orientation and gender identity as part of your interview with patients in this group (see Table 1-4). **QSEN: Patient-Centered Care**

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CHAPTER 2

Overview of Health Concepts for Medical-Surgical Nursing

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http://evolve.elsevier.com/Iggy/

PRIORITY AND INTERRELATED CONCEPTS

The priority concepts for this chapter are:

- Acid-Base Balance
- Cellular Regulation
- Clotting
- Cognition
- Comfort
- Elimination
- Fluid and Electrolyte Balance
- Gas Exchange
- Glucose Regulation
- Immunity
- Mobility
- Nutrition
- Perfusion
- Sensory Perception
- Sexuality
- Tissue Integrity

LEARNING OUTCOMES

Safe and Effective Care Environment

1. Collaborate with the nursing and interprofessional team to help patients meet selected physiologic health needs.

Health Promotion and Maintenance

2. Develop an evidence-based teaching plan to enable adults to meet selected health needs and promote health.
3. Assess unsafe or unhealthy behaviors that could prevent the patient from meeting physiologic health needs.
4. Plan health promotion strategies to promote sensory perception in adults and maintain safety.

Psychosocial Integrity

5. Differentiate delirium and dementia as common cognitive impairments.

Physiological Integrity

6. Review the definition and scope of selected physiologic health needs of adults.
7. Describe common physiologic consequences when basic health needs are not met.
8. Document essential assessments to determine if basic health needs are met.
9. Plan patient-centered nursing interventions to help patients meet selected physiologic health needs.

Nurses care for adults in a variety of settings to help them meet a multitude of biopsychosocial needs. When these needs are not met, the nurse plans and implements care in collaboration with the interprofessional health team. This chapter reviews the 15 health concepts that are emphasized and built on in this text, and are presented alphabetically for easy access. For more information about these basic concepts, see your foundations or fundamentals of nursing textbook. Each chapter in the body systems units applies appropriate health concepts to patient assessment or interventions for selected health problems, identified as **exemplars**.

ACID-BASE BALANCE

Definition of Acid-Base Balance

Acid-base balance is the maintenance of arterial blood pH between 7.35 and 7.45 through control of hydrogen ion production and elimination. Blood pH represents a delicate balance between hydrogen ions (acid) and bicarbonate (base) and is largely controlled by the lungs and kidneys.

Scope of Acid-Base Balance

If the arterial blood pH is either below 7.35 or above 7.45, the patient has a type of acid-base *imbalance* (Fig. 2-1). *Acidosis* occurs if the arterial blood pH level falls below 7.35 and is caused by either too many hydrogen ions in the body (respiratory acidosis) or too little bicarbonate (metabolic acidosis). Conversely, *alkalosis* occurs if the pH is greater than 7.45 and is caused by either too few hydrogen ions in the body (respiratory alkalosis) or too much bicarbonate (metabolic alkalosis). Both severe acidosis and alkalosis can lead to death if the patient is not diagnosed accurately and treated quickly.

Common Risk Factors for Acid-Base Imbalance

Any individual is at risk for an acid-base imbalance, but it occurs most commonly as a complication of many acute and

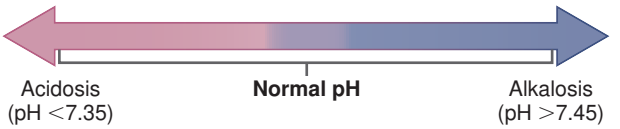

FIG. 2-1 Scope of acid-base balance.

chronic health problems. The most common risk factors include poisoning such as excessive salicylate ingestion; medical conditions such as chronic obstructive pulmonary disease (COPD), uncontrolled diabetes mellitus (especially type 1), and chronic kidney disease; excessive emesis, diarrhea, or intravenous (IV) infusions; and fluid and electrolyte imbalances. A more thorough discussion of acid-base imbalances by specific type may be found in Chapter 12 of this text.

Physiologic Consequences of Acid-Base Imbalance

When the body has an impaired acid-base balance, several mechanisms are activated in an attempt to correct the imbalance, a process referred to as *compensation*. For example, if the patient is acidotic (pH lower than 7.35), the kidneys typically decrease the amount of bicarbonate ions (base) that is excreted through the urine. The lungs may try to rid the body of carbon dioxide (source of carbonic acid) through increased and deeper respirations. In this case, both compensatory mechanisms aim to restore acid-base balance by increasing the blood pH to greater than 7.35. These actions can only occur if the individual has healthy lungs and kidneys.

Assessment of Acid-Base Balance

Take a patient health history for chronic illnesses such as diabetes mellitus or COPD and any past experiences of acid-base imbalance. Ask about the presence or recent history of signs and symptoms that could predispose the patient to acidosis or alkalosis such as excessive vomiting or diarrhea. The patient's current or recent use of medications, including over-the-counter drugs and herbal supplements, should be reviewed to determine if they could cause acid-base imbalance.

Arterial blood gas monitoring gives the health care team an understanding of the type of acid-base imbalance the patient is experiencing. Assessing the pH determines whether the patient has an imbalance and, if so, how severe it is. The $PaCO_2$ level (normal value is 35-45 mm Hg), or partial pressure of carbon dioxide, indicates how well the lungs are functioning in blowing off or retaining carbon dioxide as needed to help correct the acid-base imbalance. The bicarbonate level, or HCO_3 (normal value is 21-28 mEq/L [21-28 mmol/L), indicates how well the kidneys are excreting or reabsorbing base as needed.

Interventions to Promote Acid-Base Balance and Prevent Acid-Base Imbalance

The best way for an individual to maintain acid-base balance is to practice health promotion measures, including living a healthy lifestyle. For example, most cases of COPD can be prevented by avoiding or quitting smoking. Regular exercise and a healthy diet can decrease the incidence of type 2 diabetes mellitus and help control blood glucose in all types of diabetes.

Teach patients who are at risk for acute or chronic vomiting or diarrhea to be monitored carefully by a primary health care provider to assess for fluid, electrolyte, and acid-base imbalances. (See discussion of fluid and electrolyte balance later in this chapter.)

Interventions for Patients With Acid-Base Imbalances

Managing a patient with an acid-base imbalance depends on which type of imbalance is present. When possible, the health care team aims to diagnose and treat the underlying cause(s) of the imbalance. Chapter 12 describes the pathophysiology and management of common types of acid-base imbalance in detail.

CELLULAR REGULATION

Definition of Cellular Regulation

Cellular regulation is the process to control cellular growth, replication, and differentiation to maintain homeostasis. Cellular *growth* refers to division and continued growth of the original cell. Cell *replication* refers to making a copy of a specific cell. Cell *differentiation* refers to the process of the cell becoming specialized to accomplish a specific task.

Scope of Cellular Regulation

Cellular function can have both positive and negative effects within the body. Positive aspects of cellular function include cell development and reproduction of healthy cells, whereas negative aspects include cell replication and growth of unhealthy cells that represent tumors or neoplasms.

Common Risk Factors for Impaired Cellular Regulation

Risk factors that increase the probability of impaired cellular regulation include:

- Older age (55 years and older, with significant potential for abnormal cell development at ages >70)
- Smoking
- Poor nutrition
- Physical inactivity
- Environmental pollutants (such as air, water, soil)
- Radiation
- Selected medications (such as chemotherapy)
- Genetic predisposition or risk

Physiologic Consequences of Impaired Cellular Regulation

It is important to differentiate benign and malignant cell growth. *Benign* cell growth mirrors the original cell, but excessive cells are present. Benign cells do not have the capability to spread to other tissues or organs. However, benign masses can cause health risks because of the ability to obstruct or compress organs in the body, causing significant discomfort or high risk to the individual. For example, a meningioma (benign mass) can compress the brain and lead to increased intracranial pressure (ICP), a potentially fatal complication.

Malignant (cancerous) cells, over time, have no comparison to the original cells from which they are derived. Replication of abnormal cells leads to significant invasion of healthy cells, tissues, and organs through tumor formation and invasion.

Assessment of Cellular Regulation

Perform a thorough patient history, extensive family history, and a psychosocial history. Completing a thorough and detailed physical examination may identify any visible or palpable

masses, pain, or difficulty breathing. Diagnostic tests such as radiographic examination, computed tomography (CT), or magnetic resonance imaging (MRI) may identify the location of any mass. More invasive tests such as a colonoscopy or endoscopy give the primary health care provider an opportunity to actually see the mass. Laboratory tests can provide additional information regarding the overall health of the patient and the composition of any mass. For example, tissue biopsies and cell cytology are essential to identify the type of abnormal cell that is present. Grading and staging to identify the extent and severity of the growth are a necessity to diagnose, treat, and offer a prognosis for the patient.

Interventions to Promote Cellular Regulation and Prevent Impaired Cellular Regulation

Interventions include primary and secondary prevention techniques. *Primary prevention* includes minimizing the risk of developing impaired cellular regulation. Teach patients to:

- Minimize exposure to sunlight or other source of ultraviolet light such as tanning beds (to prevent skin cancers).
- Stop smoking or other tobacco use if applicable (to prevent many cancer types, including lung, oral, and bladder cancers).
- Consume a diet low in saturated fat and high in fiber (to prevent breast and colon cancer).
- Increase physical activity and regular exercise (to prevent all cancer types).
- Avoid exposure to environmental hazards (to prevent all cancer types).

Healthy People 2020 addresses goals for reducing cancer risk and includes maintaining a healthy weight, managing proper oral health, and being aware of one's family history or genetic makeup.

Secondary prevention includes proper and regular screening to identify early any risks or hazards that could be present. Screening also enables the primary health care provider to diagnose cancer early, which often increases the patient's chance for a cure or long-term survival.

Interventions for Patients With Impaired Cellular Regulation

Collaborative interventions for the patient with impaired cellular regulation can include surgery, radiation therapy, chemotherapy, hormonal therapy, targeted therapy, biologic therapy, and bone marrow or hemapoietic stem cell transplants. The type and course of interprofessional management depends on the type and severity of cellular regulation impairment. The two chapters on cancer in this textbook discuss the pathogenesis of cancer and its patient-centered management.

CLOTTING

Definition of Clotting

Clotting is a complex, multi-step process by which blood forms a protein-based structure (clot) in an appropriate area of tissue injury to prevent excessive bleeding while maintaining whole body blood flow (perfusion). A major component of this process involves specialized cells called *platelets* (thrombocytes) that circulate in the blood until they are needed. When injury occurs, platelets are activated to become sticky, causing them to aggregate (clump together) to form a temporary semi-solid plug. The platelet aggregation triggers a rapid complex process, known as the *clotting cascade,* in which multiple clotting factors (enzymes and plasma proteins) work together to create a fibrin clot and local blood coagulation (clotting). Another pathway, known as the *fibrinolytic system,* is triggered to cause clot lysis (breakdown) (McCance et al., 2014). Chapter 40 describes these processes in more detail.

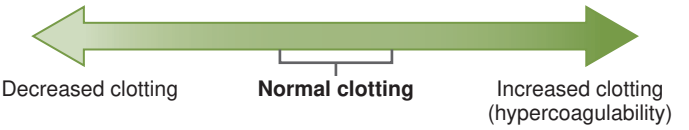

FIG. 2-2 Scope of clotting.

Scope of Clotting

An inability to form adequate clots can result in bleeding and threaten a person's life. In some cases an excess of platelets or excessive platelet stickiness can lead to **hypercoagulability** (increased clotting ability), which can impair blood flow. Therefore the scope of clotting can range from increased or excessive clotting to an inability to adequately clot, either locally at the site of an injury or systemically. Fig. 2-2 illustrates the potential scope of clotting.

Common Risk Factors for Inadequate Clotting

When taking a patient and family history, be aware that impaired clotting may result in either excessive or inadequate clotting. Common risk factors for *increased* clotting include immobility or decreased mobility, health problems such as polycythemia, and smoking. Immobility slows venous blood flow to the heart and can result in venous stasis and venous thromboembolism (VTE), described later in this text. Certain chronic health problems such as diabetes mellitus are also associated with decreased blood flow, making patients more likely than healthy adults to develop VTE. Polycythemia causes an excessive production of red blood cells, which can lead to multiple clots. Atrial fibrillation causes pooling of blood in the atria (stasis) and often leads to embolic stroke. As people age and smoke, platelets typically become stickier and therefore tend to aggregate more easily. In addition, venous valves that normally prevent the backflow of blood become weak and often inadequate as adults age. The result is venous stasis and an increased risk for VTE.

Decreased clotting most often occurs when there is an inadequate number of circulating platelets (**thrombocytopenia**). For example, chemotherapeutic drugs and corticosteroids cause bone marrow suppression where platelets and other blood cells are produced. Patients with cirrhosis of the liver also have a decreased production of clotting factors, including prothrombin, causing them to be at an increased risk for bleeding. Some rare genetic diseases such as recessive sex-linked hemophilia A and B are the result of defective clotting factors that also increase the risk for bleeding.

Physiologic Consequences of Inadequate Clotting

For patients at risk for *increased* or excessive clotting, recognize that clots can occur in either venous or arterial blood vessels. Venous **thrombosis** is a clot formation in either superficial or

deep (most often) veins, usually in the leg. If a thrombus becomes dislodged, it is known as an **embolus**. Emboli may travel to the brain (causing a stroke) or lung (pulmonary embolus).

For patients with a *decreased* ability to clot, prolonged internal (systemic) or external (localized) bleeding may occur. Internal bleeding may occur in the brain (hemorrhagic stroke), gastrointestinal (GI) tract (frank or occult blood in the stool), and/or urinary tract (hematuria). It may also occur under the skin (purpura). External bleeding often manifests as epistaxis (nose bleeds) or prolonged bleeding at the site of soft tissue trauma.

Assessment of Clotting

Observe patients for signs and symptoms of *decreased* clotting, especially purpural lesions such as ecchymosis (bruising) and petechiae (pinpoint purpura). Notice if bleeding is prolonged as a result of injury or trauma. Check urine and stool for the presence of occult or frank blood. Observe for frank bleeding from the gums or nose.

For patients with *increased* risk for clotting or excessive clotting, observe for signs and symptoms of *venous* thrombosis such as localized redness, swelling, and warmth.

! NURSING SAFETY PRIORITY QSEN

Critical Rescue

An *arterial* thrombosis is not locally observable and is typically manifested by decreased blood flow (PERFUSION) to a distal extremity or internal organ. For example, a femoral arterial clot causes an occlusion (blockage) of blood to the leg. In this case the distal leg becomes pale and cool; distal pulses may be weak or absent; *this is an emergent problem requiring immediate intervention.* If these changes are present, notify the primary health care provider or Rapid Response Team immediately. If this condition continues, the leg may become gangrenous and require amputation. A mesenteric artery thrombosis can cause small bowel ileus and gangrene if not treated in a timely manner. A renal artery thrombosis can cause acute kidney injury.

A number of serum laboratory tests are available to measure clotting factor levels and bleeding time. The most common tests are prothrombin time (PT) and activated partial thromboplastin time (aPTT). An international normalized ratio (INR) indicating a derived measure of prothrombin is used to monitor the effectiveness of warfarin (Coumadin, Warfilone ✱).

Interventions to Promote Adequate Clotting and Prevent Inadequate Clotting

Teach patients with *decreased* clotting ability to report unusual bleeding or bruising immediately.

Be sure to teach patients at risk for *increased* clotting to:

- Drink adequate fluids to prevent dehydration.
- Avoid crossing the legs.
- Ambulate frequently and avoid prolonged sitting.
- Refer patients for smoking cessation programs as needed.
- Call a health care provider if redness, swelling, and warmth occur in a lower extremity.

Interventions for Patients With Inadequate Clotting

In addition to the previous interventions, for many adults at increased risk for clotting, *anticoagulants or antiplatelet drugs* (also called *blood thinners* by many patients) are prescribed either in community or inpatient settings. Examples of medications that require frequent laboratory testing are sodium heparin and warfarin. *Teach adults the importance of obtaining these tests and monitor results to ensure that they are within the desired range to ensure patient safety.*

Newer anticoagulants called *direct thrombin inhibitors* may be given to decrease the risk of stroke in patients with atrial fibrillation. Monitor patients receiving any of these drugs for signs of bleeding, including bruising and blood in the urine or stool. Continued bleeding can lead to anemia or hemorrhage.

COGNITION

Definition of Cognition

Cognition is the complex integration of mental processes and intellectual function for the purposes of reasoning, learning, memory, and personality. *Reasoning* is a high-level thinking process that allows an individual to make decisions and judgments. *Memory* is the ability of an individual to retain and recall information for learning or recall of past experiences. *Personality* refers to the way an individual feels and behaves, often based on how he or she thinks.

Scope of Cognition

An adult may have either intact or adequate cognitive functioning or inadequate cognitive functioning. Examples of inadequate cognition include **delirium** (acute fluctuating confusion) and **dementia** (chronic confusion). Table 2-1 compares these two major cognitive disorders that are most common in older adults. Chapter 3 describes these health problems in detail. Adults may also have delayed intellectual functioning or amnesia (loss of memory) caused by brain trauma, congenital disorders, or acute health problems such as a stroke.

TABLE 2-1 Differences in the Characteristics of Delirium and Dementia

VARIABLE	DEMENTIA	DELIRIUM
Description	A chronic, progressive cognitive decline	An acute, fluctuating confusional state
Onset	Slow	Fast
Duration	Months to years	Hours to less than 1 month
Cause	Unknown, possibly familial, chemical	Multiple, such as surgery, infection, drugs
Reversibility	None	May be possible
Management	Treat signs and symptoms	Remove or treat the cause
Nursing interventions	Reorientation is not effective in the late stages; use validation therapy (acknowledge the patient's feelings and do not argue); provide a safe environment; observe for associated behaviors such as delusions and hallucinations	Reorient the patient to reality; provide a safe environment

Common Risk Factors for Inadequate Cognition

Inadequate cognition is complex and includes a variety of signs and symptoms. They may be short term and reversible or long term and not reversible. Common risk factors include:

- Advanced age (although dementia is *not* a normal physiologic change of aging)
- Brain trauma at any age, including at birth
- Disease or disorder such as brain tumor, hypoxia, or stroke (infarction)
- Environmental exposure to toxins such as lead
- Substance use disorder
- Genetic diseases such as Down syndrome
- Depression
- Opioids, steroids, psychoactive drugs, and general anesthesia, especially in older adults
- Fluid and electrolyte imbalances

Physiologic Consequences of Inadequate Cognition

Common signs and symptoms of inadequate cognition include:

- Loss of short- and/or long-term memory
- Disorientation to person, place, and/or time
- Impaired reasoning and decision-making ability
- Impaired language skills
- Uncontrollable or inappropriate emotions such as severe agitation and aggression
- Delusions and hallucinations

These manifestations often result in patient safety and communication issues. For example, an adult with impaired short-term memory may forget to turn off a stove burner that could result in a fire. A person who has impaired reasoning and decision-making ability may decide to drive a motor vehicle or operate machinery. Communication with a patient who is disoriented, aggressive, and/or delusional may not be possible.

Assessment of Cognition

Taking a thorough history is essential to determine potential or actual cognitive impairment. Conduct a mental status assessment using one of several available mental health/behavioral health screening tools such as the Confusion Assessment Method (CAM). Other tools also assess memory, speech and language, judgment, thought processes, calculation, and abstract reasoning. Discussion of assessment tools to screen for specific cognitive problems may be found throughout this text and in mental health textbooks.

Diagnostic testing includes brain imaging procedures such as magnetic resonance imaging (MRI) to determine the presence of brain abnormalities such as trauma, tumors, and infarction. Neuropsychological testing by a licensed clinical psychologist may be performed to diagnose the cause and severity of specific changes associated with cognitive problems.

Interventions to Promote Cognition and Prevent Inadequate Cognition

Teach adults to avoid risk factors such as substance use and lifestyle behaviors such as motorcycle driving without protective headgear. Teach older adults to stimulate the intellectual part of their brain through new learning activities such as taking music lessons, mastering a new language, or completing crossword puzzles or other "brain teasers."

Interventions for Patients With Inadequate Cognition

Nursing interventions focus on *safety* to prevent injury and foster communication. For adults with delirium or mild dementia, provide orientation to person, time, and place. Collaborate with the interprofessional team to determine the underlying cause of delirium, such as psychoactive drugs or hypoxia. Patients with moderate or severe dementia cannot be oriented to reality because they have chronic confusion.

! NURSING SAFETY PRIORITY QSEN

Action Alert

Teach families and caregivers to provide a safe environment for the individual with cognitive impairment living in the community! Adults who are confused or cannot follow instructions may be injured by operating machinery or driving a motor vehicle. For those in inpatient facilities, provide a safe environment, depending on the patient's specific cognitive deficit. For example, implement fall precautions for those who need help getting out of bed. Adults with delirium or dementia may wander outside and be injured. Be sure they wear an alarm and identification bracelet.

In some cases the primary health care provider may prescribe psychoactive drug therapy for specific cognitive disorders. Some of these drugs are described later in this text but are discussed in more detail in mental health/behavioral health textbooks.

COMFORT

Definition of Comfort

Comfort is a state of physical well-being, pleasure, and absence of pain or stress. This definition implies that comfort has physical and emotional dimensions. A primary role of the nurse is to promote basic care and comfort.

Scope of Comfort

The desired outcome for optimal health and well-being of any individual is to have comfort or be comfortable. Many health problems can cause decreased comfort, also called *discomfort*. Most often patients report pain or other sensation that disrupts their ability to function, either physically or mentally.

Common Risk Factors for Decreased Comfort

Risk factors can be divided into physical causes and emotional, or psychosocial, causes. In some cases patients have risk factors for both physical and emotional discomfort. For example, patients who are having surgery are often anxious and feel stressed about the procedure. They may worry about who will care for them or their family after the surgery. This emotional stress is uncomfortable and can affect the outcomes of surgery. In addition, patients who have surgery typically have acute pain. This unpleasant sensation causes more emotional stress and discomfort. Some postoperative patients also have nausea or light-headedness as a result of the anesthesia used during the surgical procedure. All of these symptoms are causes of discomfort.

Physiologic Consequences of Decreased Comfort

Physical causes of decreased comfort (discomfort) such as pain, nausea, and itching can result in emotional stress and discomfort. The body's "fight or flight" mechanism helps the individual cope with the source and manifestations of the discomfort. If this response is not successful in reducing stress, the individual may develop chronic pain and anxiety.

Assessment of Comfort

Ask patients if they are comfortable. If pain is the source of discomfort, assess the level of pain and plan interventions to manage it. See Chapter 4 of this text for pain assessment. If emotional stress is the source of discomfort, be sure to help the patient describe the nature and cause of stress. Once the underlying cause(s) of discomfort is identified, coordinate with the interprofessional health care team to treat or remove it if possible.

Interventions to Prevent Impaired Comfort

Pain and emotional stress are the most common sources of decreased comfort. To prevent these sensations, anticipate which patient may experience them and provide preplanned interventions. For example, for postoperative pain control, ensure that the patient receives a basal dose of patient-controlled analgesia for continuous pain control.

Interventions for Patients With Decreased Comfort

Assess patients at risk for discomfort and plan interventions to alleviate it, depending on its source and cause. Collaborate care with members of the interprofessional health care team as needed. For example, refer the patient to a counselor, social worker, or other qualified mental health professional to manage emotional stress. Consult with the primary health care provider and pharmacist to manage acute and chronic pain.

ELIMINATION

Definition of Elimination

Elimination is the excretion of waste from the body by the gastrointestinal (GI) tract (as feces) and by the urinary system (as urine). *Bowel* elimination occurs as a result of food and fluid intake and ends with passage of feces (stool) or solid waste products from food into the rectum of the colon. The fecal material remains in the rectum until the urge to defecate occurs. Bowel elimination control depends on multiple factors, including muscle strength and nerve function.

Urinary elimination occurs as a result of multiple kidney processes and ends with the passage of urine through the urinary tract. When the urge to void occurs, urine is passed from the bladder through the urinary sphincter, urethra, and meatus. Urine consists of water and waste products (toxins) from many chemical processes in the body. Urinary elimination control also depends on multiple factors, including muscle strength and nerve function.

Scope of Elimination

Adults desire voluntary control of both bowel and urinary elimination, a normal condition called *continence.* However, a number of factors can cause *incontinence* (lack of bowel or bladder control) or *retention* (an inability to expel stool or excrete urine).

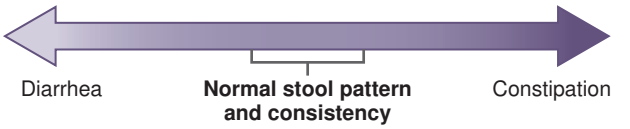

FIG. 2-3 Scope of bowel elimination.

Bowel elimination may also be categorized by the consistency of fecal material, which is shown in Fig. 2-3. At one end of the continuum the stool can be watery and without solid form, a condition called **diarrhea**. At the other end of the continuum, the stool can be hard, dry, and difficult to pass through the rectum, a condition called **constipation**. The inability to pass stool is known as **obstipation**.

Common Risk Factors for Changes in Elimination

Incontinence of either the bowel or bladder can occur as a result of aging when pelvic floor muscles become weaker. It may also occur in adults who have neurologic disorders such as stroke, dementia, and multiple sclerosis. Excessive use of laxatives may also cause fecal (diarrheal) incontinence. *Diarrhea* also results from acute GI infections such as gastroenteritis and chronic inflammatory bowel diseases such as Crohn's disease. Irritable bowel syndrome causes frequent diarrhea, constipation, or intermittent episodes of diarrhea and constipation.

Urinary retention is often a problem in older men who have benign prostatic hyperplasia (overgrowth). This overgrowth blocks the bladder neck and prevents urination or complete bladder emptying. *Retention of stool*, or constipation, is also common in older adults who have decreased peristalsis and/or lack of adequate dietary fiber and fluids to promote fecal passage. Lack of exercise and use of certain medications such as opioids, diuretics, and psychoactive drugs can contribute to constipation in adults of any age. Spinal cord and brain injuries or diseases often cause involuntary control or retention of both bowel and bladder.

Renal and urinary health problems can alter urinary elimination, depending on the type of disease or disorder. For example, urinary tract obstructions such as ureteral stones may prevent urine from reaching the bladder. Chronic kidney disease can cause changes in the amount of urinary output, depending on the stage of the disease. In the end stage the patient experiences oliguria (scant urine) or anuria (absence of urine) because the kidneys have lost their ability to make urine.

Physiologic Consequences of Changes in Elimination

Adults who have urinary or bowel *incontinence* are at risk for damage to tissue integrity. If not removed promptly from the skin, stool and urine can cause skin irritation, fungal infection, and/or skin breakdown, which are very uncomfortable. Loss of bladder and bowel control can also lead to depression and anxiety. Older adults in both health care and community settings may wear undergarments or briefs to prevent soiling their clothes. Many older adults perceive these protective garments as "diapers" and are embarrassed or feel humiliated when wearing them.

If not treated, patients with prolonged *diarrhea* may develop fluid and electrolyte imbalances, especially dehydration and hypokalemia (decreased serum potassium). These problems are serious and can be life-threatening because hypokalemia often causes cardiac rhythm abnormalities (dysrhythmias).

Urinary or bowel *retention* can result in a buildup of toxins and waste products in the body. Although not common, a large amount of retained urine can cause rupture of the bladder. A large amount of stool can lead to bowel impaction and result in partial or total intestinal obstruction. These conditions can be life threatening.

Assessment of Elimination

Take a patient history to determine risk factors or the underlying cause for impaired or altered elimination. Ask the patient or designated family member if incontinence or retention is or has been a problem. Assess the perineal area and buttocks for skin breakdown, redness, and fungal infection in patients who have incontinence.

Monitor the frequency, amount, consistency, and characteristics of urine and stool. Listen to bowel sounds in all four quadrants for presence of adequate bowel sounds. Expect overactive bowel sounds in a patient who has diarrhea; anticipate hypoactive bowel sounds in patients who have constipation. Palpate the bladder and bowel for distention.

For some patients laboratory testing of urine or stool may be useful in determining the cause of elimination changes. For example, a urinalysis and culture and sensitivity are appropriate for the patient with suspected urinary stones, retention, and infection. Radiologic testing and ultrasonography for stones or other structural abnormalities may also be performed.

A stool culture and sensitivity may be done for patients suspected of have methicillin-resistant *Staphylococcus aureus* (MRSA) infection. This infection often causes severe diarrhea in older adults who have received antibiotic therapy.

Interventions to Prevent Changes in Elimination

Maintaining normal elimination requires adequate nutrition and hydration. Teach adults to ensure a diet high in fiber, including eating fruits, vegetables, and whole grains, and drinking 8 to12 glasses of water each day unless medically contraindicated. Remind them to promptly toilet or void when the urge occurs. Patients at risk for *constipation* may need to take bulk-forming agents or stool softeners in addition to a high-fiber diet and fluids. Remind adults who have or are at risk for constipation to exercise frequently to stimulate peristalsis.

Interventions for Patients With Changes in Elimination

Adults with *diarrhea* need medical attention to determine the underlying cause of the problem. Monitor the patient for signs and symptoms of fluid and electrolyte imbalances. These problems can be treated to help the patient return to more normal elimination patterns and restore lost fluids and electrolytes. Chart 2-1 outlines nursing best practices for care of the patient experiencing diarrhea.

Nursing care for patients with *constipation* includes health teaching and collaboration with the interprofessional health care team. In addition to teaching about measures to prevent worsening of constipation as described previously, recommend that the patient take stool softeners, bulk-forming agents, and/or mild laxatives as needed to restore normal elimination patterns. In some cases enemas are needed to stimulate peristalsis and empty the rectum.

Adults who experience urinary *incontinence* need frequent toileting every 1 to 2 hours. This routine can prevent incontinence and train the bladder to empty at more regular intervals. A similar toileting schedule, especially after a meal, can help train the bowel to evacuate at about the same time each day.

Patients with short-term urinary *retention* require one or more straight urinary catheterizations to empty the bladder until the usual voiding pattern returns. For those with long-term retention, especially retention caused by lack of nerve stimuli, teach the patient or family/caregiver how to perform catheterizations on a daily routine schedule.

CHART 2-1 Best Practice for Patient Safety and Quality Care QSEN

Patient With Diarrhea

- Protect the perineal and buttock area with zinc oxide or other barrier cream to prevent skin irritation and excoriation, especially for patients who are incontinent.
- Wash and dry skin where stool and urine have made contact, especially for patients who are incontinent.
- Encourage fluid intake and ensure that the patient consumes foods high in potassium such as oranges and potatoes.
- Document food and fluid intake and urinary/stool output.
- Check the patient's weight each day for weight loss.
- Collaborate with the primary health care provider for prescribing an antifungal cream if needed.

FLUID AND ELECTROLYTE BALANCE

Definition of Fluid and Electrolyte Balance

Fluid and electrolyte balance is the regulation of body fluid, fluid osmolality, and electrolytes by processes such as filtration, diffusion, and osmosis. To maintain balance or homeostasis in the body, fluid and electrolyte balance must be as close to normal as possible. Water makes up 55% to 60% of total body weight. Older adults have less body fluid than younger adults.

Fluid occupies the inside of the cell (intracellular fluid) and the outside of the cell (extracellular fluid). Extracellular fluid is found in the vascular space (plasma) and interstitial space (fluid between cells, often referred to as *third space fluid*). *Electrolytes* are chemicals in the body needed for normal body functioning, especially the heart and brain. Examples of electrolytes are sodium, potassium, calcium, and magnesium.

Scope of Fluid and Electrolyte Balance

Fluid imbalances range from decreased fluid (deficit), often causing dehydration, to excessive fluid (overload), often causing edema. *Electrolyte imbalances* may also occur as deficits such as hypokalemia (low serum potassium) and excesses such as hyperkalemia (high serum potassium). Table 2-2 lists common fluid and electrolyte imbalances.

Common Risk Factors for Fluid and Electrolyte Imbalance

Risk factors that can alter a person's fluid and electrolyte balance include acute illnesses (e.g., vomiting and diarrhea), severe burns, serious injury or trauma, chronic kidney disease, surgery, and poor nutritional intake. Older adults are especially at risk for imbalances in fluids and electrolytes because they have less body water and are most likely to experience acute and chronic illnesses.

TABLE 2-2 Common Fluid and Electrolyte Imbalances

Common Fluid Imbalances	Common Electrolyte Imbalances
Fluid volume deficit (dehydration)	Hyponatremia (low serum sodium)
Fluid volume excess (overload)	Hypernatremia (high serum sodium)
	Hypokalemia (low serum potassium)
	Hyperkalemia (high serum potassium)
	Hypocalcemia (low serum calcium)
	Hypercalcemia (high serum calcium)
	Hypomagnesemia (low serum magnesium)
	Hypermagnesemia (high serum magnesium)

Physiologic Consequences of Fluid and Electrolyte Imbalance

Physiologic consequences of *fluid deficit* are the result of lack of blood flow and oxygen to all parts of the body. A decrease in blood volume leads to hypotension (low blood pressure). In an attempt to compensate for hypotension and perfuse major organs, the heart rate increases (tachycardia). Peripheral pulses become weak and thready. For patients with severe dehydration, fever may occur due to inadequate body water. Older adults may also experience delirium due to lack of blood flow to the brain. If fluid deficit is not adequately managed, the kidney function diminishes, as evidenced by a decrease in urinary output. Recall that the minimum hourly urinary output should be at least 30 mL per hour.

Patients with *fluid excess* (overload) usually have an increase in blood pressure due to increased blood volume. Peripheral pulses are often strong and bounding. Many patients experience peripheral edema due to fluid excess. Fluid from the vascular space shifts to the interstitial space (third spacing).

The physiologic consequences of *electrolyte deficit* depend on which electrolyte is decreased. For example, a decrease in serum potassium level (hypokalemia) can result in cardiac dysrhythmias (abnormal heart rhythms) and muscle weakness. A decreased sodium level (hyponatremia) can result in changes in mental status and generalized weakness.

The consequences of *electrolyte excess* also depend on which electrolyte is increased. For example, an increase in serum potassium (hyperkalemia) or calcium (hypercalcemia) can cause cardiac dysrhythmias. In addition, skeletal muscle spasms are likely. An increased calcium level can also result in kidney or urinary tract calculi (stones). Chapter 11 describes specific fluid and electrolyte imbalances in detail.

Assessment of Fluid and Electrolyte Balance

Take a complete health history for past experiences of fluid and electrolyte imbalance and for any risk factors that can lead to an imbalance. Ask about any current episodes of nausea, vomiting, or diarrhea. Inquire about the current use of medications, including over-the-counter and herbal supplements.

Monitor vital signs, especially blood pressure and pulse rate and quality, fluid intake and output, and weight. *Changes in weight are the best indicator of fluid volume changes in the body*. Assess skin and mucous membranes for dryness and decreased skin turgor. Monitor and interpret laboratory tests to determine fluid or electrolyte imbalance. Examples of common tests are measurements of serum electrolyte concentration, blood urea nitrogen (BUN), and serum osmolality. Chapter 11 discusses each of these assessments in detail.

Interventions to Promote Fluid and Electrolyte Balance and Prevent Fluid and Electrolyte Imbalance

Maintaining fluid and electrolyte balance in the body is essential for normal body functioning. Teach patients to drink adequate fluids to remain hydrated. Eight glasses or more of water a day are often recommended unless medically contraindicated. Older adults may not feel thirsty or want to limit their fluid intake to prevent urinary incontinence. Teach them the importance of drinking adequate fluids to prevent dehydration and potential urinary tract infection.

Remind all adults about the need to eat a well-balanced diet that promotes electrolyte balance. Certain foods contain high concentrations of essential vitamins, minerals, and electrolytes. For instance, milk and other dairy products are a good source of calcium. Bananas and potatoes are good sources of potassium.

Interventions for Fluid and Electrolyte Imbalances

Priority nursing interventions include maintenance of patient safety and comfort measures when managing fluid or electrolyte imbalances. For patients with a *fluid deficit,* the primary collaborative intervention is fluid replacement, either orally or parenterally. Depending on the cause of *fluid overload,* patients may require a fluid restriction (e.g., for those with chronic kidney disease). Diuretic therapy is often used for patients with fluid overload caused by chronic heart failure to prevent pulmonary edema, a potentially life-threatening complication. If lower extremity edema is present, teach patients the importance of elevating the legs above the heart to promote venous return.

Interprofessional collaborative management of electrolyte imbalance depends on which electrolyte balance is impaired. In general, electrolyte deficits are treated by replacing them, usually parenterally as intravenous (IV) fluids. Electrolyte excesses are managed by restricting additional electrolytes or using a medication or fluids that can help eliminate the excess. For example, sodium polystyrene sulfonate (Kayexalate) may be used for patients with hyperkalemia to eliminate excess potassium via the GI system.

GLUCOSE REGULATION

Glucose regulation is the process of maintaining optimal blood glucose levels. Though this concept is not a primary concept of this title, it is discussed in connection to multiple interrelated concepts with the Glucose regulation concept exemplar Diabetes Mellitus in Chapter 64.

GAS EXCHANGE

Definition of Gas Exchange

Gas exchange is the process of oxygen transport to the cells and carbon dioxide transport away from the cells through ventilation and diffusion. This process begins with ventilation triggered by neurons in the brain sensing the need for gas exchange. These neurons stimulate contraction of skeletal muscles that expand the chest cavity, causing inhalation of oxygen-containing air into the airways and lungs. From the lung alveoli, oxygen diffuses into blood and red blood cells, and the waste gas carbon dioxide diffuses from the blood into the alveoli. Once in the alveoli, carbon dioxide is exhaled from the body as a result of recoil of lung elastic tissues and contraction of skeletal muscles

that constrict the chest cavity. The oxygen in red blood cells bound to hemoglobin is transported through the blood by cardiac effort to tissue cells (perfusion), where low oxygen concentration allows release of oxygen from hemoglobin and diffusion or cell metabolism. The high concentration of carbon dioxide waste resulting from cellular metabolism allows diffusion of this gas into the blood and red blood cells. The waste gas is then transported back to the lungs to diffuse into the alveoli for removal during exhalation.

Scope of Gas Exchange

Gas exchange is either normal to allow for adequate perfusion and removal of waste gas (carbon dioxide) or decreased. Decreased gas exchange can range from minimal to severe.

Common Risk Factors for Decreased Gas Exchange

Adequate ventilation requires normal functioning central (brain and spinal cord) neurons, normal diaphragm function, adequate skeletal muscle contractility (especially the intercostal muscles between the ribs), and an intact chest thorax. Any acute or chronic problems that affect these functions can result in decreased ventilation, which impairs gas exchange. For example, pneumonia or lung abscess prevents adequate ventilation and gas exchange. A patient who experienced a cervical spinal cord injury often has decreased ventilation ability due to damage to spinal nerves that control the diaphragm.

As adults age, pulmonary alveoli lose some of their elasticity, causing a decrease in gas exchange. Health problems can also affect lung functioning. Any condition that decreases ventilation such as asthma can impair gas exchange. Asthma causes bronchospasm and narrowed airways, which diminishes the amount of oxygen available for gas exchange. Other lung diseases such as chronic obstructive pulmonary disease (COPD) directly damage the alveoli, decreasing both oxygen and/or carbon dioxide diffusion (Fig. 2-4). Risk factors for developing these diseases include smoking and environmental pollutants.

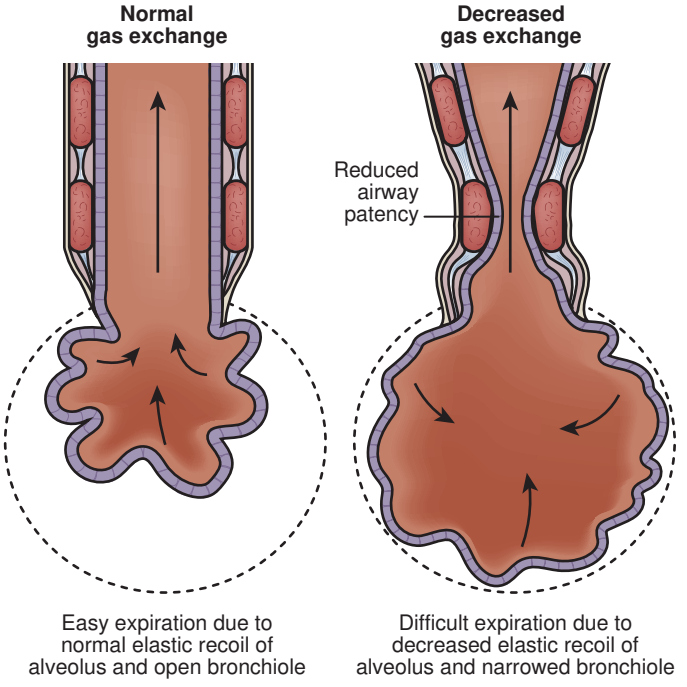

FIG. 2-4 Damaged inelastic alveoli common in patients with COPD cause decreases in oxygen and carbon dioxide diffusion.

In addition, prolonged immobility can decrease gas exchange as a result of inadequate pulmonary ventilation.

Physiologic Consequences of Decreased Gas Exchange

Decreased gas exchange results in (1) inadequate transportation of oxygen to body cells and organs; and/or (2) retention of carbon dioxide. Inadequate oxygen results in cell dysfunction (ischemia) and possible cell death (necrosis or infarction) (Fig. 2-5). An excessive buildup of carbon dioxide combines with water to produce carbonic acid. This increase in acid causes respiratory acidosis and lowers the pH of blood. See the previous discussion of acid-base imbalance earlier in this chapter and in Chapter 12.

Assessment of Gas Exchange

Take a complete health history and perform a focused respiratory assessment. Ask the patient about current or history of lung disease or trauma. Assess the patient's breathing effort, oxygen saturation, capillary refill, thoracic expansion, and lung sounds anteriorly and posteriorly. Monitor for the presence of a cough; sputum; report of shortness of breath; dizziness; chest pain; presence of cyanosis; or adventitious lung sounds such as wheezing, rhonchi, or crackles. Interpret associated laboratory results, including arterial blood gases (ABGs) and complete blood count (CBC). When necessary, a chest x-ray, chest computerized tomography (CT), or $\dot{V}/\dot{Q}$ scan may be performed to determine the presence and severity of lung disease. Pulmonary function tests can determine the extent of airway disease in the small and large airways of the lungs and their structures. Bronchoscopy can provide direct visualization into the bronchus and its extending structures.

Interventions to Promote Gas Exchange and Prevent Decreased Gas Exchange

Teach patients the importance of using infection control measures (primarily proper handwashing), smoking cessation to prevent COPD, and getting vaccinations as recommended to prevent influenza and pneumonia. Instruct them to be aware of exposure to specific respiratory conditions, including tuberculosis and influenza.

Interventions for Decreased Gas Exchange

Managing decreased gas exchange requires finding the underlying cause and treating it, often with drug therapy. Examples of drugs used to treat respiratory health problems include antihistamines, decongestants, glucocorticoids, bronchodilators, mucolytics, and antimicrobials.

Chest expansion is improved when the patient is sitting or is in a semi-Fowlers position. Teach the patient about the need for deep breathing and coughing to further enhance lung expansion and decrease breathing effort. Teach him or her how to correctly use incentive spirometry and inhalers if indicated. Administer oxygen therapy and monitor pulse oximetry to determine its effectiveness.

IMMUNITY

Definition of Immunity

Immunity is protection from illness or disease that is maintained by the body's physiologic defense mechanisms. *Natural active* immunity occurs when an antigen enters the body and the body creates antibodies to fight off the antigen. *Artificial active* immunity occurs via a vaccination or immunization.

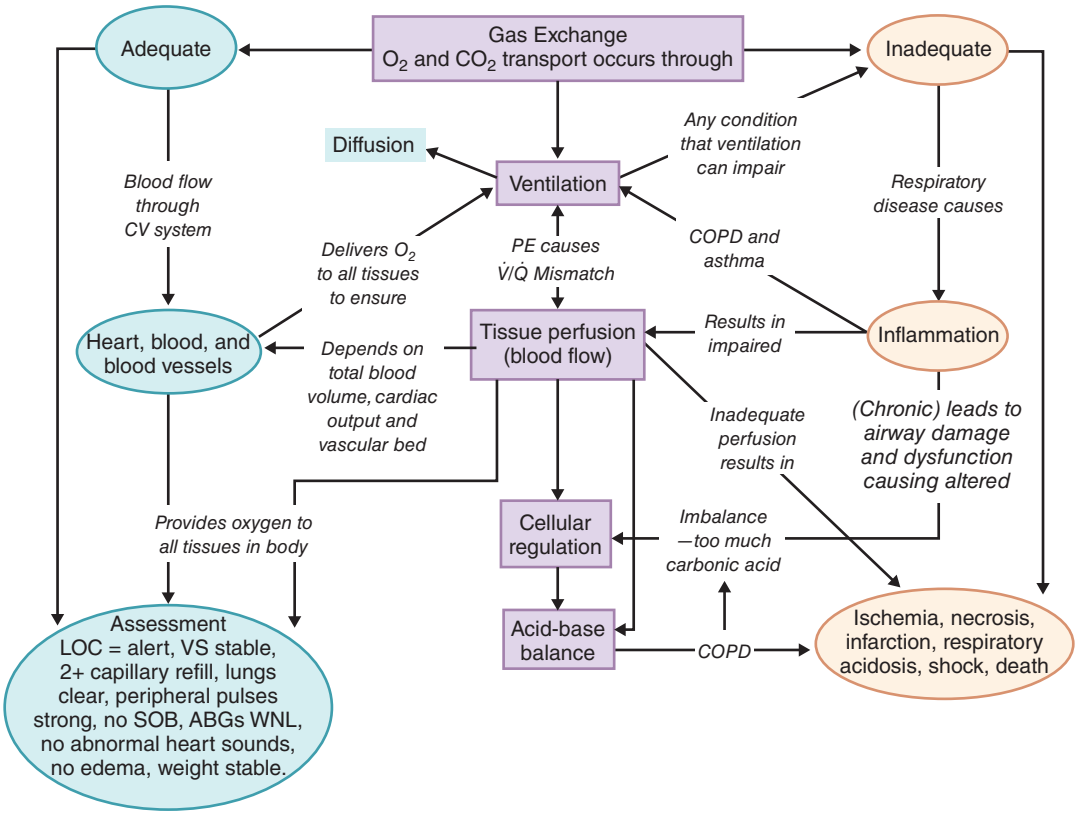

FIG. 2-5 Concept map showing comparison of adequate and inadequate gas exchange with consequences of impaired gas exchange. (*ABG,* Arterial blood gas; *COPD,* chronic obstructive pulmonary disease; *CV,* cardiovascular; *LOC,* level of consciousness; *PE,* pulmonary embolism; *SOB,* shortness of breath; *$\dot{V}/\dot{Q}$,* ventilation-perfusion; *VS,* vital signs; *WNL,* within normal limits.)

Natural passive immunity occurs when antibodies are passed from a mother to the fetus through the placenta or using colostrum or the breast milk; *artificial passive* immunity occurs via a specific transfusion such as immunoglobulins.

Multiple organs and cells in the body are involved in the immune response. *Antibody-mediated immunity* (humoral immunity) includes the antigens and antibodies interacting in an attempt to slow down or destroy the foreign body. B-cells play a major role in this activity, together with the macrophages, T-lymphocytes (T-cells), and spleen. *Cell-mediated immunity* involves the functions of numerous cells to fight off the antigen, including white blood cells (WBCs), T-cells, natural killer (NK) cells, and multiple cytokines. The thymus and lymph nodes also play a role in this immune process.

Scope of Immunity

Immunity has the potential to be decreased (suppressed or weakened) or excessive (exaggerated or heightened).

Common Risk Factors for Changes in Immunity

Adult populations at risk for impaired immunity include but are not limited to:

- Older adults (diminished immunity due to normal aging changes)
- Low socioeconomic groups (inability to obtain proper immunizations)
- Nonimmunized adults
- Adults with chronic illnesses that weaken the immune system
- Adults on chronic drug therapy such as corticosteroids and chemotherapeutic agents
- Adults experiencing substance use disorder
- Adults who have a genetic risk for decreased or excessive immunity

Physiologic Consequences of Changes in Immunity

An individual with a decreased immune response is susceptible to multiple types of infections because of the inability to "fight off" particular antigens. An individual with an excessive immune response has allergies or autoimmune reactions or diseases. Reactions are graded types I to IV and have varying degrees of urgency. These types are discussed in detail in Chapter 20.

Assessment of Immunity

A thorough history of the individual and the family is necessary to determine any of the previous risks associated with an immune problem. Identify any patient allergies, current medications, and history of environmental exposures. Ask the patient about an immunization history.

Assess weight, adequate wound healing, cognitive function, allergic responses (red, watery eyes; nasal congestion; swelling or rashes), and potential or actual organ dysfunction (cardiovascular, respiratory, renal or musculoskeletal). Monitor laboratory tests such as complete blood count (CBC) with differential, C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), and allergy testing to identify any susceptibilities that may exist. Specific tests such as the enzyme-linked immunosorbent assay (ELISA) and Western blot tests may be