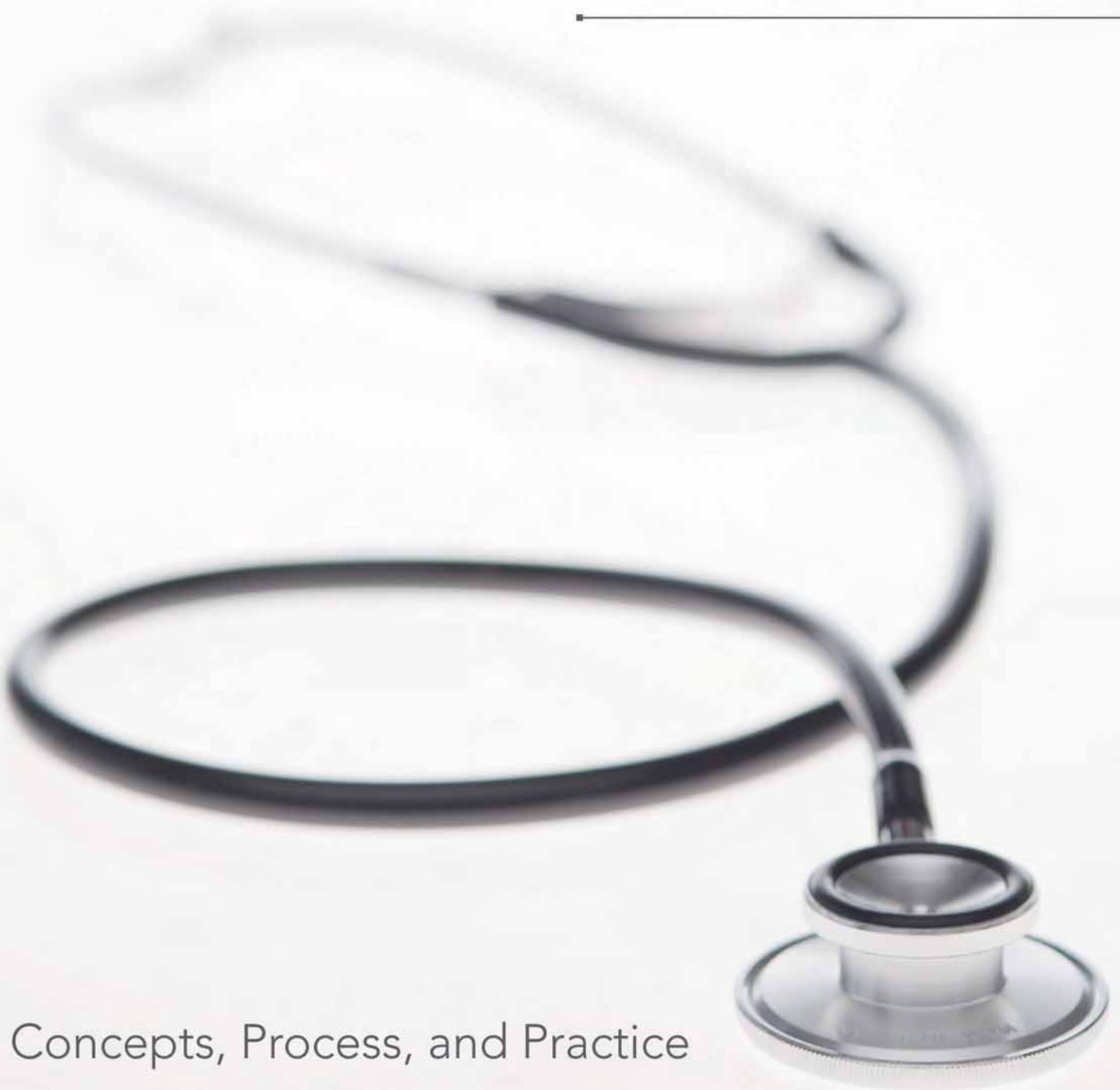


**Arab World  
Edition**

# Fundamentals of Nursing

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Concepts, Process, and Practice

Barbara Kozier Glenora Erb Audrey Berman Shirlee J. Snyder  
Maysoon Abdalrahim Fathieh Abu-Moghli Mohammad Saleh



## About the Authors



**Audrey Berman** received her BSN from the University of California–San Francisco and later returned to that campus to obtain her MS in physiologic nursing and her PhD in nursing. Her dissertation was entitled *Sailing a Course through Chemotherapy: The Experience of Women with Breast Cancer*. She worked in oncology at Samuel Merritt Hospital prior to beginning her teaching career in the diploma program at Samuel Merritt Hospital School of Nursing

in 1976. As a faculty member, she participated in the transition of that program into a baccalaureate degree and in the development of the master of science in nursing program. Over the years, she has taught a variety of medical-surgical nursing courses in the prelicensure programs. She currently serves as

the dean of nursing at Samuel Merritt College (an affiliate of Sutter Health).

Dr. Berman has traveled extensively, visiting nursing and health care institutions in Germany, Israel, Spain, Korea, Botswana, Australia, Japan, and Brazil. She serves on the board of directors for the Bay Area Tumor Institute. She is a member of the American Nurses Association and Sigma Theta Tau and is a site visitor for the Commission on Collegiate Nursing Education. She has twice participated as an NCLEX-RN item writer for the National Council of State Boards of Nursing. She is certified as an advanced oncology nurse and as an AIDS educator and has presented locally, nationally, and internationally on topics related to nursing education, breast cancer, and technology in health care.

Dr. Berman authored the scripts for more than 35 nursing skills videotapes in the 1990s. She was a coauthor of the sixth and seventh editions of *Fundamentals of Nursing* and, with Shirlee Snyder, coauthor of the fifth edition of *Kozier & Erb's Techniques in Clinical Nursing*.



**Shirlee J. Snyder** graduated from Columbia Hospital School of Nursing in Milwaukee, Wisconsin, and subsequently received a bachelor of science in nursing from University of Wisconsin–Milwaukee. Because of an interest in cardiac nursing and teaching, she earned a master of science in nursing with a minor in cardiovascular clinical specialist and teaching from the University of Alabama in Birmingham. A move to California resulted in becoming a

faculty member at Samuel Merritt Hospital School of Nursing in Oakland, California. Shirlee was fortunate to be involved in the phasing out of the diploma and ADN programs and development of a baccalaureate intercollegiate nursing program. She held numerous positions during her 15-year tenure at Samuel Merritt College, including curriculum coordinator, assistant director–instruction, dean of instruction, and associate dean of the Intercollegiate Nursing Program. She is an associate professor alumnus at Samuel Merritt College. Her interest and experiences in nursing education resulted in Shirlee obtaining a doctorate of education focused in curriculum and instruction from the University of San Francisco.

Dr. Snyder moved to Portland, Oregon, in 1990 and taught in the ADN program at Portland Community College for 8 years. During this teaching experience she became interested in

computer-assisted instruction (CAI) and initiated Web-based assessment testing for student learning. She presented locally and nationally on topics related to using multimedia in the classroom and promoting ethnic and minority student success.

Another career opportunity in 1998 led her to the Community College of Southern Nevada in Las Vegas, Nevada, where Dr. Snyder was the nursing program director with responsibilities for the associate degree and practical nursing programs for 5 years. During this time she became involved in coauthoring the fifth edition of *Kozier & Erb's Techniques in Clinical Nursing* with Audrey Berman.

In 2003, Dr. Snyder returned to baccalaureate nursing education. She embraced the opportunity to be one of the nursing faculty teaching the first nursing class in the baccalaureate nursing program at the first state college in Nevada, which opened in 2002. She is currently the associate dean of the School of Nursing at Nevada State College in Henderson, Nevada.

Dr. Snyder is an advisory board member for the Nevada Geriatric Education Center and a member of the American Nurses Association, Sigma Theta Tau, and a variety of task groups addressing the Southern Nevada nursing shortage. She has been a site visitor for the National League for Nursing Accrediting Commission and the Northwest Association of Schools and Colleges.

Dr. Snyder's experiences in nursing education and teaching keep her current in nursing and nursing education. She appreciates all she learns from the students she has taught and her past and present faculty colleagues.



**Barbara Kozier** was educated in Vancouver, British Columbia, Canada. After obtaining a bachelor of arts degree from the University of British Columbia, she entered the nursing program at that institution. After 4 years of study she graduated with a bachelor's degree in nursing. She obtained a position at Bella Bella, an aboriginal settlement on the northern coast of British Columbia. She then nursed with the Victorian Order of Nurses providing home care. Following

a position with a large general hospital as an acute care

nurse in a medical surgical unit, she taught medical and surgical nursing, pediatric nursing, psychiatric nursing, and community nursing courses at the Vancouver General Hospital School of Nursing. Ms. Kozier then enrolled at the University of Washington where she studied for 2 years, taught part time, and obtained her master of nursing title.

Barbara is a member of three honor societies: Sigma Theta Tau (nursing), Pi Lambda Theta (education), and Delta Sigma Pi (Canadian Honor Society for University Women). Barbara was a member and a chair of many nursing and government committees. She wrote a number of texts and collaborated with Glenora Erb on four books: *Techniques of Clinical Nursing*, *Fundamentals of Nursing*, *Concepts and Issues in Nursing Practice*, and *Essentials of Nursing Practice*.



**Glenora Lea Erb** was born in Calgary, Alberta, Canada. All of her schooling took place in Calgary and, with her identical twin sister, she attended the Nursing School of Calgary General Hospital. She was awarded a gold medal when she graduated and was recognized as an outstanding bedside nurse.

Following 2 years traveling in Asia, Europe, India, Australia, and

New Zealand, Ms. Erb returned to Vancouver and taught nursing at St. Paul's Hospital School of Nursing, and later at a 2-year program at the British Columbia Institute of Technology. At this time she also coauthored textbooks on *Fundamentals of Nursing*, *Techniques of Clinical Nursing*, *Concepts and Issues in Nursing Practice*, and *Essentials of Nursing Practice*.

Glen died at home December 24, 2001 of breast cancer. Her death has meant that nursing has lost a highly skilled clinical nurse and her friends and family have lost a sensitive and giving person.



**Dr. Maysoon S. Abdalrahim** received her BSc degree in nursing and MSc degree in nursing education from the University of Jordan, and her PhD in nursing care from the Faculty of Health and Caring Sciences, Gothenburg University, Sweden.

Dr. Maysoon has been a member of the Faculty of Nursing at the University of Jordan since 1985. Her main speciality is nursing care of adult clients, and acute pain

assessment and management. Over the years, she has taught medical surgical nursing, pathophysiology, health assessment, and professional writing courses. She currently serves as the Assistant Dean for Quality Affairs.

She has co-authored several textbooks about the fundamentals of nursing, nursing skills and English for nurses. She has also participated in the translation of English nursing and medical books into Arabic.

Dr. Maysoon is a member of the core group in the preceptorship program, Jordanian-Swedish exchange project, a member of *Sigma Theta Tau* (Nursing), and a member of the quality assurance committee at the University of Jordan.



**Dr. Fathieh Abu-Moghli** earned her Bachelor of Science degree from the Faculty of Nursing at the University of Jordan. She was awarded a scholarship from the university to continue her graduate studies, earning her Master's degree and PhD in Nursing Administration from Alexandria University, Egypt.

Dr. Abu-Moghli is an expert in management and leadership, curriculum building, quality improvement, and personnel management. She had occupied many academic and administrative positions within the Faculty of Nursing at the University of Jordan, as well as at the Jordan University Hospital. She has

served as director of the Studies Department at the Center of Consultation, as a member of the executive board of the Jordanian Nursing Council for four years, and as a member of the Jordanian Nurses and Midwives Council. She is a member of several committees at the faculty and university level.

Jointly appointed as associate professor within the Faculty of Nursing and the Faculty of Rehabilitation Sciences at the University of Jordan, Dr. Abu-Moghli is also the vice-dean and chairperson of graduate studies at the Faculty of Nursing. She teaches at the level of undergraduate and graduate programs, and is also a reviewer for several international and prestigious journals. She works as a consultant for many national and international institutions and has presented locally, nationally, and internationally on topics related to nursing education, nursing ethics, and AIDS.



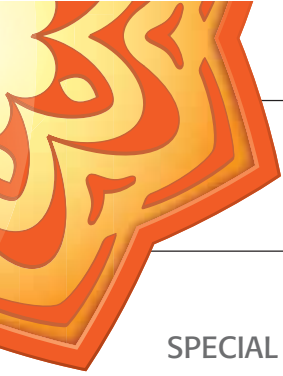
**Dr. Mohammad Saleh**, a registered nurse, tissue viability specialist, and Ph.D-holder, was born in Amman, Jordan. He is now an assistant professor and head of adult health nursing within the Clinical Nursing Department at the University of Jordan. He received his Bachelor of Science in nursing from the University of Jordan in 1995, and began his nursing career at the Ministry of Health Hospitals, Jordan. While practicing

nursing, he gave continuing education seminars regarding the nursing implication of dealing with surgical and critically-ill patients. A decade ago, he moved to the United Kingdom and settled in Leicester city, where he received his MPhil and Ph.D in Nursing from De Monte Forte University.

Ultimately, Dr. Saleh would like to use his knowledge of caring for critically ill patients, and the principles of tissue viability nursing, to create new knowledge, through research and close study of relevant populations, utilizing critical thinking, therapeutic communication, and appropriate teaching, management, and consultative skills in the exercise of professional responsibilities. He would like to engage in the teaching process for subjects including fundamentals of nursing, applied research, community health, and medical and surgical nursing, and in instructional development to contribute not only to the general knowledge base in the field of nursing but also to the ways in which knowledge is created and shared.

Dr. Saleh continues to teach in undergraduate and graduate programs at the University of Jordan in Amman, and had published work in the field of tissue viability nursing, nursing education, nursing management, critical care nursing, and nursing research.

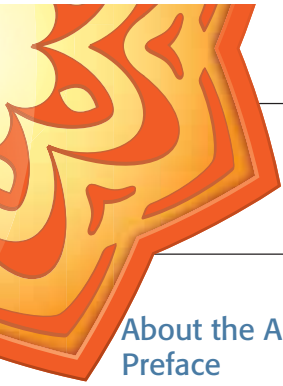




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# Preface

Nurses today must be able to grow and evolve to meet the demands of a dramatically changing health-care system. The technological advances, the emphasis on quality and health care cost and shifting the focus of health care delivery from an illness perspective to disease prevention and health promotion have all contributed to the complexity of nurses' role. Nurses have to care for chronic illnesses associated with increased life expectancy and health problems related to lifestyle versus previously prevalent infectious diseases. The unique role of the nurse demands a blend of nurturance, sensitivity, caring, empathy, commitment, and skill founded on a broad base of knowledge.

Nurses need skills in technology, communication, and interpersonal relations to be effective members of the collaborative health-care team. They need to think critically and be creative in implementing nursing strategies with clients of diverse cultural backgrounds in increasingly varied settings and implementing change where necessary. They need skills in teaching, leading, managing and ethical decision making. They need to understand holistic healing modalities and complementary therapies.

*Fundamentals of Nursing: Concepts, Process, and Practice, Arab World Edition*, addresses concepts of contemporary professional nursing in the Arab world. These concepts include, but are not limited to, caring, wellness, health promotion, disease prevention, holistic care, multiculturalism, nursing theories, nursing informatics, nursing research, ethics, and advocacy. In this edition, every chapter has been extensively revised, with content being updated and tailored to reflect the practice of nursing across the Middle East, and specifically the Arab world.

The Arab world is highly influenced by culture and religion. In addition, environmental and social problems are increasing in complexity and variability. Therefore, nursing education programs need to prepare nurses to utilize a culturally-sensitive approach to nursing care. In this text, students of nursing are introduced to a challenging and rewarding profession from both the perspective of the nurse and a holistic understanding of clients within the Arab context.

This book is designed to guide nursing students in the Arab world in the foundation level of the baccalaureate program at nursing schools. It will aid students to acquire the basic knowledge and skills that are necessary to care for individual, family and community clients across the lifespan and along the illness-wellness continuum in a variety of settings.

## THE ARAB WORLD EDITION

The eighth U.S. edition of this text, *Fundamentals of Nursing: Concept, Process and Practice*, as well as previous U.S. editions, is considered a valuable text in the Arab world. It has been adopted in many faculties of nursing across the Arab

world, especially in Jordan and the Gulf area, for years. The eighth edition, in particular, provided the core knowledge and skills needed to deliver timely, sensitive, quality, and individualized care to the individuals, families and communities with whom the nurse works. However, we, as faculty members and nursing educators, found that while the book was comprehensive and reflects the standards of care used in many global areas, it needed to be modified to address the Arab world's standards and resources. We believe that the following updates in this Arab World Edition increase the value of the book for Arab nursing students and future nurses:

- Reflecting the culture and focusing on issues related to Arab and religious culture that affect the nursing care of individuals.
- Reduction in the length of the book, from 52 to 22 chapters. This will help the students and instructors focus on the knowledge and skills that are really needed at the foundation level of nursing practice. Summarizing, without affecting the merit of the content, makes the book more accessible, affordable, and easier to handle and read.
- Cutting down details that are thought to be unessential as they relate to systems or strategies (i.e. problem-oriented medical records and computerized records) not in use in some Arab countries.
- Emphasis on the Arab world's nursing practices, using studies and evidence-based references supporting current nursing practices in the Arab world and clinical examples from the region.
- Using simple language appropriate to students for whom English is a second language, and using Arabic names to make the book more engaging and accessible to students in the Arab world.

## NEW FEATURES

For years, *Fundamentals of Nursing* has been a gold standard that helps students embark on their careers in nursing. This Arab World Edition retains many of the features that have made this textbook the number-one choice of nursing students and faculty. We have also added **opening case studies** and **closing critical reflections** in each chapter to give students an insight into the type of real-world cases they might be faced with, giving them an opportunity to see how theory is applied to real cases, encouraging them to reflect on what they have learnt and how it may be applied to real situations.

The Arab World Edition also features regional **Research Notes**, reinforcing the theory presented in the text. These also demonstrate how nursing studies in the Arab world have contributed to our understanding of nursing practices, and allow students to examine real research conducted across the region.



## SUPPLEMENTS

To supplement the textbook, we have included a variety of instructor aids in our supplements package.

**INSTRUCTOR'S RESOURCE MANUAL.** This manual contains a wealth of material to help faculty plan and manage the Fundamentals of Nursing course. It includes chapter overviews, detailed lecture suggestions and outlines, learning outcomes, tips, and more for each chapter.

**POWERPOINT SLIDES.** For use in class, these slides include the key topics and figures from the book to supplement your lectures.

**TEST GENERATOR.** An electronic test generator lets you view and edit testbank questions, transfer questions to tests, and print the test in a variety of customized formats

## THANKS

We wish to extend a sincere thank you to the talented team involved in producing the Arab World Edition of this book. In particular, we would like to express our deepest appreciation and gratitude to our Senior Development Editor, Sophie Bulbrook, for her meticulous and exceptional efforts to make this work a success and for her exceptional ability to coordinate the Arab World Editions team. Our appreciation also extends

to Rasheed Roussan, Acquisitions Editor, for his dedication to working with us as a team.

Our thanks also extend to Michelle Thomson and Kate Sherington, Project Editors, and Christopher Crow, Senior Manufacturing Controller; for producing this book with precision, and to our designer, Sarah Fach, for managing the beautiful design. Many of the photos in this Arab World Edition were photographed by Patrick Watson, setting courtesy of the School of Nursing at Nevada State College.

Last, but not least, we would like to acknowledge nursing students of the Arab world, our nurses and leaders of the future. Our dear students: you are called to open your eyes, minds, and hearts. You are called to see, read, understand, comprehend, and appreciate the opportunity you have to become nurses, and the gift you have been awarded to work with those in need of your care and passionate attention. You are called to become the bright future of the profession of nursing.

We hope that this Arab World Edition will be appreciated by nursing students and educators in the region, and in the wider world.

Fathieh Abdullah Abu-Moghli  
Maysoon Salim Abdalrahim  
Mohammad Saleh



# Nursing Excellence


for the Next Generation...

## Nursing Excellence Starts Here!

*Fundamentals of Nursing* continues to set the foundation for nursing excellence. Now in its eighth edition, *Fundamentals of Nursing* is designed for success in today's classroom and to prepare tomorrow's nurses.

**Nursing: Historical and Current Practice**

CHAPTER 1



**LEARNING OUTCOMES**  
After completing this chapter you will be able to:

1. Discuss historical and current factors influencing the development of nursing.
2. Identify the essential aspects of nursing.
3. Identify four major areas within the scope of nursing practice.
4. Describe the diverse roles of nurses and the expanded career roles.
5. Discuss the criteria of a profession and the professionalization of nursing.
6. Describe factors that could influence current nursing practice.
7. Explain the functions of national and international nursing associations.
8. Describe the different types of educational nursing programs in the Arab world.
9. Explain the importance of quantitative and qualitative research in nursing practice.
10. Differentiate health care services based on primary, secondary, and tertiary disease prevention categories.
11. Identify the various roles of health care professionals.

## Excellence from the Start....

Start by reviewing learning outcomes and key terms.

◀ **Learning Outcomes** help identify critical concepts.

## ...To the Finish

The end of each chapter summarizes and applies chapter information.

**Chapter highlights** focus your attention and review critical concepts.

**Test your knowledge** helps you prepare for the NCLEXRN® exam. Alternative-style questions are also included.

**References** give you source for supporting and evidence-based material and additional information.

**CHAPTER HIGHLIGHTS**

- Historical perspectives of nursing practice reveal recurring themes or influencing factors. Women have traditionally cared for others, beginning with Arab women in early Islam. Visionary leaders have made notable contributions to improve the status of nursing.
- The scope of nursing practice includes promoting wellness, preventing illness, restoring health, and caring for the dying.
- Although traditionally the majority of nurses were employed in hospital settings, today the numbers of nurses working in home health care, and...
- Every nurse may fall exclusive of one and communicator, teacher, agent, leader, manager.
- With advanced education...
- Some professional organizations have recommended that minimum entry into practice be at the baccalaureate or master's degree level.
- The concept of research has been introduced into nursing education programs, and research journals in nursing have been developed.
- Both quantitative and qualitative research involve identifying a research problem/question, collecting data, and analyzing.

**TEST YOUR KNOWLEDGE**

1. Health promotion is best represented by which of the following activities?
  1. Administering immunizations
  2. Giving a bath
  3. Preventing accidents in the home
  4. Performing diagnostic procedures
2. Which of the following social forces is most likely to significantly impact the future supply and demand for nurses?
  1. Aging
  2. Economics
  3. Science/technology
  4. Telecommunications
3. Quantitative research is most appropriate for which of the following studies?
  2. A study examining the bereavement process in spouses of clients with terminal cancer
  3. A study exploring factors influencing weight control behavior
  4. A study examining a client's feelings before and after a bone marrow aspiration
4. The use of a qualitative research process is most appropriate for which of the following studies?
  1. A study measuring nutrition and weight loss or gain in clients with cancer
  2. A study examining oxygen levels after endotracheal suctioning
  3. A study examining client reactions to stress after open heart surgery

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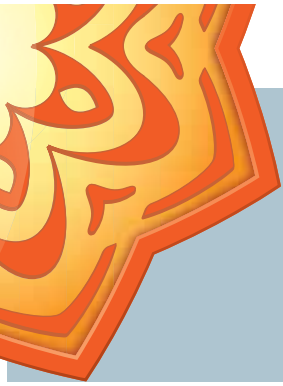
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# Client-focused Nursing Evidence-

**ASSESSMENT INTERVIEW Sleep Disturbances**

- How would you describe your sleeping problem? What changes have occurred in your sleeping pattern? How often does this happen?
- How many cups of coffee, tea, or caffeinated beverages do you drink per day? Do you drink alcohol? If so, how much?
- Do you have difficulty falling asleep?
- Do you wake up often during the night? If so, how often?
- Do you wake up earlier in the morning than you would like and have difficulty falling back to sleep?
- How do you feel when you wake up in the morning?
- Do you sleep more than usual? If so, how often do you sleep?
- Do you have periods of overwhelming sleepiness? If so, when does this happen?
- Have you ever suddenly fallen asleep in the middle of a daytime activity? Does anything unusual happen when you laugh or get angry?
- Has anyone ever told you that you snore, walk in your sleep, or stop breathing for a while when sleeping?
- What have you been doing to deal with this sleeping problem? Does it help?
- What do you think might be causing this problem? Do you have any medical condition that might be causing you to sleep more (or less)? Are you receiving medications for an illness that might alter your sleeping pattern? Are you experiencing any stressful or upsetting events or conflicts that may be affecting your sleep?
- How is your sleeping problem affecting you?

◀ **Assessment Interview**  
Boxes help you learn the type and range of what to ask in particular situations.

**Client Teaching boxes** ▶ give tips and tools to help clients facilitate self-care, monitor potential problems, perform prescribed therapies, and assist in other client teaching experiences.

**CLIENT TEACHING Home Care and Circulation**

**MAINTAINING CARDIAC OUTPUT AND TISSUE PERFUSION**

- Teach the symptoms of heart failure to the client and family and emphasize when to contact the primary care provider.
- Teach the client about the importance of maintaining regular physical activity to promote circulation and vascular health. Emphasize the need to increase activity levels gradually with the goal of exercising (walking, swimming, weight training, or aerobic exercise as recommended by the care provider) for at least 20 minutes four to five times per week.
- Instruct the client to avoid exposure to cold, wearing warm clothing as needed.
- Teach cardiopulmonary resuscitation or refer for instruction.

**DIETARY ALTERATIONS**

- Instruct the client and family about prescribed dietary restrictions such as a low-sodium diet. Refer to a dietitian as needed for further instruction.
- Discuss dietary measures to reduce the risk of atherosclerosis, including reducing total and saturated fats in the diet, reducing weight if obese, and increasing the intake of dietary fiber.

**MEDICATIONS**

- Instruct the client and family about prescribed medications, including effects, side effects, and administration instructions.

**NURSING CARE PLAN For A Client With Skin Problems**

ASSESSMENT DATA	NURSING DIAGNOSIS	DESIRED OUTCOMES
<p><b>Nursing Assessment</b> Tawfeek Ahmad, a 69-year-old, unmarried accountant being treated for congestive heart failure, states he has dyspnea with mild activity. ("I cannot climb a flight of stairs without stopping and resting and become breathless even when walking on level ground.") Prefers the orthopedic position. He works at home and sits at a table for most of the day.</p> <p><b>Physical Examination</b> Height: 178 cm Weight: 102 kg Temperature: 37.8°C Pulse rate: 94 BPM Respirations: 20/minute Blood pressure: 174/92 mmHg Rales present in both lungs Respirations slightly labored Color pale 3+ (5 mm) edema both feet and ankles</p> <p><b>Diagnostic Data</b> Complete blood count and urinalysis within normal limits. Chest X-ray reveals an enlarged heart.</p>	<p><i>Risk for disuse syndrome</i> related to decreased activity resulting from inadequate balance between oxygen supply and demand associated with decreased cardiac output and obesity.</p>	<p><b>Immobility Consequences</b> Physiological, as evidenced by no</p> <ul style="list-style-type: none"> <li>Pressure ulcers</li> <li>Decreased muscle strength.</li> </ul> <p><b>Immobility Consequences</b> Psychocognitive, as evidenced by no</p> <ul style="list-style-type: none"> <li>Apathy</li> <li>Sleep disturbances</li> <li>Negative body image.</li> </ul> <p><b>Mobility</b>, as evidenced by mildly compromised</p> <ul style="list-style-type: none"> <li>Walking</li> <li>Balance.</li> </ul>
NURSING INTERVENTIONS/SELECTED ACTIVITIES	RATIONALE	
<p><b>Positioning</b></p> <p>a. Position to alleviate dyspnea, e.g., high Fowler's.</p>	<p>a. Clients with increased pulmonary secretions are able to breathe better when upright because abdominal organs are lower and</p>	

◀ **Nursing care Plans** help you approach care from the nursing process perspective.

# Care, Critical Thinking and Based Practice!



## IDENTIFYING NURSING DIAGNOSES, OUTCOMES, AND INTERVENTIONS Clients with Fluid Volume Excess

**DATA CLUSTER** Omar, a 67-year-old retired man who has a history of heart disease, has experienced a weight gain of 6 kg during the past month. He states his wedding ring is too tight to remove, his ankles are swollen, he can hear his heart beat at times, and he has shortness of breath with exertion. Physical findings reveal delayed capillary refill; bounding pulse (86 BPM); pitting edema in feet, ankles, and lower legs; and moist lung sounds (rales/crackles).

NURSING DIAGNOSIS	EVIDENCED BY	DESIRED OUTCOMES	SELECTED INTERVENTIONS
Excess fluid volume	<ul style="list-style-type: none"> <li>Gain weight: 6 kg in 1 month</li> <li>Pitting edema: +4 in both legs</li> <li>Adventitious sound: crackles in both lungs</li> <li>Capillary refill: more than 3 seconds</li> </ul>	<ul style="list-style-type: none"> <li>Client will lose 6 kg of body weight within 2 weeks with the help of diuretic.</li> <li>Client will exhibit freedom from leg edema and adventitious breath sounds within 2 weeks of diuretic therapy.</li> </ul>	<ul style="list-style-type: none"> <li>Monitor for indications of fluid overload                             <ul style="list-style-type: none"> <li>Crackles</li> <li>Elevated BP</li> <li>Edema (on scale from 1+ to 4+)</li> <li>Neck vein distention.</li> </ul> </li> <li>Maintain accurate intake and output record.</li> <li>Weigh daily.</li> <li>Report to the physician if signs and symptoms persist or worsen.</li> </ul>

◀ **Identifying Nursing Diagnoses.** Outcomes, and Interventions boxes provide guidelines for establishing diagnose, outcomes and interventions for situations and conditions.

**Critical Reflections** ▶ provide a brief case study followed by questions that encourage students to analyze, compare, contemplate, interpret and evaluate information.



## CRITICAL REFLECTION

Let us return to the opening case study at the start of this chapter. Now that you have read the chapter, do you feel confidence to stand in class and talk about nursing history, roles of the nurse, future career opportunities, and nursing professional qualities? Before doing so, try to write a short essay about nursing status in your country and ask your instructor permission to present it in class, and then request feedback from your colleagues and instructor to improve your essay. This will prepare you to answer any questions raised while performing this community service activity.



## RESEARCH NOTE What is the Status of Nursing in the Arab World?

The purpose of this study was to address some of the factors affecting the development of the nursing profession in Arab countries. The status of nursing in the Arab world was presented in three dimensions: education, practice, and image.

### NURSING EDUCATION

The majority of nursing education programs in the Arab world range from practical nurse preparation programs (18 months of study) to an associate degree (2 years of study) or a 3-year diploma program. Baccalaureate and graduate programs are very limited. Some countries, such as Tunisia, Morocco, Algeria, and Libya, do not have the baccalaureate. Some countries, like Egypt, Jordan, Palestine, Lebanon, Saudi Arabia, and Iraq, offer master's-level preparation. Most doctorate-level nurses in the Arab world are graduates of American or European universities.

### NURSING PRACTICE

There is a shortage of nurses in the Arab world. The male/female ratio of practicing nurses has increased rapidly in some Arab countries. For

example, the ratio has reached 50/50 in Palestine. Thus, the employment of foreign nurses is increasing in the Gulf region.

### NURSING IMAGE

Image is one factor that affects the development of the nursing profession. The image of nurses has improved lately, but still lacks appeal and prestige. Some countries, such as Bahrain and Jordan, were satisfied with the image of nursing.

### IMPLICATIONS

Based on the results of this study, it is important to know that the nursing in the Arab world has improved in the last 10 years. Also, Arab countries are planning to improve the quality of nursing education.

Note: From "Status of nursing in the Arab world," by R. Shukri, 2005, *Ethnicity & Disease*, 15, 88–89.

◀ **Research Notes** focus on evidence-based practice. These boxes highlight relevant nursing journal articles and implications for nursing care.

# Excellence in the

▼ **Step-by-step skills.** A NEW easy-to-follow, two-column format helps students understand techniques and practice sequence.

**SKILL 8-16**


### OBTAINING A CAPILLARY BLOOD SPECIMEN TO MEASURE BLOOD GLUCOSE

**EQUIPMENT**

- Blood glucose meter (glucometer)
- Blood glucose reagent strip compatible with the meter
- 2 x 2 gauze
- Warm cloth or other warming device (optional)
- Antiseptic swab
- Disposable gloves
- Sterile lancet
- Lancet injector

**PERFORMANCE**

1. Introduce self and verify the client's identity using institution's protocol. Explain the procedure to the client.
2. Wash hands and observe appropriate infection control procedures. Put on gloves.
3. Provide for client privacy.
4. Assess the client's skin at the puncture site to determine if it is intact and the circulation is sufficient. Check color, warmth, and capillary refill. Review the client's record for medications that may prolong bleeding, such as anticoagulants.
5. Calibrate the meter and run a control sample according to the manufacturer's instructions.
6. Select and prepare the vascular puncture site.
  - Choose a vascular puncture site (e.g., the side of an adult's finger). Avoid sites beside bone.
  - Clean the site with the antiseptic swab and allow it to dry completely.
7. Obtain the blood specimen.
  - Place the injector, against the site, and release the needle, thus permitting it to pierce the skin. Make sure the lancet is at a 90-degree angle to the site. 1
  - Gently squeeze (but do not touch) the puncture site until a large drop of blood forms.



1 Place the injector against the site.

● Hold the strip under the puncture site until adequate blood covers the indicator square. The pad will absorb the blood and a chemical reaction will occur. Do not smear the blood. 2

● Ask the client to apply pressure to the site with a gauze.

Includes a complete Equipment list for easy preparation.

**SKILL 10-9**

CHANGING AN UNOCCUPIED BED *continued*



1 Roll soiled linen inside the bottom sheet and hold away from the body.  
(Al Dodge, Pearson Education/PH College)

● Roll all soiled linen inside the bottom sheet, hold it away from your uniform, and place it directly in the linen hamper, not on the floor. 2 **Rationale** These actions are essential to prevent the transmission of microorganisms to the nurse and others.



1 Placing the bottom sheet on the bed.  
(Patrick Watson)



Critical steps are visually represented with full-color photos and illustrations!

Easy-to-find rationales give you a better understanding of why things are done.

**Clinical Alerts** highlight special information such as safety issues

▼ **Clinical Manifestations** *New to this edition!*

These boxes are a quick resource to learn key signs and symptoms of illness.

### CLINICAL ALERT

Significant overlap may occur among those providers who can perform certain health care activities. For example, an anesthesiologist (MD), a neonatal care nurse, or a respiratory therapist may be responsible for assisting a newborn baby with breathing problems. All providers perform client teaching. ■

### CLINICAL MANIFESTATIONS HYPOTHERMIA

- Decreased body temperature, pulse, and respirations
- Severe shivering (initially)
- Feelings of cold and chills
- Pale, cool, waxy skin
- Frostbite (nose, fingers, toes)
- Hypotension
- Decreased urinary output
- Lack of muscle coordination
- Disorientation
- Drowsiness progressing to coma

# Clinical Setting!



## **PRACTICE TIPS** Steps to Follow after Exposure to Bloodborne Pathogens (Follow Agency Policy for Variations)

- Report the incident immediately to appropriate personnel within the agency. Seek appropriate evaluation and follow-up. This includes:
  - Identification and documentation of the source individual when feasible and legal.
  - Testing of the source for hepatitis B, hepatitis C, and HIV when feasible and consent is given.
  - Making results of the test available to the source individual's health care provider.
  - Testing of blood of exposed nurse (with consent) for hepatitis B, hepatitis C, and HIV antibodies.
  - Post-exposure prophylaxis if medically indicated.
  - Medical and psychologic counseling regarding personal risk of infection or risk of infecting others.
- For a puncture/laceration:
  - Encourage bleeding.
  - Wash/clean the area with soap and water.
  - Initiate first aid and seek treatment if indicated.
  - For a mucous membrane exposure (eyes, nose, mouth), saline or water flush for 5 to 10 minutes.

### **POST EXPOSURE PROTOCOL**

#### **HIV**

- Treatment should be started as soon as possible, preferably within hours after exposure. Treatment may be less effective

when started more than 24 hours after exposure. Starting treatment after a longer period (e.g., 1 week) should be considered for high-risk exposures previously untreated.

- For 'high-risk' exposure (high blood volume *and* source with a high HIV titer): three-drug treatment is recommended.
- For 'increased-risk' exposure (high blood volume *or* source with a high HIV titer): three-drug treatment is recommended.
- For 'low-risk' exposure (neither high blood volume nor source with a high HIV titer): two-drug treatment is considered.
- Drug prophylaxis continues for 4 weeks.
- Drug regimens vary and new drugs and regimens are continuously being developed.
- HIV antibody tests should be done shortly after exposure (baseline), and 6 weeks, 3 months, and 6 months afterward.

#### **Hepatitis B**

- Anti-HBs testing 1 to 2 months after last vaccine dose.
- HBIG and/or hepatitis B vaccine within 1 to 7 days following exposure for nonimmune workers.

#### **Hepatitis C**

Anti-HCV and ALT at baseline and 4 to 6 months after exposure.

◀ **Practice Tips** provide instant-access summaries of clinical do's and don'ts.



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# CHAPTER 5

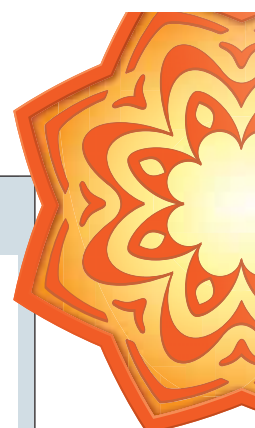
## Culture and Heritage

### LEARNING OUTCOMES

After completing this chapter, you will be able to:

1. Acknowledge cultural communalities and differences between Arab regions.
2. Discuss the components of culturally focused nursing, heritage consistency, and health traditions.
3. Describe examples of the different health views of culturally diverse people.
4. Differentiate biomedical care from folk healing.
5. Identify factors related to communication with culturally diverse clients and colleagues.
6. Recognize the core practice competencies of culturally competent nursing care.
7. Identify methods of heritage assessment.
8. Plan culturally sensitive, appropriate, and competent nursing interventions.





## KEY TERMS

**assimilation**, 71

**bicultural**, 71

**biomedical health belief**, 73

**culture**, 69

**culture shock**, 72

**discrimination**, 72

**diversity**, 71

**folk medicine**, 73

**holistic health belief**, 73

**magico-religious health belief**, 72

**prejudice**, 71

**race**, 71

**religion**, 72

**scientific**, 73

**socialization**, 72

**stereotyping**, 71

**subculture**, 71

**transcultural nursing**, 71



## CASE STUDY

Mrs Salma Fatima, a 24-year-old female, was admitted to the labor and delivery department of a private general hospital in Beirut, Lebanon. Salma was having labor pains 5 minutes apart. She was accompanied by her husband, Majed (Abu-Abdallah), and Mrs Naifeh (Um Sanad), her sister. Um Sanad was able to communicate with the health care providers on behalf of the couple. The family is from Jiddah, a city on the western coast of Saudi Arabia, and are in Lebanon while Mr Majed conducts some business in the area. They have been in the country for 2 months. Their plan had been to return to Saudi Arabia for the birth but it appears the family was unaware that the time of birth was so close. Mrs Fatima had expected her pregnancy to last for another month. She has two children, boys aged 4 and 6, and had one spontaneous abortion 2 years ago. Her two sons are healthy except

that the youngest has had frequent ear infections since coming to Lebanon. Mr Majed told hospital staff that his wife's siblings and parents have no medical problems. Mrs Fatima's sister, the family midwife, came from Saudi Arabia to be a companion in the home while Mr Majed was at work. The two women do not leave the house without Mr Majed. Mr Majed has stated that his wife would prefer that no men outside her family be allowed in her room. Mrs Fatima wanted her husband to remain in her room during her hospital stay to be a host to visitors. The physician wants to monitor Mrs Fatima's blood glucose levels because diabetes mellitus is a major health problem in people from Saudi Arabia. After studying this chapter, you will be able to identify the issues you need to address when caring for Mrs Fatima's and reflect on this situation.

To provide quality care, nurses must become informed about and be sensitive to the culturally diverse subjective meanings of health, illness, caring, and healing practices. **Culture** can be defined as the nonphysical traits, such as values, beliefs, attitudes, and customs, that are shared by a group of people and passed from one generation to the next (Spector, 2004). Culture is also the “thoughts, communications, actions, customs, beliefs, values, and institutions of racial, ethnic, religious, or social groups” (Office of Minority Health, 2001, p. 131). Many people of different cultures maintain the cultural values, beliefs, traditions and practices of their heritage (things passed down from the previous generation). Culture and heritage provides the blueprint for a group's behavior. It defines how health is perceived, how health care information is received, how rights and protections are exercised, what is considered to be a health problem, how symptoms and concerns about the health problem are expressed, who should provide treatment and how, and what kind of treatment should be given.

Nurses must be aware that, although people from a given group share certain beliefs, values, and experiences, often there is also widespread intragroup diversity. Major differences within groups may be due to such factors as age, gender, level of education, socioeconomic status, and area of origin in the

home country (rural or urban). Such factors influence the client's beliefs about health and illness, practices, help-seeking behaviors, and expectations of nurses. For these reasons, effort must be made and care taken to avoid stereotyping people from a specific group.

The Arab world includes 22 countries in the Middle East and North Africa, extending from the Atlantic coast of Northern Africa to the Arabian Gulf (see Figure 5-1 ■). Arabs are inhabitants of the Arab world who speak various dialects of the Arabic language and have a shared sense of geographic, historical, and cultural identity. The term Arab is not based on race; it includes peoples with widely varied physical features.

Of the 22 Arab countries, 11 are in Asia—Bahrain, Iraq, Kuwait, Jordan, Lebanon, Oman, Qatar, Saudi Arabia, Syria, UAE, and Yemen—and 10 are in Africa—Algeria, Djibouti, Eritrea, Egypt, Libya, Morocco, Mauritania, Somalia, Sudan, and Tunisia. Palestinians live under Israeli rule, under the autonomy of the partial Palestinian Authority in the West Bank and Gaza, or as refugees throughout the world. Arabs have a feeling of unified entity despite of the national boundaries and diverse religious beliefs. The large majority of Arabs are Muslim (92 percent), but the Arab world also includes Christians and Jews. Therefore, the religion of Islam shapes Arab





Figure 5-1 ■ The Arab world consists of 22 countries, where inhabitants speak various dialects of Arabic and have a shared cultural identity.

identity and Arabic, being the language of the Holy Qur'an, is the official language. Ethnic groups such as Persians, Turks, Armenians, Kurds, Berbers, and other minorities live in some Arab countries. Cultural variations are observed among people living in rural and urban areas. For example, 84 percent of Lebanese live in urban areas compared with only 29 percent of Yemen's population.

### CLINICAL ALERT

No practice is universal, and behaviors and attitudes, while they may follow certain trends or have a common influence, may vary greatly. Culture and language are vital factors in how nursing care is delivered and received, and the diverse cultural needs of clients are expected to be met. ■

## Differences across Arab regions

Despite the similarities among Arab countries there are differences due to their geographic dispersion. Arab countries can be divided into regions: North Africa (Egypt, Sudan, Somalia, Djibouti, Libya, Tunisia, Algeria, Morocco, Comoros and Mauritania), Bilad Ash-Sham (Lebanon, Syria, Palestine, Jordan, and Iraq), and the Arabian Peninsula (Bahrain, Kuwait, Qatar, Oman, Yemen, Saudi Arabia, and the UAE). Each of these regions has its own cultural traditions, customs, and practices. Other factors also contribute to variations between Arab countries. These factors include:

- **Topography:** The topographical variation in the Arab world greatly affects the social organization and contributes to lifestyle differences between people of the three regions. Living in high, low, or desert areas affects peoples' ways of earning their living, dressing, and which foods they consume.
- **Location on the Mediterranean:** People in countries that have port cities connecting Africa to Europe have the

opportunity to work in trade. Their lives are more business-oriented because of the more developed nature of these trade cities on the coast.

The Arabian Peninsula is the major connection of the Arab world to the Western world. Oil, along with tourism to the city of Mecca for Muslim pilgrimage, has given the region the ability to provide free health care and education for its citizens.

These varied backgrounds must be kept in mind when applying cultural norms, considering that many nurses, especially Egyptians and Jordanians, leave their home countries and work in foreign and other Arab countries, mainly in the Arab Gulf. Moreover, people from one Arab country often seek health care services elsewhere in the Arab world.

## CULTURAL NURSING CARE

Responsibility for cultural health care is shared among "individuals, professional associations, regulatory bodies, health services delivery and accreditation organizations, educational institutions, and governments" (Canadian Nurses Association, 2004, p. 1). Professional nursing care is culturally sensitive, culturally appropriate, and culturally competent. This type of nursing is critical to meeting the complex nursing care needs of a given person, family, and community. It is the provision of nursing care across cultural boundaries, taking into account the context in which the client lives as well as the situations in which the client's health problems arise.

- **Culturally sensitive** implies that nurses possess some basic knowledge of and constructive attitudes toward the health traditions observed among the diverse cultural groups found in the setting in which they are practicing.
- **Culturally appropriate** implies that nurses apply the underlying background knowledge that must be possessed to provide a given client with the best possible health care.

- **Culturally competent** implies that, within the delivered care, nurses understand and attend to the total context of the client's situation and use a complex combination of knowledge, attitudes, and skills.

The term 'transcultural nursing' has been used by nurse Madeleine Leininger since the 1950s. **Transcultural nursing** focuses on differences and similarities among cultures with respect to human care, health, and illness based upon people's cultural values, beliefs, and practices. Its aim is to provide cultural specific or culturally congruent nursing care to people (Leininger & McFarland, 2005).

Countless conflicts in health care delivery situations are predicated on cultural misunderstandings. Often these misunderstandings are related to universal situations, such as verbal and nonverbal language misunderstandings, the conventions of courtesy, sequencing of interactions, phasing of interactions, objectivity, and so forth. Many cultural misunderstandings are unique to the delivery of nursing care. Cultural nursing care is essential and demands that nurses be able to assess and interpret a given client's health beliefs and practices and cultural needs.

## CONCEPTS RELATED TO CULTURAL NURSING CARE

All groups of people face issues in adapting to their environment: providing nutrition and shelter, caring for and educating children, dividing labor, developing social organization, controlling disease, and maintaining health. Humans adapt to varying environments by developing cultural solutions to meet these needs. Culture refers to norms and practices of a particular group that are learned and shared and guide thinking, decisions, and actions. Culture is a universal experience, but no two cultures are exactly alike.

Cultural patterns are learned, and it is important for nurses to note that members of a particular group may not share identical cultural experiences. Thus, each member of a cultural group will be somewhat different from his or her own cultural counterparts. For example, third-generation Arabs will differ in their cultural understanding from first-generation Arabs.

### Subculture

Large cultural groups often have cultural subgroups or subsystems. A **subculture** is usually composed of people who have a distinct identity and yet are related to a larger cultural group. A subcultural group generally shares ethnic origin or physical characteristics with the larger cultural group. Examples of cultural subgroups include occupational groups (e.g., nurses), societal groups (e.g., feminists), and ethnic groups (e.g., Persians, Turks, Armenians, Kurds, Berbers, and other minorities).

### Bicultural

**Bicultural** is used to describe a person who has dual patterns of identification and crosses two cultures, lifestyles, and sets of values (Spector, 2004). For example, a young man whose father is an Arab and whose mother is European may honor his traditional Arabic heritage while also being influenced by his mother's cultural values.

## Diversity

**Diversity** refers to the fact or state of being different. Many factors account for diversity: race, gender, sexual orientation, culture, ethnicity, socioeconomic status, educational attainment, religious affiliation, and so on. Diversity therefore occurs not only between cultural groups but also within a cultural group.

## Assimilation

**Assimilation** is the process by which an individual develops a new cultural identity. Assimilation means becoming like the members of the dominant culture. The process of assimilation encompasses various aspects, such as behavioral, marital, identification, and civic. The underlying assumption is that the person from a given cultural group loses his or her original cultural identity to acquire the new one. In fact, because this is a conscious effort it is not always possible, and the process may cause severe stress and anxiety. Assimilation can also be described as a collection of subprocesses: a process of inclusion through which a person gradually ceases to conform to any standard of life that differs from the dominant group standards and, at the same time, a process through which the person learns to conform to all the dominant group standards. The process of assimilation is considered complete when the foreigner is fully merged into the dominant cultural group (McLemore & Romo, 2005).

## Race

**Race** is the classification of people according to shared biologic characteristics, genetic markers, or features. People of the same race have common characteristics such as skin color, bone structure, facial features, hair texture, and blood type. Different ethnic groups can belong to the same race, and different cultures can be found within one ethnic group. It is important to understand that not all people of the same race have the same culture. Culture should not be confused with either race or ethnic group.

## Prejudice

**Prejudice** is a negative belief or preference that is generalized about a group and that leads to 'prejudgment.' Prejudice occurs because either the person making the judgment does not understand the particular person or his or her heritage, or the person making the judgment generalizes an experience of one individual from a culture to all members of that group. It may also be referred to as racism.

## Stereotyping

**Stereotyping** is assuming that all members of a culture or ethnic group are alike. For example, a nurse may assume that all Arabs have brown eyes or that all Arabs are Muslims. Stereotyping may be based on generalizations founded in research, or it may be unrelated to reality. For example, research indicates that most Arab families prefer to have many children; however, some do not. Stereotyping that is unrelated to reality is frequently an outcome of racism or discrimination. Nurses need to realize

that not all people of a specific group have the same health beliefs, practices, and values. It is therefore essential to identify a specific client's beliefs, needs, and values rather than assuming they are the same as those attributable to the larger group.

## Discrimination

**Discrimination**, the differential treatment of individuals or groups based on categories such as race, ethnicity, gender, social class, or exceptionality, occurs when a person acts on prejudice and denies other persons one or more of their fundamental rights.

## Culture Shock

**Culture shock** is a disorder that occurs in response to transition from one cultural setting to another. A person's former behavior patterns are ineffective in such a setting, and basic cues for social behavior are absent (Spector, 2004). This phenomenon may occur when one moves from one geographic location to another or when a person immigrates to a new country. It may occur when a person is admitted into a hospital and has to adapt to a foreign situation. Expressions of culture shock may range from confusion and anxiety, to silence and immobility, to agitation, rage, or fury.

## Religion

Although the word has many definitions, **religion** may be considered a system of beliefs, practices, and ethical values about divine or superhuman power or powers worshipped as the creator(s) and ruler(s) of the universe. Ethnicity and religion are clearly related, and one's religion quite often is determined by one's ethnic group. Religion gives a person a frame of reference and a perspective with which to organize information. Religious teachings about health help to present a meaningful philosophy and system of practices within a system of social controls having specific values, norms, and ethics. Illness is sometimes seen as the punishment for the violation of religious codes and morals. It is not possible to isolate the aspects of culture, religion, and ethnicity that shape a person's worldview. Each is part of the other, and all three are united within the person.

### CLINICAL ALERT

In times of distress or illness, the Muslim finds the greatest comfort in the remembrance of God. The severely ill person, who might be distracted by his or her pain, greatly benefits from the nurse's assistance in notifying someone who could come and provide by prayer and reading from the Holy Qur'an. ■

## Socialization

**Socialization** is the process of being raised within a culture and acquiring the characteristics of that group. Education—graduating from high school and enrolling in the nursing school—is a form of socialization. For many people who have been socialized within the boundaries of one culture the second culture

becomes a second cultural identity. If the difference between the two cultures is very big, socialization into the new culture may be an extremely difficult and painful process. As time passes, many people experience biculturalism and divided loyalties. In addition, many people who have been socialized in cultures wherein traditional health care resources are used may prefer to use this type of care even when residing within a cultural setting with modern health care resources available.

## SELECTED PARAMETERS FOR CULTURAL NURSING CARE

This section outline selected phenomena of significance to nursing.

### HEALTH Traditions Model

The HEALTH traditions model (Spector, 2004) is predicated on the concept of holistic health and describes what people do from a traditional perspective to maintain, protect, and restore health. Imagine health as a complex, interrelated, threefold phenomenon; that is, the balance of all aspects of the person: the body, mind, and spirit.

- The body includes all physical aspects, such as genetic inheritance, body chemistry, gender, age, nutrition, and physical condition.
- The mind includes cognitive processes, such as thoughts, memories, and knowledge of such emotional processes as feelings, defenses, and self-esteem.
- The spiritual facet includes both positive and negative learned spiritual practices and teachings, dreams, symbols, stories, protecting forces, and metaphysical or native forces.

These aspects are in constant flux and change over time, yet each is completely related to the others and also related to the context of the person. The context includes the person's family, culture, work, community, history, and environment (Spector, 2004).

The HEALTH traditions model consists of nine interrelated facets, represented by the following (see also Table 5-1):

1. *Traditional methods of maintaining HEALTH*—physical, mental, and spiritual—include following a proper diet and wearing proper clothing, concentrating and using the mind, and practicing one's religion.
2. *Traditional methods of protecting HEALTH*—physical, mental, and spiritual—include wearing protective objects, such as amulets, avoiding people who may cause trouble, and placing religious objects in the home or reciting daily protective prayers in the morning and afternoon.
3. *Traditional methods of restoring HEALTH*—physical, mental, and spiritual—include the use of herbal remedies, exorcism, and healing rituals.

### Health Beliefs and Practices

Three views of health beliefs include magico-religious, scientific, and holistic. In the **magico-religious health belief** view,

**TABLE 5-1 The Nine Interrelated Facets of Health (Physical, Mental, and Spiritual) and Personal Methods of Maintaining, Protecting, and Restoring Health**

	<b>PHYSICAL</b>	<b>MENTAL</b>	<b>SPIRITUAL</b>
Maintain HEALTH	Proper clothing Proper diet Exercise/rest	Concentration Social and family support systems Hobbies	Religious worship Prayer Meditation
Protect HEALTH	Special foods and food combination Symbolic clothing	Avoid certain people who can cause illness Family activities	Religious customs Superstitions Wearing amulets and other symbolic objects to prevent the 'evil eye' or defray other sources of harm
Restore HEALTH	Homeopathic remedies Liniments Herbal teas Special foods Massage Acupuncture/moxibustion	Relaxation Exorcism Curanderos and other traditional healers Nerve teas	Religious rituals, special prayers Meditation Traditional healings Exorcism

Note: from *Cultural Diversity in Health and Illness* (6th ed., p. 76), by R. E. Spector, 2004, Upper Saddle River, NJ: Prentice Hall.

health and illness are controlled by supernatural forces. The client may believe that illness is the result of 'being bad' or opposing God's will. Getting well is also viewed as dependent on God's will. The client may make statements such as "If it is God's will, I will recover" or "What did I do wrong to be punished with cancer?" Some cultures believe that magic can cause illness. A witch may put a spell on the client. Some people view illness as possession by an evil spirit. The belief that the evil eye could harm a mother's milk has been described in the literature. In Egypt, the belief that the entrance of a menstruating woman into the room can harm a mother or baby is referred to as *mushahra*. The perception of the evil eye presents a barrier to women breastfeeding, because a mother might deny her child the benefits of her breast milk if she fears she has been subjected to the evil eye.

Although these beliefs are not supported by empirical evidence, clients who believe that such things can cause illness may in fact become ill as a result. Such illnesses may require magical treatments in addition to scientific treatments. For example, a man who experiences gastric distress, headaches, and hypertension after being told that a spell has been placed on him may recover only if the spell is removed by the culture's healer.

The **scientific** or **biomedical health belief** is based on the belief that life and life processes are controlled by physical and biochemical processes that can be manipulated by humans. The client with this view will believe that illness is caused by germs, viruses, bacteria, or a breakdown of the human machine, the body. This client will expect a pill, or treatment, or surgery to cure health problems.

The **holistic health belief** holds that the forces of nature must be maintained in balance or harmony. Human life is one aspect of nature that must be in harmony with the rest of nature. When the natural balance or harmony is disturbed, illness results.

The concept of yin and yang in the Chinese culture and the hot-cold theory of illness in many Spanish cultures are examples of holistic health beliefs. When a Chinese client has a

yin illness or a 'cold' illness such as cancer, the treatment may include a yang or 'hot' food (e.g., hot tea).

What is considered hot or cold varies considerably across cultures. In many cultures, the mother who has just delivered a baby should be offered warm or hot foods and kept warm with blankets because childbirth is seen as a cold condition. Conventional scientific thought recommends cooling the body to reduce a fever. The primary care provider may order liquids for the client and cool compresses to be applied to the forehead, the axillae, or the groin. Many cultures believe that the best way to treat a fever is to increase elimination of toxins through sweating (Fontaine, 2005). Clients from these cultures may want to cover up with several blankets, take hot baths, and drink hot beverages. The nurse must keep in mind that a treatment strategy that is consistent with the client's beliefs may have a better chance of being successful.

Sociocultural forces, such as politics, economics, geography, religion, and the predominant health care system, influence the client's health status and health care behavior. For example, people who have limited access to scientific health care may turn to folk medicine or folk healing. **Folk medicine** is defined as those beliefs and practices relating to illness prevention and healing that derive from cultural traditions rather than from modern medicine's scientific base. Many persons have special teas or 'cures' (such as chicken soup) used by older family members to prevent or treat colds, fevers, indigestion, and other common health problems. A frequent component of treatment is some ritual practice on the part of the healer or the client to cause healing to occur. Because folk healing is more culturally based, it is often more comfortable and less frightening for the client.

### CLINICAL ALERT

Treatments once considered to be folk treatments, including acupuncture, therapeutic touch, and massage, are now being investigated for their therapeutic effect. ■



It is important for the nurse to obtain information about folk or family healing practices that may have been used before or while the client used medical treatment. Often clients are reluctant to disclose the use of home remedies with health care professionals for fear of being laughed at. However, the use of alternative healing practices represents an opportunity for nurses to inform clients about what the nursing profession offers in this regard.

## Family Patterns

The family is the basic unit of society. Cultural values can determine communication within the family group, the norm for family size, and the roles of specific family members. In some families, the man is considered the provider and decision maker. The woman may need to consult her husband before making decisions about her medical treatment or the treatment of her children. In some families the mother or grandmother is viewed as the leader of the family and is usually the decision maker. The nurse needs to identify who has the ‘authority’ to make decisions in a client’s family. If the decision maker is someone other than the client, the nurse needs to include that person in health care discussions.

### CLINICAL ALERT

The elderly in the Arab community are regarded with deep respect. They are given priority in all walks of life. Whether they live together with their children or separately, parents are usually consulted in all decision-making processes. ■

Cultural family values may also dictate the extent of the family’s involvement in the hospitalized client’s care. In some cultures, only the nuclear and the extended family will want to visit for long periods and participate in care. In other cultures, the entire community may want to visit and participate in the client’s care. This can cause concern on nursing units with strict visiting policies. The nurse should evaluate the positive benefits of family participation in the client’s care and modify visiting policies as appropriate.

Cultures that value the needs of the extended family as much as those of the individual may believe that personal and family information must stay within the family. Some cultural groups are very reluctant to disclose family information to outsiders, including health care professionals. This attitude can present difficulties for health care

professionals who require knowledge of family interaction patterns to help clients with emotional problems.

## Communication Style

Communication and culture are closely interconnected. Through communication, the culture is transmitted from one generation to the next, and knowledge about the culture is transmitted within the group and to those outside the group. Communicating effectively with clients of various ethnic and cultural backgrounds is critical to providing culturally competent nursing care. There are cultural variations in both verbal and nonverbal communication.

### Verbal Communication

The most obvious cultural difference is in verbal communication: vocabulary, grammatical structure, voice qualities, intonation, rhythm, speed, pronunciation, and silence. One example of something that is very divisive to communication in the Arab world is the prevalence of dialects. Dialects of the Arabic language not only vary by region; they can even vary by country or even from city to city or village to village. In general, the dialects are more similar to other dialects in their region than they are with dialects of people from other parts of the Arab world. The dialects not only change pronunciations but can have different words or phrases for the same meaning depending on the region, or have different meaning for the same word or phrase. For example, the phrase “how are you?” in Arabic translates to “*ezayyik*” in Egypt but to “*keef haalak*” or “*ishloonik*” in places like Bilad Ash-Sham, Iraq, and parts of the Arabian Peninsula. The dialects can have different meaning to the same words or phrases. For example, the word *Azra* indicates the color blue in Bilad Ash-Sham whereas it means purple in Egypt, and the phrase “*Yateek alafieh*” indicates an appreciation for someone’s effort in Bilad Ash-Sham but is not good to be used in Tunisia.

Initiating verbal communication may be influenced by cultural values. The busy nurse may want to complete nursing admission assessments quickly. The client, however, may be offended when the nurse immediately asks personal questions. In some cultures, social courtesies should be established before business or personal topics are discussed. Discussing general topics can convey that the nurse is interested and has time for the client. This enables the nurse to develop a rapport with the client before progressing to discussion that is more personal. Techniques for therapeutic communication are shown in the accompanying Practice Tips.



### PRACTICE TIPS Techniques for Therapeutic Communication

- Avoid slang words, medical terminology, and abbreviations.
- Augment spoken conversation with gestures or pictures to increase the client’s understanding.
- Speak slowly, in a respectful manner, and at a normal volume. Speaking loudly does not help the client understand and may be offensive.
- Frequently validate the client’s understanding of what is being communicated. Do not automatically interpret a client’s smiling and nodding to mean that the client understands; the client may only be trying to please the nurse and not understand what is being said.

## Nonverbal Communication

To communicate effectively with culturally diverse clients, the nurse needs to be aware of two aspects of nonverbal communication behaviors: what nonverbal behaviors mean to the client and what specific nonverbal behaviors mean in the client's culture. Before assigning meaning to nonverbal behavior, the nurse must consider the possibility that the behavior may have a different meaning for the client and the family. To provide safe and effective care, nurses who work with specific cultural groups should learn more about cultural behavior and communication patterns within these cultures.

Nonverbal communication can include the use of silence, touch, eye movement, facial expressions, and body posture. Some cultures are quite comfortable with long periods of silence, whereas others consider it appropriate to speak before the other person has finished talking. Many people value silence and view it as essential to understanding a person's needs or use silence to preserve privacy. Some cultures view silence as a sign of respect, whereas to other people silence may indicate agreement.

Touching involves learned behaviors that can have both positive and negative meanings. Cultures dictate what forms of touch are appropriate for individuals of the same and opposite gender. In the American culture, a firm handshake is a recognized form of greeting that conveys character and strength. A handshake may not be accepted between religious male and female Muslims or even in Hindu or some far Asian countries. In some European cultures, greetings may include a kiss on one or both cheeks. In Arab culture a kiss is not appropriate for a public greeting between persons of the opposite sex, even those who are family members; however, a kiss on the cheek is acceptable as a greeting among individuals of the same sex. Moreover, in Arab cultures, male health care providers may be prohibited from touching or examining certain parts of the female body; similarly, females may be prohibited from caring for males. The nurse should watch interaction among clients and families for cues to the appropriate degree of touch in that culture. The nurse can also assess the client's response to touch when providing nursing care, for example, by noting the client's reaction to a physical examination or a bath.

Facial expression can also vary between cultures. People from some cultures are more likely to smile readily and use

facial expression to communicate feelings. Facial expressions can also convey a meaning opposite to what is felt or understood.

Eye movement during communication has cultural foundations. In Western cultures, direct eye contact is regarded as important and generally shows that the other is attentive and listening. It conveys self-confidence, openness, interest, and honesty. However, other cultures may view eye contact as impolite or an invasion of privacy. In fact, your strong gaze may be interpreted as a sign of disrespect among Asian and Arab cultures, and patients may feel that direct eye contact is impolite or aggressive. These patients may avert their eyes when talking with you and others they perceive as authority figures. The nurse should not misinterpret the character of the client who avoids eye contact.

Body posture and hand gestures are also culturally learned. For example, making a V sign with one's middle and index fingers means victory in some cultures, but it is an offensive gesture in other cultures. Tapping the index finger on one's temple may mean someone is intelligent in the United States but crazy in Holland.

Communication is an essential part of establishing a relationship with a client and his or her family. It is also important for developing effective working relationships with health care colleagues. To enhance their practice, nurses can observe the communication patterns of clients and colleagues and be aware of their own communication behaviors.

## Space Orientation

Space is a relative concept that includes the individual, the body, the surrounding environment, and objects within that environment. The relationship between the individual's own body and objects and persons within space is learned and is influenced by culture. For example, in nomadic societies space is not owned, it is occupied temporarily until the tribe moves on. In Western societies people tend to be more territorial, as reflected in phrases such as "This is my space" or "Get out of my space." The client may physically withdraw or back away if the nurse is perceived as being too close. The nurse will need to explain to the client why there is a need to be close. To assess the lungs with a stethoscope, for example, the nurse needs to move into the client's intimate space. The nurse should first explain the procedure and await permission to continue.



### RESEARCH NOTE What are Patients' Preferences for Nurses' Gender in Jordan?

A study was conducted in Jordan to examine patients' preferences for nurses' gender. The study sample (919 patients) was recruited from the medical and surgical floors in seven hospitals that represent three health sectors: public, private, and university hospitals. Research assistants were trained to collect the data using a standardized individual interview. The interview questionnaire consisted of two parts. Part one recorded participants' characteristics and part two consisted of a seven-item scale examining patients' attitudes towards nurses' gender. The results indicated that two-thirds of female patients preferred to be cared for by female nurses, compared with only 3.4 percent who preferred to be cared for by male nurses. On the other hand, one-third of male patients' preferred to be cared for by male nurses, and only 10 percent preferred female nurses.

### IMPLICATIONS

The current percentage (65 percent) of male nursing students enrolled in nursing programs can be used to predict the direction of future distribution of nurse gender in Jordan, and shows that male nurses will dominate the profession. Although patients' preferences for nurses' gender can be investigated in several ways, the present study was concerned only with presenting the general theme of the patients' view for nurses' gender and to explore whether the high percentage of male nursing students in Jordan is justifiable. Therefore, the authors recommend further studies to explore the essence of this phenomenon.

*Note:* From "Patients' preferences for nurses' gender in Jordan," by M. M. Ahmad, & J. A. Alasad, 2007, *International Journal of Nursing Practice*, 13(4), 237–242.

## Time Orientation

Time orientation refers to an individual's focus on the past, the present, or the future. Most cultures include all three time orientations, but one orientation is more likely to dominate. The culture of nursing and health care values time. Appointments are scheduled, and treatments are prescribed with time parameters (e.g., changing a dressing once a day). Medication orders include how often the medicine is to be taken and when (e.g., digoxin 0.25 mg, once a day, in the morning). Nurses need to be aware of the meaning of time for clients. When caring for clients who are "present oriented," it is important to avoid fixed schedules. The nurse can offer a time range for activities and treatments. For example, instead of telling the client to take digoxin every day at 10.00 am, the nurse might tell the client to take it every day in the morning or every day after getting out of bed.

## Nutritional Patterns

The cultural meanings associated with food vary widely. For example, sharing meals may be associated with solidifying social or business ties, celebrating life events, expressing appreciation, recognizing accomplishment, expressing wealth or social status, and validating social, cultural, or religious ceremonial functions. Culture determines which foods are served and when, the number and frequency of meals, who eats with whom, and who gets the choicest portions. Culture also determines how foods are prepared and served, how they're eaten (with chopsticks, fingers, or forks), and where people shop for their favorite food.

Food-related cultural behaviors can include whether to breast-feed or bottle-feed infants, and when to introduce solid foods to them. Food can also be considered part of the remedy for illness. Foods classified as 'hot' foods or foods that are hot in temperature may be used to treat illnesses that are

classified as 'cold' illnesses. For example, corn meal (a 'hot' food) may be used to treat arthritis (a 'cold' illness). Each culture group defines what it considers to be hot and cold entities.

## PROVIDING CULTURALLY SENSITIVE NURSING CARE

All phases of the nursing process are affected by the client's and the nurse's cultural values, beliefs, and behaviors. As the client's culture and the nurse's culture come together in the nurse–client relationship, a unique cultural environment is created that can improve or impair the client's outcome. Self-awareness of personal biases can enable nurses to develop modifying behaviors or (if they are unable to do so) to remove themselves from situations where care may be compromised. Nurses can become more aware of their own culture through values clarification as discussed in Chapter 4 ∞. The nurse must also consider the cultural values dominant in the health care setting because those, too, may influence the client's outcome.

The following assumptions are the core tenets of providing care that is culturally appropriate (College of Nurses of Ontario, 2009).

- *Everyone* has a culture.
- Culture is individual. Individual assessments are necessary to identify relevant cultural factors within the context of each situation for each client.
- An individual's culture is influenced by many factors, such as race, gender, religion, ethnicity, socioeconomic status, sexual orientation, and life experience. The extent to which particular factors influence a person will vary.
- Culture is dynamic. It changes and evolves over time as individuals change over time.
- Reactions to cultural differences are automatic, often subconscious and influence the dynamics of the nurse–client relationship.



### RESEARCH NOTE What are Islamic Religious Leaders' Knowledge and Attitudes towards AIDS and their Perception of People Living with HIV/AIDS?

Research has indicated that Arab countries are highly influenced by Islam, and Islamic values influence every aspect of peoples' lives. Religious leaders in Islamic society are very influential and trustworthy personnel who are important in shaping social values. They have considerable influence on public opinion and can have a positive role in raising the awareness of society about healthy and nondiscriminating behaviors towards AIDS patients. Therefore, a qualitative study was conducted to explore Muslim religious leaders' perceptions, knowledge, and attitudes towards AIDS and AIDS prevention, and their attitudes towards people living with HIV/AIDS. Participants for the focus groups were selected through the Ministry of Awqaf (Religious affairs) and the Islamic Culture Center at the University of Jordan. Two focus groups were conducted to collect the data: one for the male religious leaders (10 people) and one for female religious leaders (10 people). The two focus groups were conducted separately because of cultural sensitivity. The study results showed that Muslim religious leaders do not perceive AIDS as a major health problem in Jordan, and that following the Islamic values reduces the

risky behaviours. The religious leaders reflected varied responses to people living with HIV/AIDS but they agreed that they have responsibilities toward the prevention of HIV/AIDS, and that sex education contributes to healthy behaviours and consequently to the prevention of HIV transmission. The findings of this study provided an insight into Muslim religious leaders' perception of people living with HIV/AIDS and highlighted the importance of their role in the prevention of AIDS.

#### IMPLICATIONS

Exploring the attitudes and beliefs of religious leaders will pave the way to incorporating this group into AIDS prevention programs and to planning culturally appropriate evidence-based strategies to combat AIDS and assist health care providers (nurses and physicians) in providing needed treatment and care for those living with AIDS.

*Note:* From "Islamic religious leaders' knowledge and attitudes towards AIDS and their perception of people living with HIV/ AIDS: A qualitative study," by F. Abu-Moghli, M. Nabolsi, I. Khalaf, & W. Suliman, 2010, *Scandinavian Journal of Caring Sciences*, 24(4), 655–662.



- A nurse's culture is influenced by personal beliefs as well as by nursing's professional values. The values of the nursing profession are upheld by all nurses.
- The nurse is responsible for assessing and responding appropriately to the client's cultural expectations and needs.



## NURSING MANAGEMENT

### Assessing

The Assessment Interview on pg 81 depicts the questions to ask when conducting a heritage assessment. The tool is a way of interviewing and facilitating communication with clients and their families. It is designed to enhance the process in order to determine whether clients are identifying with their traditional cultural heritage (**heritage consistency**) or if they have acculturated into the dominant culture of the modern society in which they reside (**heritage inconsistency**). The tool may be used in any setting to facilitate conversation and help in the planning of cultural care. Once a conversation begins and the person describes aspects of cultural heritage, it becomes possible to develop an understanding of the person's unique health and illness beliefs, practices, and cultural needs.

### Examples of Heritage Consistency

The following factors and examples indicative of heritage consistency can be explored to determine the depth to which a person identifies with his or her traditional heritage; that is, the cultural beliefs and practices of his or her family heritage:

1. The person's childhood development occurred in the person's country of origin or ethnic group. For example, an Egyptian who was born and raised in a Gulf country and was exposed only to the culture, foods, and customs of the Gulf area.
2. Extended family members encouraged participation in traditional religious and cultural activities. For example, the parents sent the person to religious (parochial, nonpublic) school, and most social activities were church related.
3. The individual engages in frequent visits to the country of origin. The desire to return to the old country or to the old neighborhood is prevalent in many people; however, many people, for various reasons, do not return.
4. The individual's family home is within the ethnic community of which he or she is a member. As adults, persons elect to live with their families in the ethnic neighborhood wherein the people are from a similar heritage.
5. The individual participates in ethnic cultural events, such as religious festivals or national holidays, sometimes with singing, dancing, and costumes. For example, the person is active in social and cultural groups and participates in family festivities.
6. The individual was raised in an extended family setting. For example, when the person was growing up, grandparents or aunts and uncles may have been living in the same house or close by. The person's social frame of reference was the family.
7. The individual maintains regular contact with the extended family. For example, the person maintains close ties with family members of the same generation, the surviving members of the older generation, and members of the younger generation.
8. The individual's name has not been localized. For example, the person has restored the family name to its original if it had been changed by immigration authorities at the time the family immigrated or if the family changed the name at a later time in an attempt to assimilate to the dominant culture more fully.
9. The individual was educated in a parochial school with a religious or ethnic philosophy similar to the family's background. The person's education plays an enormous role in socialization, and the major purpose of education is to socialize a given person into the dominant culture. Children learn English and Arabic and the customs and norms of Arab life in the schools. In the parochial or private schools, they not only learn English and Arabic but also are socialized in the culture and norms of the particular religious or ethnic group that is sponsoring the school.
10. The individual engages in social activities primarily with others of the same religious or ethnic background. For example, the major portion of the person's personal time is spent attending meetings and events sponsored by those with whom he or she identifies.
11. The individual has knowledge of the culture and language of origin. For example, the person has been socialized in the traditional ways of the family and expresses this as a central theme of life.
12. The individual expresses pride in his or her heritage. For example, the person may identify him- or herself as ethnic Arab and display flags, wear clothing, or participate in ethnic activities to a great extent.

### Conveying Cultural Sensitivity

The process of heritage and health traditions assessment is important. How and when questions are asked requires sensitivity and clinical judgment. The timing and phrasing of questions need to be adapted to the individual. Timing is important in introducing questions. Sensitivity is needed in phrasing questions. Trust must be established before clients can be expected to volunteer and share sensitive information. The nurse therefore needs to spend time with clients, introduce some social conversation, and convey a genuine desire to understand their values and beliefs.

Before a heritage assessment begins, determine what language the client speaks, and the client's degree of fluency in the English language. It is also important to learn about the client's communications patterns and space orientation. This is accomplished by observing both verbal and nonverbal communication. For example, does the client do the speaking or defer to another? What nonverbal communication behaviors does the client exhibit (e.g., touching, eye contact)? What significance do these behaviors have for the nurse-client interaction? What is the client's proximity to other people and objects within the



## ASSESSMENT INTERVIEW Heritage Assessment Tool

This set of questions is to be used to describe a given client's—or your own—ethnic, cultural, and religious background. In performing a *heritage assessment* it is helpful to determine how deeply a given person identifies with his or her traditional heritage. This tool is most useful in setting the stage for assessing and understanding a person's traditional health and illness beliefs and practices and in helping to determine the community resources that will be appropriate to target for support when necessary. The greater the number of positive responses, the greater the degree to which the person may identify with his or her traditional heritage. The one exception to positive answers is the question about whether a person's name was changed.

1. Where was your mother born? \_\_\_\_\_
2. Where was your father born? \_\_\_\_\_
3. Where were your grandparents born? \_\_\_\_\_
  - a. Your mother's mother? \_\_\_\_\_
  - b. Your mother's father? \_\_\_\_\_
  - c. Your father's mother? \_\_\_\_\_
  - d. Your father's father? \_\_\_\_\_
4. How many brothers \_\_\_\_\_ and sisters \_\_\_\_\_ do you have?
5. What setting did you grow up in? Urban \_\_\_\_\_ Rural \_\_\_\_\_
6. What country did your parents grow up in?
 

Father \_\_\_\_\_

Mother \_\_\_\_\_
7. How old were you when you came to this country? \_\_\_\_\_
8. How old were your parents when they came to this country?
 

Mother \_\_\_\_\_

Father \_\_\_\_\_
9. When you were growing up, who lived with you? \_\_\_\_\_
10. Have you maintained contact with
  - a. Aunts, uncles, cousins? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
  - b. Brothers and sisters? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
  - c. Parents? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
  - d. Your own children? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
11. Did most of your aunts, uncles, cousins live near your home? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
12. Approximately how often did you visit family members who lived outside of your home?
 

(1) Daily \_\_\_\_\_ (2) Weekly (3) Monthly \_\_\_\_\_

(4) Once a year or less \_\_\_\_\_ (5) Never \_\_\_\_\_
13. Was your original family name changed? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
14. What is your religious preference?
 

(1) Islam \_\_\_\_\_ (2) Jewish \_\_\_\_\_

(3) Protestant \_\_\_\_\_ Denomination \_\_\_\_\_

(4) Catholic \_\_\_\_\_ (5) Other \_\_\_\_\_ (6) None \_\_\_\_\_
15. Is your spouse the same religion as you? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
16. Is your spouse the same ethnic background as you? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
17. What kind of school did you go to?
 

(1) Public \_\_\_\_\_ (2) Private \_\_\_\_\_ (3) Parochial \_\_\_\_\_
18. As an adult, do you live in a neighborhood where the neighbors are the same religion and ethnic background as yourself? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
19. Do you belong to a religious institution? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
20. Would you describe yourself as an active member? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
21. How often do you attend your religious institution?
 

(1) More than once a week \_\_\_\_\_ (2) Weekly \_\_\_\_\_

(3) Monthly \_\_\_\_\_

(4) Special holidays only \_\_\_\_\_ (5) Never \_\_\_\_\_
22. Do you practice your religion in your home?
 

(1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_ (if yes, please specify)

(3) Praying \_\_\_\_\_ (4) Qur'an reading \_\_\_\_\_ (5) Diet \_\_\_\_\_

(6) Celebrating religious holidays \_\_\_\_\_
23. Do you prepare foods special to your ethnic background? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
24. Do you participate in ethnic activities?
 

(1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_ (if yes, please specify)

(3) Singing \_\_\_\_\_ (4) Holiday celebrations \_\_\_\_\_

(5) Dancing \_\_\_\_\_ (6) Festivals \_\_\_\_\_

(7) Costumes \_\_\_\_\_ (8) Other \_\_\_\_\_
25. Are your friends from the same religious background as you? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
26. Are your friends from the same ethnic background as you? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_
27. What is your native language? \_\_\_\_\_
28. Do you speak this language?
 

(1) Prefer \_\_\_\_\_ (2) Occasionally \_\_\_\_\_ (3) Rarely \_\_\_\_\_
29. Do you read your native language? (1) Yes \_\_\_\_\_ (2) No \_\_\_\_\_

Note: From *Cultural Diversity in Health & Illness* (6th ed., pp. 321–323), by R. E. Spector, 2004, Upper Saddle River, NJ: Prentice Hall.

environment? How does the client react to the nurse's movement toward the client? What cultural objects within the environment have importance for health promotion or health maintenance?

Cultural competence in nursing involves delivering care that integrates the mind, the body, the spirit, and the cultural values of the individual (Fontaine, 2005). A potential outcome is that the client can "promote, maintain, and/or regain mutually desired and obtainable levels of health within the realities of their life circumstances" (Kagawa-Singer, & Kassim-Lakha, 2003, p. 580). There are several steps involved in the process that lead to the development of cultural competency. The knowledge and skills necessary to incorporate cultural care

into standard nursing require the acquisition of a broad base of knowledge about different heritages and social structures. It is an ongoing process and the skills and knowledge base grow over time. As one's knowledge base grows, the ability to convey cultural sensitivity also grows (see Box 5-1).

The following are examples of the necessary steps:

1. Become aware of one's own cultural heritage. Where were your parents and grandparents born? What are examples of their traditional health and illness beliefs and practices? Do they value privacy in relation to pain, or is it permissible to state that you are in pain? Are the rights of the

**BOX 5-1 Arab Cultural Commonalities that May Have an Impact on Health Care Delivery**

- Preferring to be treated by a medical provider of the same sex, especially female patients.
- Nurses are perceived as helpers, not health care professionals, and their suggestions and advice are not taken seriously. Doctors may need to explain the nurse's role to the patient.
- Arabs are not accustomed to the profession of social workers, clinical psychologists, or family and marriage therapists.
- Arabs rely on their families, other relatives, and close friends for support and help.
- Arabs may prefer medical treatment that involves prescribing pills or giving injections, rather than simple medical counseling.
- Muslims follow a *halal* diet (Muslim diet), which prohibits some types of meat, like pork, and medications/foods that contain alcohol. For example, a Muslim patient may refuse to take some medications or foods that contain alcohol, or pork or pig products.
- In some Muslim societies women are strictly secluded from men; in these societies, women may have little contact outside of the home.
- Muslims pray as many as five times a day, starting before sunrise and ending at night.
- Abstaining from alcohol is mandatory for Muslims.
- Among devout Muslims, fasting is required during the holy month of Ramadan, with no food or drink consumed between sunrise and sunset. The ill are supposed to be exempt from fasting, but among people who are fasting oral medication and intravenous solutions are prohibited (religious scholars are in favor of allowing it, but debate is still ongoing). Muscular injections are permitted. Women are exempt from fasting during menstruation and 40 days postpartum unless they are clear from bleeding and spotting. Despite their illness the Muslim patient may try to fast during Ramadan.
- Arabic culture in general, regardless of being Christian or Muslim, believes in death as "the will of God" and that nobody can stop it or delay it.
- Arab culture and the Islamic religion emphasize maintaining good health, especially through personal hygiene practices and a healthy diet. They place a high value in modern medicine and have confidence in the medical profession.

individual valued over and above the rights of the family? Only by knowing one's own culture (values, practices, and beliefs) can a person be ready to learn about another's.

2. Become aware of the client's heritage and health traditions as described by the client. It is important to avoid assuming that all people of one ethnic background have the same cultural beliefs and values. When the nurse has knowledge of the client's culture, mutual respect between client and nurse is more likely to develop.
3. Become aware of the client's preferences in health practices, diet, hygiene, and so on. During this part of the interview, a nurse can also identify the client's preferences in health practices, diet, hygiene, and so on.
4. Form a nursing plan with the client that incorporates his or her cultural beliefs regarding the maintenance, protection, and restoration of health. In this way, cultural values, practices, and beliefs can be incorporated with the necessary nursing care.

Culturally sensitive and competent nurses convey this sensitivity to clients, support people, and other health care personnel. Some ways to do so follow:

- Always address clients, support people, and other health care personnel by the way they wish to be addressed. In Western countries people like to be addressed by their last names (e.g., Mrs Aylia, Dr Rush) until they give you permission to use other names. In some cultures, the more formal style of address is a sign of respect, whereas the informal use of first names may be considered disrespectful. Arabs are accustomed to being called by the name of their older sons (e.g., Abu Mohammad, Um Ahmad).
- When meeting a person for the first time, introduce yourself by your full name, and then explain your role (e.g., "My name is Alia Hasan and I am a student nurse at X University"). This helps establish a relationship and

provides an opportunity for clients, others, and nurses to learn the pronunciation of one another's names and their roles.

- Be authentic with people, and be honest about the knowledge you lack about their culture. When you do not understand a person's actions, politely and respectfully seek information.
- Use language that is culturally sensitive; for example, do not use 'man' or 'mankind' when referring to a woman.
- Find out what the client thinks about his or her health problems, illness, and treatments. Assess whether this information fits with the dominant health care culture. If the beliefs and practices do not fit, establish whether this will have a negative effect on the client's health.
- Do not make any assumptions about the client, and always ask about anything you do not understand.
- Show respect for the client's values, beliefs, and practices, even if they differ from your own or from those of the dominant culture. If you do not agree with them, it is important to respect the client's right to hold these beliefs.
- Show respect for the client's support people. In some cultures, men in the family make decisions affecting the client, while in other cultures women make the decisions.
- Make a concerted effort to obtain the client's trust, but do not be surprised if it develops slowly or not at all. The heritage assessment takes time and usually needs to extend over several meetings.

## Diagnosing

The nursing diagnoses developed by NANDA International are focused on nursing care provided in the United States and Canada and are based on Western cultural beliefs. It is essential

to expand the understanding of the nursing practice to include cultural beliefs of Eastern and Arab culture. Nurses must provide appropriate care to clients of any culture. This is accomplished through developing cultural sensitivity and considering how a client's culture influences his or her responses to health conditions, much as the nurse considers how a client's age or gender influences a nursing diagnosis, plan, and delivery of nursing care.

## Nursing Intervention

The implementation of cultural nursing care includes (a) cultural preservation and maintenance and (b) cultural accommodation and negotiation. Cultural preservation may involve the use of cultural health care practices, such as giving herbal tea, chicken soup, or 'hot' foods to the ill client. Accommodation of the client's viewpoint and negotiating appropriate care requires expert communication skills, such as responding empathetically, validating information, and effectively summarizing content. Negotiation is a collaborative process. It acknowledges that the nurse–client relationship is reciprocal and that different views exist of health, illness, and treatment. The nurse attempts to bridge the gap between the nurses's scientific and the client's cultural perspectives. During the negotiation process, the client's views are explored and acknowledged. Relevant scientific information is then provided. If the client's views reveal that certain behaviors would not affect the client's condition adversely, then they are incorporated in planning care. If the client's views can lead to harmful behavior or outcomes, then an attempt is made to shift the client's perspectives to the scientific view.

Negotiation occurs when cultural treatment practices conflict with those of the health care system. It must be determined precisely how the client is managing the illness, what practices could be harmful, and which practices can be safely combined with Western medicine. For example, reducing dosages of an antihypertensive medication or replacing insulin therapy with herbal measures may be detrimental. Some herbal remedies are synergistic with Western medicines and others are antagonistic; therefore, it is necessary to fully inform the client about the possible outcomes.

When a client chooses to follow only cultural practices and declines all prescribed medical or nursing interventions, the

nurse and client must adjust the client goals. Monitoring the client's condition to identify changes in health and to recognize impending crises before they become irreversible may be all that is realistically achievable. At a time of crisis, the opportunity may arise to renegotiate care.

Providing cultural nursing care is challenging. It requires discovery of the meaning of the client's behavior, flexibility, creativity, and knowledge to adapt nursing interventions. An effort must be made to learn from each experience. This knowledge will improve the delivery of culture-specific care to future clients. Box 5-2 offers suggestions for providing such care to clients and families.

## Evaluating

Evaluating nursing care of clients that incorporates the concepts of heritage and ethnicity is performed in the same way as with any client. Client outcomes are compared with the goals and expected outcomes established following comprehensive assessment that includes sensitivity to cultural diversity. However, if the outcomes are not achieved, and the client and nurse are from different cultures, the nurse should be especially careful to consider whether the client's belief system has been adequately included as an influencing factor.

### BOX 5-2 Providing Culturally Competent Care to Families

- Include cultural assessment of the client and family as part of overall assessment.
- Learn the rituals, customs, and practices of the major cultural groups with whom you come into contact. Learn to appreciate the richness of diversity and consider it an asset rather than a hindrance in your practice.
- Don't make assumptions about beliefs or practices.
- Ask about the client's use of cultural or alternative approaches to healing.
- Identify your personal biases, attitudes, prejudices, and stereotypes.
- Recognize that it is the client's (or family's) right to make their own health care choices. Explain in detail the client's condition and the treatment plan if the client is willing for you to do this.
- Convey respect and cooperate with traditional helpers and caregivers.



## CRITICAL REFLECTION

We have seen in this chapter that there are many cultural implications that need to be considered when providing health care. People have different health beliefs and the nurse will need to be culturally sensitive to these. After having read the chapter, let us go back to the case study presented at the beginning of this chapter. What issues should you consider in providing health care to Mrs Salma? What concepts related to cultural nursing care should you take into consideration?



## CHAPTER HIGHLIGHTS

- The Arab world is made up of 22 countries across the Middle East and North Africa.
- Ethnic minority groups live in many Arab countries. These include Persians, Turks, Armenians, Kurds, Berbers, and other minorities. Differences within Arab culture also exist between people living in urban and those in rural areas, and among countries.
- People in the Arab world come from a variety of backgrounds, and may retain at least some of their traditional values, including health beliefs and practices.
- People may live within their traditional heritage or they may embrace both their original ethnocultural traditional heritage(s) and the new culture.
- An individual's heritage and cultural background can influence health beliefs and practices.
- Health beliefs and practices, family patterns, communication style, space and time orientation, and nutritional patterns may influence the relationship between the nurse and the client who have different cultural backgrounds.
- When assessing a client, the nurse considers the client's cultural values, beliefs, and practices related to health and health care.

## TEST YOUR KNOWLEDGE

1. Which of the following behaviors is most indicative of culturally sensitive nursing practice?
  1. Helps client recognize the need to adapt health practices to fit commonly accepted practices.
  2. Discusses the meaning of the medical regime to the client.
  3. Informs client that lack of adherence to medical regime may be detrimental.
  4. Asks a person from the same culture to explain the relevance of the intervention.
2. In initiating care for a client of a different culture than the nurse, which of the following would be an appropriate statement?
  1. "Since, in your culture, people don't drink ice water, I will bring you hot tea."
  2. "Do you have any books I could read about people of your culture?"
  3. "Please let me know if I do anything that is not acceptable in your culture."
  4. "You will need to set aside your usual customs and practices while you are in the hospital."
3. Students ask the nurse to explain the differences between culture and race. Which of the following is the best response?
  1. Culture is limited to a shared language or religion.
  2. Race describes common characteristics within a specific heritage group.
  3. Culture is socially oriented and race addresses shared physical traits.
  4. Culture is the degree by which one's lifestyle matches one's heritage.

See Answers to Test Your Knowledge in Appendix A .

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# Nutrition

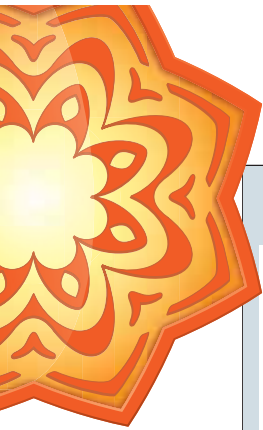
## LEARNING OUTCOMES

After completing this chapter, you will be able to:

1. Identify essential nutrients and their dietary sources.
2. Explain essential aspects of energy balance.
3. Discuss body weight and body mass standards.
4. Identify factors influencing nutrition.
5. Identify developmental nutritional considerations.
6. Evaluate a diet using a food guide pyramid.
7. Discuss essential components and purposes of nutritional assessment and nutritional screening.
8. Identify risk factors for and clinical signs of malnutrition.
9. Describe nursing interventions to promote optimal nutrition.
10. Discuss nursing interventions to treat clients with nutritional problems.
11. Perform the skills of inserting enteral tubes, administering feedings and medications through enteral tubes, and removing enteral tubes.

# CHAPTER 15





## KEY TERMS

<b>anabolism</b> , 415	<b>large calorie</b> , 416	<b>overweight</b> , 426
<b>basal metabolic rate (BMR)</b> , 417	<b>lipids</b> , 416	<b>parenteral</b> , 442
<b>body mass index (BMI)</b> , 417	<b>lipoproteins</b> , 416	<b>partially complete proteins</b> , 415
<b>caloric value</b> , 416	<b>macrominerals</b> , 416	<b>percutaneous endoscopic gastrostomy (PEG)</b> , 437
<b>calorie</b> , 416	<b>macronutrients</b> , 414	<b>percutaneous endoscopic jejunostomy (PEJ)</b> , 437
<b>catabolism</b> , 415	<b>malnutrition</b> , 426	<b>polysaccharides</b> , 415
<b>cholesterol</b> , 416	<b>metabolism</b> , 417	<b>polyunsaturated fatty acids</b> , 416
<b>complete proteins</b> , 415	<b>microminerals</b> , 416	<b>protein-calorie malnutrition (PCM)</b> , 426
<b>disaccharides</b> , 415	<b>micronutrients</b> , 414	<b>pureed diet</b> , 432
<b>dysphagia</b> , 419	<b>mid-arm circumference (MAC)</b> , 429	<b>resting energy expenditure (REE)</b> , 417
<b>enteral</b> , 433	<b>mid-arm muscle circumference</b> , 429	<b>saturated fatty acids</b> , 416
<b>enzyme</b> , 415	<b>minerals</b> , 416	<b>skinfold measurement</b> , 428
<b>essential amino acids</b> , 415	<b>monosaccharides</b> , 415	<b>small calorie</b> , 416
<b>fat-soluble vitamins</b> , 416	<b>nasoenteric tube</b> , 437	<b>triglycerides</b> , 416
<b>fats</b> , 416	<b>nasogastric tube</b> , 434	<b>tube</b> , 437
<b>fatty acids</b> , 416	<b>nasointestinal tube</b> , 437	<b>undernutrition</b> , 426
<b>gastrostomy</b> , 437	<b>nitrogen balance</b> , 415	<b>unsaturated fatty acids</b> , 416
<b>glycerides</b> , 416	<b>nitrogen balance</b> , 415	<b>urea</b> , 430
<b>glycogenesis</b> , 415	<b>nonessential amino acids</b> , 415	<b>vitamin</b> , 416
<b>hemoglobin</b> , 430	<b>nutrients</b> , 414	<b>water-soluble vitamins</b> , 416
<b>ideal body weight (IBW)</b> , 417	<b>nutrition</b> , 414	
<b>incomplete proteins</b> , 415	<b>nutritional value</b> , 414	
<b>jejunostomy</b> , 437	<b>obese</b> , 426	
<b>kcal</b> , 416	<b>oils</b> , 442	



## CASE STUDY

Laila is a 55-year-old woman who has recently been diagnosed with unstable angina. Her physician has recommended that she lose weight and eat a low cholesterol diet. Laila followed the advice of the physician but went too far, which resulted in her being admitted to the medical floor to treat her malnutrition problems. She had lost 17 kg during the past 6 months. While taking the client's history,

you asked Laila about the reasons for her condition. She replied, "I was afraid that my heart condition would get worse if I ate, and now I have no appetite to eat at all." After reading this chapter you will be able to identify factors influencing nutrition and identify risks and symptoms of malnutrition. You will be provide nursing intervention and perform skills to treat clients with nutritional problems.

**Nutrition** is what a person eats and how the body uses it. **Nutrients** are organic and inorganic substances found in foods that are required for body functioning. Adequate food intake consists of a balance of nutrients: water, carbohydrates, proteins, fats, vitamins, and minerals. Foods differ greatly in their **nutritional value** (the content of a specified amount of nutrients found in a food), and no one food provides all essential nutrients. Nutrients have three major functions: providing energy for body processes and movement, providing structural material for body tissues, and regulating body processes.

## ESSENTIAL NUTRIENTS

The body's most basic nutrient need is water. Following this, the next most important nutritional need is for nutrients that provide energy. The energy-providing nutrients are carbohydrates, fats,

and proteins. These will be referred to as **macronutrients** (because they are needed in large amounts to provide energy) and vitamins and minerals will be referred to as **micronutrients**. Vitamins and minerals are required in small amounts to metabolize the energy-providing nutrients.

## Carbohydrates

There are of two basic types of carbohydrates: simple carbohydrates (sugars) and complex carbohydrates (starches and fiber). As with all nutrients, carbohydrates must be ingested, digested, and metabolized.

### Types of Carbohydrates

**SUGARS.** Sugars, the simplest of all carbohydrates, are water soluble and are produced naturally by both plants and animals.



Sugars may be **monosaccharides** (single molecules such as glucose—the most simple sugar—fructose, and galactose) or **disaccharides** (double molecules). Most sugars are produced naturally by plants, especially fruits, sugar cane, and sugar beets. However, other sugars are from an animal source. For example, lactose, a combination of glucose and galactose, is found in animal milk. Processed or refined sugars (e.g., table sugar, molasses, and corn syrup) have been extracted and concentrated from natural sources.

**STARCHES.** Starches (**polysaccharides**) are the insoluble, nonsweet forms of carbohydrate. They are composed of branched chains of dozens or hundreds of glucose molecules. Like sugars, nearly all starches exist naturally in plants, such as grains and potatoes. Other foods, such as cereals, breads, flour, and puddings, are processed from starches.

**FIBER.** Fiber, a complex carbohydrate derived from plants, supplies roughage, or bulk, to the diet. However, fiber cannot be digested by humans but satisfies the appetite and helps the digestive tract to function effectively and eliminate waste. Fiber is present in the outer layer of grains, bran, and in the skin, seeds, and pulp of many vegetables and fruits.

Natural sources of carbohydrates also supply vital nutrients, such as protein, vitamins, and minerals that are not found in processed foods.

## Carbohydrate Metabolism

An **enzyme** is a biologic catalyst that speeds up chemical reactions. Major enzymes include ptyalin (salivary amylase), pancreatic amylase, and the disaccharidases—maltase, sucrase, and lactase—and are used in carbohydrate digestion. The desired end products of carbohydrate digestion are monosaccharides, which are absorbed by the small intestine in a healthy person. After the body breaks carbohydrates down into glucose, some glucose continues to circulate in the blood to maintain blood levels and to provide a readily available source of energy. The remainder is either used as energy or stored, either as glycogen, a large polymer (compound molecule) of glucose, or as fat (glucose that cannot be stored as glycogen is converted to fat), by a process called **glycogenesis** in the liver and skeletal muscles. Insulin, a hormone secreted by the pancreas, enhances the transport of glucose into cells.

## Proteins

Every cell in the body contains some protein, and about three-quarters of body solids are proteins. Amino acids are basic structural units of proteins and categorized as essential or nonessential. **Essential amino acids** are those that cannot be manufactured in the body and must be supplied in the diet. Nine essential amino acids—histidine, isoleucine, leucine, lysine, methionine, phenylalanine, tryptophan, threonine, and valine—are necessary for tissue growth and maintenance. A tenth, arginine, appears to have a role in the immune system.

**Nonessential amino acids** are those that the body can manufacture. Nonessential amino acids include alanine, aspartic acid, cystine, glutamic acid, glycine, hydroxyproline, proline, serine, and tyrosine.

Proteins may be complete or incomplete. **Complete proteins** contain all of the essential amino acids plus many nonessential

ones. Most animal proteins, including meats, poultry, fish, dairy products, and eggs are complete proteins. Some animal proteins are **partially complete proteins** and contain less than the required amount of one or more essential amino acids. Examples are gelatin and the milk protein casein.

**Incomplete proteins** lack one or more essential amino acids (most commonly lysine, methionine, or tryptophan) and are usually derived from vegetables such as corn. A balanced ratio of amino acids can be achieved if a mixture of plant proteins is included in the diet. A combination of proteins such as corn (low in tryptophan and lysine) and beans (low in methionine) is a complete protein. Such combinations of two or more vegetables are called *complementary proteins*. To take full advantage of vegetable proteins is to eat them with a small amount of animal protein. Eating Mansaf (rice with hot yogurt and meat), Kabsah (rice with meat), or Maklobah (rice, vegetables and chicken) are examples of combining vegetable and animal proteins.

## Protein Digestion

Digestion of protein foods begins in the mouth, where the enzyme *pepsin* breaks protein down into smaller units. Most proteins are digested in the small intestine. The pancreas secretes the proteolytic enzymes trypsin, chymotrypsin, and carboxypeptidase; glands in the intestinal wall secrete aminopeptidase and dipeptidase. These enzymes break protein down into smaller molecules and eventually into amino acids. Amino acids are absorbed by active transport through the small intestine into the portal blood circulation. The liver uses some amino acids to synthesize specific proteins (e.g., liver cells and the plasma proteins albumin, globulin, and fibrinogen).

## Storage

Plasma proteins are a storage medium that can rapidly be converted back into amino acids. Other amino acids are transported to tissues and cells throughout the body where they are used to make protein for cell structures. In a sense, protein is stored as body tissue. The body cannot actually store excess amino acids for future use. However, a limited amount is available in the ‘metabolic pool’ that exists because of the constant breakdown and buildup of the protein in body tissues.

## Protein Metabolism

Protein metabolism includes three activities: **anabolism** (building tissue), **catabolism** (breaking down tissue), and **nitrogen balance**.

**ANABOLISM.** All body cells synthesize proteins from amino acids. The types of proteins formed depend on the characteristics of the cell and are controlled by its genes.

**CATABOLISM.** Because a cell can accumulate only a limited amount of protein, excess amino acids are degraded for energy or converted to fat. Protein degradation occurs primarily in the liver.

**NITROGEN BALANCE.** Because nitrogen is the element that distinguishes protein from lipids and carbohydrates, nitrogen balance reflects the status of protein nutrition in the body. **Nitrogen balance** is a measure of the degree of protein anabolism and catabolism; it is the net result of intake and loss of nitrogen. When nitrogen intake equals nitrogen output, a state of nitrogen balance exists.

## Lipids

**Lipids (fats and oils)** are organic substances that have the same elements (carbon, hydrogen, and oxygen) as carbohydrates, but they contain a higher proportion of hydrogen. Fats may be solid or liquid (oil). **Fatty acids** are the basic structural units of most lipids.

**Fatty acids** are described as saturated or unsaturated. **Saturated fatty acids** are those in which all carbon atoms are filled to capacity (i.e., saturated) with hydrogen; an example is butyric acid, found in butter. An **unsaturated fatty acid** is one that could accommodate more hydrogen atoms than it currently does. It has at least two carbon atoms that are not attached to a hydrogen atom; instead, there is a double bond between the two carbon atoms. Fatty acids with one double bond are called **monounsaturated fatty acids**; those with more than one double bond (or many carbons not bonded to a hydrogen atom) are **polyunsaturated fatty acids**. An example of a polyunsaturated fatty acid is linoleic acid, found in vegetable oil.

Lipids are classified as simple or compound. **Glycerides**, the simple lipids, are the most common form of lipids. They consist of a glycerol molecule with up to three fatty acids attached. **Triglycerides** (which have three fatty acids) account for more than 90% of the lipids in food and in the body. Triglycerides may contain saturated or unsaturated fatty acids. Saturated triglycerides are found in animal products, such as butter, and are usually solid at room temperature. Unsaturated triglycerides are usually liquid at room temperature and are found in plant products, such as olive oil and corn oil.

**Cholesterol** is a fat-like substance that is both produced by the body and found in foods of animal origin. Most of the body's cholesterol is synthesized in the liver; however, some is absorbed from the diet (e.g., from milk, egg yolk, and organ meats). Cholesterol is needed to create bile acids and to synthesize steroid hormones. Along with phospholipids, large quantities of cholesterol are present in cell membranes as well as other cell structures.

### Lipid Digestion

Although chemical digestion of lipids begins in the stomach, they are digested mainly in the small intestine, primarily by bile, pancreatic lipase, and enteric lipase, an intestinal enzyme. The end products of lipid digestion are glycerol, fatty acids, and cholesterol. These are immediately reassembled inside the intestinal cells into triglycerides and cholesterol esters (cholesterol with a fatty acid attached to it), which are not water soluble. For these reassembled products to be transported and used, the small intestine and the liver must convert them into soluble compounds called lipoproteins. **Lipoproteins** are made up of various lipids and a protein.

### Lipid Metabolism

Converting fat into usable energy occurs through the use of the enzyme hormone-sensitive lipase that breaks down triglycerides in adipose cells, releasing glycerol and fatty acids into the blood. 0.45 kg of fat provides 3,500 kilocalories. Fasting persons will obtain most of their calories from fat metabolism, but some amount of carbohydrate or protein must also be used because the brain, nerves, and red blood cells require glucose. Only the glycerol molecules in fat can be converted to glucose. A typical

triglyceride has 50 carbon atoms, of which the one glycerol molecule represents only three carbons (Rolfes, Pinna, Whitney, 2006).

## Micronutrients

A **vitamin** is an organic compound that cannot be manufactured by the body and is needed in small quantities to catalyze metabolic processes. Thus, when vitamins are lacking in the diet, metabolic deficits result. Vitamins are generally classified as fat soluble or water soluble. **Water-soluble vitamins** include vitamin C and the B-complex vitamins: B<sub>1</sub> (thiamine), B<sub>2</sub> (riboflavin), B<sub>3</sub> (niacin or nicotinic acid), B<sub>6</sub> (pyridoxine), B<sub>9</sub> (folic acid), B<sub>12</sub> (cobalamin), pantothenic acid, and biotin. The body cannot store water-soluble vitamins; thus, people must get a daily supply in the diet. Water-soluble vitamins can be affected by food processing, storage, and preparation.

**Fat-soluble vitamins** include vitamins A, D, E, and K. The body can store these vitamins, although there is a limit to the amounts of vitamins E and K the body can store. Therefore, a daily supply of fat-soluble vitamins is not absolutely necessary. Vitamin content is highest in fresh foods that are consumed as soon as possible after harvest.

**Minerals** are found in organic compounds, as inorganic compounds, and as free ions. Calcium and phosphorus make up 80% of all mineral elements in the body. The two categories of minerals are macrominerals and microminerals. **Macrominerals** are those that people require daily in amounts over 100 mg. They include calcium, phosphorus, sodium, potassium, magnesium, chloride, and sulfur. **Microminerals** are those that people require daily in amounts less than 100 mg. They include iron, zinc, manganese, iodine, fluoride, copper, cobalt, chromium, and selenium.

Common problems associated with the mineral nutrients are iron deficiency resulting in anemia, and osteoporosis resulting from loss of bone calcium.

## ENERGY BALANCE

Energy balance is the relationship between the energy derived from food and the energy used by the body. The body obtains energy in the form of calories from carbohydrates, protein, and fat. The body uses energy for voluntary activities such as walking and talking and for involuntary activities such as breathing and secreting enzymes. A person's energy balance is determined by comparing his or her energy intake with energy output.

### Energy Intake

The amount of energy that nutrients or foods supply to the body is their **caloric value**. A **calorie (c, cal, kcal)** is a unit of heat energy. A **small calorie** is the amount of heat required to raise the temperature of 1 gram of water 1°C. This unit of measure is used in chemistry and physics. A **large calorie (Calorie, kilocalorie, or Kcal)** is the amount of heat energy required to raise the temperature of 1 gram of water 15 to 16°C.

The energy liberated from the metabolism of food has been determined to be:

- 4 Calories/gram of carbohydrates.
- 4 Calories/gram of protein.
- 9 Calories/gram of fat.

## Energy Output

**Metabolism** refers to all biochemical and physiologic processes by which the body grows and maintains itself. Metabolic rate is normally expressed in terms of the rate of heat liberated during these chemical reactions. The **basal metabolic rate (BMR)** is the rate at which the body metabolizes food to maintain the energy requirements of a person who is awake and at rest. The energy in food maintains the basal metabolic rate of the body and provides energy for activities such as running and walking.

**Resting energy expenditure (REE)** is the amount of energy required to maintain basic body functions; in other words, the calories required to maintain life. The REE of healthy persons is generally about 1 cal/kg of body weight/hour for men and 0.9 cal/kg/hour for women although there is great variation among individuals. BMR is calculated by measuring the REE in the early morning, 12 hours after eating.

## BODY WEIGHT AND BODY MASS STANDARDS

Maintaining a healthy or ideal body weight requires a balance between the expenditure of energy and the intake of nutrients. Generally, when energy requirements of an individual equate with the daily caloric intake, the body weight remains stable. **Ideal body weight (IBW)** is the optimal weight recommended for optimal health; however, many health professionals consider the body mass index to be a more reliable indicator of a person's healthy weight. For people older than 18 years, the **body mass index (BMI)** is an indicator of changes in body fat stores and whether a person's weight is appropriate for height, and may provide a useful estimate of malnutrition. However, the results must be used with caution in people who have fluid retention (e.g., ascites or edema), athletes, or elders. To calculate the BMI:

1. Measure the person's height in meters, e.g., 1.7 m.
2. Measure the weight in kilograms, e.g., 72 kg.
3. Calculate the BMI using the following formula:

$$\text{BMI} = \frac{\text{Weight in kilograms}}{(\text{Height in meters})^2}$$

or

$$\frac{72 \text{ kilograms}}{1.7 * 1.7(\text{meter})^2} = 24.9$$

Box 15-1 provides an interpretation of the results.

Another measure of body mass is the percentage of body fat. Because BMI uses only height and weight, it can give misleading results for certain groups of clients such as athletes, the frail elderly, and children. Percentage of body fat can be measured by underwater weighing and dual-energy x-ray absorptiometry (DEXA), but these methods are time-consuming and expensive. Other indirect, but more practical measures include waist circumference (see Box 15-1), skinfold testing, and near-infrared interactance.

Bioelectrical impedance analysis (BIA) is used by some modern weight scales and is considered one of the most accurate methods of body fat determination (Kyle et al., 2004). The speed

### BOX 15-1 Classification of Overweight and Obesity by BMI, Waist Circumference, and Associated Disease Risks

	BMI (kg/m <sup>2</sup> )	Obesity Class	Disease Risk* Relative to Normal Weight and Waist Circumference	
			Men 102 cm or less Women 88 cm or less	Men >102 cm Women >88 cm
Underweight	<18.5		—	—
Normal†	18.5–24.9		—	—
Overweight	25.0–29.9		Increased	High
Obesity	30.0–34.9	I	High	Very high
	35.0–39.9	II	Very high	Very high
Extreme obesity	40.0+	III	Extremely high	Extremely high

\*Disease risk for type 2 diabetes, hypertension, and cardiovascular disease.  
 †Increased waist circumference can also be a marker for increased risk even in persons of normal weight.  
 Note: From *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report*, by the National Heart, Lung, and Blood Institute, 1998, p. xvii, Washington, DC: U.S. Department of Health & Human Services. Retrieved June 25, 2006 from [http://www.nhlbi.nih.gov/guidelines/obesity/ob\\_gdlns.htm](http://www.nhlbi.nih.gov/guidelines/obesity/ob_gdlns.htm)

with which an electrical signal passes through the body is influenced by the amount of water in the body. The more muscle, the more water the body can hold, and the easier it is for current to pass through it. The more fat, the more resistance to the current. Height, age, gender, and weight or other physical characteristics such as body type, physical activity level, and ethnicity are used with the impedance data to determine percentage body fat. BIA is safe and it does not hurt.

## FACTORS AFFECTING NUTRITION

Although the nutritional content of food is an important consideration when planning a diet, an individual's food preferences and habits are often major factors affecting actual food intake. Habits about eating are influenced by developmental considerations, gender, ethnicity and culture, beliefs about food, personal preferences, religious practices, lifestyle, economics, medications and therapy, health, alcohol consumption, advertising, and psychologic factors.

## Development

People in rapid periods of growth (i.e., infancy and adolescence) have increased needs for nutrients. Elders, on the other hand, need fewer calories and dietary changes in view of the risk of coronary heart disease, osteoporosis, and hypertension.

## Gender

Nutrient requirements are different for men and women because of body composition and reproductive functions. The larger muscle mass of men translates into a greater need for calories and proteins. Because of menstruation, women require more



iron prior to menopause than men do. Pregnant and lactating women have increased caloric and fluid needs.

## Ethnicity and Culture

Ethnicity often determines food preferences. Traditional foods (e.g., dates, meat, and rice for Arabs, rice for Asians, pasta for Italians, and curry for Indians) are eaten long after other customs are abandoned (see Box 15-2 for a list of selected variations in nutritional practices and preferences among different cultures).

### BOX 15-2 Selected Variations in Nutritional Practices and Preferences Among Different Cultures

#### AFRICAN AMERICAN HERITAGE

- Gifts of food are common and should never be rejected.
- Diets are often high in fat, cholesterol, and sodium.
- Being overweight is viewed as positive.
- Most persons are lactose intolerant.

#### ARAB HERITAGE

- Many spices and herbs are used, such as cinnamon, allspice, cloves, mint, ginger, and garlic.
- Meats are often skewer-roasted or slowly boiled; most common are lamb and chicken. Meat should be drained of blood before cooking.
- Bread is served at every meal.
- Muslims do not eat pork as it is forbidden, and all meats must be cooked well done.
- Eating dates and drinking Arabic coffee is common.
- Food is eaten (and clients fed) with the right hand.
- Beverages are drunk after the meal, not during.
- Muslims fast during daylight hours during the month of Ramadan (which may fall at a slightly different time each year on non-Muslim calendars).
- Hand washing is essential before eating.

#### CHINESE HERITAGE

- Foods are served at meals in a specific order.
- Each region in China has its own traditional diet.
- Traditional Chinese may not want ice in their drinks.
- Foods are chosen to balance *yin* and *yang* in order to avoid indigestion.

#### JEWISH HERITAGE

- Dietary laws govern killing, preparation, and eating of foods.
- Meat and milk are not eaten at the same time; dairy substitutes (e.g., margarine) are permitted.
- Pork is one meat that is forbidden to eat.
- All blood must be drained from meats.
- Always wash hands before eating.

#### MEXICAN HERITAGE

- Rice, beans, and tortillas are core, essential foods.
- Many persons are lactose intolerant. Leafy green vegetables and stews with bones provide calcium.
- Being overweight is viewed as positive.
- Sweet fruit drinks, including adding sugar to juice, are popular.
- The main meal of the day is at noontime.
- Foods are chosen according to *hot* and *cold* theory.

Nurses should not use a ‘good food, bad food’ approach, but rather should realize that variations of intake are acceptable under different circumstances. The only ‘universally’ accepted guidelines are (a) to eat a wide variety of foods to ensure adequate nutrients and (b) to eat moderately to maintain correct body weight. Food preference probably differs as much among individuals of the same cultural background as it does generally between cultures. Not all Italians like pizza, for example, and many undoubtedly enjoy Mexican food.

## Beliefs about Food

Beliefs about effects of foods on health and well-being can affect food choices. Many people acquire their beliefs about food from television, magazines, and other media. For example, some people are reducing their intake of animal fats in response to evidence that excessive consumption of animal fats is a major risk factor in vascular disease, including heart attack and stroke (Sauvaget, Nagano, Hayashi, & Yamada, 2004).

Food trends that involve nontraditional food practices are relatively common. It may be based either on the belief that certain foods have special powers or on the notion that certain foods are harmful. Examples of some food beliefs in the Arab world are given in Box 15-3. Determining the needs for such a diet for the client enables the nurse to support the client’s needs and suggest more nutritious elements.

## Personal Preferences

Individual likes and dislikes can be related to typical food and familiarity. Some adults are very adventuresome and eager to try new foods. Others prefer to eat the same foods repeatedly. Preferences in the tastes, smells, flavors (blends of taste and smell), temperatures, colors, shapes, and sizes of food influence a person’s food choices. For example, some people may prefer sweet and sour tastes to bitter or salty tastes. Textures play a great role in food preferences. Some people prefer firm to soft, tender to tough, smooth to lumpy, or dry to moist.

## Religious Practices

Religious practice also affects diet. Islam prohibits eating carnivorous animals, pork, alcohol intake, and meat from animals not prepared in the Halal way (that is, properly slaughtered). Box 15-4 shows some nutritional principles in Islam.

### BOX 15-3 Examples of Food Beliefs in the Arab World

- Having yogurt and fish (such as tuna) may induce poisoning.
- Honey is healthier than sugar, more readily digested, and a cure for many diseases.
- Eating garlic may prevent hypertension.
- Raw eggs, honey, ginger, oysters, black beans, and lizard meat increase fertility.
- Organic foods are always healthier than those exposed to pesticides.

**BOX 15-4 Nutritional Principles in Islam**

- An important principle in Islam is that the food consumed will have a direct effect not only on the physical body but also the soul.
- To keep optimum health a proper diet and nutrition must be ensured.
- The Prophet Muhammad (PBUH) said: “Stomach is the home of disease. Diet is the main medicine” (Sahih Muslim).
- Allah asked everyone to eat what is lawful. Allah says in *Surah Al-Baqarah* (The Heifer): “Ye people eat of what is on earth lawful and wholesome” (Qur’an 2:168).
- Muslims are to eat the food, but do not waste excess. Allah says in the Qur’an in *Surah Al-A’raf* (The Heights): “Eat and drink, but waste not excess, for Allah loves not the prodigals” (Qur’an 7:31).
- Muslims are to select the best-quality food. Allah says in the Qur’an in *Surah Al Kahf* (The Cave): “Now send ye then one of you with the money of yours to the town: let him find out which is the best food [to be had]...” (Qur’an 18:29).
- The idea of moderation through diet is mentioned in *Surah Taha*: “Eat of the good things we have provided for your sustenance, but commit no excess therein.”
- In another approach, Islam demands from its followers total abstinence from food and drinks for one whole month (Ramadan) from dawn to sunset. Fasting increases productivity and curbs inflation. Allah says in the Qur’an in *Surah Al-Baqarah* (The Heifer): “O ye who believe! Fasting is prescribed for you as it was prescribed for those before you, that ye may learn self-restraint.” About fasting, the Prophet Muhammed said: “Fast [the month of Ramadan] so as to heal your bodies from diseases.”

*Note:* From *Health, Nutrition in Islam*, Powerpoint presentation by M. A. Arafa, Associate Professor of Epidemiology at High Institute of Public Health, Alexandria University, Egypt. Retrieved 2010, from <http://www.pitt.edu/super7/5011-6001/5601.ppt>.

## Lifestyle

Certain lifestyles are linked to food-related behaviors. People who are always in a hurry probably buy convenience grocery items or eat restaurant meals (or junk food). People who spend many hours at home may take time to prepare more meals. Individual differences also influence lifestyle patterns (e.g., cooking skills, concern about health). Some people work at different times, such as evening or night shifts. They might need to adapt their eating habits to this and also make changes in their medication schedules if they are related to food intake.

Muscular activity affects metabolic rate more than any other factor; the harder the activity, the greater the stimulation of the metabolism. Mental activity, which requires only about 4 Kcal per hour, provides very little metabolic stimulation.

## Economics

Not all persons have the financial resources for extensive food preparation and storage facilities. The quality and quantity of a person’s food can be affected by their socioeconomic status. The nurse should not assume that all clients have their own resources to buy fruits, meat, or higher-fat and -protein foods.

## Medications and Therapy

The effects of drugs on nutrition vary considerably. They may alter appetite, disturb taste perception, or interfere with nutrient absorption or excretion. Nurses need to be aware of the nutritional effects of specific drugs when evaluating a client for nutritional problems. Conversely, nutrients can affect drug utilization. Some nutrients can decrease drug absorption; others enhance absorption. Selected drug and nutrient interactions are shown in Table 15-1.

Therapies (e.g., chemotherapy and radiation) prescribed for certain diseases may also adversely affect eating patterns and nutrition. Oral ulcers, intestinal bleeding, or diarrhea resulting from the toxicity of antineoplastic agents used in chemotherapy can seriously diminish a person’s nutritional status.

The effects of radiotherapy depend on the area that is treated. For example, radiotherapy of the head and neck may cause decreased salivation, taste distortions, and swallowing difficulties; radiotherapy of the abdomen and pelvis may cause malabsorption, nausea, vomiting, and diarrhea. Many clients feel profound fatigue and anorexia (loss of appetite).

## Health

An individual’s health status greatly affects eating habits and nutritional status. The lack of teeth, ill-fitting dentures, or a sore mouth makes chewing food difficult. Difficulty swallowing (**dysphagia**) due to a painfully inflamed throat or a narrowing of the esophagus can prevent a person from obtaining adequate nourishment. Disease processes and surgery of the gastrointestinal tract can affect digestion, absorption, metabolism, and excretion of essential nutrients. Gastrointestinal and other diseases also create nausea, vomiting, and diarrhea, all of which can adversely affect a person’s appetite and nutritional status.

## Advertising

Advertising is thought to influence people’s food choices and eating patterns to a certain extent. Of note is that such products as coffee, frozen foods, and soft drinks are more heavily advertised than such products as bread, vegetables, and fruits. Convenience foods (frozen or packaged and easy to prepare) and take-out (fast) foods, snack foods, candy, soda, and sugared cereals are heavily advertised over fresh, healthy foods. In many countries of the Arab world, food advertisements must have Ministry of Health approval to be targeted to a certain audience.

In the Arab world there has been an increase in advertising that targets elders in particular and encourages use of herbs and supplements, which require the need to be regulated according to food and health system. Some of these products are nutritionally safe whereas others are not and can cause interactions with medications they might be taking or cause unexpected side effects.

## Psychologic Factors

Although some people overeat when stressed, depressed, or lonely, others eat very little under the same conditions. Anorexia and weight loss can indicate severe stress or depression.



**TABLE 15-1 Selected Drug–Nutrient Interactions**

<b>DRUG</b>	<b>EFFECT ON NUTRITION</b>
Acetylsalicylic acid	Decreases serum folate and folacin nutrition Increases excretion of vitamin C, thiamine, potassium, amino acids, and glucose May cause nausea and gastritis
Antacids containing aluminum or magnesium hydroxide	Decrease absorption of phosphate and vitamin A Inactivate thiamine May cause deficiency of calcium and vitamin D Increase excretion of sodium, potassium, chloride, calcium, magnesium, zinc, and riboflavin
Thiazide diuretics	May cause anorexia, nausea, vomiting, diarrhea, or constipation Decrease absorption of vitamin B <sub>12</sub> May cause diarrhea, nausea, or vomiting
Potassium chloride	Increases excretion of potassium, magnesium, and calcium May cause anorexia, nausea, or vomiting Is incompatible with protein hydrolysates
Laxatives	May cause calcium and potassium depletion Decrease absorption of vitamins A, D, E, and K
Antihypertensives	Hydralazine (Apresoline) may cause anorexia, vomiting, nausea, and constipation Methyldopa (Aldomet) increases need for vitamin B <sub>12</sub> and folate May cause dry mouth, nausea, vomiting, diarrhea, and constipation
Anti-inflammatory agents	Colchicine decreases absorption of vitamin B <sub>12</sub> , carotene, fat, lactose, sodium, potassium, protein, and cholesterol Prednisone decreases absorption of calcium and phosphorus
Antidepressants	Increases food intake (large amounts may suppress intake)
<b>NUTRIENT</b>	<b>EFFECT ON DRUGS</b>
Grapefruit	Can cause toxicity when taken with a variety of medications including cisapride, carbamazepine, diazepam, cyclosporine, verapamil, nifedipine, amiodarone (Dahan, & Altman, 2004)
Vitamin K	Can decrease the effectiveness of warfarin (Coumadin)
Milk	Interferes with absorption of tetracycline antibiotics

Anorexia nervosa and bulimia are severe psychophysiological conditions seen most frequently in female adolescents.

## NUTRITIONAL VARIATIONS THROUGHOUT THE LIFE CYCLE

Nutritional requirements vary throughout the life cycle. Guidelines follow for the major developmental stages.

### Neonate to 1 Year

The neonate's fluid and nutritional needs are met by breast milk or formula milk. Fluid needs of infants are proportionately greater than those of adults because of a higher metabolic rate, immature kidneys, and greater water losses through the skin and the lungs. The last is largely due to rapid respirations. The total daily nutritional requirement of the newborn is about 80 to 100 mL of breast milk or formula per kilogram of body weight. The newborn infant's stomach capacity is about 90 mL, and feedings are required every 2.5 to 4 hours.

### Children

Children learn eating habits from their parents. It is the parents' responsibility to be good nutritional role models, both in terms of what they eat and how they incorporate food into their lifestyle. During the preschool and early school-age years children learn lifelong eating habits. It is the parents' responsibility to

provide the child with adequate amounts of nutritious foods in an environment that is relaxed and comfortable for eating. It is the child's responsibility to decide what and how much of the nutritious foods to eat. Parents should be counseled that eating can become a source of conflict if the parent tries to tell the child what and how much to eat, or if the child tries to tell the parent what foods should be eaten. Children's access to 'junk food' should be limited, but completely forbidding a food may also create conflict.

Although adolescents who are vegetarians are at risk for some nutritional deficits, the diet of adolescents who eat eggs, milk products, and, on occasion, non-red meat is more healthy than that of their red-meat-eating peers (Haddad, & Tanzman, 2003).

Common problems related to nutrition and self-esteem among adolescents include obesity, anorexia nervosa, and bulimia. Obesity is a common problem of the preadolescent period and continues to be a problem in the adolescent period. Many obese adolescents feel ugly and socially unacceptable. Depression is not unusual among obese adolescents.

### Adult

The nutritional habits established during young adulthood often lay the foundation for the patterns maintained throughout a person's life. Many adults are aware of the food groups but may not be knowledgeable about how many servings of each group

**TABLE 15-2 Problems Associated with Nutrition in Older Adults**

<b>PROBLEMS</b>	<b>NURSING INTERVENTIONS</b>
Difficulty chewing	Encourage regular visits to the dentist to have dentures repaired, refitted, or replaced. Chop fruits and vegetables finely; shred green, leafy vegetables; select ground meat, poultry, or fish.
Lowered glucose tolerance	Eat more complex carbohydrates (e.g., breads, cereals, rice, pasta, and potatoes) rather than sugar-rich foods.
Decreased social interaction, loneliness	Promote appropriate social interaction at meals, when possible. Encourage the client and spouse to take an interest in food preparation and serving, perhaps as an activity they can do together. Encourage family or caregivers to present the food at a dining table with place mats, table cloths, and napkins to trigger eating associations for the elder. If food preparation is not possible, suggest community resources, such as home delivery meals. Suggest picnics outdoors or inviting friends over for meals.
Loss of appetite and senses of smell and taste	Eat essential, nutrient-dense foods first; follow with desserts and low-nutrient-density foods. Review dietary restrictions, and find ways to make meals appealing within these guidelines. Eat small meals frequently instead of three large meals a day.
Limited income	Suggest using generic brands and coupons. Substitute milk, dairy products, and beans for meat. Avoid convenience foods if able to cook. Buy foods that are on sale and freeze for future use. Suggest community resources and nutrition programs. Have the major meal at noon instead of in the evening.
Difficulty sleeping at night	Avoid tea, coffee, or other stimulants in the evening.

they need or how much a serving constitutes. The nurse should provide the adult client with resources such as a chart or list that contains the foods and the amounts needed in each category.

## Elders

Most elders take several medications as a result of having an increase in the number of chronic illnesses (see Table 15-1). Considerations for potential problems related to elderly nutrition should be taken into account (see Table 15-2 for problems associated with nutrition in older adults and prompt nursing interventions).

Conditions such as neuromuscular disorders and dementia can make it difficult for elders to eat or to be fed. Safety should always be a priority concern with attention paid to prevent aspiration. All health care personnel and family caregivers should be taught proper techniques to reduce this risk. Effective techniques include the following:

- Use the chin-tuck method when feeding clients with dysphagia. Having them flex the head toward the chest when swallowing decreases the risk of aspiration into the lungs.
- Use foods of prescribed consistency. Many elders can swallow foods with thicker consistency more easily than thin liquids.
- Try to focus on food preferences: the family can help provide this information.
- Try to maintain mealtime as a positive social occasion with conversations and extra attention to creating a pleasant environment.

## STANDARDS FOR A HEALTHY DIET

Various daily food guides have been developed to help healthy people meet the daily requirements of essential nutrients and to facilitate meal planning. Food group plans emphasize the

general types or groups of foods rather than the specific foods, because related foods are similar in composition and often have similar nutrient values. For example, all grains, whether wheat or oats, are significant sources of carbohydrate, iron, and the B vitamin thiamine. The scope of the expert consultation of the World Health Organization (WHO) and Food and Agriculture Organization (FAO), and the subsequent recommended nutrient requirements, included over 20 essential nutrients. These nutrients comprise the basis of all human nutrition: protein, energy, vitamin A and carotene, vitamin D, vitamin E, vitamin K, thiamine, riboflavin, niacin, vitamin B<sub>6</sub>, pantothenic acid, biotin, vitamin B<sub>12</sub>, folate, vitamin C, antioxidants, calcium, iron, zinc, selenium, magnesium, and iodine. For each nutrient, consideration was given to function, metabolism, dietary intake patterns, requirement levels, and toxicity. Basal requirements, safe intake levels, recommended dietary allowances, and tolerable upper intake levels are to be established for each. A detailed technical report of the Joint WHO/FAO Expert Consultation, in addition to a briefer handbook on human nutrient requirements, were published in 1999 (<http://www.who.int/nutrition/topics/nutrecomm/en/index.html>).

## The Food Guide Pyramid

The Food Guide Pyramid is a graphic aid that was developed by the U.S. Department of Agriculture (USDA) as a guide in making daily food choices.

There are many food pyramids originated from the general food guide pyramid such as the pyramid for young children (Figure 15-1 ■) and the pyramid for elders (Figure 15-2 ■).

Using and following this guide does not guarantee that a person will consume the necessary levels of all essential nutrients. For example, someone who chooses cooked and low-fiber fruits and vegetables might have an inadequate intake of dietary fiber even though the recommended number of servings is eaten.

Fats and sweets—eat less

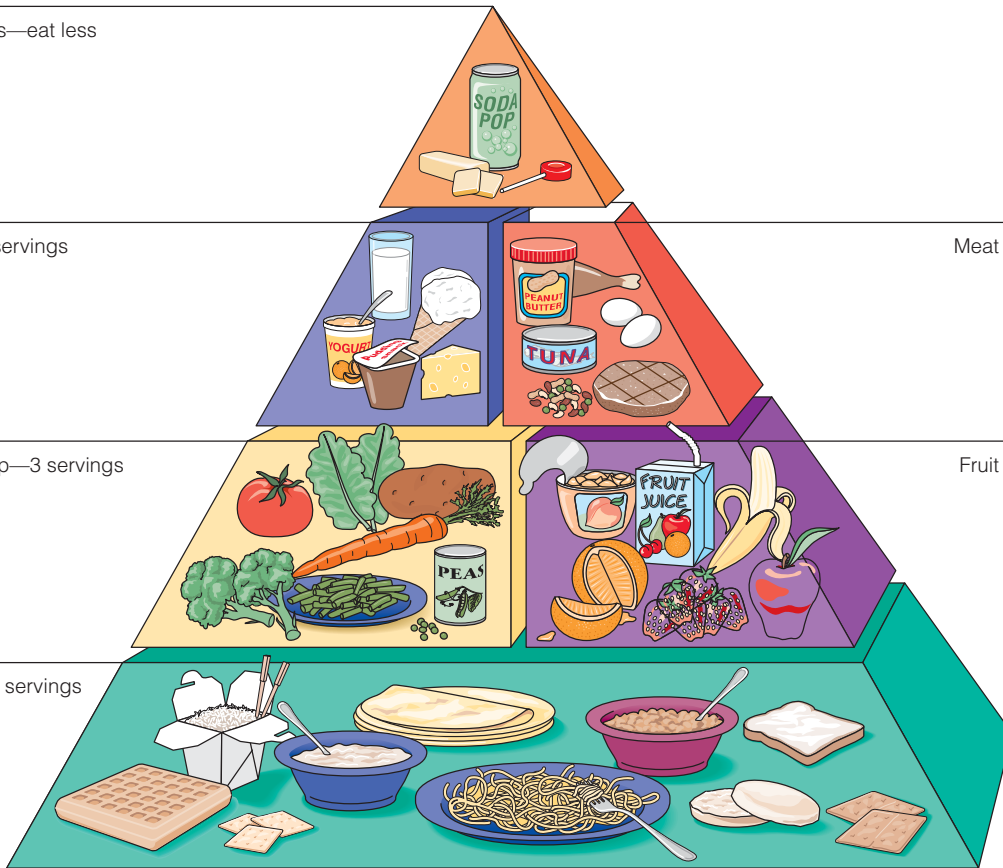
Milk group—2 servings

Meat group—2 servings

Vegetable group—3 servings

Fruit group—2 servings

Grain group—6 servings



U.S. Department of Agriculture Center for Nutrition Policy and Promotion, March 1999, Program Aid 1649

WHAT COUNTS AS ONE SERVING		
<p><b>GRAIN GROUP</b>                      1 slice of bread                      1/2 cup of cooked rice or pasta                      1/2 cup of cooked cereal                      1 ounce of ready-to-eat cereal</p>	<p><b>FRUIT GROUP</b>                      1 piece of fruit or melon wedge                      3/4 cup of juice                      1/2 cup of canned fruit                      1/4 cup of dried fruit</p>	<p><b>MEAT GROUP</b>                      2 to 3 ounces of cooked lean meat, poultry, or fish                       1/2 cup of cooked dry beans, or 1 egg counts as 1 ounce of lean meat. 2 tablespoons of peanut butter count as 1 ounce of meat.</p>
<p><b>VEGETABLE GROUP</b>                      1/2 cup of chopped raw or cooked vegetables                      1 cup of raw leafy vegetables</p>	<p><b>MILK GROUP</b>                      1 cup of milk or yogurt                      2 ounces of cheese</p>	<p><b>FATS AND SWEETS</b>                      Limit calories from these.</p>
<p>Four- to 6-year-olds can eat these serving sizes. Offer 2- to 3-year-olds less, except for milk.                      Two- to 6-year-old children need a total of 2 servings from the milk group each day.</p>		

Figure 15-1 ■ Food guide pyramid for young children.

(Note: From U.S. Department of Agriculture and U.S. Department of Health and Human Services, 1999.)

However, the food guide is easy to follow, and people who eat a variety of foods from each group, in the suggested amounts, are likely to come close to recommended nutrient levels. The Food Guide Pyramid does not address fluid intake or provide guidelines about combination foods or about convenience foods.

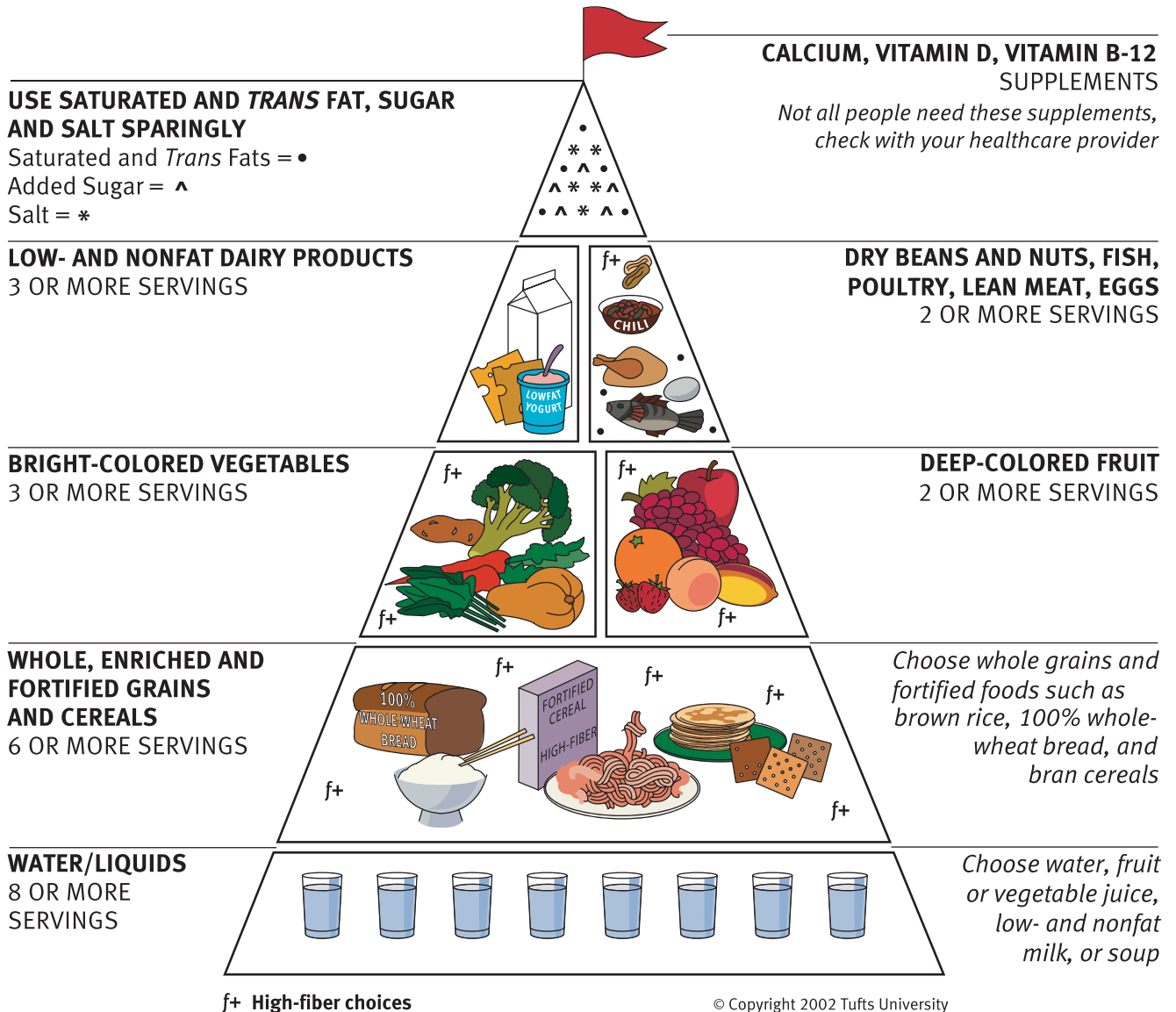
## Recommended Dietary Intake

The Committee on the Scientific Evaluation of Dietary Reference Intakes of the Institute of Medicine in United States publishes

the Dietary Reference Intakes (DRIs) tables, which contain four sets of reference values: estimated average requirements (EARs), recommended dietary allowances (RDAs), adequate intakes (AIs), and tolerable upper intake levels (ULs). Definitions of these terms are found in Box 15-5. The values for RDAs and AIs in the tables are modified for different age groups and according to gender. The effect of illness or injury (increasing the need for nutrients) and the variability among individuals within any given subgroup are not taken into account in the DRIs.

# TUFTS

## Food Guide Pyramid for Older Adults



For additional copies visit us on the web at <http://nutrition.tufts.edu>

Figure 15-2 ■ A modified food guide pyramid for people older than 70 years of age.

(Copyright © 2002 from Tufts University School of Nutrition Science and Policy. Reproduced with permission. <http://nutrition.tufts.edu>)

Consumers most commonly learn recommended dietary intake information from the U.S. Food and Drug Administration (FDA) nutrition labels called Nutrition Facts. Food labeling is required for most prepared foods, such as breads, cereals, canned and frozen foods, snacks, desserts, and drinks. Nutrition labeling for raw produce (fruits and vegetables) and fish is

voluntary. It is important that everyone learn how to read and interpret these labels.

The section at the top of the label ❶ in Figure 15-3 ■ indicates serving size and number of servings in the container. The remaining information on the label indicates the values for *each serving*. Thus, if the person consumes a container that has more

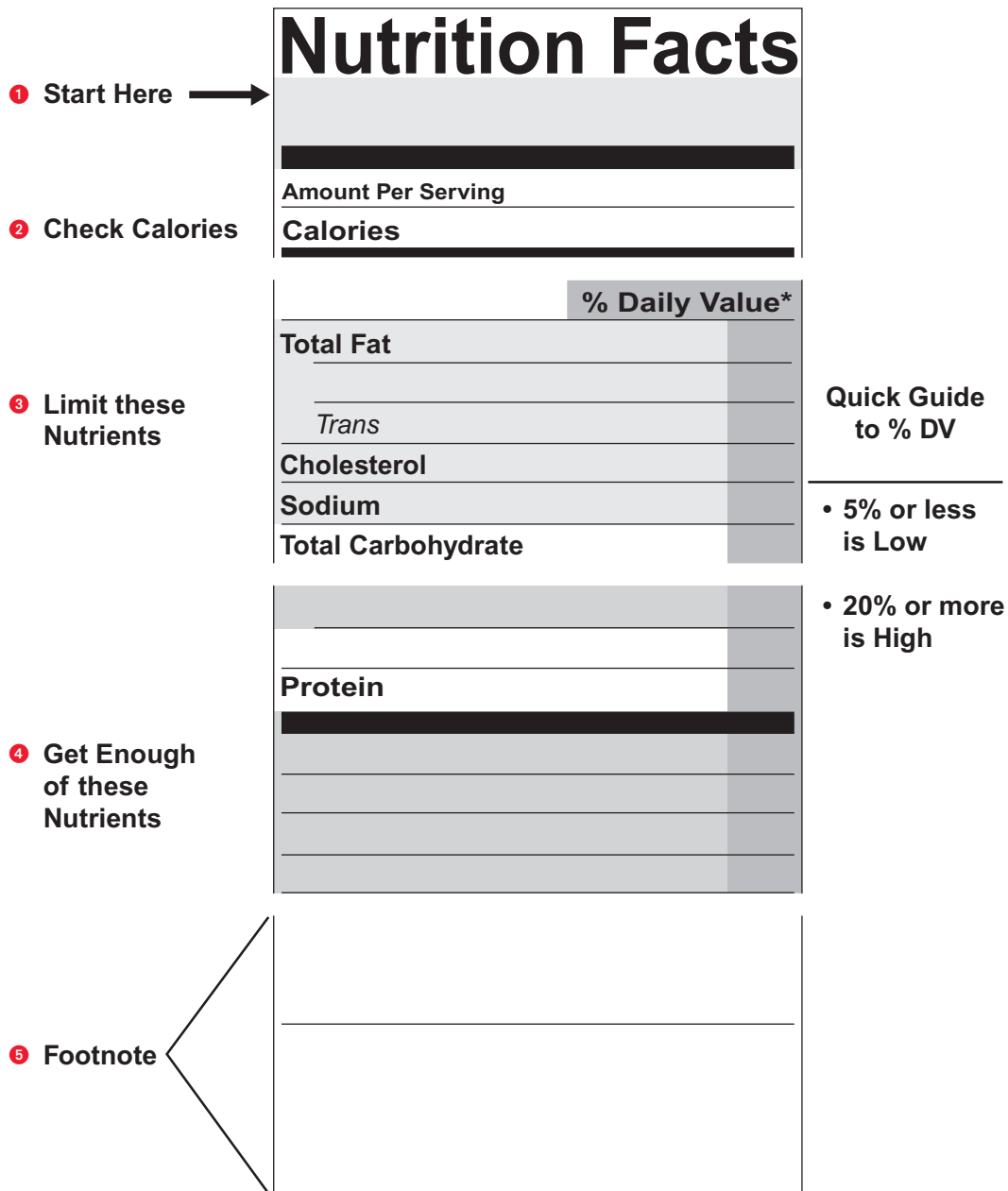


Figure 15-3 ■ The Nutrition Facts Label

(Note: From "How to Understand and Use the Nutrition Facts Label", by the U.S. FDA/Center for Food Safety & Applied Nutrition, 2004. Retrieved September 4, 2006 from www.cfsan.fda.gov/~dms/foodlab.html#twoparts)

than one serving, the person must multiply the values in order to know the real nutrient content. The next section 2 indicates the number of total calories and calories from fat per serving. Based on a 2,000-calorie diet, a serving with 40 calories is considered low, 100 calories moderate, and 400 calories high. Section 3 has those nutrients that should be minimized: fats, cholesterol, and sodium. A % Daily Value (DV) of 5% or less is low, and 20% or more is high. When adding the % DV from all foods eaten in one day, the goal is to keep the total below 100%. Effective January 1, 2006, packaged foods must list *trans-fat*

content. *Trans-fats* are created when unsaturated oils are hydrogenated to create a solid form and are used in frying foods, margarine, and many snack products. They are also present in meat and dairy fats. *Trans-fats* have been shown to increase cholesterol and contribute to heart disease. The next section 4 includes fiber, vitamins, and minerals commonly insufficient in American diets. When adding the percentage values from all foods eaten in one day, the goal is to keep the total DV of each of these at least at 100%. Again, a % DV of 5 or less is low and 20% or more is high. The footnote 5 indicates the approximate





## RESEARCH NOTE What are the Factors Associated with the High Prevalence of Obesity in the Eastern Mediterranean Region?

Musaiger (2004) has discussed the prevalence and factors associated with overweight and obesity in the Eastern Mediterranean Region. The prevalence of overweight and obesity among schoolchildren was alarming. A prevalence of 3–9% overweight and obese children has been recorded at preschool age, whereas among schoolchildren it is 12–25%. A remarkable increase in obesity also has been noted among adolescents, ranging from 15 to 45%. Regarding gender differences, in adulthood, women showed a higher prevalence of obesity (35–75%) than men (30–60%).

### IMPLICATIONS

The study addressed several factors such as change in dietary habits, socioeconomic factors, inactivity, and patterns of physical activity associated to obesity in this region. The author recommended national programs to prevent and control obesity in the countries of the region. These programs may include education on nutrition as well as assessment of psychosocial problems that may lead to overeating.

*Note:* From "Overweight and obesity in the Eastern Mediterranean Region: Can we control it?" by A. Musaiger, 2004, *Eastern Mediterranean Health Journal*, 10(6), 789.

### BOX 15-5 Definitions for Dietary Reference Value Tables

*Dietary reference intakes (DRIs):* The standards for nutrient recommendations that include the following values.

*Estimated average requirement (EAR):* The average daily nutrient intake value estimated to meet the requirement of half the healthy individuals in a particular life stage and gender group.

*Recommended dietary allowance (RDA):* The average daily nutrient intake level sufficient to meet the nutrient requirement of nearly all (97 to 98%) healthy individuals in a particular life stage and gender group.

*Adequate intake (AI):* Used when RDA cannot be determined. A recommended average daily nutrient intake level based on observed or experimentally determined approximations or estimates of nutrient

intake for a group (or groups) of healthy people that are assumed to be adequate.

*Tolerable upper intake level (UL):* The highest average daily nutrient intake level likely to pose no risk of adverse health effects to almost all individuals in a particular life stage and gender group. As intake increases above the UL, the potential risk of adverse health effects increases.

*Note:* Reprinted with permission from *Dietary Reference Intakes: Applications in Dietary Planning* © 2003 by the National Academy of Sciences, Courtesy of the National Academies Press, Washington, D.C.

DVs for fat cholesterol, sodium, total carbohydrate, and fiber in 2,000- and 2,500-calorie diets. The 2,000-calorie values are used for the % DV numbers in the upper sections.

If the label on a food is missing, consumers can retrieve the information from several websites.

## Vegetarian Diets

People may become vegetarians for economic, health, religious, ethical, or ecologic reasons. There are two basic vegetarian diets: those that use only plant foods (vegan) and those that include milk, eggs, or dairy products. Some people eat fish and poultry but not beef or lamb; others eat only fresh fruit, juices, and nuts; and still others eat plant foods and dairy products but not eggs.

Vegetarian diets can be nutritionally sound if they include a wide variety of foods and if proper protein and vitamin and mineral supplementation are provided (Anonymous, 2003). Because the proteins found in plant foods are incomplete proteins, vegetarians must eat complementary protein foods to obtain all the essential amino acids. A plant protein can be complemented by combining it with a different plant protein. The combination produces a complete protein (see Box 15-6). Obtaining complete proteins is especially important for growing children and pregnant and lactating women, whose

### BOX 15-6 Combinations of Plant Proteins that Provide Complete Proteins

Grains plus legumes = complete protein.  
 Legumes plus nuts or seeds = complete protein.  
 Grains, legumes, nuts, or seeds plus milk or milk products (e.g., cheese) = complete protein.

<b>Grains</b>	<b>Legumes</b>	<b>Nuts and Seeds</b>
Brown rice	Black beans	Almonds
Barley	Kidney beans	Brazil nuts
Corn meal	Lima beans	Cashews
Millet	Soybeans	Pecans
Oats/oatmeal	Lentils	Walnuts
Rye	Tofu	Pumpkin seeds
Whole wheat	Black-eyed peas	Sesame seeds
	Split peas	Sunflower seeds
Examples	Black-eyed peas and rice Lentil soup and whole wheat bread Beans and tortillas Lima beans and sesame seeds or Cereal with milk Macaroni with cheese	

protein needs are high. Generally, legumes (starchy beans, peas, lentils) have complementary relationships with grains, nuts, and seeds. Complementary foods must be eaten in the same meal. Diets such as the fruitarian diet do not provide sufficient amounts of essential nutrients and are not recommended for long-term use.

Foods of animal origin are the best source of vitamin B<sub>12</sub>. Therefore, vegans need to obtain this vitamin from other sources: brewer's yeast, foods fortified with vitamin B<sub>12</sub>, or a vitamin supplement. Because iron from plant sources is not absorbed as efficiently as iron from meat, vegans should eat iron-rich foods (e.g., green leafy vegetables, whole grains, raisins, and molasses) and iron-enriched foods. They should eat a food rich in vitamin C at each meal to enhance iron absorption. Calcium deficiency is a concern only for strict vegetarians. It can be prevented by including in the diet soybean milk and tofu (soybean curd) fortified with calcium and leafy green vegetables.

## ALTERED NUTRITION

**Malnutrition** is commonly defined as the lack of necessary or appropriate food substances, but in practice includes both undernutrition and overnutrition. **Overnutrition** refers to a caloric intake in excess of daily energy requirements, resulting in storage of energy in the form of adipose tissue. As the amount of stored fat increases, the individual becomes **overweight** or **obese** (see Box 15-1, on BMI). Excess body weight increases the stress on body organs and predisposes people to chronic health problems such as hypertension and diabetes mellitus. Obesity that interferes with mobility or breathing is referred to as morbid obesity. Obese people may also manifest undernourishment in important nutrients (e.g., essential vitamins or minerals) even though excess calories are ingested.

**Undernutrition** refers to an intake of nutrients insufficient to meet daily energy requirements because of inadequate food intake or improper digestion and absorption of food. An inadequate food intake may be caused by the inability to acquire and prepare food, inadequate knowledge about essential nutrients and a balanced diet, discomfort during or after eating, dysphagia, anorexia, nausea, vomiting, and so on. Improper digestion and absorption of nutrients may be caused by an inadequate production of hormones or enzymes or by medical conditions resulting in inflammation or obstruction of the gastrointestinal tract.

Inadequate nutrition is associated with marked weight loss, generalized weakness, altered functional abilities, delayed wound healing, increased susceptibility to infection, decreased immunocompetence, impaired pulmonary function, and prolonged length of hospitalization. In response to undernutrition, carbohydrate reserves, stored as liver and muscle glycogen, are mobilized. However, these reserves can only meet energy requirements for a short time (e.g., 24 hours) and then body protein is mobilized.

**Protein-calorie malnutrition (PCM)** is associated with the manifestation of undernutrition seen in starving children and recognized as a significant problem of clients with long-term

deficiencies in caloric intake (e.g., those with cancer and chronic disease). Characteristics of PCM are depressed visceral proteins (e.g., albumin), weight loss, and visible muscle and fat wasting.

Protein stores in the body are generally divided into two compartments: somatic and visceral. Somatic protein consists largely of skeletal muscle mass; it is assessed most commonly by conducting anthropometric measurements such as the mid-arm circumference (MAC) and the mid-arm muscle circumference (MAMC). Visceral protein includes plasma protein, hemoglobin, several clotting factors, hormones, and antibodies. It is usually assessed by measuring serum protein levels such as albumin and transferrin, discussed in the Laboratory Data section of Assessing, which follows.



## NURSING MANAGEMENT

### Assessing

The purpose of the nutritional assessment is to identify clients at risk for malnutrition and those with poor nutritional status. In most health care facilities, the responsibility for nutritional assessment and support is shared by the primary care provider, the dietitian, and the nurse. Generally nurses perform a nutritional screen. Components of a nutritional assessment are shown in Table 15-3 and may be remembered as ABCD data: anthropometric, biochemical, clinical, and dietary.

### Nutritional Screening

According to nutritional screening, clients who are found to be at moderate or high risk are followed with a comprehensive assessment by a dietitian (see Box 15-7).

Nurses carry out nutritional screens through routine nursing histories and physical examinations. Custom-designed screens for a particular population (e.g., elders and pregnant women) and specific disorders (e.g., cardiac disease) are available. Screening tools such as the Patient-Generated Subjective Global Assessment (PG-SGA) and the Nutrition Screening Initiative (NSI) can be incorporated into the nursing history. The PG-SGA is a method of classifying clients as well nourished, moderately malnourished, or severely malnourished based on a dietary history and physical examination. It was established primarily for use with cancer patients but has been widely tested and is appropriate for both inpatient and outpatient clients with various diagnoses (Green, & Watson, 2005).

### Nursing History

As mentioned above, nurses obtain considerable nutrition-related data in the routine admission nursing history. Data include but are not limited to the following:

- Age, gender, and activity level
- Difficulty eating (e.g., impaired chewing or swallowing)
- Condition of the mouth, teeth, and presence of dentures
- Changes in appetite
- Changes in weight

**TABLE 15-3 Components of a Nutritional Assessment**

	<b>SCREENING DATA</b>	<b>ADDITIONAL IN-DEPTH DATA</b>
Anthropometric Data	<ul style="list-style-type: none"> <li>■ Height</li> <li>■ Weight</li> <li>■ Ideal body weight</li> <li>■ Usual body weight</li> <li>■ Body mass index</li> </ul>	<ul style="list-style-type: none"> <li>■ Triceps skinfold (TSF)</li> <li>■ Mid-arm circumference (MAC)</li> <li>■ Mid-arm muscle circumference (MAMC)</li> </ul>
Biochemical Data	<ul style="list-style-type: none"> <li>■ Hemoglobin</li> <li>■ Serum albumin</li> <li>■ Total lymphocyte count</li> </ul>	<ul style="list-style-type: none"> <li>■ Serum transferrin level</li> <li>■ Urinary urea nitrogen</li> <li>■ Urinary creatinine excretion</li> </ul>
Clinical	<ul style="list-style-type: none"> <li>■ Skin</li> <li>■ Hair and nails</li> <li>■ Mucous membranes</li> <li>■ Activity level</li> </ul>	<ul style="list-style-type: none"> <li>■ Hair analysis</li> <li>■ Neurological testing</li> </ul>
Dietary Data	<ul style="list-style-type: none"> <li>■ 24-hour food recall</li> <li>■ Food frequency record</li> </ul>	<ul style="list-style-type: none"> <li>■ Selective food frequency record</li> <li>■ Food diary</li> <li>■ Diet history</li> </ul>

**BOX 15-7 Summary of Risk Factors for Nutritional Problems****DIET HISTORY**

- Chewing or swallowing difficulties (including ill-fitting dentures, dental caries, and missing teeth)
- Inadequate food budget
- Inadequate food intake
- Inadequate food-preparation facilities
- Inadequate food-storage facilities
- Intravenous fluids (other than total parenteral nutrition for 10 or more days)
- Living and eating alone
- No intake for 10 or more days
- Physical disabilities
- Restricted or fashionable diets

**MEDICAL HISTORY**

- Adolescent pregnancy or closely spaced pregnancies
- Alcohol or substance abuse
- Catabolic or hypermetabolic condition: burns, trauma
- Chronic illness: end-stage renal disease, liver disease, HIV, pulmonary disease (COPD), cancer

- Dental problems: difficulty chewing, ill-fitting dentures
- Fluid and electrolyte imbalance
- Gastrointestinal problems: anorexia, dysphagia, nausea, vomiting, diarrhea, constipation
- Neurologic or cognitive impairment
- Oral and gastrointestinal surgery
- Unintentional weight loss or gain of 10% within 6 months

**MEDICATION HISTORY\***

- Antacid
- Antidepressants
- Antihypertensives
- Anti-inflammatory agents
- Antineoplastic agents
- Aspirin
- Digitalis
- Diuretics (thiazides)
- Laxatives
- Potassium chloride

\*The potential effects of some medications on nutrition are shown in Table 15-1.

- Physical disabilities that affect purchasing, preparing, and eating food
- Cultural and religious beliefs that affect food choices
- Living arrangements (e.g., living alone) and economic status
- General health status and medical condition
- Medication history.

**Physical Examination**

Physical examination reveals some nutritional deficiencies and excesses in addition to obvious weight changes. Assessment focuses on rapidly proliferating tissues such as skin, hair, nails, eyes, and mucosa but also includes a systematic review comparable to any routine physical examination. See Clinical

Manifestations and Figure 15-4 ■ for signs associated with malnutrition.

**Calculating Percentage of Weight Loss**

Accurate assessment of the client's height, current body weight (CBW), and usual body weight (UBW) is essential. Calculation and interpretation of the percentage of deviation from UBW and the percentage of weight loss are shown in Box 15-8. The nurse should describe any weight loss or gain, the duration of the change, and whether the weight change was intentional or unintentional.

**Dietary History**

A dietary history includes data about the client's usual eating patterns and habits; food preferences, allergies, and intolerances; frequency, types, and quantities of foods consumed;



A



B



C



D

**Figure 15-4** ■ Example of nutritional deficiencies. *A*, Dull, sparse hair from protein deficiency. *B*, Inflammation of the corners of the mouth from riboflavin deficiency. *C*, Inflammation of the tongue from niacin, B<sub>6</sub>, or riboflavin deficiency. *D*, Spongy bleeding gums from vitamin C deficiency.

(*A* and *B* from Centers for Disease Control and Prevention (CDC), *C* from Custom Medical Stock Photo, Inc., *D* from Pearson Education/PH College)

### BOX 15-8 Calculating and Interpreting the Percentage of Deviation from Usual Body Weight and the Percentage of Weight Loss

#### Calculating Percentage of Usual Body Weight

$$\% \text{ usual body weight} = \frac{\text{Current weight}}{\text{Usual body weight}} \times 100$$

Mild malnutrition 85–90%

Moderate malnutrition 75–84%

Severe malnutrition Less than 74%

#### Calculating Percentage of Weight Loss

$$\% \text{ weight loss} = \frac{\text{Usual weight} - \text{current weight}}{\text{Usual weight}} \times 100$$

Significant Weight Loss

5% over 1 months

7.5% over 3 months

10% over 6 months

Severe Weight Loss

>5% over 1 months

>7.5% over 3 months

>10% over 6 months



and social, economic, ethnic, or religious factors influencing nutrition. Factors may include, but are not limited to, living and eating companions, ability to purchase and prepare food, availability of refrigeration and cooking facilities, income, and effect of religion and ethnicity on food choices.

Four possible methods for collecting dietary data are a 24-hour food recall, a food frequency record, a food diary, and a diet history.

Medical and psychosocial factors are also assessed to evaluate their impact on nutritional requirements, food habits, and choices. Data obtained are analyzed and translated into caloric and nutrient intake. Results are compared with the DRIs that are appropriate for the client's age, gender, and condition.

### Anthropometric Measurements

Anthropometric measurements are noninvasive techniques that aim to quantify body composition. A **skinfold measurement** is performed to determine fat stores. The most common site for

measurement is the triceps skinfold (TSF). The fold of skin measured includes subcutaneous tissue but not the underlying muscle. It is measured in millimeters using special calipers. To measure the TSF, locate the midpoint of the upper arm (halfway between the acromion process and the olecranon process), then grasp the skin on the back of the upper arm along the long axis of the humerus (Figure 15-5 ■). Placing the calipers 1 cm below the nurse's fingers, measure the thickness of the fold to the nearest millimeter.

The **mid-arm circumference (MAC)** is a measure of fat, muscle, and skeleton. To measure the MAC, ask the client to sit or stand with the arm hanging freely and the forearm flexed to horizontal. Measure the circumference at the midpoint of the arm, recording the measurement in centimeters, to the nearest millimeter (e.g., 24.6 cm) (Figure 15-6 ■).

The **mid-arm muscle circumference (MAMC)** is then calculated by using reference tables or by using a formula that incorporates the TSF and the MAC. The MAMC is an estimate of lean body

### CLINICAL MANIFESTATIONS MALNUTRITION

Area of Examination (possible cause)	Signs Associated With Malnutrition
General appearance and vitality	Apathetic, listless, looks tired, easily fatigued
Weight	Overweight or underweight
Skin	Dry, flaky, or scaly; pale or pigmented; presence of petechiae or bruises; lack of subcutaneous fat; edema
Nails	Brittle, pale, ridged, or spoon shaped (iron)
Hair	Dry, dull, sparse, loss of color, brittle (see Figure 15-4 A)
Eyes	Pale or red conjunctiva, dryness, soft cornea, dull cornea, night blindness (vitamin A deficiency)
Lips	Swollen, red cracks at side of mouth, vertical fissures (B vitamins) (see Figure 15-4 B)
Tongue	Swollen, beefy red- or magenta-colored (B vitamins); smooth appearance (B vitamin deficiency); decrease or increase in size (see Figure 15-4 C)
Gums	Spongy, swollen, inflamed; bleed easily (vitamin C deficiency) (see Figure 15-4 D)
Muscles	Underdeveloped, flaccid, wasted, soft
Gastrointestinal system	Anorexia, indigestion, diarrhea, constipation, enlarged liver, protruding abdomen
Nervous system	Decreased reflexes, sensory loss, burning and tingling of hands and feet (B vitamins), mental confusion or irritability



Figure 15-5 ■ Measuring the triceps skinfold



Figure 15-6 ■ Measuring the mid-arm circumference.

(Patrick Watson)



**TABLE 15-4 Standard Values for Anthropometric Measurements for Adults**

MEASUREMENT	MALE	FEMALE
Triceps skinfold (mm)	12	20
Mid-arm circumference (cm)	32	28
Mid-arm muscle circumference (cm <sup>2</sup> )	54	30

Note: From *The Merck Manual of Diagnosis and Therapy*, 18th ed., by M. H. Beers and R. Berkow (Eds.), 2006. Copyright John Wiley & Sons. Reprinted with permission.

mass, or skeletal muscle reserves. If tables are not available, the nurse uses the following formula to calculate the MAMC from the TSF and MAC direct measurements:

$$\text{MAMC cm} = \frac{\text{MAC(cm)} - 3.143 \text{ TSF(mm)}}{10}$$

Standard values for anthropometric measurements for adults are shown in Table 15-4.

Changes in anthropometric measurements often occur slowly and reflect chronic rather than acute changes in nutritional status. They are, therefore, used to monitor the client's progress for months to years rather than days to weeks. Ideally, initial and subsequent measurements need to be taken by the same clinician. In addition, measurements obtained need to be interpreted with caution as it may be affected by hydration and normal changes in body composition related to aging.

### Laboratory Data

Laboratory tests provide objective data to the nutritional assessment, but because many factors can influence these tests, no single test specifically predicts nutritional risk or measures the presence or degree of a nutritional problem. The tests most commonly used are serum proteins, urinary urea nitrogen and creatinine, and total lymphocyte count.

**SERUM PROTEINS.** Tests commonly include hemoglobin, albumin, transferrin, and total iron-binding capacity. A low **hemoglobin** level may be evidence of iron deficiency anemia. Albumin, is one of the most common visceral proteins evaluated as part of the nutritional assessment. A low serum albumin level is a useful indicator of altered liver function, hydration status, and losses from open wounds and burns.

Transferrin is a protein that responds more quickly to protein depletion than albumin. Transferrin levels below normal indicate protein loss, iron deficiency anemia, pregnancy, hepatitis, or liver dysfunction. An increase in total iron binding capacity (TIBC) can indicate iron deficiency; a decrease, anemia.

Prealbumin, also referred to as thyroxine-binding albumin and transthyretin, is the most responsive serum protein to rapid changes in nutritional status. It is now considered the 'gold standard' for assessing for possible protein malnutrition (Kusza-jewski, & Clontz, 2005). It should be measured twice a week: prealbumin levels of 15 to 35 mg/dL are normal, whereas below 15 mg/dL indicates clients at risk, and below 11 mg/dL indicates that aggressive nutritional intervention is needed.

**URINARY TESTS** Urinary urea nitrogen and urinary creatinine are measures of protein catabolism and the state of nitrogen

balance. **Urea** directly reflects the intake and breakdown of dietary protein, the rate of urea production in the liver, and the rate of urea removal by the kidneys. The state of nitrogen balance is determined by comparing the nitrogen intake (grams of protein) to the nitrogen output over a 24-hour period. A positive balance indicates intake exceeds nitrogen output; a negative nitrogen balance occurs when output exceeds nitrogen intake.

Urinary creatinine reflects a person's total muscle mass. The greater the muscle mass, the greater the excretion of creatinine. As skeletal muscle atrophies during malnutrition, creatinine excretion decreases. Standards for creatinine excretion are developed based on gender and height. Urinary creatinine is also influenced by protein intake, exercise, age, renal function, and thyroid function.

**TOTAL LYMPHOCYTE COUNT.** Certain nutrient deficiencies and malnutrition can depress the immune system. The total number of lymphocytes decreases as protein depletion occurs.

### Diagnosing

NANDA International (2007) includes the following diagnostic labels for nutritional problems:

- *Imbalanced nutrition: more than body requirements*
- *Imbalanced nutrition: less than body requirements*
- *Readiness for enhanced nutrition*
- *Risk for imbalanced nutrition: more than body requirements.*

Many other NANDA International nursing diagnoses may apply to certain individuals, because nutritional problems often affect other areas of human functioning. In this case, the nutritional diagnostic label may be used as the etiology of other diagnoses. Examples include:

- *Activity intolerance* related to inadequate intake of iron-rich foods resulting in iron deficiency anemia
- *Constipation* related to inadequate fluid and fiber intake
- *Low self-esteem* related to obesity
- *Risk for infection* related to immunosuppression secondary to insufficient protein intake.

### Nursing Intervention

Nursing interventions for optimal nutrition for hospitalized clients are often provided in collaboration with the physician and the dietitian. The nurse reinforces dietary instructions and creates an atmosphere that encourages eating, provides assistance with eating, monitors the client's appetite and food intake, administers enteral and parenteral feedings, and consults with the primary care provider and dietitian about nutritional problems that arise.

In the community setting, the nurse's role is largely educational. For example, nurses promote optimal nutrition at health fairs, in schools, at prenatal classes, and with well or ill clients and support people in their homes. In the home setting, nurses also initiate nutritional screens, refer clients at risk to appropriate resources, instruct clients about enteral and

parenteral feedings, and offer nutrition counseling as needed. Nutrition counseling involves more than simply providing information. The nurse must help clients integrate diet changes into their lifestyle and provide strategies to motivate them to change their eating habits (see Client Teaching for guidelines of healthy nutrition).

### Assisting with Special Diets

Alterations in the client's diet are often needed to treat a disease process such as diabetes mellitus, to prepare for a special examination or surgery, to increase or decrease weight, to restore nutritional deficits, or to allow an organ to rest and promote healing. Diets are modified in one or more of the following aspects: texture, kilocalories, specific nutrients, seasonings, or consistency.

Hospitalized clients who do not have special needs eat the regular (standard or house) diet, a balanced diet that supplies the metabolic requirements of a sedentary person (about 2,000

Kcal) (see Client Teaching on Guidelines for Healthy Nutrition, below). Most agencies offer clients a daily menu from which to select their meals for the next day; others provide standard meals to each client on the general diet. Certain foods (e.g., cabbage, which tends to produce flatus, and highly seasoned and fried foods, which are difficult for some people to digest) are usually omitted from the regular diet.

A variation of the regular diet is the light diet, designed for postoperative and other clients who are not ready for the regular diet. Foods in the light diet are plainly cooked and fat is usually minimized, as are bran and foods containing a great deal of fiber.

Diets that are modified in consistency are often given to clients before and after surgery or to promote healing in clients with gastrointestinal distress. These diets include clear liquid, full liquid, soft, and diet as tolerated. In some health institutions, gastrointestinal surgery clients are not permitted red-colored liquids or candy since, if vomited, the color may be confused with blood.



## CLIENT TEACHING Guidelines for Healthy Nutrition

- Instruct clients about the content of a healthy diet based on the available nutrition guidelines in their country.
- Encourage clients, particularly older clients, to reduce dietary fat.
- Instruct strict vegetarians about proper protein complementation and additional vitamin and mineral supplementation.
- Discuss foods high in specific nutrients required such as protein, iron, calcium, vitamin C, and fiber.
- Discuss importance of properly fitted dentures and dental care.
- Discuss safe food preparation and preservation techniques as appropriate.

### DIETARY ALTERATIONS

- Explain the purpose of the diet.
- Discuss allowed and excluded foods.
- Explain the importance of reading food labels when selecting packaged foods.
- Include family or significant others.
- Reinforce information provided by the dietitian or nutritionist as appropriate.
- Discuss herbs and spices as alternatives to salt and substitutes for sugar.

### FOR OVERWEIGHT CLIENTS

- Discuss physiologic, psychologic, and lifestyle factors that predispose to weight gain.
- Provide information about desired weight range and recommended calorie intake.
- Discuss principles of a well-balanced diet and high- and low-calorie foods.
- Encourage intake of low-calorie, caffeine-free beverages and plenty of water.
- Discuss ways to adapt eating practices by using smaller plates, taking smaller servings, chewing each bite a specified number of times, and putting one's fork down between bites.
- Discuss ways to control the desire to eat by taking a walk, drinking a glass of water, or doing slow deep-breathing exercises.

- Discuss the importance of exercise and help the client plan an exercise program.
- Discuss stress reduction techniques.
- Provide information about available community resources (e.g., weight-loss groups, dietary counseling, exercise programs, self-help groups).

### FOR UNDERWEIGHT CLIENTS

- Discuss factors contributing to inadequate nutrition and weight loss.
- Discuss recommended calorie intake and desired weight range.
- Provide information about the content of a balanced diet.
- Provide information about ways to increase calorie intake (e.g., high-protein or high-calorie foods and supplements).
- Discuss ways to manage, minimize, or alter the factors contributing to malnourishment.
- If appropriate, discuss ways to purchase low-cost nutritious foods.
- Provide information about community agencies that can assist in providing food.

### PREVENTING FOODBORNE ILLNESS

- Reinforce hygienic handling of food and dishes.
  - Wash hands before preparing foods.
  - Wash hands and all dishes and utensils with hot water and soap after contact with raw meats.
  - Defrost frozen foods in the refrigerator.
  - Cook beef, poultry, and eggs thoroughly. Use a cooking thermometer.
  - Refrigerate leftovers promptly (at 5°C or less) and keep no more than 3 to 5 days.
  - Wash or peel raw fruits and vegetables.
  - Do not use foods from containers that have been damaged or have opened seals.
  - Follow the rules 'keep hot foods hot and cold foods cold' and 'when in doubt, throw it out.'
- Instruct clients to seek medical attention for prolonged vomiting, fever, abdominal pain, or severe diarrhea following a meal.

**CLEAR LIQUID DIET.** This diet is limited to water, tea, coffee, or other carbonated beverages, strained and clear juices, and plain gelatin. Note that ‘clear’ does not necessarily mean ‘colorless.’ This diet provides the client with fluid and carbohydrate (in the form of sugar) but does not supply adequate protein, fat, vitamins, minerals, or calories. It is a short-term diet (24–36 hours) provided for clients after certain surgeries or in the acute stages of infection, particularly of the gastrointestinal tract. The major objectives of this diet are to relieve thirst, prevent dehydration, and minimize stimulation of the gastrointestinal tract. Examples of foods allowed in clear liquid diets are shown in Box 15-9.

**FULL LIQUID DIET.** This diet contains only liquids or foods that turn to liquid at body temperature, such as ice cream (see Box 15-9). Full liquid diets are often eaten by clients who have gastrointestinal disturbances or are otherwise unable to tolerate solid or semisolid foods. This diet is not recommended for long-term use because it is low in iron, protein, and calories. In addition, its cholesterol content is high because of the amount of milk offered. Clients who must receive only liquids for long periods are usually given a nutritionally balanced oral supplement, such as Ensure. The full liquid diet is monotonous and difficult for clients to accept. Planning six or more feedings per day may encourage a more adequate intake.

**SOFT DIET.** The soft diet is easily chewed and digested. It is often ordered for clients who have difficulty chewing and swallowing. It is a low-residue (low-fiber) diet containing very few uncooked foods; however, restrictions vary among agencies and according to individual tolerance (see Box 15-9). The **pureed diet** is a modification of the soft diet. Liquid may be added to the food, which is then blended to a semisolid consistency.

**DIET AS TOLERATED.** Diet as tolerated is ordered when the client’s appetite, ability to eat, and tolerance for certain foods may change. For example, on the first postoperative day a client may be given a clear liquid diet. If no nausea occurs, normal intestinal motility has returned as evidenced by active

bowel sounds and client reports passing gas, and the client feels like eating, the diet may be advanced to a full liquid, light, or regular diet.

**MODIFICATION FOR DISEASE.** Many special diets may be prescribed to meet requirements for disease process or altered metabolism. For example, a client with diabetes mellitus may need a diet recommended by dietician in that health institution labeled as Diabetic diet. An obese client may need a calorie-restricted diet, a cardiac client may need sodium and cholesterol restrictions, and a client with allergies will need a hypoallergenic diet.

Some clients must follow certain diets (e.g., low-salt diet) for a lifetime. If the diet is long term, the client must understand the diet and also develop a healthy, positive attitude toward it. Assisting clients and support persons with special diets is a function shared by the dietitian or nutritionist and the nurse. The dietitian informs the client and support persons about the specific foods allowed and not allowed and assists the client with meal planning. The nurse reinforces this instruction, assists the client to make changes, and evaluates the client’s responses.

**DYSPHAGIA.** Some clients may have an inability to swallow but otherwise have no difficulty with choosing a healthy diet. These clients may have inadequate solid or fluid intake, be unable to swallow their medications, or aspirate food or fluids into the lungs—causing pneumonia. Clients at risk for dysphagia include elders, those who have experienced a stroke, cancer patients who have had radiation therapy to the head and neck, and others with cranial nerve dysfunction. Nurses may be the first persons to detect dysphagia and are in an excellent position to recommend further evaluation; implement specialized feeding techniques and diets; and work with clients, family members, and other health care professionals to develop a plan to assist the client with difficulties. If the client condition suggests dysphagia, the nurse should review the history in detail; interview the client or family; assess the mouth, throat, and chest; and observe the client swallowing. Presence of the gag reflex,

### BOX 15-9 Examples of Foods for Clear Liquid, Full Liquid, and Soft Diets

<i>Clear Liquid</i>	<i>Full Liquid</i>	<i>Soft</i>
Coffee, regular and decaffeinated	All foods on clear liquid diet plus: Milk and milk drinks	All foods on full and clear liquid diets, plus: Meat: All lean, tender meat, fish, or poultry (chopped, shredded); spaghetti sauce with ground meat over pasta
Tea	Puddings, custards	Meat alternatives: Scrambled eggs, omelet, poached eggs; cottage cheese and other mild cheese
Carbonated beverages	Ice cream, sherbet	Vegetables: Mashed potatoes, sweet potatoes, or squash; vegetables in cream or cheese sauce; other cooked vegetables as tolerated (e.g., spinach, cauliflower, asparagus tips), chopped and mashed as needed; avocado
Bouillon, fat-free broth	Vegetable juices	Fruits: Cooked or canned fruits; bananas, grapefruit and orange sections without membranes, apple sauce
Clear fruit juices (apple, cranberry, grape)	Refined or strained cereals (e.g., cream of rice)	Breads and cereals: Enriched rice, barley, pasta; all breads; cooked cereals (e.g., oatmeal)
Other fruit juices, strained	Cream, butter, margarine	Desserts: Soft cake, bread pudding
Ice creams	Eggs (in custard and pudding)	
Gelatin	Smooth peanut butter	
Sugar, honey	Yogurt	
Hard candy		

**BOX 15-10 Improving Appetite**

- Provide familiar food that the person likes. Often the relatives of clients are pleased to bring food from home but may need some guidance about special diet requirements.
- Select small portions so as not to discourage the anorexic client.
- Avoid unpleasant or uncomfortable treatments immediately before or after a meal.
- Provide a tidy, clean environment that is free of unpleasant sights and odors. A soiled dressing, a used bedpan, an uncovered irrigation set, or even used dishes can negatively affect the appetite.
- Encourage or provide oral hygiene before mealtime. This improves the client's ability to taste.
- Relieve illness symptoms that depress appetite before mealtime; for example, give an analgesic for pain or an antipyretic for a fever or allow rest for fatigue.
- Reduce psychologic stress. A lack of understanding of therapy, the anticipation of an operation, and fear of the unknown can cause anorexia. Often, the nurse can help by discussing feelings with the client, giving information and assistance, and allaying fears.

often thought to indicate that the client can swallow safely, has not been shown to be a reliable indicator (Zagaria, 2005). Confirmation of the tendency for food to divert to the trachea is best done through x-ray.

**Stimulating the Appetite**

Physical illness, unfamiliar or unpalatable food, environmental and psychologic factors, and physical discomfort or pain may depress the appetite of many clients. However, it leads to weight loss, decreased strength and other nutritional problems.

A decreased food intake is often accompanied by a decrease in fluid intake, which may cause fluid and electrolyte problems. Stimulating a person's appetite requires the nurse to determine the reason for the lack of appetite and then deal with the problem. Some general interventions for improving the client's appetite are summarized in Box 15-10.

**Assisting Clients with Meals**

Because clients in health care institutions are frequently confined to their beds, meals are brought to the client. The client receives a tray that has been assembled in a central kitchen. Nursing personnel may be responsible for giving out and collecting the trays; however, in most settings this is done by dietary personnel. Long-term care facilities and some hospitals serve meals to mobile clients in a special dining area. Guidelines for providing meals to clients are summarized in Box 15-11.

Plates with rims and plastic or metal plate guards enable the client to pick up the food by first pushing it against this raised edge. A suction cup or damp sponge or cloth may be placed under the dish to keep it from moving while the client is eating. No-spill mugs and two-handled drinking cups are especially useful for persons with impaired hand coordination. Stretch terry cloth and knitted or crocheted glass covers enable the client to keep a secure grasp on a glass. Lidded tip-proof glasses are also available. Figures 15-8 ■ and 15-9 ■ show some of these aids.

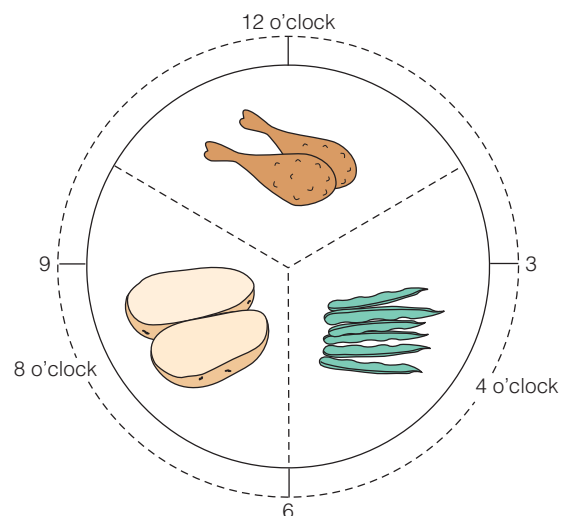
**Enteral Nutrition**

An alternative feeding method to ensure adequate nutrition includes **enteral** (through the gastrointestinal system) methods.

**BOX 15-11 Providing Client Meals**

- Offer the client assistance with hand washing and oral hygiene before a meal.
- If it is permitted, assist the client to a comfortable position in bed or in a chair, whichever is appropriate.
- Clear the overbed table so that there is space for the tray. If the client must remain in a lying position in bed, arrange the overbed table close to the bedside so that the client can see and reach the food.
- Check each tray for the client's name, the type of diet, and completeness. Do not leave an incorrect diet for a client to eat.
- Assist the client as required (e.g., remove the food covers, butter the bread, pour the tea, and cut the meat).
- For a blind person, identify the placement of the food as you would describe the time on a clock (Figure 15-7 ■). For instance, the nurse might say, "The potatoes are at 8 o'clock, the chicken at 12 o'clock, and the green beans at 4 o'clock."
- After the client has completed the meal, observe how much and what the client has eaten and the amount of fluid taken. Use a standard tool to estimate the amount eaten in relation to a typical meal. For example, if served two pieces of bread and a cup of tea for breakfast, although the client may have eaten all of these, they certainly do not represent 100% of a nutritious breakfast.
- If the client is on a special diet or is having problems eating, record the amount of food eaten and any pain, fatigue, or nausea experienced.

- If the client is not eating, document this so that changes can be made, such as rescheduling the meals, providing smaller, more frequent meals, or obtaining special self-feeding aids.



**Figure 15-7 ■** For a client who is blind, the nurse can use the clock system to describe food on a plate.





Figure 15-8 ■ Left to right: glass holder, cup with hole for nose, two-handed cup holder.



Figure 15-9 ■ Dinner plate with guard attached and lipped plate facilitate scooping; wide-handled spoon and knife facilitate grip.

Enteral nutrition (EN), also referred to as total enteral nutrition (TEN), is provided when the client is unable to ingest foods or the upper gastrointestinal tract is impaired and the transport of food to the small intestine is interrupted. Enteral feedings are administered through nasogastric and small-bore feeding tubes, or through gastrostomy or jejunostomy tubes.

**ENTERAL ACCESS DEVICES.** Enteral access is achieved by means of nasogastric or nasointestinal (nasoenteric) tubes, or gastrostomy or jejunostomy tubes.

A **nasogastric tube** is inserted through one of the nostrils (nasal openings), down the nasopharynx, and into the alimentary tract (gastrointestinal tract). Traditional firm, large-bore nasogastric tubes (i.e., those larger than 12 Fr in diameter; tubes are sized by the diameter of the lumen using the French (Fr) scale: the larger the number, the larger the lumen) are placed in the stomach. Examples are the Levin tube, a flexible rubber or plastic, single-lumen tube with holes near the tip, and the Salem sump tube, with a double lumen. The larger lumen of the Salem sump tube allows delivery of liquids to the stomach or removal of gastric contents. When the Salem tube is used for suction of gastric contents, the smaller vent lumen (the proximal port is often referred to as the *blue pigtail*) allows for an inflow of atmospheric air, which prevents a vacuum if the gastric tube adheres to the wall of the stomach. Irritation of the gastric mucosa is thereby avoided. Softer, more flexible and less irritating small-bore tubes (smaller than 12 Fr in diameter) are frequently used.

Nasogastric tubes are used for feeding clients who have adequate gastric emptying, and who require short-term feedings. They are not advised for feeding clients without intact gag and cough reflexes since the risk of accidental placement of the tube into the lungs is much higher in those clients. These reflexes are present if a tongue depressor advanced to the back of the throat elicits retching or coughing responses. Skill 15-1 provides guidelines for inserting a nasogastric tube. Skill 15-2 outlines the steps for removing a nasogastric tube.

## INSERTING A NASOGASTRIC TUBE

### EQUIPMENT

- Large- or small-bore tube (nonlatex preferred)
- Nonallergenic adhesive tape, 2.5 cm wide
- Clean gloves
- Water-soluble lubricant
- Facial tissues
- Glass of water and drinking straw
- 20- to 50-mL syringe with an adapter
- Basin
- pH test strip or meter
- Bilirubin dipstick
- Stethoscope
- Disposable pad or towel
- Clamp or plug (optional)
- Anti-reflux valve for air vent if Salem sump tube is used
- Suction apparatus
- Safety pin and elastic band
- CO<sub>2</sub> detector (optional)
- Flash light to examine nares

### Performance

1. Assist the client to a high Fowler's position if his or her health condition permits, and support the head on a pillow.

**Rationale** *It is often easier to swallow in this position and gravity helps the passage of the tube.*

Place a towel or disposable pad across the chest.



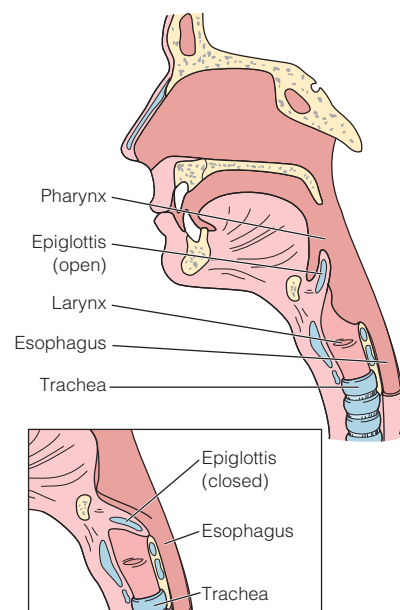
INSERTING A NASOGASTRIC TUBE *continued*

2. Prior to performing the insertion, introduce self and verify the client's identity. Explain to the client what you are going to do, why it is necessary, and how he or she can cooperate. The passage of a gastric tube is unpleasant because the gag reflex is activated during insertion. Establish a method for the client to indicate distress and a desire for you to pause the insertion. Raising a finger or hand is often used for this.
3. Perform hand hygiene and observe other appropriate infection control procedures (e.g., wearing clean gloves).
4. Provide for client privacy.
5. Assess the client's nares (nostrils).
  - Ask the client to hyperextend the head, and, using a flashlight, observe the intactness of the tissues of the nostrils, including any irritations or abrasions.
  - Examine the nares for any obstructions or deformities by asking the client to breathe through one nostril while occluding the other.
  - Select the nostril that has the greater airflow.
6. Prepare the tube.
  - If a small-bore tube is being used, ensure stylet or guidewire is secured in position. **Rationale** An improperly positioned stylet or guidewire can traumatize the nasopharynx, esophagus, and stomach.
7. Determine how far to insert the tube.
  - Use the tube to mark off the distance from the tip of the client's nose to the tip of the earlobe and then from the tip of the earlobe to the tip of the xiphoid. **1 Rationale** This length approximates the distance from the nares to the stomach. This distance varies among individuals.
  - Mark this length with adhesive tape if the tube does not have markings.
8. Insert the tube.
  - Put on gloves.
  - Lubricate the tip of the tube well with water-soluble lubricant or water to ease insertion. **Rationale** A water-soluble lubricant dissolves if the tube accidentally enters the lungs. An oil-based lubricant, such as petroleum jelly, will not dissolve and could cause respiratory complications if it enters the lungs.



**1** Measuring the appropriate length to insert a nasogastric tube.

- Insert the tube, with its natural curve toward the client, into the selected nostril. Ask the client to hyperextend the neck, and gently advance the tube toward the nasopharynx. **Rationale** Hyperextension of the neck reduces the curvature of the nasopharyngeal junction.
- Direct the tube along the floor of the nostril and toward the ear on that side. **Rationale** Directing the tube along the floor avoids the projections (turbinates) along the lateral wall.
- Slight pressure and a twisting motion are sometimes required to pass the tube into the nasopharynx, and some client's eyes may water at this point (tears). **Rationale** Tears are a natural body response. Provide the client with tissues as needed.
- If the tube meets resistance, withdraw it, relubricate it, and insert it in the other nostril. **Rationale** The tube should never be forced against resistance because of the danger of injury.
- Once the tube reaches the oropharynx (throat), the client will feel the tube in the throat and may gag and retch. Ask the client to tilt the head forward, and encourage the client to drink and swallow. **Rationale** Tilting the head forward facilitates passage of the tube into the posterior pharynx and esophagus rather than into the larynx; swallowing moves the epiglottis over the opening to the larynx. **2**
- If the client gags, stop passing the tube momentarily. Have the client rest, take a few breaths, and take sips of water to calm the gag reflex.
- In cooperation with the client, pass the tube 5 to 10 cm with each swallow, until the indicated length is inserted.
- If the client continues to gag and the tube does not advance with each swallow, withdraw it slightly, and inspect the throat by looking through the mouth. **Rationale** The tube may be coiled in the throat. If so, withdraw it until it is straight, and try again to insert it.



**2** Swallowing closes the epiglottis

INSERTING A NASOGASTRIC TUBE *continued*

- If a CO<sub>2</sub> detector is used, after the tube has been advanced approximately 30 cm, draw air through the detector. Any change in color of the detector indicates placement of the tube in the respiratory tract. Immediately withdraw the tube and reinsert.
9. Ascertain correct placement of the tube.
    - Aspirate stomach contents, and check the pH, which should be acidic. **Rationale** *Testing pH is a reliable way to determine location of a feeding tube. Gastric contents are commonly pH 1 to 5. 6 or greater would indicate the contents are from lower in the intestinal tract or in the respiratory tract. Some researchers suggest that a pH of greater than 5 should be followed by further confirmation of tube location (Huffman et al., 2004).*
    - Aspirate can also be tested for bilirubin. Bilirubin levels in the lungs should be almost zero, while levels in the stomach will be approximately 1.5 mg/dL and in the intestine over 10 mg/dL.
    - Almost all nasogastric tubes are radiopaque, and position can be confirmed by x-ray. Check agency policy. If a small-bore tube is used, leave the stylet or guidewire in place until correct position is verified by x-ray. If the stylet has been removed, never reinsert it while the tube is in place. **Rationale** *The stylet is sharp and could pierce the tube and injure the client or cut off the tube end.*
    - Place a stethoscope over the client's epigastrium and inject 10 to 30 mL of air into the tube while listening for a whooshing sound. Although still one of the methods used, do not use this method as the *primary* method for determining placement of the feeding tube because it does not guarantee tube position.
    - If the signs indicate placement in the lungs, remove the tube and begin again.
    - If the signs do not indicate placement in the lungs or stomach, advance the tube 5 cm, and repeat the tests.
  10. Secure the tube by taping it to the bridge of the client's nose.
    - If the client has oily skin, wipe the nose first with alcohol to defat the skin.
    - Cut 7.5 cm of tape, and split it lengthwise at one end, leaving a 2.5-cm tab at the end.
    - Place the tape over the bridge of the client's nose, and bring the split ends either under and around the tubing, or under the tubing and back up over the nose. **3 Rationale** *Taping in this manner prevents the tube from pressing against and irritating the edge of the nostril.*
  11. Once correct position has been determined, attach the tube to a suction source or feeding apparatus as ordered, or clamp the end of the tubing.
  12. Secure the tube to the client's gown.
    - Loop an elastic band around the end of the tubing, and attach the elastic band to the gown with a safety pin.
 or
    - Attach a piece of adhesive tape to the tube, and pin the tape to the gown. **Rationale** *The tube is attached to prevent it from dangling and pulling.*
  - If a Salem sump tube is used, attach the anti-reflux valve to the vent port (if used) and position the port above the client's waist so gastric contents do not flow into the vent lumen.
  13. Document relevant information: the insertion of the tube, the means by which correct placement was determined, and client responses (e.g., discomfort or abdominal distention).
  14. Establish a plan for providing daily nasogastric tube care.
    - Inspect the nostril for discharge and irritation.
    - Clean the nostril and tube with moistened, cotton-tipped applicators.
    - Apply water-soluble lubricant to the nostril if it appears dry or encrusted.
    - Change the adhesive tape as required.
    - Give frequent mouth care. Due to the presence of the tube, the client may breathe through the mouth.
  15. If suction is applied, ensure that the patency of both the nasogastric and suction tubes is maintained.
    - Irrigations of the tube may be required at regular intervals. In some agencies, irrigations must be ordered by the primary care provider.
    - If a Salem sump tube is used, follow agency policies for irrigating the vent lumen with air to maintain patency of the suctioning lumen. Often, a sucking sound can be heard from the vent port if it is patent.
    - Keep accurate records of the client's fluid intake and output, and record the amount and characteristics of the drainage.
  16. Document the type of tube inserted, date and time of tube insertion, type of suction used, color and amount of gastric contents, and the client's tolerance of the procedure. Conduct appropriate follow-up, such as degree of client comfort, client tolerance of the nasogastric tube, correct placement of nasogastric tube in stomach, client understanding of restrictions, color and amount of gastric contents if attached to suction, or stomach contents aspirated.



**3** Taping a nasogastric tube to the bridge of the nose.

## REMOVING A NASOGASTRIC TUBE

### EQUIPMENT

- Disposable pad or towel
- Tissues
- Clean gloves
- 50-mL syringe (optional)
- Plastic trash bag

### Performance

1. Prepare
  - Confirm the physician's order to remove the tube.
  - Assist the client to a sitting position if health permits.
  - Place the disposable pad or towel across the client's chest to collect any spillage of secretions from the tube.
  - Provide tissues to the client to wipe the nose and mouth after tube removal.
2. Prior to performing the removal, introduce self and verify the client's identity. Explain to the client what you are going to do, why it is necessary, and how he or she can cooperate.
3. Perform hand hygiene and observe other appropriate infection control procedures (e.g., clean gloves).
4. Provide for client privacy.
5. Detach the tube.
  - Disconnect the nasogastric tube from the suction apparatus, if present.
  - Unpin the tube from the client's gown.
  - Remove the adhesive tape securing the tube to the nose.
6. Remove the nasogastric tube.
  - Put on clean gloves.
  - (Optional) Instill 50 mL of air into the tube. **Rationale** *This clears the tube of any contents such as feeding or gastric drainage.*
  - Ask the client to take a deep breath and to hold it. **Rationale** *This closes the glottis, thereby preventing accidental aspiration of any gastric contents.*
7. Pinch the tube with the gloved hand. **Rationale** *Pinching the tube prevents any contents inside the tube from draining into the client's throat.*
8. Smoothly, withdraw the tube.
9. Place the tube in the plastic bag. **Rationale** *Placing the tube immediately into the bag prevents the transference of microorganisms from the tube to other articles or people.*
10. Observe the intactness of the tube.
7. Ensure client comfort.
  - Provide mouth care if desired.
  - Assist the client as required to blow the nose. **Rationale** *Excessive secretions may have accumulated in the nasal passages.*
8. Dispose of the equipment appropriately.
  - Place the pad, bag with tube, and gloves in the receptacle designated by the agency. **Rationale** *Correct disposal prevents the transmission of microorganisms.*
9. Document all relevant information.
  - Record the removal of the tube, the amount and appearance of any drainage if connected to suction, and any relevant assessments of the client.
10. Perform a follow-up examination, such as presence of bowel sounds, absence of nausea or vomiting when tube is removed, and intactness of tissues of the nares.
  - Relate findings to previous assessment data if available.
  - Report significant deviations from normal to the primary care provider

Although the focus of this chapter is nutrition, nasogastric tubes may be inserted for reasons other than to provide a route for feeding the client, including these:

- To prevent nausea, vomiting, and gastric distention following surgery. In this case, the tube is attached to a suction source.
- To remove stomach contents for laboratory analysis.
- To lavage (wash) the stomach in cases of poisoning or overdose of medications.

A **nasoenteric** (or **nasointestinal**) **tube**, a longer tube than the nasogastric tube (at least 1 m for an adult) is inserted through one nostril down into the upper small intestine. Some health institutions may require specially trained nurses or primary care providers for this procedure. Nasoenteric tubes are used for clients who are at risk for aspiration. Clients at risk for aspiration are those who manifest the following:

- Decreased level of consciousness
- Poor cough or gag reflexes
- Endotracheal intubation
- Recent extubation
- Inability to cooperate with the procedure
- Restlessness or agitation.

**Gastrostomy** and **jejunostomy** devices are used for long-term nutritional support, generally more than 6 to 8 weeks. Tubes are placed surgically or by laparoscopy through the abdominal wall into the stomach (gastrostomy) or into the jejunum (jejunostomy). A **percutaneous endoscopic gastrostomy (PEG)** or **percutaneous endoscopic jejunostomy (PEJ)** is created by using an endoscope to visualize the inside of the stomach, making a puncture through the skin and subcutaneous tissues of the abdomen into the stomach, and inserting the PEG or PEJ catheter through the puncture.

The surgical opening is sutured tightly around the tube or catheter to prevent leakage. Care of this opening before it heals requires surgical asepsis. The catheter has an external bumper and an internal inflatable retention balloon to maintain placement. When the tract is established (about 1 month), the tube or catheter can be removed and reinserted for each feeding. Alternatively, a skin-level tube can be used that remains in place. A feeding set is attached when needed.

**ENTERAL FEEDINGS.** The type and frequency of feedings and amounts to be administered are ordered by physician and followed appropriately by nurse. Liquid feeding mixtures are available commercially or may be prepared by the dietary

department in accordance with the primary care provider's orders. A standard formula provides 1 Kcal per milliliter of solution with protein, fat, carbohydrate, minerals, and vitamins in specified proportions.

Enteral feedings can be given intermittently or continuously. Intermittent feedings are the administration of 300 to 500 mL of enteral formula several times per day. The stomach is the preferred site for these feedings, which are usually administered over at least 30 minutes. Bolus intermittent feedings are those that use a syringe to deliver the formula into the stomach. Because the formula is delivered rapidly by this method, it is not usually recommended but may be used in long-term situations if the client tolerates it. These feedings must be given only into the stomach; the client must be monitored closely for distention and aspiration.

Continuous feedings are generally administered over a 24-hour period using an infusion pump (often referred to as a kangaroo pump) that guarantees a constant flow rate (Figure 15-10 ■). Continuous feedings are essential when feedings are administered in the small bowel. They are also used when smaller bore gastric tubes are in place or when gravity flow is insufficient to instill the feeding.

Cyclic feedings are continuous feedings that are administered in less than 24 hours (e.g., 12 to 16 hours). These feedings, often administered at night, allow the client to attempt to eat regular meals through the day. Because nocturnal feedings may use higher nutrient densities and higher infusion rates than the standard continuous feeding, particular attention needs to be given to monitoring fluid status and circulating volume.

Enteral feedings are administered to clients through open or closed systems. Open systems use an open-top container or a syringe for administration. Enteral feedings for use with open systems are provided in flip-top cans or powdered formulas that are reconstituted with sterile water. Sterile water, rather than tap water, reduces the risk of microbial contamination. Open systems should have no more than 8 to 12 hours of formula poured at one time. At the completion of this time, remaining formula should be discarded and the container rinsed before new formula is poured. The bag and tubing should be replaced every 24 hours (Rolfes, Pinna & Whitney, 2006). Closed systems consist of a prefilled container that is



Figure 15-10 ■ An enteric feeding pump.

spiked with enteral tubing and attached to the enteral access device. Prefilled containers can hang safely for 48 hours if sterile technique is used.

Skill 15-3 provides the essential steps involved in administering a tube feeding, and Skill 15-4 indicates the steps involved in administering a gastrostomy or jejunostomy tube feeding.

## ADMINISTERING A TUBE FEEDING

### EQUIPMENT

- Correct type and amount of feeding solution
- 60-mL catheter-tip syringe
- Emesis basin
- Clean gloves
- pH test strip or meter

- Large syringe or calibrated plastic feeding bag with label and tubing that can be attached to the feeding tube or prefilled bottle with a drip chamber, tubing, and a flow-regulator clamp
- Measuring container from which to pour the feeding (if using open system)
- Water (60 mL unless otherwise specified) at room temperature
- Feeding pump as required



ADMINISTERING A TUBE FEEDING *continued***CLINICAL ALERT**

Do not add colored food dye to tube feedings. Previously, blue dye was often added to assist in recognition of aspiration. However, the U.S. FDA reports cases of many adverse reactions to the dye, including toxicity and death. ■

**Performance**

1. Help the client to assume high Fowler's position as rationalized in Skill 15-1. **Rationale** *These positions enhance the gravitational flow of the solution and prevent aspiration of fluid into the lungs.*
2. Prior to performing the feeding, introduce self and verify the client's identity. Explain to the client what you are going to do, why it is necessary, and how he or she can cooperate. Inform the client that the feeding should not cause any discomfort but may cause a feeling of fullness.
3. Perform hand hygiene and observe appropriate infection control procedures (e.g., clean gloves).
4. Provide privacy for this procedure if the client desires it. Tube feedings are embarrassing to some people.
5. Assess tube placement as indicated in Skill 15-1.
6. Assess residual feeding contents. **Rationale** *This is done to evaluate absorption of the last feeding; that is, whether undigested formula from a previous feeding remains. If the tube is in the small intestine, residual contents cannot be aspirated.*
  - If the tube is placed in the stomach, aspirate all contents and measure the amount before administering the feeding.
  - If 100 mL (or more than half the last feeding) is withdrawn, check with the nurse in charge or refer to institutional policy before proceeding as the amount may be reinstilled. **Rationale** *At some agencies, a feeding is delayed when the specified amount or more of formula remains in the stomach.*

or

  - Reinstill the gastric contents into the stomach if this is the agency policy or primary care provider's order. **Rationale** *Removal of the contents could disturb the client's electrolyte balance.*
  - If the client is on a continuous feeding, check the gastric residual every 4 to 6 hours or according to institutional protocol.
7. Administer the feeding.
  - Before administering feeding:
  - Check the expiration date of the feeding.
  - Warm the feeding to room temperature. **Rationale** *An excessively cold feeding may cause abdominal cramps.*
  - When an open system is used, clean the top of the feeding container with clean water before opening it. **Rationale** *This minimizes the risk of contaminants entering the feeding syringe or feeding bag.*

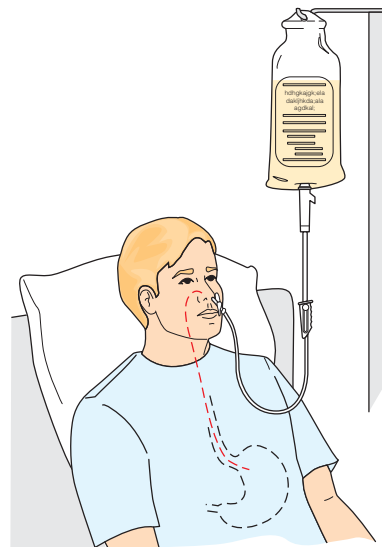
**Feeding Bag (Open System)**

- Hang the labeled bag from an infusion pole about 30 cm above the tube's point of insertion into the client.

- Clamp the tubing and add the formula to the bag.
- Open the clamp, run the formula through the tubing, and reclamp the tube. **Rationale** *The formula will displace the air in the tubing, thus preventing the instillation of excess air into the client's stomach or intestine.*
- Attach the bag to the feeding tube ① and regulate the drip by adjusting the clamp to the drop factor on the bag (e.g., 20 drops/mL) if not placed on a pump.

**Syringe (Open System)**

- Remove the plunger from the syringe and connect the syringe to a pinched or clamped nasogastric tube. **Rationale** *Pinching or clamping the tube prevents excess air from entering the stomach and causing distention.*
- Add the feeding to the syringe barrel. ②
- Permit the feeding to flow in slowly at the prescribed rate. Raise or lower the syringe to adjust the flow as needed. Pinch or clamp the tubing to stop the flow for a minute



① Using a calibrated plastic bag to administer a tube feeding.



② Using the barrel of a syringe to administer a tube feeding.



ADMINISTERING A TUBE FEEDING *continued*

if the client experiences discomfort. **Rationale** *Quickly administered feedings can cause flatus, cramps, and/or vomiting.*

**Prefilled Bottle With Drip Chamber (Closed System)**

- Remove the screw-on cap from the container and attach the administration set with the drip chamber and tubing. ③
  - Close the clamp on the tubing.
  - Hang the container on an intravenous pole about 30 cm above the tube's insertion point into the client. **Rationale** *At this height, the formula should run at a safe rate into the stomach or intestine.*
  - Squeeze the drip chamber to fill it to one-third to one-half of its capacity.
  - Open the tubing clamp, run the formula through the tubing, and reclamp the tube. **Rationale** *The formula will displace the air in the tubing, thus preventing the instillation of excess air.*
  - Attach the feeding set tubing to the feeding tube and regulate the drip rate to deliver the feeding over the desired length of time or attach to a feeding pump.
8. If another bottle is not to be immediately hung, flush the feeding tube before all of the formula has run through the tubing.
    - Instill 50 to 100 mL of water through the feeding tube or medication port. **Rationale** *Water flushes the lumen of the tube, preventing future blockage by sticky formula.*
    - Be sure to add the water before the feeding solution has drained from the neck of a syringe or from the tubing of an administration set. **Rationale** *Adding the water before the syringe or tubing is empty prevents the instillation of air into the stomach or intestine and thus prevents unnecessary distention.*
  9. Clamp the feeding tube. **Rationale** *Clamping prevents leakage and air from entering the tube if done before water is instilled.*
    - Clamp the feeding tube before all of the water is instilled.
  10. Ensure client comfort and safety.
    - Secure the tubing to the client's gown. **Rationale** *This minimizes pulling of the tube, thus preventing discomfort and dislodgment.*
    - Ask the client to remain sitting upright in Fowler's position or in a slightly elevated right lateral position for at least 30 minutes. **Rationale** *These positions facilitate digestion and movement of the feeding from the stomach along the alimentary tract, and prevent the potential aspiration of the feeding into the lungs.*
    - Check the institutional policy on the frequency of changing the nasogastric tube and the use of smaller lumen tubes if a large-bore tube is in place. **Rationale** *These measures prevent irritation and erosion of the pharyngeal and esophageal mucous membranes.*
  11. Dispose of equipment appropriately.
    - If the equipment is to be reused, wash it thoroughly with water so that it is ready for reuse.
    - Change the equipment every 24 hours or according to policy.



③ Feeding set tubing with drip chamber.

(Ross Products Division, Abbot Laboratories. Used with permission)

12. Document all relevant information.
    - Document the feeding, including amount and kind of solution taken, duration of the feeding, and assessments of the client.
    - Record the volume of the feeding and water administered on the client's intake and output record.
  13. Monitor the client for possible problems.
    - Carefully assess clients receiving tube feedings for problems.
    - To prevent dehydration, give the client supplemental water in addition to the prescribed tube feeding as ordered.
- Variation: Continuous-Drip Feeding**
- Clamp the tubing at least every 4 to 6 hours, or as indicated by protocol or the manufacturer, and aspirate and measure the gastric contents. Then flush the tubing with 30 to 50 mL of water. **Rationale** *This determines adequate absorption and verifies correct placement of the tube. If placement of a small-bore tube is questionable, a repeat x-ray should be done.*
  - Determine protocol regarding withholding a feeding. Many agencies withhold the feeding if more than 75 to 100 mL of feeding is aspirated.
  - To prevent spoilage or bacterial contamination, do not allow the feeding solution to hang longer than 4 to 8 hours. Check policy or manufacturer's recommendations regarding time limits.
  - Follow policy regarding how frequently to change the feeding bag and tubing.
  - Changing the feeding bag and tubing every 24 hours reduces the risk of contamination.
14. Perform a follow-up examination.
    - Relate findings to previous assessment data if available. Tolerance of feeding (e.g., nausea, cramping).
    - Report significant deviations from normal to the primary care provider.

**EQUIPMENT**

- Correct amount of feeding solution
- Graduated container and tubing with clamp to hold the feeding
- 60-mL catheter-tip syringe

**For a Tube that Remains in Place**

- Mild soap and water
- Clean gloves
- Petrolatum or other skin barrier creams

- Precut 10 cm × 10 cm gauze squares
- Uncut 10 cm × 10 cm gauze squares

**For Tube Insertion**

- Clean gloves
- Moisture-proof bag
- Water-soluble lubricant
- Feeding tube (if needed)

**Performance**

1. Prior to performing the feeding, introduce self and verify the client's identity. Explain to the client what you are going to do, why it is necessary, and how he or she can cooperate. Discuss how the results will be used in planning further care or treatments.
2. Perform hand hygiene and observe other appropriate infection control procedures (e.g., clean gloves).
3. Provide for client privacy.
4. Assess and prepare the client as shown in Skill 15-3.
5. Insert a feeding tube, if one is not already in place.
  - Wearing gloves, remove the dressing. Then discard the dressing and gloves in the moisture-proof bag.
  - Apply new clean gloves.
  - Lubricate the end of the tube, and insert it into the ostomy opening 10 to 15 cm.
6. Check the location and patency of a tube that is already in place.
  - Determine correct placement of the tube by aspirating secretions and checking the pH.
  - Follow agency policy for amount of residual formula. This may include withholding the feeding, rechecking in 3 to 4 hours, or notifying the physician if a large residual remains.
  - For continuous feedings, check the residual every 4 to 6 hours and hold feedings according to agency policy.
  - Remove the syringe plunger. Pour 15 to 30 mL of water into the syringe, remove the tube clamp, and allow the water to flow into the tube. **Rationale** *This determines the patency of the tube. If water flows freely, the tube is patent.*
  - If the water does not flow freely, notify the nurse in charge and/or primary care provider.
7. Administer the feeding.
  - Hold the barrel of the syringe 7 to 15 cm above the ostomy opening.
  - Slowly pour the solution into the syringe and allow it to flow through the tube by gravity.
  - Just before all the formula has run through and the syringe is empty, add 30 mL of water. **Rationale** *Water flushes the tube and preserves its patency.*
  - If the tube is to remain in place, hold it upright, remove the syringe, and then clamp or plug the tube to prevent leakage.
  - If a catheter was inserted for the feeding, remove it.
8. Ensure client comfort and safety.
  - After the feeding, ask the client to remain in the sitting position or a slightly elevated right lateral position for at least 30 minutes. **Rationale** *This minimizes the risk of aspiration.*
  - Assess status of peristomal skin. **Rationale** *Gastric or jejunal drainage contains digestive enzymes that can irritate the skin.* Document any redness and broken skin areas.
  - Check the peristomal skin, applying a skin protectant, and applying appropriate dressings if needed. Generally, the peristomal skin is washed with mild soap and water at least once daily. The tube may be rotated between thumb and forefinger to release any sticking and promote tract formation. Petrolatum or other skin barrier creams may be applied around the stoma, and precut 10 cm × 10 cm gauze squares may be placed around the tube. The precut squares are then covered with regular 10 cm × 10 cm gauze squares, and the tube is coiled over them.
  - Observe for common complications of enteral feedings: aspiration, hyperglycemia, abdominal distention, diarrhea, and fecal impaction. Report findings to primary care provider. Often, a change in formula or rate of administration can correct problems.
  - When appropriate, teach the client how to administer feedings and when to notify the health care provider concerning problems.
9. Document all assessments and interventions.

Table 15-5 lists essential assessments to conduct before administering tube feedings. The nurse must also check the expiration date on a commercially prepared formula or the preparation date and time of agency-prepared solution, discarding any formula that has passed the expiration date or that was prepared more than 24 hours previously.

Feedings are usually administered at room temperature unless the order specifies otherwise. The nurse warms the specified amount of solution in a basin of warm water or leaves it to stand for a while until it reaches room temperature. Because a formula that is warmed can grow microorganisms, it should not hang longer than the manufacturer recommends. Continuous-feeding

formulas should be kept cold; excessive heat coagulates feedings of milk and egg, and hot liquids can irritate the mucous membranes. However, excessively cold feedings can reduce the flow of digestive juices by causing vasoconstriction and may cause cramps.

**Managing Clogged Feeding Tubes**

Even if feeding tubes are flushed with water before and after feedings and medications, they can still become clogged. This can occur when the feeding container runs dry, solid medication is not adequately crushed, or medications are mixed with formula. Even the important practice of aspirating to check

**TABLE 15-5 Assessing Clients Receiving Tube Feedings**

<b>ASSESSMENTS</b>	<b>RATIONALE</b>
Allergies to any food in the feeding	Common allergenic foods include milk, sugar, water, eggs, and vegetable oil.
Bowel sounds before each feeding or, for continuous feedings, every 4 to 8 hours	To determine intestinal activity
Correct placement of tube before feedings	To prevent aspiration of feedings
Presence of regurgitation and feelings of fullness after feedings	May indicate delayed gastric emptying, need to decrease quantity or rate of the feeding, or high fat content of the formula
Dumping syndrome: nausea, vomiting, diarrhea, cramps, pallor, sweating, heart palpitations, increased pulse rate, and fainting after a feeding	Jejunostomy clients may experience these symptoms, which result when hypertonic foods and liquids suddenly distend the jejunum. To make the intestinal contents isotonic, body fluids shift rapidly from the client's vascular system.
Abdominal distention, at least daily (Measure abdominal girth at the umbilicus.)	Abdominal distention may indicate intolerance to a previous feeding.
Diarrhea, constipation, or flatulence	The lack of bulk in liquid feedings may cause constipation. The presence of hypertonic or concentrated ingredients may cause diarrhea and flatulence.
Urine for sugar and acetone	Hyperglycemia may occur if the sugar content is too high.
Hematocrit and urine specific gravity	Both increase as a result of dehydration.
Serum blood urea nitrogen and sodium levels	Feeding formula may have a high protein content. If a high protein intake is combined with an inadequate fluid intake, the kidneys may not be able to excrete nitrogenous wastes adequately.

residual volume increases the incidence of clogging (Reising, & Neal, 2005). To avoid the necessity of removing the tube and reinserting a new tube, both prevention and intervention strategies must be used.

To prevent clogged feeding tubes, flush liberally (at least 30 mL water) before, between, and after each separate medication is instilled, using a 60-mL piston syringe. The larger the barrel of the syringe, the less the pressure exerted. Too great a pressure can rupture the tube, especially small-bore feeding tubes. Do not add medications to formula or to each other.

Many strategies have been used to try to unclog feeding tubes. Strategies that have shown inconsistent effectiveness include instilling meat tenderizer, carbonated beverages, or cranberry juice, or flushing with small barrel syringes with or without digestive enzymes such as papain or chymotrypsin. Soda has actually been found to make the clog worse (Novartis Nutrition Corporation, 2003).

## Parenteral Nutrition

Parenteral nutrition (PN), also referred to as total parenteral nutrition (TPN) or intravenous hyperalimentation (IVH), is provided when the gastrointestinal tract is nonfunctional because of an interruption in its continuity or because its absorptive capacity is impaired. **Parenteral** nutrition is administered intravenously such as through a central venous catheter into the superior vena cava.

Parenteral feedings are solutions of dextrose, water, fat, proteins, electrolytes, vitamins, and trace elements; they provide all needed calories. Because TPN solutions are hypertonic (highly concentrated in comparison to the solute concentration of blood), they are injected only into high-flow central veins, where they are diluted by the client's blood.

TPN is a means of achieving an anabolic state in clients who are unable to maintain a normal nitrogen balance. Such clients may include those with severe malnutrition, severe burns, bowel

disease disorders (e.g., ulcerative colitis or enteric fistula), acute renal failure, hepatic failure, metastatic cancer, or major surgeries where nothing may be taken by mouth for more than 5 days.

TPN is not risk-free. Infection control is of utmost importance during TPN therapy. The nurse must always observe surgical aseptic technique when changing solutions, tubing, dressings, and filters. Clients are at increased risk of fluid, electrolyte, and glucose imbalances and require frequent evaluation and modification of the TPN mixture.

TPN solutions are 10 to 50% dextrose in water, plus a mixture of amino acids and special additives such as vitamins (e.g., B complex, C, D, K), minerals (e.g., potassium, sodium, chloride, calcium, phosphate, magnesium), and trace elements (e.g., cobalt, zinc, manganese). Additives are modified to each client's nutritional needs. Fat emulsions may be given to provide essential fatty acids to correct and/or prevent essential fatty acid deficiency or to supplement the calories for clients who, for example, have high calorie needs or cannot tolerate glucose as the only calorie source. Note that 1,000 mL of 5% glucose or dextrose contains 50 grams of sugar. Thus, a liter of this solution provides less than 200 calories!

Because TPN solutions are high in glucose, infusions are started gradually to prevent hyperglycemia. The client needs to adapt to TPN therapy by increasing insulin output from the pancreas. For example, an adult client may be given 1 liter (40 mL/hr) of TPN solution the first day; if the infusion is tolerated, the amount may be increased to 2 liters (80 mL/hr) for 24 to 48 hours, and then to 3 liters (120 mL/hr) within 3 to 5 days. Glucose levels are monitored during the infusion.

When TPN therapy is to be discontinued, the TPN infusion rates are decreased slowly to prevent hyperinsulinemia and hypoglycemia. Weaning a client from TPN may take up to 48 hours but can occur in 6 hours as long as the client receives adequate carbohydrates either orally or intravenously.

Enteral or parenteral feedings may be continued beyond hospital care in the client's home or may be initiated in the home.

## Evaluation

If the outcomes are not achieved, the nurse should explore the reasons. The nurse might consider the following questions:

- Was the cause of the problem correctly identified?
- Was the family included in the teaching plan? Are family members supportive?

- Is the client experiencing symptoms that cause loss of appetite (e.g., pain, nausea, fatigue)?
- Were the outcomes unrealistic for this person?
- Were the client's food preferences considered?
- Is anything interfering with digestion or absorption of nutrients (e.g., diarrhea)?

ASSESSMENT DATA		NURSING DIAGNOSIS	DESIRED OUTCOMES
<p><b>Nursing Assessment</b></p> <p>Mrs Rajha is a 70-year-old woman who is 167 cm tall and weighs 88 kg. She was recently admitted to the medical unit. She reports having lost 20 kg in weight during the past 2 months and recently had a stroke resulting in left-sided weakness. She also has had nothing by mouth for the past 24 hours and has needs to begin tube feeding.</p> <p><b>Nursing History</b></p> <ul style="list-style-type: none"> <li>■ History taking indicates that she eats mostly bread, cereal, whole milk, and canned fish and meats. She eats almost no fruits and vegetables.</li> <li>■ She wears dentures and has impaired chewing and swallowing.</li> <li>■ History revealed left-side weakness with disability to cook and eat food and that she is on several medications (aspirin, digitalis, thiazides).</li> </ul> <p><b>Physical Examination</b></p> <p>Height: 167 cm Weight: 88 kg Physical examination revealed anorexia; indigestion; dysphagia; 20 kg weight loss in last 2 months; dry flaky skin; apathetic; easily fatigued; reddened conjunctiva; wasted muscles; and with loss of concentration and confusion</p> <p><b>Diagnostic Data</b></p> <p>UBW: 85% TSF is 9.2 cm MAC is 18.2 cm MAMC is 20.4 cm Hemoglobin: 11.8 mg/dL Serum albumin: 15 mg/dL</p>		<p><i>Imbalanced nutrition</i>: less than body requirements/intake of nutrients insufficient to meet metabolic needs</p>	<p>Adequacy of usual pattern of nutrient intake in terms of calories and vitamins</p>
NURSING INTERVENTIONS/SELECTED ACTIVITIES		RATIONALE	
a. Assist Mrs Rajha in a special diet		a. To restore nutritional deficits	
b. Provide Mrs Rajha with a soft diet as tolerated after checking gag and cough reflexes.		b. Soft diet is easily chewed and digested. It is often ordered for clients who have difficulty chewing and swallowing	
c. Provide familiar food that Mrs Rajha likes; avoid unpleasant or uncomfortable treatments immediately before or after a meal; provide a tidy, clean environment that is free of unpleasant sights and odors; encourage or provide oral hygiene before mealtime and reduce psychologic stress		c. To encourage the client's appetite and food intake	
d. Assist Mrs Rajha as required (e.g., remove the food covers, butter the bread, pour the tea, and cut the meat).		d. To encourage food intake	



### NURSING CARE PLAN

### For a Client with Imbalanced Nutrition

NURSING CARE PLAN For a Client with Imbalanced Nutrition *continued*

## NURSING INTERVENTIONS/SELECTED ACTIVITIES

## RATIONALE

e. If Mrs Rajha's general condition has deteriorated and she is unable to take oral food, assist in insertion of a nasogastric tube and administering enteral feeding as indicated.	e. To maintain optimal nutrition and prevent complications of under nutrition
f. Assist Mrs Rajha to assume Fowler's position (at least 30 degrees elevation) in bed or a sitting position in a chair, the normal position for eating. If a sitting position is contraindicated, a slightly elevated right side-lying position is acceptable.	f. These positions enhance the gravitational flow of the solution and prevent aspiration of fluid into the lungs.
g. Assess enteral tube placement prior to administering tube feeding.	g. To prevent tube-misplacement complications such as aspiration of fluids and food in the lungs
h. Assess residual feeding contents.	h. To evaluate absorption of the last feeding; that is, whether undigested formula from a previous feeding remains. If the tube is in the small intestine, residual contents cannot be aspirated.
i. Administer the feeding at room temperature.	i. Excessively cold formulas may induce abdominal cramps and diarrhea.
j. Instill 50 to 100 mL of water through the feeding tube after administering food.	j. To flush tube and preventing future blockage by sticky formula.
k. Ensure client comfort and safety and secure the tubing to her gown.	k. To minimize pulling the tube, thus preventing discomfort and dislodgement.
l. Ask the client to remain sitting upright in Fowler's position or in a slightly elevated right lateral position for at least 30 minutes.	l. These positions facilitate digestion and movement of the feeding from the stomach along the alimentary tract, and prevent the potential aspiration of the feeding into the lungs.

## EVALUATION

Outcome measures has been partially achieved. Mrs Rajha's general condition improved as her vital signs are stable (temperature 37.6°C, pulse 68 BPM, respiratory rate: 18/minute, blood pressure 110/90 mmHg). Mrs Rajha tolerated feeding and did not develop nausea or vomiting. Mild anorexia, indigestion, and dysphagia have been monitored. The client gained 2 kg in 1 week and her skin condition is moist. Mrs Rajha is still feeling fatigued and has loss of concentration, but her orientation level has improved for person, place, and time. Bowel sounds can be clearly auscultated, and no diarrhea or constipation have been experienced, with concentrated urine.



## CRITICAL REFLECTION

Let us return to Laila's case at the start of this chapter. Now that you have read this chapter, what are the possible nursing diagnoses that can be listed in the client's medical record? What instruction would you give Laila as part of health teaching to manage her health problems? What procedures can be performed to provide Laila with optimal nutrition if she continues to refuse eating by the oral route?

## CHAPTER HIGHLIGHTS

- Essential nutrients are grouped into categories: carbohydrates, proteins, lipids, vitamins, and minerals.
- Nutrients serve three basic purposes: forming body structures (such as bones and blood), providing energy, and helping to regulate the body's biochemical reactions.
- The amount of energy that nutrients or foods supply to the body is their caloric value. The amount of energy required to maintain basic body functions is referred to as the resting energy expenditure (REE). The basal metabolic rate (BMR) is the rate at which the body metabolizes food to maintain the energy and requirements of a person who is awake and at rest.
- A person's state of energy balance can be determined by comparing caloric intake with caloric expenditure.



- Ideal body weight (IBW) is the optimal weight recommended for optimal health.
- Body mass index (BMI) and percentage body fat are indicators of changes in body fat stores. They indicate whether a person's weight is appropriate for height and may provide a useful estimate of nutrition.
- Factors influencing a person's nutrition include development, gender, ethnicity and culture, beliefs about foods, personal preferences, religious practices, lifestyle, economics, medications and therapy, health, advertising, and psychologic factors.
- Nutritional needs vary considerably according to age, growth, and energy requirements. Adolescents have high energy requirements due to their rapid growth; a diet plentiful in milk, meats, green and yellow vegetables, and fresh fruits is required. Middle-aged adults and elders often need to reduce their caloric intake because of decreases in metabolic rate and activity levels.
- Various daily food guides have been developed to help healthy people meet the daily requirements of essential nutrients and to facilitate meal planning. These include the Food Guide Pyramid.
- Both inadequate and excessive intakes of nutrients result in malnutrition. The effects of malnutrition can be general or specific, depending on which nutrients and what level of deficiency or excess are involved.
- Assessment of nutritional status may involve all or some of the following: nursing history data, nutritional screening, physical examination, calculation of the percentage of weight loss, a dietary history, anthropometric measurements, and laboratory data.
- Major goals for clients with or at risk for nutritional problems include the following: maintain or restore optimal nutritional status, decrease or regain specified weight, promote healthy nutritional practices, and prevent complications associated with malnutrition.
- Assisting clients and support persons with therapeutic diets is a function shared by the nurse and the dietitian. The nurse reinforces the dietitian's instructions, assists the client to make beneficial changes, and evaluates the client's response to planned changes.
- Because many hospitalized clients have poor appetites, a major responsibility of the nurse is to provide nursing interventions that stimulate their appetites.
- Whenever possible, the nurse should help incapacitated clients to feed themselves; a number of self-feeding aids help clients who have difficulty handling regular utensils.
- Enteral feedings, administered through nasogastric, nasointestinal, gastrostomy, or jejunostomy tubes, are provided when the client is unable to ingest foods or the upper gastrointestinal tract is impaired.
- A nasogastric or nasointestinal tube is used to provide enteral nutrition for short-term use. A gastrostomy or jejunostomy tube can be used to supply nutrients via the enteral route for long-term use.
- The two most accurate methods of confirming gastrointestinal tube placement are radiographs and pH testing of aspirate.
- Parenteral nutrition (PN), provided when the gastrointestinal tract is nonfunctional (e.g., absorptive capacity impaired), is given intravenously into a large central vein (e.g., the superior vena cava).

## TEST YOUR KNOWLEDGE

1. Which of the following nursing diagnoses is most appropriate for a client with a body mass index (BMI) of 35?
  1. *Imbalanced nutrition: less than body requirements*
  2. *Imbalanced nutrition: more than body requirements*
  3. *Risk for imbalanced nutrition*
  4. *Deficient knowledge*
2. An adult reports eating, on average, the following each day: 3 cups dairy, 2 cups fruit, 2 cups vegetables, 142 g grains, and 142 g meat. The nurse would counsel the client to:
  1. Maintain the diet; the servings are adequate.
  2. Increase the number of servings of dairy.
  3. Decrease the number of servings of vegetables.
  4. Increase the number of servings of grains.
3. Which of the following are allowed on a full liquid diet? Select all that apply.
  1. Scrambled eggs
  2. Chocolate pudding
  3. Tomato juice
  4. Hard candy
  5. Mashed potatoes
  6. Cream of wheat cereal
  7. Oatmeal cereal
  8. Fruit 'smoothies'
4. Which of the following is the best indication of proper placement of a nasogastric tube in the stomach?
  1. Client is unable to speak.
  2. Client gags during insertion.
  3. pH of the aspirate is less than 5.
  4. Fluid is easily instilled into the tube.
5. What is the proper technique with gravity tube feeding?
  1. Feeding bag is hung 30 cm higher than the tube's insertion point into the client.
  2. Nurse administers the next feeding only if there is less than 25 mL of residual volume from the previous feeding.
  3. Place client in the left lateral position.
  4. Feeding is administered directly from the refrigerator.
6. A 55-year-old female is about 9 kg over her desired weight. She has been on a 'low-calorie' diet with no improvement. Which of the following statements reflects a healthy approach to the desired weight loss?
  1. "I need to increase my exercise to at least 30 minutes every day."
  2. "I need to switch to a low-carbohydrate diet."
  3. "I need to keep a list of my forbidden foods on hand at all times."
  4. "I need to buy more organic and less processed foods."

7. An elderly Asian client has mild dysphagia from a recent stroke. The nurse plans the client's meals based on the need to:
1. Have at least one serving of thick dairy (e.g., pudding, ice cream) per meal.
  2. Eliminate the beer usually ingested every evening.
  3. Include as many of the client's favorite foods as possible.
  4. Increase the calories from lipids to 40%.
8. Which of the following meals would the nurse recommend to the client as highest in calcium, iron, and fiber?

1. 37 g cottage cheese with 1/3 cup raisins and 1 banana
2. 1/2 cup broccoli with 3 ounces chicken and 1/2 cup peanuts
3. 1/2 cup spaghetti with 2 ounces ground beef and 1/2 cup lima beans plus 1/2 cup ice cream
4. 3 ounces tuna plus 1 ounce cheese sandwich on whole wheat bread plus a pear

See Answers to Test Your Knowledge in Appendix A. 

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# Glossary

**Absorption** | امتصاص

the process by which a drug passes into the bloodstream

**Accountability** | مسؤولية

the ability and willingness to assume responsibility for one's actions and to accept the consequences of one's behavior

**Acid** | حمض

a substance that releases hydrogen ions (H<sup>+</sup>) in solution

**Acidosis** | حماض

a condition that occurs with increases in blood carbonic acid or with decreases in blood bicarbonate; blood pH below 7.35

**Acquired immunity** | الحصانة أو المناعة المكتسبة

see Passive immunity

**Active euthanasia** |

قتل من يشكو مرضاً عضالاً بطريقة خالية من الألم بمشاركة ومعرفة من المريض نفسه  
actions that directly bring about the client's death with or without consent

**Active immunity** | الفعال المناعة

a resistance of the body to infection in which the host produces its own antibodies in response to natural or artificial antigens

**Active ROM exercises** | مجموعة من التدريبات النشطة

isotonic exercises in which the client moves each joint in the body

**Active transport** | النقل النشط

movement of substances across cell membrane against the concentration gradient

**Activity tolerance** | للنشاط نطاق النشاط. درجة حمل الفرد

the type and amount of exercise or daily activities an individual is able to perform

**Activity-exercise pattern** | نمط النشاط

refers to a person's pattern of exercise, activity, leisure, and recreation

**Actual loss** | الفقدان الفعلي (الخسارة الفعلية)

can be identified by others and can arise either in response to or in anticipation of a situation

**Actual nursing diagnosis** | التشخيص التمريضي الواقعي

a client problem that is present at the time of the nursing assessment.

**Acute illness** | مرض حاد

typically characterized by severe symptoms of relatively short duration

**Acute infection** | التهاب حاد

those that generally appear suddenly or last a short time

**Acute pain** | ألم حاد

pain that lasts only through the expected recovery period (less than 6 months), whether it has a sudden or slow onset and regardless of the intensity

**Adherence** | الالتزام

the extent to which an individual's behavior (for example, taking medications, following diets, or making lifestyle changes) coincides with medical or health advice; commitment or attachment to a regimen

**Advance health care directives** | توجيهات مسبقة للرعاية الصحية

a variety of legal and lay documents that allow persons to specify aspects of care they wish to receive should they become unable to make or communicate their preferences

**Adventitious breath sounds** | أصوات التنفس الشاذة

abnormal or acquired breath sounds

**Adverse effects** | اعراض جانبية

more severe side effects that may justify the discontinuation of a drug

**Advocate** | مدافع عن. مؤيد لقضية

individual who pleads the cause of another or argues or pleads for a cause or proposal

**Aerobic** | هوائي

living only in the presence of oxygen

**Aerobic exercise** | التمارين الهوائية

any activity during which the body takes in more or an equal amount of oxygen than it expends

**Afebrile** | غير مصحوب بحمى

absence of a fever

**Afterload** | حمولة تلويته

the resistance against which the heart must pump to eject blood into the circulation

**Agglutinogens** | لزينات

a substance that acts as an antigen and stimulates the production of agglutinins

**Agonist** | ناهض

a drug that interacts with a receptor to produce a response

**Agonist analgesic** | مسكن ألم ناهض

full agonists which are pure opioid drugs that bind tightly to mu receptor sites, producing maximum pain inhibition, an agonist effect

**Agonist-antagonist analgesic** | مسكن ألم ناهض-مناهض

mixed agonist-antagonist drugs that can act like opioids and relieve pain (agonist effect) when given to a client who has not taken any pure opioids

**Airborne precautions** | احتياطات النقل الهوائي

methods used to reduce exposure to infectious agents

**Algor mortis** | برودة الموت

the gradual decrease of the body's temperature after death

**Alopecia** | تساقط الشعر (الصلع)

the loss of scalp hair (baldness) or body hair

**Ambulation** | سير، حريك

the act of walking

**Ampule** | الامبولة-وعاء زجاجي او بلاستيكي يحتوي مادة دوائية

a small glass container for individual doses of liquid medications

**Anabolism** | عملية البناء

a process in which simple substances are converted by the body's cells into more complex substances (e.g., building tissue, positive nitrogen balance)

**Anaerobic** | اللاهوائي

living only in the absence of oxygen

**Anaerobic exercise** | التمرينات اللاهوائية

involves activity in which the muscles cannot draw out enough oxygen from the bloodstream; used in endurance training

**Anger** | الغضب

an emotional state consisting of a subjective feeling of animosity or strong displeasure

**Angiogenesis** | عملية بناء اوعية دموية جديدة

the process by which new blood loops (capillaries) build up in a healed wound

**Angle of Louis** | زاوية لويس

the junction between the body of the sternum and the manubrium; the starting point for locating the ribs anteriorly

**Anions** | الأيونات (الأيونات السالبة)

ions that carry a negative charge; includes chlorine ( $\text{Cl}^-$ ), bicarbonate ( $\text{HCO}_3^-$ ), phosphate ( $\text{HPO}_4^{2-}$ ), and sulfate ( $\text{SO}_4$ )

**Ankylosed** | مَقْسُوط، يصاب بالقسط، يصاب بالتصلب

permanently immobile joints

**Anorexia** | فقدان الشهية للطعام

lack of appetite

**Antagonist** | مضاد

drug that inhibits cell function by occupying the drug's receptor sites

**Antibodies** | الاجسام المضادة

immunoglobulins, part of the body's plasma proteins, defend primarily against the extracellular phases of bacterial and viral infections

**Anticipatory grief** | حزن استباقي

grief experienced in advance of the event

**Anticipatory loss** | فقدان استباقي

the experience of loss before the loss actually occurs

**Antigen** | مستضد (مولد الضد)

a substance capable of inducing the formation of antibodies

**Antiseptics** | المطهرات

agents that inhibit the growth of some microorganisms

**Anuria** | انقطاع البول، بَرَام

the failure of the kidneys to produce urine, resulting in a total lack of urination or output of less than 100 mL per day in an adult

**Anxiety** | القلق

a state of mental uneasiness, apprehension, or dread producing an increased level of arousal caused by an impending or anticipated threat to self or significant relationships

**Apical pulse** | نبض قمة القلب

a central pulse located at the apex of the heart

**Apical-radial pulse** | نَبْضٌ كُفْرِيّ

measurement of the apical beat and the radial pulse at the same time

**Apnea** | انقطاع التنفس

a complete absence of respirations

**Approximated** | مقارنة الانسجة

closed tissue surfaces

**Arrhythmia** | اضطراب النظم، عدم انتظام النبض

a pulse with an abnormal rhythm

**Arterial blood gases (ABGs)** | غازات الدم الشرياني

specimen of arterial blood that assesses oxygenation, ventilation, and acid-base status

**Arterial blood pressure** | ضغط الدم الشرياني

the measure of the pressure exerted by the blood as it pulsates through the arteries

**Arteriosclerosis** | تَصَلُّبُ الشَّرَاطِينِ، تَصَلُّبُ شَرِكَايِيّ

a condition in which the elastic and muscular tissues of the arteries are replaced with fibrous tissue

**Asepsis** | العفامة

freedom from infection or infectious material

**Assault** | محاولة اعتداء أو تهجم

an attempt or threat to touch another person unjustifiably

**Assessing** | تقييم

the process of collecting, organizing, validating, and recording data (information) about a client's health status

**Assimilation** | استيعاب

the process by which an individual develops a new cultural identity and becomes like the members of the dominant culture

**Assisted suicide** | المساعدة في الانتحار أو محاولة الانتحار

a form of active euthanasia in which clients are given the means to kill themselves

**Associate degree programs** | برامج التمريض المشترك

nursing programs that are offered in community colleges (academies) 2 years in length.

**Atelectasis** | انخماص الرئة

a condition that occurs when ventilation is decreased and pooled secretions accumulate in a dependent area of a bronchiole and block it

**Atherosclerosis** | تصلب الشرايين

buildup of fatty plaque within the arteries

**Atria** | أُذَيَّتَان : [المفردة: أُذِيْن]

two upper hollow chambers of the heart

**Atrioventricular (AV) node** | العقدة الأذينية البطينية

conduction pathways that slightly delay transmission of the impulse from the atria to the ventricles of the heart

**Atrioventricular (AV) valves** | صمامات القلب بين الأذنين والبطين

between the atria and ventricles of the heart, the tricuspid valve on the right and the bicuspid or mitral valve on the left

**Atrophy** | ضمور

wasting away; decrease in size of organ or tissue (e.g., muscle)

**Attitudes** | موقف. اتجاه

mental stance that is composed of many different beliefs; usually involving a positive or negative judgment toward a person, object, or idea

**Auscultation** | التسمع

the process of listening to sounds produced within the body

**Auscultatory gap** | نُغْرَةٌ تَسْمَعِيَّة (في قياس الضغط)

the temporary disappearance of sounds normally heard over the brachial artery when the sphygmomanometer cuff pressure is high and the sounds reappear at a lower level

**Autoantigen** | مستضد ذاتي

an antigen that originates in a person's own body

**Autonomy** | استقلال

the state of being independent and self-directed, without outside control, to make one's own decisions

**Autopsy** | تشريح الجثة لتحديد سبب الوفاة

an examination of the body after death to determine the cause of death and to learn more about a disease process

**Bacteremia** | بكتريم

bacteria in the blood

**Bacteria** | بكتيريا-نوع من الجراثيم

the most common infection-causing microorganisms

**Basal metabolic rate (BMR)** | معدل الاستقلاب الاساسي

the rate of energy utilization in the body required to maintain essential activities such as breathing

**Base of support** | قاعدة الارتكاز

the area on which an object rests

**Bases** | قواعد

(alkalis) have low hydrogen ion concentration and can accept hydrogen ions in solution

**Battery** | إعتداء بالضرب

(legal) the willful or negligent touching of a person (or the person's clothes or even something the person is carrying), which may or may not cause harm

**Bed rest** | راحة تامة في السرير

strict confinement to bed (complete bed rest), or the client may be allowed to use a bedside commode or have bathroom privileges

**Bedpan** | قصرية السرير

a receptacle for urine and feces for clients who are restricted to bed

**Beliefs** | معتقدات

interpretations or conclusions that one accepts as true

**Beneficence** | منفعة. فائدة

the moral obligation to do good or to implement actions that benefit clients persons and their support persons

**Bereavement** | عزاء

a subjective response of a person who has experienced the loss of a significant other through death

**Bevel** | شطبة

the slanted part at the tip of a needle

**Bicultural** | ثنائي الثقافة

used to describe a person who crosses two cultures, lifestyles, and sets of values

**Bioethics** | الأخلاقيات البيولوجية

ethical rules or principles that govern right conduct concerning life

**Biomedical | health belief**

المعتقدات الصحية المتعلقة بالأمور الطبيّة البيولوجية  
see Scientific health belief

**Bioterrorism** | الارهاب البيولوجي

intentional attack using biological weapons such as viruses, bacteria, or other germs transmitted by airborne droplet nuclei smaller than 5 microns

**Biotransformation** | التحول البيولوجي

process by which a drug is converted to a less active form; also called *detoxification*

**Bladder training** | تَدْرِيبُ الْبَلْثَانَةِ

client postpones voiding, resists or inhibits the sensation of urgency, and voids according to a timetable rather than according to the urge to void

**Blood chemistry** | كيمياء الدم

a number of tests performed on blood serum (the liquid portion of the blood)

**Blood pressure (BP)** | ضغط الدم

the force exerted on arterial walls by blood flowing within the vessel

**Bloodborne pathogens** | الجراثيم المنقولة بالدم

those microorganisms carried in blood and body fluids that are capable of infecting other persons with serious and difficult-to-treat viral infections, namely, hepatitis B virus, hepatitis C virus, and HIV

**Body image** | صورة الجسم

how a person perceives the size, appearance, and functioning of his or her body and its parts

**Body mass index (BMI)** | مؤشر كتلة الجسم

indicates whether weight is appropriate for height



**Body substance isolation (BSI)** | احتياطات عزل العدوى  
generic infection control precautions for all clients except those with diseases transmitted through the air

**Body temperature** | حرارة الجسم  
the balance between the heat produced by the body and the heat lost from the body

**Bowel incontinence** | التغوط اللاإرادي  
loss of voluntary ability to control fecal and gaseous discharges through the anal sphincter

**Bradycardia** | بَطءُ القَلْبِ (أقل من ٦٠ ضَرْبَةً في الدَّقِيقَةَ)  
abnormally slow pulse rate, less than 60 beats per minute

**Bradypnea** | بطء التنفُّس  
abnormally slow respiratory rate, usually less than 10 respirations per minute

**Brand name** | اسم الدواء بالعلامة التجارية  
the name given to a drug by the drug's manufacturer

**Breach of duty** | خرق الواجب  
a standard of care that is expected in the specific situation but that the nurse did not observe; this is the failure to act as a reasonable, prudent nurse under the circumstances

**Buccal** | داخل الخد  
pertaining to the cheek

**Buffers** | دوائر  
prevent excessive changes in pH by removing or releasing hydrogen ions

**Bundle of His** | السَّيْرُطُ الأَدْبِيئِيُّ البَطْنِيَّي (حُرْمَةُ هيس)  
the right and left bundle branches of the ventricular conduction pathways

**Calculi** | حصاة الكلى أو المثانة  
renal stones

**Callus** | نسيج لين  
a thickened portion of the skin

**Caloric value** | القيمة الحرارية  
the amount of energy that nutrients or foods supply to the body

**Calorie (c, cal, kcal)** | السعرة الحرارية  
a unit of heat energy equivalent to the amount of heat required to raise the temperature of 1 kg of water 1°C

**Cannula** | القنية  
a tube with a lumen (channel) that is inserted into a cavity or duct and is often fitted with a trocar during insertion

**Cardiac output (CO)** | التَّنَاجُ القَلْبِيَّي  
the amount of blood ejected by the heart with each ventricular contraction

**Caregiver** | مقدم الرعاية  
a role that has traditionally included those activities that assist the client physically and psychologically

**Carminative** | قَرْوِز  
an agent that promotes the passage of flatus from the colon

**Carrier** | حامل المرض  
a person or animal that harbors a specific infectious agent and serves as a potential source of infection, yet does not manifest any clinical signs of disease

**Case manager** | مدير حالة  
a nurse who works with the multidisciplinary health care team to measure the effectiveness of the case management plan and monitor outcomes

**Catabolism** | عملية الهدم  
a process in which complex substances are broken down into simpler substances (e.g., breakdown of tissue)

**Cathartics** | علاج مسهل  
drugs that induce defecation

**Cations** | الكاتيونات (الأيونات الموجبة)  
ions that carry a positive charge; includes sodium (Na<sup>+</sup>), potassium (K<sup>+</sup>), calcium (Ca<sup>2+</sup>), and magnesium (Mg<sup>2+</sup>)

**Causation** | العلاقة بين السبب والسبب-السببية  
a fact that must be proven that the harm occurred as a direct result of the nurse's failure to follow the standard of care and the nurse could have (or should have) known that failure to follow the standard of care could result in such harm

**Cell-mediated defenses** | المناعة الخلوية  
*see* Cellular immunity

**Cellular immunity** | المناعة الخلوية  
also known as cell-mediated defenses, occur through the T-cell system

**Center of gravity** | مركز الجاذبية  
the point at which the mass (weight) of the body is centered

**Central venous catheter** | قنطار وريدي مركزي  
catheter that is usually inserted into the subclavian or jugular vein, with the distal tip of the catheter resting in the superior vena cava just above the right atrium

**Cerebral death** | الموت الدماغيّ  
the higher brain center or cerebral cortex is irreversibly destroyed

**Cerumen** | صملاخ أو صمغ-الان-مادة شمعية  
the wax-like substance secreted by glands in the external ear canal

**Change agent** | عامل تغيير  
person (or group) who initiates change or who assists others in making modifications in themselves or in the system

**Change-of-shift report** | عاتقيرير بين الورديات  
a report given to nurses on the next shift

**Chart** | ملف (سجل)  
a formal, legal document that provides evidence of a client's care

**Charting** | توثيق  
the process of making an entry on a client record

**Chemical name** | الاسم الكيميائي للدواء  
the name by which a chemist knows a drug; describes the constituents of the drug precisely