THE REHAB NURSING SERIES™

CERTIFICATION REVIEW FOR REHABILITATION NURSING

WORKBOOK

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CERTIFICATION REVIEW FOR REHABILITATION NURSES WORKBOOK

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This workbook is for use with the course ***Certification Review for Rehabilitation Nurses***, which is part of the *Rehab Nursing Series™* published by Rehab ClassWorks, LLC®.

Notice: The clinical information and tools used in this course are based on current literature, research, and consultation with nursing, medical, and legal authorities. To the best of our knowledge, it reflects current practice. However, appropriate information sources should be consulted, especially for new or unfamiliar procedures.

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Second Edition

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GETTING STARTED

This course is designed to assist nurses to prepare for the national certification exam. This workbook is intended to be used with the Rehab ClassWorks® multimedia ***Certification Review for Rehabilitation Nurses*** course. It also may be used as an adjunct to classroom or study group review sessions or for other varieties of self-study. Feel free to contact Rehab ClassWorks® for more study ideas or assistance at (888) 294-0412.

Main Menu

If you have a single user license, after the course has been loaded, launch it on the computer by selecting it from your Windows menu or by using the desktop icon. If using a multiuser license in an organization, follow your organization's instructions for accessing the course. Enter your login name as you want to see it on the CE certificate. Select your own password and **keep track of this information** so you can use it in the future to enter the course. (Support cannot access this information.) Click the **Start** button on the login screen to view the menu.

Functions of the Main Menu:

The course is navigated from the Main Menu.

1. You can roll your mouse onto a chapter title to display information about a given chapter.
2. Click on the chapter title to enter the chapter.

3. Start with the Overview chapter for an introduction to the course and access to Course HELP tools.

Continuing Education Hours

All RCW courses offer continuing education contact hours. The course posttest must be completed with a score of 80% or better in order to receive a continuing education certificate. This course is worth 42.5 contact hours. The test is in the multimedia computer course that accompanies this workbook and your results are displayed on the computer when you complete the exam. **Complete the form that contains your score on the computer and print it**. **Be sure to verify that all the information has printed successfully before closing this screen, because you will not be able to return to that page once you have left it.**

Send the document by fax (801) 253-7520 or mail (RCW, PO Box 1306, Riverton, UT 84065) and your certificate will be returned to you. (This course does not require connection to the internet to run, so results can be sent via e-mail only by pressing PRINT SCREEN (Prt Scr) on your computer keyboard while the results are displayed and pasting the image into an e-mail sent to support@rehabclassworks.com). **Only persons with valid, registered serial numbers will receive continuing education credit. Go to www.rehabclasswork/reg.html to register the purchase of your course! (NOTE: Those with multiuser licenses are only required to register once for the group via the person managing the course.)**

Using the Course

Listed below are features of the course and how to best use them.

Workbook and Computer Course: To get the most out of this course, you should use this workbook concurrently with the computer course. **There is a great deal of audio in the course, so be sure your speakers are on.** There are exercises in the workbook and in the computer course to help you learn and remember the material. When you see the following, you should go to the designated section of the course in the computer.

Note that each chapter in the workbook matches the chapter of the same name in the multimedia course. Answers to questions in the workbook are in the back of the workbook for your reference.

This course is a lengthy course and thus should be approached **in small chunks of time for best retention.** Each chapter in the multimedia course has a bookmarking feature so that you can return to the page you last viewed when you return to that chapter. Be sure to exit the course using the **EXIT** button on the bottom right of the course navigation bar (not the X on the top right corner of the window) to initiate the bookmark.

Quizzes: There are quizzes at the end of each section of the *computer* course to help you assess your understanding of the information in that part of the course.

Links: There are links in the *computer* course that take you to more information when you click on them. They appear in blue underlined text. If your system allows you to jump to web pages while in this course, you can jump to those as well via these links. Otherwise, type the address in your web browser to view those resources.

Functions of the Navigation Bar in the Computer Course

The Navigation Bar at the bottom of the screen allows access to information, return to the Main Menu, or the ability to go to a specific page in the course.

Page Numbers: Page numbers in the multimedia course are located on the left side of the Navigation Bar.

Reference: The Reference link displays definitions of terms and additional reference material.

Main Menu: Return to the Main Menu by clicking that item on the Navigation Bar.

Index: You can use the Index link to display the electronic pages of the chapter. Click on the page you want to go to when this tool is open.

Help: This item provides information on using and navigating the course. If you do not find your answer there, contact technical support at technicalsupport@rehabclassworks.com or call (888) 294-0412.

Read: This item opens a window that allows you to read the audio that occurs in a given frame.

Progress Report: The Progress Report summarizes your scores on quizzes in the course. The Posttest score is also recorded, but not the subset scores you will see at the end of the Posttest. Only Posttest scores are reported in a learning management system. Quizzes are for self-assessment of content learned in each chapter and are not reported in a learning management system.

Other Features

Notes Books/Feedback: There are icons on some screens in the top right corner of the screen. You can click on them for feedback or more information. The Notes Books icon is pictured here on the right.

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CHAPTER 1

OVERVIEW

As with any test, preparation is the key to success. Establish your goals and plan your studying to maximize your efforts and decrease the stress and anxiety associated with the exam.

Chapter Objectives or What is Your Job?

In this chapter, your job is to review the prerequisites for sitting the rehabilitation nursing certification exam and to develop a study plan of your own.

On the Computer: Overview, pages 1-10

(Page numbers are on the bottom bar of the frame.)

Chapter Highlights

- Success in passing the national certification exam for rehabilitation nurses requires experience, confident test-taking skills, and preparation.
- This is a lengthy course. Plan for adequate study time, listen to audio, and click on hypertext links and the ***Notes Books*** to access all available information.
- Use a plan that works for you to prepare for the exam, making sure you are organized and prepared on test day.
- The Pretest can provide you with a prescriptive report to help you plan your study time.
- Additional support is available at www.rehabclassworks.com/Blog.htm.

Preparation

Time is a precious commodity! Preparation is critical to your success in passing the certification exam. Many of us try to squeeze studying in between thousands of other activities demanding our attention. Unfortunately, this can lead to longer hours of studying and increased stress as we get closer and closer to the exam date. Make the most of your study time by following these suggestions:

- **Get organized!** Give yourself a sense of control and reduce your stress and anxiety. Commit the time and effort to do it well and to do it right the first time.
- **Set up short, intermediate, and long-term goals.** Post your goals and regularly track your progress. If you begin to lag behind, either redefine your goals or implement appropriate interventions to get back on track.
- **Study in 15-30 minute blocks.** Retention is better when you study for short periods. If you must include more hours of studying in a given session, take a short break every 15-30 minutes to allow your brain to refresh itself.
- **What works for you?** Think back through previous successful study sessions you have had and apply the successful processes to studying for this exam. You probably have study habits that have been very helpful to you in the past including note taking, practice tests, highlighting, memorization strategies, etc. What are your needs for auditory, visual, and tactile input? How are you going to meet them? Are certain environments more conducive to learning than others? Are they available to you? What kind of help and support will you need to be successful? Create a plan for ***you***!

My Study Plan

Long-term Goals:

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Short-Term Goals with Target Dates (check frequently to track progress):

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Study Plan (include days, time, frequency, and strategies to stay organized):

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The Exam—Getting Ready for Test Day

Contact the Association of Rehabilitation Nursing-Rehabilitation Nursing Certification Board for the test packet (http://www.rehabnurse.org/certification/content/examapp.html). You will need to print materials and submit an application by the deadline. Watch for contact from the testing center for a testing date.

- **Complete the test packet.** There are several steps to the completion of the test application packet. Failure to complete it will result in denial of your application to sit the exam.
- **Familiarize yourself with the test site.** Know how long it takes to get there and where you will park. Remember that if you are late, you will forfeit your reservation and still owe the full examination fee, unless you are able to provide written verification and supporting documentation of an excused absence.
- **Get organized!** Collect all your supplies and tools for the test in advance to avoid last minute rushing and stress.
- **Read all test directions carefully.** Use the practice screens in the test to familiarize yourself with the testing process.
- **Relax so that you can think!** Guided imagery and relaxation techniques for stress control can help you alleviate test anxiety. Learn and practice such techniques, if you feel you may need to use them. If you need more ideas for reducing test stress, go to www.rehabclassworks.com/CertRevResources.htm.

Additional Resources

If you are looking for additional materials, the following resources will also assist you in preparing for the certification exam.

- **The Specialty Practice of Rehabilitation Nursing: A Core Curriculum** (6th edition). Cynthia S. Jacelon, Editor. Available from the Association of Rehabilitation Nursing at www.rehabnurse.org.
- **Rehabilitation Nursing: Prevention, Intervention, & Outcomes** (4th edition). Shirley P. Hoeman, Editor. Available from major bookstores as well as through the Association of Rehabilitation Nurses.
- **Rehabilitation Nursing: A Contemporary Approach to Practice.** Kristen L. Mauk, Editor. Also available from major bookstores as well as through the Association of Rehabilitation Nurses.

Evaluate Your Current Status

Please take the **Pretest** in this *Certification Review for Rehabilitation Nurses* course now. This is an evaluative test. If you don't know the answer, just make your best guess. Then, use the results to refine your study plan. You may want to make note of your sub-scores.

The national certification exam for rehabilitation nurses is a comprehensive exam of the professional role of the rehabilitation nurse. This course is a review course, not an all-encompassing course for the professional practice of rehabilitation nursing. The course presumes previous rehabilitation nursing education and knowledge. In an effort to expose the learner to the wide variety of questions, the tests may ask questions on items not specifically covered in this review course. This additional content (e.g., cultural competence, complementary and alternative medicine, side effects of commonly-administered medications, and general patient safety behaviors) is widely used in general rehabilitation nursing practice and/or is available in the resources listed above or in other courses in ***The Rehab Nursing Series***. This course is the last course in ***The Rehab Nursing Series***. If you need to dive more deeply into rehab-specific topics, please review the other courses in ***The Series***. They are listed on page iv.

On the Computer: Overview Pretest, page 11.

Make notes and make a plan based on the results of the Pretest.

Then, go to the next page to start the next Section: Principles & Philosophy.

- If you are using ***The Specialty Practice of Rehabilitation Nursing: A Core Curriculum*** as an additional study tool, supporting pages are noted here at the end of each chapter.

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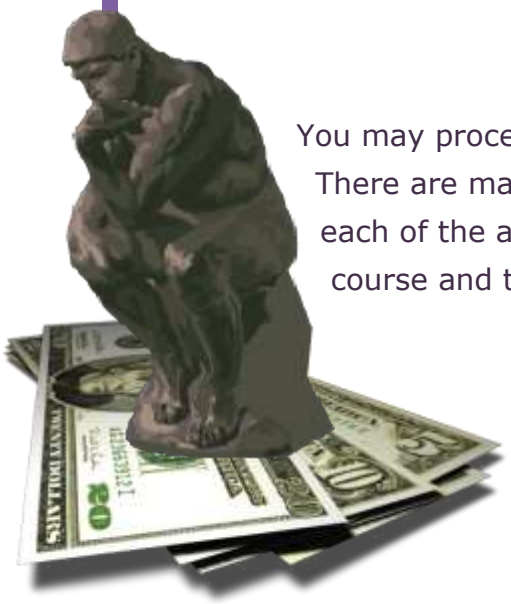
PRINCIPLES & PHILOSOPHY

This section of the workbook contains four chapters.

- The Impact of **History** & Legislation on the Practice of Rehabilitation
- **Philosophy** & Values of Rehabilitation Nursing
- Nursing **Theories** Applicable to Rehabilitation
- **Economic** Issues in Rehabilitation Care



You may proceed in this order or select the chapter you prefer to study. There are matching chapters on the computer and in this workbook for each of the above. Simply go to the correct page in the computer course and the workbook to pursue your selection.

On the Computer: To start the next chapter, go to the Main Menu and select Rehabilitation Principles & Philosophy.

Start on page 1.

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CHAPTER 2

THE IMPACT OF HISTORY & LEGISLATION ON THE PRACTICE OF REHABILITATION

How has our past influenced our present and how will it impact our future?

What is Your Job in this Chapter?

In this chapter, your job is to review historical events and their impact on the development of rehabilitation services.

On the Computer: Principles & Philosophy, pages 3-11

Chapter Highlights

- Social and political systems have a dramatic impact on healthcare regulations and access to services.
- Use what you know about history to relate to legislative changes. It will help you solve problems on the test about when legislation occurred.
- The Americans with Disability Act, Individuals with Disabilities Education Act, Balanced Budget Act, Medicare Acts, and Affordable Care Act have had a dramatic impact on service requirements and access to care.
- Rehabilitation nurses must be aware of changes in technology, populations, regulations, legislation, and social constructs affecting care.

Social and political systems have dramatically influenced the development of healthcare services. Necessity continues to be the mother of invention. As a result, war has been a driving force in the development of rehabilitation services. The impacts of war, combined with the technological advancements of the last century, have created survivorship of disease and catastrophes unlike any previously experienced. Today policies, rules, and regulations concerning access to care and resources, cost structures, and quality of life are debated, politicized, and covered by the media in a dramatic and extraordinary manner. Change is widespread and continuous. Where are we going from here?

The Impact of History

Think about the impact of history on rehab services and answer the questions below.

1. What changes contributed to the organization of services for the disabled in the 1890's and early 1900's?

2. What historical event during the early 1900's created the next significant impact on the development of rehabilitation services? How?

3. The 1930's brought legislative and healthcare issues to the forefront. The Social Security Act was passed in 1935, creating and impacting many services for those in need. How did the issues of this decade impact rehab services?

4. A major advance in medical care occurred in the 1940's and it had a profound impact on the development of rehab services by increasing survivorship. What was that major advance?

5. The post-World-War-II era noted both social and healthcare trends that significantly impacted rehabilitation. What were those trends?

6. What was the impact of the Korean and Vietnam Wars on rehabilitation?

7. What was the social impact of the 1960's on rehabilitation care?

Vocational rehabilitation expanded with laws such as the Vocational Education Act of 1984. This act required states to provide funds for those with disability, allowing them access to available vocational education opportunities.

8. What factors drove the development of rehabilitation services during the 1970's and 1980's?

The 1990’s once again delivered many significant acts of legislation that impacted healthcare and those with disability. The impact of alternative medicine was acknowledged when the 1998 Omnibus Appropriations Bill established the National Center for Complementary and Alternative Medicine (NCCAM). This center researches complementary and alternative healing practices and publicizes the resulting information. The NCCAM has many clinical research programs in place and is an information clearinghouse, working closely with other agencies, such as the Agency for Healthcare Research and Quality, to establish evidence of effectiveness of interventions. While this was an important piece of legislation that reflected on the ways healthcare was changing, it was not considered the most important legislation of this decade regarding disability.

9. What was the most important legislation regarding disability passed in the 1990's?

The demand for rehab services has continued to change during this century to meet the demands of increasing numbers of elderly persons, and persons of every age with one or more chronic illnesses (an illness that lasts for three or more months). Research and technology continue to develop new strategies for improving quality of life and recovery following injury.

Costs of healthcare stayed on the table as the Balanced Budget Act of 1997 was implemented. The Deficit Reduction Act of 2005 continued efforts at saving healthcare dollars by requiring that the Centers for Medicare and Medicaid develop a standardized patient assessment tool that can be used across all post-acute care settings to facilitate appropriate transitions and post-acute payment reform.

10. What are the impacts of these trends on our practice and on the care of patients in the future?

The needs of children with developmental disabilities have been addressed since 1975 when The Education for All Handicapped Children Act was passed.

Revisions have improved the original law emphasizing access, evaluation, transition services, assistive technology, rehabilitation counseling, and more. It was renamed the Individuals with Disabilities Education Act (IDEA) in 1990 and was updated in 1991 to include a section addressing acquired brain injury.

Significant changes were made in 1997, and it was since then updated to the Individuals with Disabilities Education Improvement Act of 2004 (now known as IDEIA).

11. What tool is required by IDEA to facilitate planning of education programs?

While facing legal challenges and continued debate, the Patient Protection and Affordable Care Act is being implemented in stages, directly impacting access to care and the type of care available. Payment strategies are expected to change over the next decade in response to the demands of this act and to the realities of the limits of our financial resources. Demonstration projects abound across the country, including alternative funding, medical home models, and other alternatives to post-acute care.

Rehabilitation nurses are knowledgeable about the needs of persons with disability and can **advocate** on their behalf by being politically aware and active. Start in your local community by providing expertise and voicing opinions. Pick an issue of concern and follow it. Stay informed, write a letter, and use your influence to shape the future of healthcare and the lives of those with disability.

Match the law to the correct year.

1920 1935 1943 1965 1965 1966 1967

1968 1973 1975 1990 1991 1997 2003

12. _____ First Rehabilitation Act
13. _____ First Vocational Rehabilitation Act
14. _____ Independent Living Movement
15. _____ Initial Medicaid Legislation
16. _____ Social Security Act defines rehabilitation
17. _____ Workmen's Compensation Law
18. _____ Medicare legislation drives demand for rehabilitation nurses
19. _____ Education of All Handicapped Person's Act
20. _____ Balanced Budget Act
21. _____ Americans with Disabilities Act
22. _____ Rehabilitation Act establishes standards for individualized treatment plans
23. _____ Architectural Barriers Act
24. _____ Individuals with Disabilities Education Act amendment regarding brain injury
25. _____ Medicare Modernization Act

Read the next page to start the next section.

Core Curriculum supporting pages are: 3-5, 15-29, 65, 521-527.

CHAPTER 3

FOUNDATIONS OF REHABILITATION NURSING

The nurse is the pivot point of all inpatient rehabilitation care. His or her success or failure in blending all that the patient learns in therapy into daily care will drive the success, failure, and efficiency of the program.

What is Your Job in this Chapter?

This chapter helps you review conceptual frameworks used to describe disability, to define goals and roles of rehabilitation nurses, and to review ethical practice issues.

On the Computer: Principles & Philosophy, pages 12-24

Chapter Highlights

- The World Health Organization's International Classification of Functioning, Disability, and Health describes impacts of impairments.
- Ethical issues abound in rehabilitation. Ethical principles drive care and form the foundation of laws that protect patients from unethical behavior.
- Ethics committees and ethical decision-making processes provide structure and balance for the rehabilitation team when they are faced with a difficult ethical decision. Many of the decision-making processes resemble the nursing process.
- Spirituality is more than religious preference. It is hope, the concepts of God, relationships between health and beliefs, and religious practice.

World Health Organization Definitions

Rehabilitation addresses impairments and limitations in activity that cause deficits in participation, as *participation* is defined by the World Health Organization. Our assessments are used to identify the patient's limitations. Our interventions are used to reduce activity limitations. Our community reentry activities, education, and laws are designed to reduce participation restrictions.

Match these terms to their definitions.

Impairment Activity Participation

1. _____ The nature and extent of functioning at the level of the person
2. _____ A loss or abnormality of a physiological or psychological nature
3. _____ The nature and extent of a person's involvement in life situations related to impairment, activities, health conditions, and contextual factors

Defining Rehabilitation Nursing

Indicate whether the following are True or False.

4. _____ Rehabilitation nursing has a specialized body of knowledge.
5. _____ Rehabilitation nursing is a process that can be practiced in any setting.
6. _____ Rehabilitation nursing has a defined scope of practice and related accountabilities.

Key concepts that are associated with the practice of rehabilitation are:

- Patient-Centered Care
- Prevention and Wellness
- Functional Ability
- Quality of Life
- Informed Choice
- Optimum Outcomes
- Dignity and Respect

Roles of Rehabilitation Nurses

A rehab nurse has many roles and uses them all on almost any given day. Most nurses new to the field of rehabilitation are comfortable with the caregiving role. However, they may be challenged by the educator role that often requires them to sit on their hands, allowing the patient the opportunity to struggle through a skill and solve the problem or learn the process on their own. The art is in determining when the patient has been pushed enough and needs assistance, and when to push the patient for more. This skill is developed through experience and role-modeling by other team members.

Match the following nursing roles to the correct description.

Educator Caregiver Advocate Collaborator Coordinator Counselor

7. _____ Nurses provide care that is consistent, thorough, and supportive of the patients' and caregivers' efforts to learn their own care. Caregiving is integrated with education and identification of the tools and resources needed to transfer care responsibilities to the patient/caregiver.

8. _____ Nurses facilitate coping and support patients and families as they prepare for community reintegration.

9. _____ In order to do this well, the nurse must know the patient's wishes and desires well enough to be an effective and true representative. The nurse often spends more time with the patient than other team members do and may have more insight to the patient's desires.

10. _____ This is one of the most important roles of a nurse in a rehab setting. One of our basic principles is that every nursing encounter is a potential teaching opportunity—an opportunity to teach them how to live, not just survive, in the community. Your job is to teach, to coach, and to give them the skills they need to solve their problems and be able to use the resources in their community.

11. _____ Effective and efficient care results from the efforts of all team members working together to be creative, problem solve, and promote functional gains in each patient.

12. _____ The rehab nurse has responsibility for the patient around-the-clock. Practicing skills repeatedly throughout the day, in a

coordinated and consistent manner, will help patients acquire effective problem-solving skills and become experts in their own care.

Values & Moral Principles

Ethical issues are difficult. They are value judgments, and values vary among individuals. Laws represent strongly-held values, which mean that ethical debates often have legal consequences. The nurse is accountable to know and understand the laws that impact nursing practice. Superseding these laws are ethical statements and guidelines published by nursing associations.

Technological advances, cost-containment, legislation, and self-advocacy movements will continue to present ethical dilemmas for the rehab team. Successful navigation of these issues requires a clear understanding of one's own values as well as the ability to understand the values and opinions of your patients and their families. Nursing operates on a system of moral principles that provide the foundation for patients' rights. Review the **Patient Rights** provided to your patients. They support these moral principles and must be posted in sight of your patients.

Professional Codes & Ethics

Position statements have been developed by the American Nurses Association and the Association of Rehabilitation Nurses regarding ethical practices and many other issues. These documents are available from the nursing associations. Key points in these documents include:

- The patient is a whole human being with a disability, not a disabled patient.
- The patient should be treated with dignity and respect.
- Patients and families should be fully educated so they are able to participate in making decisions.
- Confidentiality is maintained.
- The nurse functions as a patient advocate.
- Care is delivered in a non-judgmental, nondiscriminatory manner.

- Patients have the right to make decisions that may not be congruent with the team's recommendations.
- The nurse is aware of the effect that his/her beliefs may have on the patient and family.
- Appropriate resources are utilized to make ethical decisions.
- The nurse participates in decisions on allocation of resources.

Applying Moral Decision Making

Moral decision making is a process of using ethical principles when making a decision that occurs from a moral dilemma (when two or more moral principles apply but support mutually-inconsistent actions) or moral distress (a person knows the right thing to do, but outside constraints make it impossible to do so).

- Ethical models provide a foundation for moral decision making.
    - Deontology
    - Utilitarianism
    - Objectivism
    - Social Equity and Social Justice
- Decision-making models provide guidance for decision making.
    - ACT Model
    - Savage Model
- Laws, policies, and regulations regarding ethical behavior:
    - Nuremberg Code and successive National Institute of Health guidelines specify requirements for research on humans.
    - Laws govern informed consent and many other aspects of care.

(Hoeman, 2008, Jacelon, 2011, Mauk, 2007)

(Use the **Reference** link on the navigation bar in the computer course for definitions of these tools.)

Spiritual Distress

A holistic view of the person with a disability requires reflection on his or her spiritual needs. Disability causes such severe stress that the patient's and family's entire underlying belief system may be disrupted. The rehabilitation nurse should be prepared to support patients and to address issues of spirituality. Assessment and intervention should occur early in the care process to provide support to the patient and family system.

13. List three questions you may ask your patient to determine whether the patient has need of spiritual support.

14. Identify three strategies you can use to prepare yourself to assist your patients in meeting their spiritual needs.

15. Identify at least three interventions you can use if your patient is in spiritual distress.

Read the next page to start the next section.

Core Curriculum supporting pages are: 3, 5, 7-11, 31-49, 77-78, 80-81.

CHAPTER 4

NURSING THEORIES APPLICABLE TO REHABILITATION

Theories of nursing are constantly evolving in response to research.

What is Your Job in this Chapter?

Your job in this chapter is to review key theories that have tried to explain interactions between healthcare providers and their patients.

On the Computer: Principles & Philosophy, pages 25-35

Theories allow us to define our practice and guide us in the provision of care. Knowledge of different theories can provide resources and options to meet the various needs of patients in different settings. Use the following exercises to review select

Chapter Highlights

- Nursing theorists take different approaches to care of the patient. Different theories may be more applicable to some patient situations than others.
- Gordon's Functional Health Patterns can be helpful in organizing data during assessment.

theories applicable to rehabilitation nursing in a wide variety of settings. Remember that rehabilitation is a process, and consider options for the continuum of care.

Who? What?

Identify the nursing theorists associated with the following theories.

King Orem Neuman Roy Rogers Hall

1. _____ Health Care Systems Model
2. _____ Adaptation Model
3. _____ Open Systems Model
4. _____ Self-Care Deficit Theory
5. _____ Science of Unitary Human Beings Theory
6. _____ Aspects of Nursing: Care, Core, Cure

Identify key concepts of each of the following theorist's theories.

7. Hall:

8. Roger:

9. King:

10. Neuman:

11. Orem:

12. Roy:

Gordon's Functional Health Patterns

Many nursing models and processes of documentation utilize Gordon's Functional Health Patterns. The patterns facilitate delivery of holistic care when all the components are used.

13. List the five functional health patterns that reflect psychosocial functioning.

Other Theorists

Roper's Model for Living and its corresponding Model for Nursing are other models that focus on activities of daily living that are typical of each person and the things they do on a daily basis. Each of the categories, which are comparable to Gordon's Functional Health Patterns, is evaluated on a dependence-independence continuum. The factors that influence this continuum are categorized as biological, psychological, sociocultural, environmental, or politico-economic.

There are many other nursing theorists who have theories that may be applicable to rehabilitation nursing care. Consider Jean Watson's Caring Theory, Katharine Kolcaba's Comfort Theory, and Nola Pender's Health Promotion Theory as examples. A good summary of nursing theories and their applications can be found at http://currentnursing.com/nursing_theory/.

Wellness

Wellness is a concept with different meanings. Ask yourself these questions.

> **Choices**
>
> Why do people think they would make better choices had they been in the same situation?

- What is wellness? What is the impact of health maintenance behaviors on recovery and adjustment to disability? Why do some people survive the impact of injury and disability better than others?
- Why do people who know better still practice behaviors that are obviously not in their best interest? How are healthcare providers justified in criticizing patients for noncompliance and poor choices of behaviors when they continue to smoke, fail to exercise, etc.? Why do they think they would make better choices in the same situation?
- What is the effect of labeling the patient noncompliant or maladaptive rather than determining the cause of the behavior?
- How does the stress of the situation affect our ability to teach and the patient's/caregiver's ability to learn?
- What effects do current lengths of stay and pressures for productivity have on assisting a patient to cope with significant alterations in lifestyle?

Many people have studied these questions and produced theories about different responses to stressors, beliefs, and behaviors associated with health management and self-esteem and about the impact of personal belief systems on survival of illness and injury. An understanding of these issues is important to the success of the patient's rehabilitation program. Understanding wellness theories, and evaluating your patient's previous behavior patterns in relation to them, may indicate how he will approach recovery and rehabilitation.

Wellness theory reflects on a person's ability to achieve high levels of self-maintenance and performance. It is commonly said that without one's health, everything else becomes harder. Wellness is a personal responsibility. Bandura's Social Learning Theory, based on self-efficacy, emphasizes a person's self-perception of abilities.

Match these wellness theories with the correct theme or component:

Self-Responsibility Hardiness Locus of Control Health Belief Model

14. _____ Low levels result in powerlessness and alienation

15. _____ Belief about whether a contingency relationship exists between one's own actions and outcomes

16. _____ The main factors affecting my health are my attitudes, beliefs, and behaviors

17. _____ Perceived barriers directly impact decision-making

Read the next page to start the next section.

Core Curriculum supporting pages are: 78-79, 441-447.

CHAPTER 5

THE ECONOMICS OF HEALTHCARE

Funding continues to have a significant impact on access to and utilization of services. Changes in Medicare law have impacted every level of post-acute care over the last decade. Cost containment efforts continue to impact how care is delivered.

What is Your Job in this Chapter?

Your job in this chapter is to review types of funding sources, eligibility issues, and economic challenges of rehabilitation care.

On the Computer: Principles & Philosophy, pages 36-45

Chapter Highlights

- Medicare, Medicaid, Workers Compensation, and private insurance provide the majority of insurance coverage for patients in rehabilitation.
- Patients must meet criteria in order to be eligible for Medicare or Medicaid; patients must be injured while working for an insured employer for Workers Compensation coverage to apply.
- Income options following a disability that limits employment are determined by previous employment history, private disability insurance, and state low-income programs.
- Rehabilitation nurses must focus on providing care that reduces the financial as well as the physical and emotional burden on caregivers.

Payers and payer systems dramatically impact service availability and utilization. Concerns about the costs of healthcare have led to numerous proposals and experiments in alternative methods of care delivery.

Discussions regarding healthcare reform must consider access, quality, cost-containment, and fairness. We will be forced to address ethical issues of universal access as well as rationing of care. It is impossible to pay for everything for everyone.

Rehabilitation nurses must use critical thinking when learning about proposed healthcare reform and actively advocate for an appropriate balance of care delivery.

Funding Sources

Most laypeople do not have a solid understanding of their healthcare benefits and require significant support to navigate through the insurance system. Rehabilitation nurses should be knowledgeable regarding a patient's eligibility and coverage, and should incorporate that information into a reasonable and affordable plan of care.

Identify the coverage you would expect to see for each of the following patients.

Medicare Medicaid Private Insurance Workers Compensation

1. _____ A 68-year-old auto mechanic who had a stroke; assets of $300,000
2. _____ A 23-year-old university student working part-time as a clerk, who sustained a TBI in a motorcycle accident; assets of $2500
3. _____ A 26-year-old iron worker who sustained a T6-7 incomplete SCI from a fall at work; assets of $4400
4. _____ A 36-year-old nurse diagnosed with MS, still working full-time at the university clinic; assets of $180,000

Living Expenses

Persons who have been employed prior to the development of disability have income options that those who have not worked cannot access. These include private disability insurance, Social Security Disability Insurance (SSDI), and Supplemental Security Income (SSI). The two programs covered by Social Security are designed to cover workers who cannot return to work under the guidelines of reasonable accommodation, as set forth in the ADA.

- **SSDI** is available to workers with medically-determinable limitations that prevent them from working or participating in substantial gainful activity. The disability must last longer than a year or be predicted to result in death. In order to qualify, a worker will need to have worked five of the last ten years, paying FICA taxes during that time.

- **SSI** benefits provide income to persons with limited income if they are over 65 or disabled, but are not tied to a work history. The program includes such things as food stamps, Medicaid, coverage of Medicare premiums, etc., and is variable from state to state.

A unique paradigm exists for persons with disability who want to return to work. Until recently, if persons with disability returned to work, they would lose Social Security benefits and healthcare coverage. Private insurance is often unaffordable due to the disability.

The **Ticket to Work and Work Incentives Improvement Act of 1999** was passed to correct that problem. Persons receiving support from Social Security can use a ticket to access vocational rehabilitation or other employment support services from an approved provider with the goal of achieving steady, long-term employment. Medicare and Medicaid coverage is expanded under this program, with states allowing coverage for persons with incomes of up to 250% of the poverty level.

PASS (Plan to Achieve Self-Support) is another work incentive plan that maintains Social Security healthcare coverage while working. Under general SSI rules, a person's SSI benefit is reduced according to the amount of other income. With PASS, the income set aside for PASS does not reduce SSI benefits.

The PASS program requires a work goal and a plan with costs that includes those items that must be purchased in order to meet the work goal (training, testing, vehicle, computer, trade supplies, childcare, etc.). If income is to be set aside for the plan, SSI benefits may increase to help cover living expenses. Monies for PASS should be kept separate from other income; tracking of expenses and expenditures is required.

Not Enough $$$$

Financial worries can have a crescendo effect on coping and health maintenance. If it is not managed, this effect can completely undo all the progress made through rehabilitation. Team members focused on discharge planning need to be proactive in pursuing sound management of the patient's resources.

5. Identify at least two nursing diagnoses associated with discharge planning and financial strain.

6. Identify a strategy you can incorporate into your care to reduce this stressor.

Life Care Planning

One option for organizing funds for future care is life care planning. Life care planning involves development of an individualized plan that projects future needs and available funding to organize care, prevent complications, improve quality of life, and avoid crises in funding, function, or health.

Because many of those requiring rehabilitation will face life-long limitations that influence their financial situation, life care planning can help to manage and protect assets. Provide care in a manner that proactively works to reduce physical, financial, and emotional burdens to caregivers, with attentiveness to services and quality.

Of special note, when technology-dependent children were cared for at home, the cost of care declined and their psychosocial status improved.

Jacelon, 2011, Mauk, 2007

Reimbursement in healthcare settings is directly tied to documentation of care. This documentation must accurately reflect the rehabilitative as well as the medical aspects of care. (The Rehab Nursing Series provides additional training on this topic in the course *Not Documented, Not Done: Documenting Professional Rehabilitation Nursing Care*. You can find information at www.rehabclassworks.com/Document.htm.)

On the Computer: Principles & Philosophy, page 46. Use the quiz to review material.

Then, review the next page and return to the Main Menu to start the next section.

Core Curriculum supporting pages are: 498-499, 513-521.

Special Populations & Team Issues

This section of the workbook contains 4 chapters.

- Rehabilitation **Teams** and Teamwork!
- Improving **Quality** of Care
- We're Growing—**Growth & Development**
    - Not as Young as We Used to Be—**Impacts of Aging**

You may proceed in this order or select the chapter you prefer to study. There are matching chapters in the computer course for each chapter title above. Simply go to the correct page in the computer course and in the workbook to pursue your selection.

On the Computer: Special Populations & Team Issues, pages 1-2

Chapter 6

Rehabilitation Teams & Teamwork

Teams are complicated and dynamic, changing as their members mature and take on different roles. Membership on a team brings with it responsibility and accountability for cooperation, collaboration, and communication.

What is Your Job in this Chapter?

You work with teams every day. Coordination and collaboration of team members facilitate faster goal achievement for patients.

Chapter Highlights

- Rehabilitation team members should know each other's roles and respect the skill and expertise of fellow team members.
- Multidisciplinary, interdisciplinary, and transdisciplinary teams are common in rehabilitation, and each type of team has its own strengths and limitations.
- There are many models of care delivery within which teams practice. Diagnosis-based, age-related, setting-centered, and provider-centered are a few examples. The continuum of care is used to provide care at the most cost-effective level.
- Case management improves the coordination of care and resources to support the best outcome for the patient.

Your job in this chapter is to define characteristics of effective teams, to review the variety of team models used in rehabilitation settings, and to look again at the roles of various team members.

On the Computer: Special Populations & Team Issues, pages 3-14

Team Membership

While teams are required by accrediting bodies and payers, their makeup and function varies from site to site. There are many types of teams found in rehabilitation settings. There are care delivery teams, project teams, quality improvement teams, etc. Whatever the team, its success is dependent on the commitment of its members to do the work of the team in a **collaborative** manner. Teams need to be flexible and creative as they work towards goals.

A successful team has:

- Clear goals
- Defined roles
- Clear communication
- Balanced participation
- Well-defined decision-making processes
- Established and communicated ground rules
- A plan for continued improvement and development

Jacelon, 2011, Scholtes, et al, 2003

Teams providing rehabilitation care to patients are comprised of a variety of disciplines selected to work with a given patient according to that patient's needs.

Complete the statements below with the name of the correct team member.

1. The _____ _____ focuses on the patient and his support system, often coordinating the discharge process. (two words)
2. The _____ _____ _____ focuses on re-socialization and diversional activities. (three words)
3. The _____ counsels patients and families through adaptation.
4. The _____ _____ focuses on strength, range of motion, and functional mobility. (two words)
5. The _____ is responsible for the medical management of the patient.
6. The _____ _____ assists patients in adapting to their environment and fosters successful independence. (two words)
7. The _____ _____ promotes the therapeutic milieu twenty-four hours a day. (two words)
8. The _____ tests cognitive functioning and recommends remedial activities.
9. The _____is the most important member of the team.
10. The _____ _____ _____ diagnoses and prescribes care for dysphagia problems. (three words)

Types of Teams

Caregiving teams in rehab settings tend to function in one of three ways. Label each type of team.

11. _____Multiple disciplines working primarily on own area of focus and own area's goals
12. _____Multiple disciplines working together for a common goal

13. _____Multiple disciplines working together, the majority acting as consultants to those providing care

Identify strengths and weaknesses for each type of team listed below.

14. Multidisciplinary:

    a) Strength:

    b) Weakness:

15. Interdisciplinary:

    a) Strength:

    b) Weakness:

16. Transdisciplinary:

    a) Strength:

    b) Weakness:

The Continuum of Care

More and more frequently, care is provided in multiple settings. It is common that a liaison or case manager is used to facilitate the movement of the patient to the right level of care at the right time. (This behavior is actively driven by Medicare admission requirements for post-acute care.)

The more we utilize reimbursement patterns and continuums of care to manage the care of patients, the more likely relocation stress will occur. The team should be aware of the stresses placed on the patient and family when the setting of care is frequently changed, and should make an effort to be flexible and avoid redundancy. The best method of care for this problem of **Risk of Relocation Stress** is good planning and prevention.

Symptoms of relocation stress include:

- Apprehension, depression, or increased confusion
- Changes in sleep and/or eating patterns, or gastrointestinal disturbances
- Expressions of distress or need for excessive reassurance
- Vigilance
- Withdrawal

17. List three interventions that can prevent relocation stress from developing or diminish its effect.

Models of Care

Client-centered models of care are used to address the needs of specific populations. This may include:

- Diagnosis-based models, such as brain or spinal cord programs
- Age-related models, such as pediatric rehabilitation programs
- Setting-centered models, such as home health or community-based transitional care programs
- Provider-centered models, such as those in managed care systems

Coordination of Care

The Commission on Accreditation of Rehabilitation Facilities (CARF) identifies expectations and requirements for the person who is accountable for coordinating the care of the person served.

18. Identify three behavioral expectations expressed by CARF for those coordinating the care of patients and their caregivers.

Case Management

Case managers may be internal or external. Their roles focus on strategies for coordinating care, managing resources, providing contacts to appropriate agencies, and advocacy. The American Nurses Association (ANA) definition of case management emphasizes the effort to meet the patient's needs while decreasing fragmentation and improving cost-effective outcomes. The Association of Rehabilitation Nurses (ARN), ANA, and the Case Management Society of America (CMSA) define case management as a process. The CMSA has standards just like ANA or ARN that:

- Define the knowledge, skill, behavior, and practice of case managers
- Provide criteria for evaluation of practice
- Stimulate the development of the field
- Encourage research to further define and evaluate the field

Jacelon, 2011, Mauk, 2007

19. What is the purpose of case management?

20. When should an external case manager become involved in the patient's plan of care?

21. Identify ways you can work with case managers to improve efficiency of care and outcomes for patients.

Goals

Patient and family goals should be developed **with** the patient/family or caregiver. After all, they are **their** goals. In order to do this successfully, patients and caregivers must be **educated** participants.

22. List characteristics of well-defined goals:

(The Rehab Nursing Series provides additional training on this topic in the course ***Got a Plan, Man? Patient-Centered Interdisciplinary Care Planning in Rehabilitation*****.** You can find information at www.rehabclassworks.com/Plan.htm.)

Conflict

Conflict is common to all types of teams. Ineffective communication is often a contributing factor to conflict. Establishment of roles, goals, and processes is critical to preventing unnecessary conflict.

23. Identify one reason why conflict is positive for teams.

24. How can an issue of conflict be resolved?

Teams of the Future

Rehabilitation services, like many others, have benefited from the expansion of the internet and its related features and services. Nursing informatics is a recognized nursing specialty; it interfaces with the way we provide and deliver care every day.

Here are just a few of the impacts on the practice of the team.

- Access to information of all types is at our fingertips for patients, families, and team members.
- We transfer information to payers, regulatory bodies, quality agencies, research centers, and federal and state government in real time.
- Virtual support groups are a click away.
- Healthcare is safer, more efficient, more effective, more timely, and more reliable with the increased use of computer technology.
- Patient safety and monitoring have improved with the expansion of computer technology that monitors changes in performance, allows visualization from afar, and sends data regarding health indicators or function of medical devices.
- Technology has enabled increased quality of life and independence for those with disability.
- Teams are using computer technology and the internet for telemedicine and other new ways of doing business. Remote care is available with a web connection.
- Teams are using new technology to improve recovery or to restore function following disabling illness or injury.
- Genomic and stem cell research are rapidly developing alternatives for prevention and recovery.

Read the next page to start the next section.

Core Curriculum supporting pages are: 5-7, 65-73, 79-80, 507-511.

CHAPTER 7

MEETING STANDARDS: QUALITY IMPROVEMENT & PROGRAM EVALUATION

Is the care provided by you and your team good enough for your own family?

What is Your Job in this Chapter?

This chapter focuses on quality initiatives impacting rehabilitation services. Your job is to describe accreditation, quality improvement, and program evaluation processes influencing the work of rehabilitation nurses.

On the Computer: Special Populations and Team Issues, pages 15-25

Chapter Highlights

- Public scrutiny and concern over quality issues has led to more intense efforts to control quality of care.
- Medicare and Joint Commission require reporting of select data items to track quality of care and outcomes. This information is reported in a public report card.
- There are several processes common to the quality improvement initiative, such as PDCA and ASPIRE. Rehabilitation nurses should be actively involved in the quality process and know how to use quality tools.
- Rehabilitation nurses should understand levels of evidence and how to incorporate evidence-based care into practice.

Many different agencies and organizations define quality standards. Some are governmental agencies, such as CMS (Centers for Medicare and Medicaid Services) and state and local health departments. Others are national accreditation agencies, such as JC (Joint Commission) and CARF (Commission on Accreditation of Rehabilitation Facilities).

Consumer action groups (AARP) and professional associations (AMA, ANA, NDNQI) also make recommendations and monitor quality.

Quality

Accreditation agencies strive to improve the quality of care through the establishment of guidelines and standards, and seek to provide education to assist organizations in performance improvement. Accredited facilities are able to demonstrate their ability to meet national standards for organization and care.

1. What does CARF emphasize more than JC?

Answer the following True or False.

2. _____ Medicare refuses to pay for select preventable complications in acute care.
3. _____ Pay-for Performance initiatives are impacting reimbursement for healthcare.
4. _____ Public scrutiny of the provision of healthcare has expanded because of the ease of accessibility of information on the internet.
5. _____ Benchmarking is used to identify best practice.
6. _____ ASPIRE is a JC guideline for quality improvement.

There are many tools and processes for addressing quality issues. Answer these questions about quality tools.

7. What does PDCA stand for?

8. What are the principles of TQM?

9. What quality tool would be used to show relationships between results and possible causes?

10. Which tool would be used to identify the most important problem to solve?

11. Which tool is a representation of a process?

Outcomes

Outcome data is collected at all levels of care. Quality is required for good outcomes, but other factors come into play as well.

12. What is measured by outcomes data collection?

13. Is patient perception of satisfaction part of outcome evaluation?

14. What tool is incorporated into the IRF-PAI to measure function and burden of care?

15. What tool is based on the above tool and used to measure function in children?

16. What tool measures IADL's in older adults?

17. What tool is used by Medicare to collect outcome data on patients in home health settings?

18. Is there an expectation that those working in CARF-accredited settings know the results of outcome data assessment regarding the program they work in?

Evidence-Based Practice

Evidence-based practice (EBP) has penetrated all levels of care. Rehabilitation nurses should pursue and consider inclusion of evidence-based practice in the care of patients.

19. What is the definition of evidence-based practice?

Match these terms to the correct definitions.

Guideline Evidence/Standard Option

20. _____ Well-conducted research studies support the action of a generally accepted patient-care strategy. Levels of Evidence range from I, which is a thorough, repeatable study, to V, a case series (less valid).

21. _____A patient-care strategy with a moderate degree of certainty reflecting Level II evidence, expert opinion, or a consensus of caregivers.

22. _____A patient-care strategy that reflects inconclusive or confusing evidence or conflicting expert opinion.

Read the next page to start the next section.

Core Curriculum supporting pages are: 51-64, 529-546.

CHAPTER 8

POPULATIONS WITH SPECIAL NEEDS: GROWTH & DEVELOPMENT

Rehab nurses are most effective when assessment, care planning, and goal establishment take into consideration the patient's developmental level. This is particularly important when caring for children.

What is Your Job in this Chapter?

Your job in this chapter is to understand developmental concepts and apply them to the care of children with disability. You should be able to match developmental tasks to appropriate age groups.

On the Computer: Special Populations & Team Issues Pages 26-41

Chapter Highlights

- Growth and development are two distinct processes. Both require achievement of one level before another can occur.
- Development is definable, predictable, and sequential. Assessment of the child's developmental level is important to determining care strategies.
- Erikson's Stages of Psychosocial Development and Piaget's Cognitive Stages are two methods of addressing a child's developmental level. Children should be approached according to the developmental stage in which they are performing.
- Disability impacts development and the entire family system. The rehabilitation nurse caring for children incorporates developmentally-appropriate interventions into care and involves the whole family.

Growth & Development

Growth results in an increase in body size, progressing to some point of optimal maturity. Development is a series of patterned changes that occur through life, resulting in new levels of maturity and integration of skills.

Development is critical to learning. No learning can occur unless a person is cognitively mature enough to understand consequences and change behaviors.

1. Complete this sentence: Developmental tasks are _____, predictable, and _____.

Developmental Pattern

Development follows a predictable pattern. Recovery from injury often follows these same patterns. There are times when growth and development are marked and rapid, such as during infancy and adolescence. Complete these phrases defining the pattern of development.

2. Simple to _____
3. _____ to specific
4. Head to toe: _____
5. Trunk to extremities: _____

Types of Development

Development is dependent on growth and maturation. Complete these phrases regarding variation in development.

6. A child who is learning to speak at an age-appropriate time is completing a _____. (two words)
7. A child who has suffered a brain injury and is having difficulty with an age-appropriate developmental task due to the neurological injury is demonstrating _____. (two words)
8. A child who is behind peers in achieving a developmental task has _____. (two words)

Developmental Tasks

Developmental milestones are tasks most children are able to perform at a specific age. They are the foundation of many developmental assessment tools. A premature child's age should be corrected using the date the child should have been born on, rather than his chronological age. Developmental screening should be part of a child's preventive healthcare screen.

Care should be congruent with developmental level and psychosocial needs. This means functional skill expectations should not exceed developmental level. Identify the appropriate ages for each developmental task below.

9. _____ Partially dresses and undresses; plays interactively
10. _____ Walks with one hand being held; throws objects
11. _____ Buttons clothing and dresses completely

Erikson's Psychosocial Development

In this theory, a child must accomplish one stage to move on to the next. Identify the appropriate ages for the stages listed below.

12. _____ Initiative vs. Guilt
13. _____ Identity vs. Role Confusion
14. _____ Industry vs. Inferiority

Piaget's Cognitive Stages

Piaget's stages focus on assimilation of information and accommodation to change. Identify the appropriate ages for his stages.

15. _____ Formal Operations
16. _____ Preoperational Thought
17. _____ Concrete Operations
18. _____ Sensorimotor

Impact of Disability

Disability impacts the development of the child and the entire family system. Families also progress through developmental phases, which can be disrupted when there is a child with disability. Care of the patient must be combined with care of the family in all age groups, but is particularly important in pediatric care.

List at least one intervention the team should incorporate into the care of a child at each developmental level.

19. Adolescence:

20. Middle Childhood:

21. Early Childhood:

22. Toddlerhood:

23. Infancy:

Children's needs are special, not because they have a disability, but because they must be supported through growth and development under the impact of the disability in order to maximize functional outcomes. This may require repeated and varied evaluation and adjustment as the child grows and matures.

24. What is the difference between **habilitation** and **rehabilitation**?

25. In order to anticipate care needs and develop preventive care programs, distinctions are made between **acquired** and **congenital** disability. Describe the difference between the two.

Special Issues: Healthcare

Chronic illness and disability make routine health maintenance and daily living much more difficult. Sometimes so much energy is spent in daily healthcare that preventive healthcare is overlooked. Children with disability or chronic illness have more visits to the doctor's office, more stays in the hospital, and more missed days at school than other children. Preventive care obviously can have a huge impact on quality of life, energy, cost of care, and general health of the child.

26. Identify three healthcare activities that should be supported in children with disability.

Special Issues: Functional Skill Development

Children learn through interactions with the environment and role-modeling of those around them. Disability may have a significant impact on the child's ability to explore, experiment, and interact with the environment. Habilitation must accommodate for this limitation by developing alternative ways for the child to experience the environment and learn functional skills.

27. List the five key areas that should be addressed through rehabilitation or habilitation in order to facilitate the child's ability to reach maximum potentials.

Special Issues: Psychosocial

Children grow and mature emotionally as well as physically. The type and severity of the disability, as well as the family’s response to it, directly impact this development. In order to assist the child to reach optimal and healthy maturity, caregivers often need support, guidance, and encouragement in supporting psychosocial development.

28. List four skill areas that should be addressed and supported with caregivers.

Public Laws

Rights of children with disabilities have been protected through legislation. These laws have been important in establishing education as a right of all children. Services are available within the school system to facilitate education, functional development, and healthcare management.

List the key components of the following laws affecting children.

29. Public Law 94-142:

30. Public Law 99-457:

Identify the following terms:

31. IEP:

32. IHP:

33. ITP:

(The Rehab Nursing Series provides additional training on care of pediatric patients in the course *Pediatric Rehabilitation*. You can find information at www.rehabclassworks.com/peds.htm.)

Read the next page to start the next section.

Core Curriculum supporting pages are 145-146, 431-473.

CHAPTER 9

POPULATIONS WITH SPECIAL NEEDS: EFFECTS OF AGING

A significant number of persons receiving rehab services are over the age of 65. Rehabilitation can make a considerable difference in their quality of life. Assessments should be done carefully in geriatric patients and interventions should consider the effects of aging on therapeutic techniques.

What is Your Job in this Chapter?

Your job in this chapter is to identify the psychosocial developmental tasks of adults and to describe physiological changes associated with aging.

On the Computer: Special Populations &Team Issues Pages 42-47

Chapter Highlights

- An aging body brings its own set of parameters, requiring healthcare providers to adjust care strategies to accommodate variations in health.
- Adults pass through psychosocial stages of development. Families also have developmental stages. An assessment of development is needed at all ages and for all family groups.
- Rehabilitation nurses should know the parameters of normal aging so that they can monitor for adverse effects of medications and treatments.

Psychosocial Stages of Development

Adjustment to aging is an active process requiring accommodation and change. Erikson reminds us that developmental tasks of old age (Ego vs. Despair) include finding meaning in age and accepting death as a part of life. We reflect on the lives we lmotilityived and are (hopefully) satisfied with our choices in life.

Havighurst suggests that this includes:

- Adjusting to physiological changes
- Adjusting to retirement and new social roles
- Adjusting to the loss of spouse and friends
- Establishing affiliations with one's own age group
- Establishing satisfactory living arrangements

Physiological Aspects of Aging

Decline and change in body function are normal parts of aging. However, these changes impact the way that older persons respond to injury and illness. Often symptoms are subtle and risks of complications are high. Identify at least one change in each system.

1. Cardiovascular:

2. Hematological:

3. Renal:

4. Respiratory:

5. Sensory:

6. Gastrointestinal:

7. Endocrine:

8. Neurological:

9. Musculoskeletal:

10. Skin:

On the Computer: Special Populations & Team Issues Page 48. Use the quiz to review material. Read the next page and go to the Main Menu and start the next section (Psychosocial Issues) on completion of the quiz.

Core Curriculum supporting pages are 146-147, 475-504.

Psychosocial Issues in Rehabilitation

This section of the workbook contains one chapter addressing the psychosocial issues pervasive in rehabilitation care.

As you work your way through this chapter, pay close attention to the theories, nursing diagnoses, and care strategies for persons adjusting to disability. This is a lifelong adjustment process that crosses the continuum of care.

Read the next page to start this section.

CHAPTER 10

PSYCHOSOCIAL ISSUES IN REHABILITATION

Adjustment to disability is a lengthy process and affects the entire family unit. Today, patients and families must begin to integrate health maintenance activities into a new lifestyle, often while they are still having difficulty believing what has happened to them.

What is Your Job in this Chapter?

Your job in this chapter is to review key theories related to coping and adaptation to disability. Pay particular attention to change theories, wellness-related theories, and the impact of disability on family systems.

On the Computer: Psychosocial Issues Pages 1-17

Chapter Highlights

- Society's attitudes influence the care provided and the responses to disability. Be attentive to these influences on care delivery.
- Wellness theories can be used to assess a patient's or a caregiver's approach and response to the situation that requires rehabilitation care.
- Patients adapt to changes brought on by disability, progressing through phases of reacting to the initial impact, mobilizing defenses, realizing the significance of the situation, retaliating, and reintegrating into society.
- The rehabilitation team must support the patient and family caregivers in the community to prevent burnout.

How many times have you said, "I hope that never happens to me!"? Attitudes towards the disabled have changed a great deal over the last several decades, especially if your disability is one which does not impair your ability to communicate or leaves you looking physically whole or normal.

Every person working in the rehabilitation setting needs to think carefully about how they really feel about disability. Our attitudes send a quiet undercurrent of values and beliefs to our patients. This message affects the patient's self-image, the family's responses, and our ability to provide the best possible care. Our attitudes influence whether we treat the patient and family in a paternalistic or empowering manner, whether we feel sympathy or empathy, how strongly we support community reentry or institutionalization, and how creative we are in assisting a patient or family in meeting their goals.

1. List three attitudes common to persons with disability.

2. List three attitudes common to society.

3. List three attitudes common to healthcare professionals.

4. How do attitudes of family and friends impact a person's response to disability?

5. List 3 common concerns of children facing an acquired disability.

Society is facing new demands as technology enhances the length and quality of life. It is facing a disabled population it has never seen before. Patients are surviving illnesses and injuries in volumes that were never before possible. Chronic disease of some sort affects 50% of us.

Survival and coping skills need to be developed early in the care process and patients and caregivers should have many opportunities to anticipate and plan for their future.

Psychosocial Issues Common to Rehabilitation Patients

The onset of an acquired disability usually is sudden and overwhelming. Common problems associated with this include: anxiety, powerlessness, loss of self-esteem, and alterations in body image, roles, and relationships. The patient's and the family's ability to cope is significantly stressed. The patient's and family's ability to cope are pivotal to adaptation and adjustment to disability. The team is proactive in supporting, guiding, and assessing their response.

6. Describe the types of behaviors you would expect to see in the patients and families who are **initially** stressed by their situation as encountered in your environment.

7. Describe the types of stressors faced by patients who are **4-6 weeks post discharge** into the community.

The Process of Change

Change is constant in rehabilitation care. Activities that facilitate change mirror the nursing process with continuous evaluation of progress and tweaking of interventions. Change activities impact the rehabilitation team as much as it does the patients who are adjusting to a new and different lifestyle. Fear, fatigue, and pursuit of comfort actively impact one's movement through the change process.

Lewin's Classical Change Theory identifies forces and movement patterns which influence readiness and participation in change. In order to help the patient successfully navigate these phases, the nurse must function as a change agent.

Match the correct phrase with the change theory term:

Unfreezing **Movement** **Refreezing** **Driving Forces**

Restraining Forces **Change**

8. _____ Occurs when one force outweighs the other
9. _____ Movement into a state that is amenable to change
10. _____ Stabilization of new learning
11. _____ Goals are established and actions taken
12. _____ Forces that inhibit the change process
13. _____ Forces that facilitate the change process

Adapting to Disability

Adapting is required throughout one's life. The sudden onset of disability disrupts all aspects of a family and an individual's life. Phases of adaptation are very similar to those of grief. Persons with support systems, spiritual well-being, and a sense of purpose in life adapt better than those without. Rehabilitation care providers should actively recruit these coping mechanisms to facilitate better outcomes for patients.

Resilience refers to a person's capacity to positively cope with stress and catastrophe. It is a protective effect that offsets risk or negative factors. Resilience is a factor of one's hardiness.

Initial Impact

Shock and anxiety are obvious during this phase. Anxiety is defined as a vague feeling of apprehension and uneasiness due to a threat to one's value system or security pattern. It ranges from mild to panic levels. Anxiety may arise from conflict that occurs when two opposing forces clash.

Anxiety

Anxiety is a self-protective mechanism that occurs when self-esteem is threatened.

(Carpenito, 2005)

Four kinds of conflict have been noted; match them to their definitions.

Approach-Approach **Approach-Avoidance**

Avoidance-Avoidance **Double Approach-Avoidance**

14. _____ Arises when a person must choose between two equally undesirable goals
15. _____ Arises when a person wants both to pursue and to avoid the same goal
16. _____ Occurs when a person can see both positive and negative aspects of both alternatives
17. _____Occurs when a person has to choose between two equally desirable options

Nursing Diagnosis: ANXIETY

Remember that anxiety has a significant impact on cognitive functioning.

- Difficulty concentrating
- Decreased awareness of environment
- Forgetfulness
- Rumination
- Focus on past rather than on present or future
- Blockage of thoughts or memories
- Hypervigilance

18. Identify at least 5 physiological symptoms of anxiety.

19. Identify at least 5 emotional symptoms of anxiety.

20. Try a little deductive reasoning. What happens to a person who has damage to the emotional centers of the brain and never experiences anxiety?

21. Now, think about a patient with a brain injury. What is the effect of anxiety on a patient with cognitive impairment who has a distorted perception of reality (i.e. he believes he is in jail rather than in a hospital)?

22. Identify interventions for anxiety.

Nursing Diagnosis: FEAR

Fear can exist without anxiety and anxiety can exist without fear, but they may coexist. For instance, a stroke patient may be fearful of another stroke and be anxious about his ability to get along at home. Fear may be related to the perceived effects of the loss of function, the loss of control associated with hospitalization or disability, loss of income, loss of relationships, among other things.

> **Fear**
>
> Fear is the feeling of apprehension associated with a specific threat or danger.

(Carpenito, 2005)

23. What interventions would you use with a patient who was fearful of suffering another heart attack?

24. Do you have fear or anxiety about the certification exam? What self-care intervention will you use?

Defense Mobilization

Defense mobilization is a protective mechanism of bargaining and denial. The patient may exhibit behaviors that are unrealistic and falsely positive in an attempt to protect him from threats. Some typical behaviors demonstrated at this time are:

- Repeatedly consulting medical experts
- Contracting with God
- Taking unnecessary risks
- Setting unrealistic goals
- Refusing to accept information about condition
- Poor comprehension or memory of information
- Unrealistic expectations regarding medical and rehabilitative interventions
- Resisting community reentry activities
- Unwillingness to participate in therapeutic activities
- Evading future planning

Interventions must focus on providing support, education, and more support as the patient (and family) eventually faces reality.

25. What response is most therapeutic for a patient who continues to tell you that he does not need to learn about self-care because he will get better soon and will be walking out the door, in spite of what you and the rest of the team may think?

Initial Realization

As recognition of reality dawns, mourning and depression may become evident. Internalized anger over the situation and the events causing it are common. Symptoms of depression appear. Expressions of internalized anger may include:

- Self-abuse or injury
- Suicidal ideation
- Passive-aggressive behavior
- Argumentative responses

Nursing Diagnosis: GRIEF

> **Grief**
>
> Grief is a natural and expected response to loss.

Denial, anger, bargaining, depression, and acceptance are considered the five stages of grieving. But, many have challenged the concept of acceptance for anyone with chronic illness or disability, feeling that success is possible without acceptance. A patient who is experiencing grief may demonstrate denial, guilt, anger, despair, crying, sorrow, delusions, phobias, suicidal thoughts, difficulty concentrating, longing, and searching behaviors.

26. What types of patients are at risk for potential pathological grieving reactions?

27. Identify specific interventions for patients who are demonstrating dysfunctional grieving (unsuccessful adaptation to loss, prolonged depression or denial, delayed emotional reactions, and the inability to assume normal patterns of living).

Nursing Diagnosis: POWERLESSNESS

Powerlessness occurs when a patient perceives a lack of personal control over events or situations. It can contribute to apathy and helplessness. It may be impacted by the patient's locus of control and may impact the patient's willingness to learn and use information to problem solve.

28. Describe a patient who is demonstrating powerlessness.

29. Why is it important for nurses and other team members to coordinate care when addressing powerlessness?

Nursing Diagnosis: BODY IMAGE DISTURBANCE

This nursing diagnosis is defined as a disruption in the perception of one's body image. It is a common problem for our patients and can lead to a feeling of hopelessness and vulnerability. These feelings and attitudes may be reinforced by interactions with others.

30. Identify at least three interventions you can take in your daily care for patients who have a body image disturbance.

Nursing Diagnosis: SELF-ESTEEM DISTURBANCE

This general diagnostic category is common to the population of rehab patients. Patients who are expressing shame, guilt, or negative comments about themselves also may have difficulty setting goals and making decisions. This may be an episodic or a lifelong problem. Counseling is recommended for patients with chronic problems.

31. Identify three specific interventions you would use with a patient demonstrating an episodic self-esteem disturbance.

Retaliation

Energy levels increase when patients reach the retaliation phase. They rebel against fate, God, and rules. Behaviors may be critical, abusive, and rebellious. Caregivers often feel personally offended and complain that the patient is not coping and is non-compliant. Instead, there should be some celebration and understanding that this is movement, because in order to be angry, you must be engaged. And, once you are engaged, the potential for problem solving exists. The challenge for the caregiver and rehab team is how to channel that energy to productive activity.

32. Identify intervention strategies you would use to channel the energy of a patient who is firing staff and complaining that no one can do a decent job of meeting his needs.

Reintegration

With reintegration comes an understanding of the situation and its implications, and reconciliation. A new self-concept is formed and there is a willingness to socialize. Adjustment brings mastery of roles and self-responsibility. Independence and dependence are balanced. Interventions focus on supporting the patient's independence and assisting with adaptation and problem solving in the patient's environment. Physical modification of the environment may be necessary to support the patient's efforts and vocational interests may increase.

Reconciliation

With reintegration comes an understanding of the situation and its implications that eventually leads to reconciliation.

Nursing Diagnosis: INEFFECTIVE MANAGEMENT OF THE THERAPEUTIC REGIMEN

This nursing diagnosis is useful for the patient who is having difficulty integrating newly-learned behaviors, or who is at risk of being overwhelmed by the complexity of care.

(Carpenito, 2005)

Unscramble the letters to complete the following statements describing factors that contribute to ineffective management of therapeutic regimen.

33. _____ (trmoo) skill deficit
34. Inability to _____ (cseacs) the healthcare system
35. Non-therapeutic _____ (psreatloinhi) with healthcare providers
36. Inadequate _____(gfnuidn)
37. Lack of _____(ctiadeuon)
38. Decreased _____(elsf)-_____ (etmese)

Listed below are suggested categories of interventions for this nursing diagnosis.

- Identify who is responsible for health management.
- Provide appropriate education.
- Minimize dependency and sick role behaviors.
- Foster self-reliance and wellness.
- Refer to appropriate community resources or support groups.

Nursing Diagnosis: RISK FOR LONELINESS

Loneliness is perceived as being imposed by others and is related to fears of rejection, difficulty accessing social activities (due to healthcare needs, limitations in mobility, transportation, funds, etc.), and personal and environmental situations. A person with loneliness has feelings of emptiness, and may find it hard to access human contact and maintain healthy relationships.

39. Identify three interventions you would use for a patient who is at risk for loneliness.

Nursing Diagnosis: NONCOMPLIANCE

Noncompliance describes the patient who desires to comply, but is limited in doing so by pathophysiological (disability, advancement of disease process), treatment-related (side effects, previous experiences, finances, environment), or situational (barriers to access, functional deficits, lack of support) barriers. This should not be confused with the patient who purposely chooses to not participate in recommended care.

40. What interventions should be used with a patient demonstrating noncompliance?

Alterations in Family Processes

Our sense of who we are and what we are is related directly and significantly to our relationships with others, our role in life, and our values, beliefs, and culture. The impact of disability and chronic illness is enormous, and role changes are stressful and difficult.

Impairments may occur in family maintenance, the division of labor, and the ability to meet emotional needs, to communicate, and to socialize. Key concepts of family systems theories focus on the family's ability to adapt and reshape itself. Family systems are open or closed.

- **Open:** Adapts and copes by realistically acknowledging change; rules permit growth and adaptation
- **Closed:** Change is handled through attempts to maintain the status quo

Success

Successful adaptation requires communication, re-establishment of socialization patterns, and a balance between dependence and independence.

Key concepts related to the family's adaptation are:

- Communication systems
- Education (knowledge is power)
- Prior history of coping
- Support systems

Patients who are maladjusted tend to be dependent in self-care and health maintenance, have problematic social relationships, and seldom successfully return to work. Resentment may be obvious and a cycle of interpersonal dependency and control persists.

Equally problematic are patients who are maladjustedly independent. They overestimate their abilities and take risks that impair their safety.

Jacelon, 2011, Mauk, 2007

The education and interaction shared by the rehab team with the patient and family highly influence the perceptions and behaviors of the family system. Equally important to this relationship are the response patterns of the patient and family that provide feedback to the team and influence the team's approaches and interactions. An understanding of family dynamics can facilitate interventions and avoid creating difficult situations.

Reintegration results in a reestablishment of roles and relationships, increased self-reliance, and a balance of dependence and independence. Support groups facilitate this reintegration by:

- Providing a forum for sharing experiences and problem solving
- Proving a safe place for the expression of frustrations and fears
- Providing a forum for celebrating successes
- Providing education

Care of the Caregiver

The number of family caregivers is enormous and the tolls and strains that this role places on the person and the family system are just now being documented. It is not surprising to learn that family caregivers have increased stress and increased health problems that are directly related to failing to care for themselves while they are busy providing care for a loved one 24 hours per day, 7 days per week. Respite care can reduce stress and facilitate self-care, but it is often not pursued or not available.

41. List three things you should teach caregivers, prior to discharge, to help prevent burnout.

(The Rehab Nursing Series provides additional training on psychosocial issues and adaptation in the course *Down, Not Out! Providing Psychosocial Support in Rehabilitation*. You can find information at www.rehabclassworks.com/psych.htm.)

On the Computer: Psychosocial Issues: Pages 18-19. Use the Can You Cope Exercise and Quiz to review material.

On completion of the quiz, read the next page in this workbook, then go to the Main Menu on the computer to start the next section (Education & Community Reentry).

Core Curriculum supporting pages are: 11-12, 157-168, 347-364.

Patient/Family Education & Community Reentry

This section of the workbook contains two chapters.

- Patient/Family **Education**
- Community **Reentry**

You may proceed in this order or select the chapter you prefer to study. There are matching chapters in this workbook for each of the above. Simply go to the correct page in the computer course and the workbook to pursue your selection.

On the Computer: Community Reentry & Education Pages 1-3

CHAPTER 11

PATIENT & FAMILY EDUCATION

Education is the single most important tool we have for assisting patients to reach optimal levels of independent functioning. Through education and knowledge, we empower them and enable them to make competent decisions. In order to be effective teachers, we must be able to recognize when the patient or family member is ready to learn and be able to present material in an efficient and effective manner.

What is Your Job in this Chapter?

Your job in this chapter is to review strategies to enhance patient and family

Chapter Highlights

- Patients and their caregivers must learn a great deal about self-care. Psychosocial adaptation can interfere with readiness to learn.
- Rehabilitation team members need to learn to be effective teachers. It is important to really understand the burden of being a 24-hour caregiver every day.
- Team members should coordinate and collaborate in educational efforts in order to provide consistent information. Variations in messaging and training interfere with learning and compliance to recommended care strategies.
- Knowles Principles of Adult Learning can be helpful in developing educational strategies. Address first what your learner wants to know.

education, to describe how psychosocial stress can interfere with learning, and to review domains and theories of learning. As you review this information, identify strategies for improving the efficiency and effectiveness of your education efforts.

Rehabilitation nurses are involved in prevention of injury or illness, prevention of complications following disability, and promotion of health. This is the primary purpose behind education. Here is a quick review of levels of prevention.

- **Primary prevention** includes health-promotion activities directed at preventing a problem or complication, or improving a situation already present.
- **Secondary prevention** includes early diagnosis and treatment in an effort to limit the consequences of a disease or injury.
- **Tertiary prevention** includes activities that promote recovery, restoration, and rehabilitation following a disabling event.

Hoeman, 2007, Jacelon, 2011

On the Computer: Patient & Family Education Pages 4-12

Assessing Readiness to Learn

Effectiveness of teaching depends on the learner's readiness to learn. This is a key component of the education process, according to JC. How can you tell when the patient is ready and motivated to learn? One person cannot motivate another. The best we can do is to provide the environment and the opportunity for the other person to motivate himself.

- Generate a need
- Establish a sense of personal responsibility
- Be interesting and relevant
- Provide feedback
- Establish goals

1. What is the one most important thing you can do to increase the readiness to learn?

Knowledge Deficit

The majority of our patients have a knowledge deficit of some type. Individual learning preferences should be taken into consideration when planning interventions. Education should be presented at the developmental level of the learner. Particular care should be given to elderly caregivers to accommodate potential memory or sensory impairments, potential visual or auditory limitations, and the caregiver's own healthcare needs.

Teaching

Teaching takes advantage of spontaneous moments in which the patient/caregiver is ready to learn. Though unscheduled, this is a planned and organized component of care.

- What are the learning objectives? What should the patient/caregiver be able to do or know on completion of the teaching?
- What resources are available to facilitate teaching and learning?
- Where do the teaching activities occur? Is it conducive to learning?
- Who will be taught what?
- How will you know that the learner has learned what was taught?

Group and individual learning activities are used to educate patients and families. Each has its advantages and disadvantages.

Group

- Advantages: Social support available; can address a larger number of persons at one time
- Disadvantages: Less one-on-one interaction and clarification; some participants may be afraid to ask questions

Individual

- Advantages: Can be more personal and specific to needs; easier to evaluate understanding
- Disadvantages: Can take more time and cost more

In order to determine which approach is best, evaluate the learning needs and outcomes expected, and identify which process will most efficiently and effectively achieve the outcomes intended.

2. Identify key concepts of Knowles' Andralogical Model of Adult Learning.

Learning domains should also be considered when planning strategies for teaching.

3. Describe the affective, cognitive, and psychomotor components that should be included when teaching self-medication administration.

Objective evaluation of learning is the key to determining what actually has been learned and whether the information can be transferred into the real world. This also means objective documentation of responses: ***The wife states she understands how to administer the medication*** vs. ***the wife demonstrates setting up and administering of medications and correctly answers questions about side effects.***

The final evaluation of the effectiveness of teaching revolves around the ability of the patient/caregiver to retain information and incorporate it into daily routines and lifestyle. There are several components in this evaluation.

- Assessing the patient/caregiver's ability to incorporate newly-learned skills and information over time to determine adherence to health promotion and safety behaviors.
- Identifying and addressing barriers or causes of non-adherence.
- Facilitating critical thinking and problem-solving skills to support early management of potential problems in the community.

(The Rehab Nursing Series provides additional training on this topic in the course *See One, Do One: Patient & Family Education in Rehabilitation*. You can find information at www.rehabclassworks.com/PtEd.htm.)

Compassion Fatigue

Caregivers vested in the care of the patient are at risk for compassion fatigue. The empathy, concern, and caring they want to provide place them at risk, leading to a state of exhaustion and dysfunction. Risk increases with isolation and the level of personal demands. Prevention focuses on balance, respite care, quality sleep, exercise, and good self-care. (Nurses can develop this condition as well as family caregivers. If you are interested in more information, the following link may be of interest: http://www.nursinglink.com/training/articles/5497-compassion-fatigue-syndrome-what-is-it-do-you-have-it-. Although it is targeted to neonatal nurses, application of the principles extends to others.)

On the Computer: Education & Community Reentry: Test Your Knowledge Exercise Page 13; then start the Community Reentry chapter on pages 13-15.

Core Curriculum supporting pages are: 80, 82-83.

CHAPTER 12

COMMUNITY REENTRY

Community reentry requires planning, risk taking, and problem solving. Practical aspects often are much easier to address than the changes in attitudes.

What is Your Job in this Chapter?

Your job in this chapter is to identify skills and resources needed by patients when they return to community living. You are invited to experience the transition to community living through the eyes of Katy, and to learn from her experience how to support community reentry activities.

On the Computer: Education & Community Reentry Pages 16-22

Chapter Highlights

- Discharge planning should consider transitions to the next level of care and should provide opportunities for practicing needed skills. It starts on admission!
- All inpatient rehabilitation team members should understand the basics of a home assessment, and should address and reinforce safety issues.
- Barriers to access in the community occur in the home and potentially in any area of the community. Legislation has improved access, but not removed barriers. Reinforce safety considerations when problem solving barriers.
- Rehabilitation nurses must be aware of changes in technology, populations, regulations, legislation, and social constructs affecting care.

After a considerable amount of hard work and significant amounts of planning, patients in inpatient settings return to the community.

This return to real life is both a celebration and a challenge. Barriers are everywhere: housing, accessibility, finances, access to healthcare, transportation, employment, and recreational activities. Preparations for discharge should include community outings and opportunities to test skills in the home environment. Success may be dependent on skill development and access to appropriate support resources. Education, training, and good problem-solving skills are the best tools for reentering the mainstream of society.

Therapeutic community tasks are addressed by various team members. Some organizations utilize a special community skills therapist with an OT, PT, or Recreational Therapy background. Others send patients with family members to complete tasks and assess for success or problem areas. The method is variable. The experience is invaluable. The coverage by insurance companies is debatable. And, that often determines the depth of this experience for patients. (While this is a valued practice in rehabilitation care, insurance companies may not support the activity, so it must be used selectively and the therapeutic value must be documented. See the ***Got a Plan, Man? Patient-Centered Interdisciplinary Care Planning in Rehabilitation*** course at www.rehabclassworks.com/plan.htm for more specific information regarding the use of therapeutic community passes to improve discharge planning.)

Community Living Skills

Successful community living requires housing, transportation, self-care, and access to necessary supplies. Resources available should be assessed and investigated to most effectively meet needs of care without undue burden on the family system. Community access should be assessed for barriers to roles and community living.

An accessible community allows those with disability to be able to participate in their roles in life. Regaining function alone is not rehabilitation; it has to be applied to life and lifestyles.

Can You Do It Better?

Patients may find entirely too much time is taken up with healthcare and self-care maintenance activities or that there is too much free time with nothing to do. What can you do in discharge planning to assist them in developing a balanced lifestyle?

1. Identify four areas of a home that need to be assessed for community living.

2. Identify four community-level self-care activities.

Many persons with disability require the use of a wheelchair for mobility in the home and/or the community. When a person spends a great deal of time in a wheelchair, it is important that it is fitted appropriately to reduce the risk of skin problems and musculoskeletal discomfort from poor positioning. The correct type of chair should be selected to maximize mobility and reduce the risk of wear-and-tear injury of the arms that can occur with extensive use.

Fitting a wheelchair:

- Seat height from the floor, determined by measuring the length of the leg from the bottom of the heel to the popliteal fold, is important if the patient will be self-propelling, and for safety and effectiveness performing transfers.
- Appropriate seat depth, measured from the popliteal fold to the back of the buttocks, provides appropriate support and prevents pressure at the back of the knee.
- Standard back height of wheelchairs is measured from the bottom of the buttocks to the scapula. Sports and active chairs generally have lower backs. Patients with posture and balance problems require higher backs.

- The armrest is positioned to support the arm in neutral position, measured from the bottom of the buttocks to the bottom of a flexed arm in a relaxed position.
- Adequate width prevents pressure areas from developing. It is determined by measuring the widest part of the hips.

3. List five pieces of adaptive equipment, besides a wheelchair, which can enhance independence in the home.

4. Identify four safety measures for cognitively-impaired persons in the home.

5. List at least three issues related to emergency safety that should be addressed prior to community living of patients with significant disability.

Return to Work

Vocational rehabilitation is a valuable service for persons with disability who want and need to be employed.

- Adolescents are provided a comprehensive transition plan regarding services and support needed for postsecondary education, job training, and

community living, as a requirement of the Individuals with Disabilities Education Act of 1997.

- Adults who have sustained a disability may need vocational counseling and job retraining in order to return to employment. Vocational rehabilitation services are governed by many laws and supported by federal monies to assist the person with disability in this transition.

Diversional Activity Deficit

What an unbalanced life we would lead without recreational activities! A key benefit of recreational activities can be their ability to support the patient in his efforts to reestablish himself as an active, competitive person. Participation in recreational activities depends on the interest, functional skills, and financial resources of the patient.

6. What is the first thing you would assess regarding diversional activity?

7. List three adapted sports/recreational activities available in your community.

On the Computer: Education & Community Reentry: Pages 23-24. Use the Yellow Brick Road exercise and quiz to review material.

On completion of the quiz, go to the next page and start the next section (Anatomy & Physiology Review).

Core Curriculum supporting pages are: 83-101.

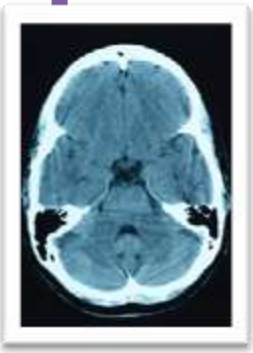
ANATOMY & PHYSIOLOGY REVIEW

This section of the workbook contains one chapter addressing physiology issues common to rehabilitation care.

As you work your way through this chapter, think about the impact different illnesses and injuries common to rehabilitation settings have on these body systems. Consider how an impact on one system can have a direct impact on another. Successful rehabilitation care strategies balance all systems for best outcomes.

On the Computer: Anatomy & Physiology: Pages 1-2

CHAPTER 13



ANATOMY & PHYSIOLOGY REVIEW

A basic understanding of normal physiology allows deductive reasoning to assist in understanding pathological disease processes.

What is Your Job in this Chapter?

Your job in this chapter is to review normal functioning of the body systems such as the neurological, cardiac, respiratory, GI, and GU systems in preparation for applying this information to the problems that commonly occur in rehabilitation patients.

Chapter Highlights

- Knowledge of neuroanatomy facilitates understanding of the impact of neurological injury and disease.
- Review function of the cardiopulmonary systems; their dysfunction may be primary or secondary causes of the need for rehabilitation.
- Genitourinary and gastrointestinal dysfunctions are common in rehabilitation patients. Knowledge of normal function facilitates effective application of interventions that normalize the function of these systems.
- Relate the content of this chapter to the diagnoses of your patients so that you can make correlations between function and injury.

An understanding of sensory inflow, motor control, and cognitive process is essential to management of patients with neurological diseases.

As significant portions of rehab patients suffer from neurological diseases or injuries, you should be very familiar with the functioning of the central nervous system. If you need a more in-depth review of this material, access your favorite physiology text.

On the Computer: Anatomy & Physiology Pages 3-26

Brain Strain

Start this review with a trip through the brain. A great deal of information is processed in our brains. Stroke and other forms of brain injury impact brain function in a variety of ways.

Division in Hemispheres

An understanding of hemispheric function helps to explain the changes that occur with brain function following stroke. Remember that, generically, the right side of the brain controls the left side of the body, and the left side of the brain controls the right side of the body. Some other functions are more heavily managed by one side of the brain or the other.

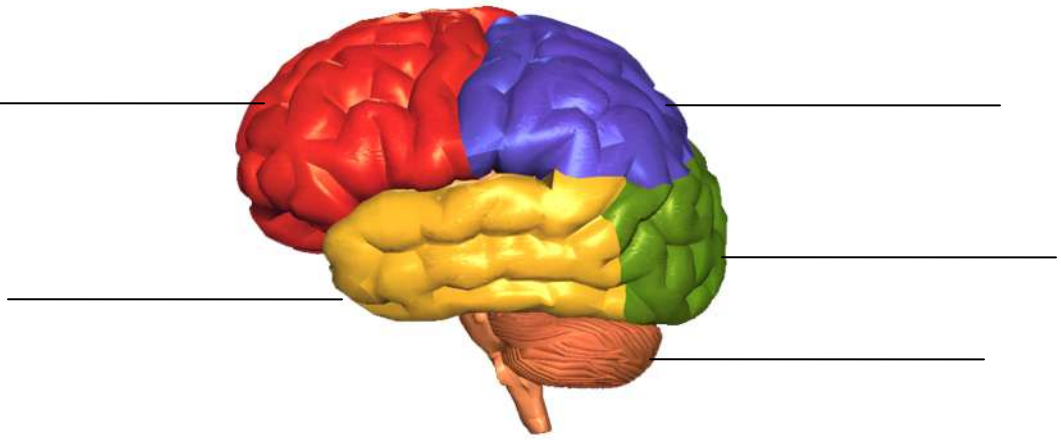
Identify which of the following activities are left brain activities and which are right brain activities by putting an **R** or an **L** in front of each.

1. _____ Speech and language
2. _____ Left/right discrimination
3. _____ Constructional skills
4. _____ Analytical reasoning
5. _____ Proprioception
6. _____ Spatial perception

Division in Lobes

The brain is further divided into lobes. Each lobe has a particular focus. But make no mistake, they are highly integrated!

7. Label each lobe of the brain in this picture.



You reviewed the activities associated with different lobes of the brain in the exercises in the computer course. What do you remember?

Identify which activities are associated with each lobe of the brain. Your choices are:

Frontal Lobe (F) Parietal Lobe (P) Temporal Lobe (T)

Occipital Lobe (O) Cerebellum (C)

8. _____Executive functioning
9. _____Recognition of objects
10. _____Body awareness
11. _____Reception of sensory impulses
12. _____Screening out unnecessary stimuli
13. _____Interpretation of the sensations of touch, pressure, temperature, and pain
14. _____Location of memorized patterns of movement
15. _____Initiates voluntary movement
16. _____Seat of personality
17. _____Spatial relationships

18. _____Speech motor area in the left hemisphere

19. _____Interpretation of balance

20. _____Control of the amount of muscle tone

21. _____Concentration

22. _____Complex problem solving

23. _____Logical thinking

24. _____Abstract thinking

25. _____Future planning

26. _____Voluntary muscle coordination

27. _____Interpretation of visual information

28. _____Complicated math problems

29. _____Recognition of the meaning of written words

30. _____Recognition of tones, loudness, and qualities of sound

31. _____Interpretation of the meanings of spoken words

32. _____Modifies speed, force, and accuracy of movement

33. _____Storage of short term memory

Internal Structures

The internal structures of the brain control many important areas for screening of information, modulating body functions, and fine-tuning outgoing messages. Check your memory again… Identify which activities are associated with each internal structure of the brain. Your choices are:

Hypothalamus (H) Basal Ganglia (BG) Thalamus (T)

Limbic System (LS) Internal Capsule (IC) Medulla (M) Pons (P)

Reticular Activating Center (RAS)

34. _____Contains centers that work with the hypothalamus to control body temperature

35. _____All motor fibers converge here

36. _____Affects motivation and attention

37. _____ Secretion of anti-diuretic hormone

38. _____ Contains the respiratory center that establishes rhythmic breathing and increases ventilation when CO_2 level increases (chemical receptors sensitive to CO_2)

39. _____Satiety center

40. _____Cranial nerves originate here

41. _____Important in the storage of memory

42. _____Contains vasodilation and vasopressor centers

43. _____Initial recognition of sensory information: pain, touch, and pressure

44. _____Smooths out movement and makes postural adjustments

45. _____Regulation of vegetative functions via control of the autonomic nervous system

46. _____ Works with the hypothalamus and autonomic nervous system to regulate hunger, thirst, and sleep/wake patterns

47. _____Helps maintain bio-rhythms

48. _____Contains swallowing and vomiting centers

49. _____Relay station for sensory information, routing to correct area of the brain

50. _____Injury to this area may result in hyperarousal

51. _____Differentiates pleasant from unpleasant feelings

52. _____Active in controlling levels of consciousness, damage results in a coma, major role in attention and concentration, establishes "*selective attention*"

53. _____Contains the apneustic center (initiates inspiration) and the pneumotaxic center (inhibits inspiration)

54. _____Testing for damage to the area includes testing the oculocephalic (doll's eye) and oculovestibular (calorics) reflex

55. _____Important role in primitive behaviors: fight, flight, food, and sexual arousal

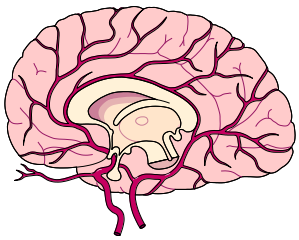
56. _____Injury in this area will result in rigidity and bradykinesia

Cerebral Circulation

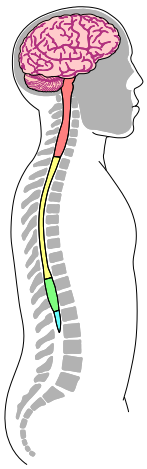
Oxygenation of the brain is critical to brain function.

57. Circle the correct choice: The primary regulator for blood flow to the brain is (carbon dioxide/oxygen).

58. Identify the **anterior** cerebral arteries and **posterior** cerebral arteries on this picture.



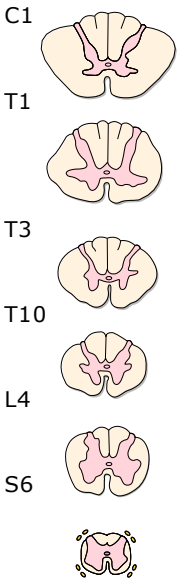
59. What is the purpose of the Circle of Willis?



Spinal Cord

The spinal cord changes as you descend the spinal column. Spinal nerves exit between each of the vertebrae. These nerves are labeled in relationship to the area of the spinal column where they exit. However, there is not a direct correlation between each nerve and each vertebra.

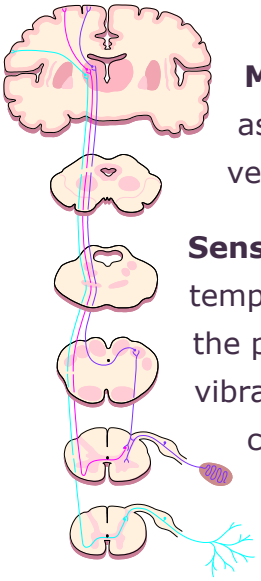
60. Where are the discrepancies?



Motor neurons travel from the brain down the spinal cord, where they relay information to the peripheral nervous system. Describe the following terms:

61. Upper motor neuron:

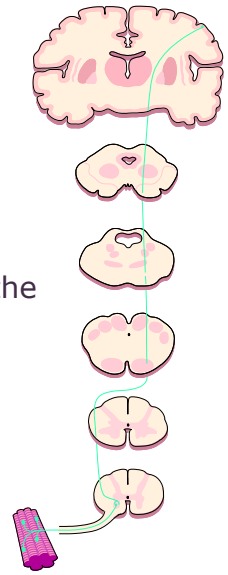
62. Lower motor neuron:



Motor nerve tracts descend the spinal cord; sensory nerve tracts ascend it. Motor nerve tracts include the lateral corticospinal, the ventral corticospinal, and the extrapyramidal.

Sensory nerve tracts include the anterolateral (pain, temperature, crude touch, tickle, itch, and sexual sensations) and the posterior (dorsal) column or medial lemniscal system (tactile, vibratory, and proprioceptive sensation). The anterolateral tract crosses in the spinal cord and the posterior column crosses in the medulla.

Ascending Tract

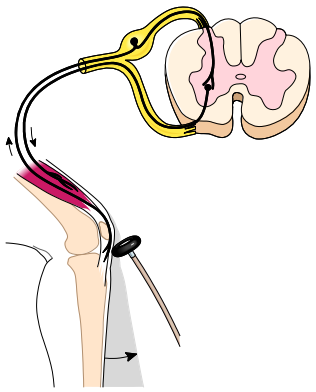


Descending Tract

Reflex Responses

Many responses and functions of the body (such as maintaining posture and protective mechanisms) are dependent on reflex actions.

63. Describe a simple reflex arc.



Assessment

Common language when assessing a patient's strength or reflex response is important to good communication. Learn these terms for effective communication with therapists. Match the definition with the score.

Muscle Strength or Grade: **1 2 3 4 5**

64. _____full ROM, gravity eliminated
65. _____no contraction
66. _____full ROM against gravity
67. _____full ROM against resistance
68. _____full ROM against moderate resistance

Deep Tendon Reflexes: **0+ 1+ 2+ 3+ 4+**

69. _____hyperactive with or without clonus
70. _____diminished
71. _____increased
72. _____normal
73. _____absent

Dermatomes

Cutaneous sensations are received via sensory nerves distributed throughout the body. When sensory deficits are suspected, assessment of dermatomes demonstrates the pattern of impairment. Sensory perception of light/deep touch, pain, discrimination, proprioception, tickle, and temperature should be tested.

Autonomic Nervous System

Sympathetic and parasympathetic systems counterbalance each other. Many of the medications used to manage healthcare needs of rehabilitation patients act on these systems.

Identify whether these functions are **sympathetic (S)** or **parasympathetic (P)**.

74. __ Constriction of pupils
75. __ Pupil dilation
76. __ Stimulation of sweat glands
77. __ Constriction of superficial blood vessels
78. __ Secretion of saliva
79. __ Slowing of heart rate
80. __ Increased heart rate
81. __ Relaxation of bronchial airways
82. __ Constriction of bronchial airways
83. __ Gastric secretion
84. __ Emptying of the stomach
85. __ Relaxation of rectal sphincters
86. __ Constriction of sphincters of the gut and rectum
87. __ Mobilization of the liver's glycogen store
88. __ Bladder relaxation
89. __ Bladder contraction
90. __ Relaxation of bladder sphincter
91. __ Constriction of bladder sphincter
92. __ Vasodilation of the genitalia
93. __ Vasoconstriction of the genitalia

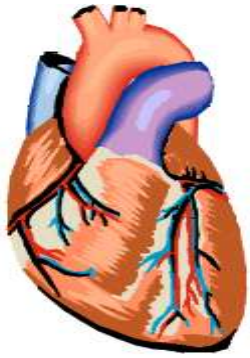
Cardiopulmonary System

In rehab practice, it is common to see co-morbidities of the cardiac and respiratory system. Thus, a brief review is warranted. (For a more in-depth review, please refer to a physiology text).

The Heart

The heart initiates contractions through excitation at the SA node. This electronic wave travels across the atria to the AV node and then across the ventricle. Disorders of conduction are reflected in EKG patterns.

Rate and contractility of the heart are fine-tuned to meet the body's requirements. These adjustments are mediated by the autonomic nervous system's response to sensory data collected by regulatory centers in the brain (hypothalamus, medulla, and cortex) and major blood vessels.



- Parasympathetic stimulation of the vagus nerve (CN X) decreases heart rate, force of contraction, and excitability.
- The sympathetic nervous system increases the rate, force, conductivity, and excitability of the heart.

The sympathetic and parasympathetic nervous systems are both in action all the time, balancing their input to meet the body's demands.

94. Name three factors affecting coronary artery performance.

The Vessels

Arteries also are under the influence of the parasympathetic and sympathetic nervous systems.

95. What are the two main factors affecting blood pressure?

Fill in the blanks:

96. Mean Arterial Pressure = _____ X Total Peripheral Resistance.

97. Cardiac Output = Heart Rate X _____.

Respirations

Normal respirations are automatic and involuntary and controlled by centers in the medulla and pons. Primary innervation of the diaphragm is from the $C_{3, 4, 5}$ levels of the spinal cord. These nerves form the phrenic nerve. Oxygen, carbon dioxide, and hydrogen levels in the blood stimulate the respiratory centers to regulate breathing.

Complete the following phrases.

98. A fall in CO_2 blood levels slightly depresses respiratory centers, resulting in _____ breathing.

99. An increase in CO_2 will result in an increase in H^+ in the cerebral spinal fluid, stimulating respiratory centers and _____ rate and depth of breathing.

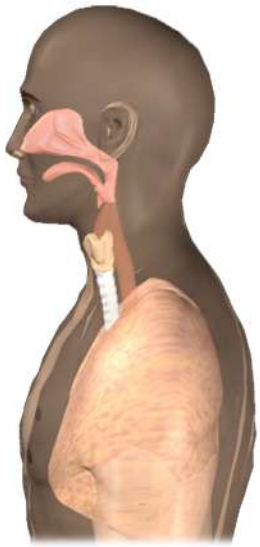
100. Arterial PaO_2 has to fall below _____ mm Hg in order to get a response from respiratory chemoreceptors.

101. A severe lack of oxygen _____ the respiratory centers.

Swallowing

There are three stages to a normal swallow.

- Oral phase
- Pharyngeal phase
- Esophageal phase



Unscramble the letters to complete the following statements.

102. Oral phase activities include lip _____(lurscoe), to keep food in the mouth, and forming food into a _____ (lsuob).

103. During the oral phase, the _____ (uegnto) elevates and sends the bolus to the _____ (pxynhar).

104. The most important activity in the pharyngeal phase is protection of the_____ (waariy).

Bowel Elimination

Neurological control of bowel elimination is a coordinated effort between the brain and the reflexes at the sacral level of the spinal cord.

Describe the following reflexes.

105. Gastrocolic Reflex:

106. Defecation Reflex:

107. Identify at least five factors influencing bowel elimination.

Complete the following:

108. Sympathetic stimulation of the colon will _____ the walls of the colon.

109. Sympathetic stimulation of the internal and external sphincter in the anal canal will cause _____ of the sphincter.

110. Parasympathetic stimulation of the internal sphincter in the anal canal will result in _____ of the sphincter.

Urinary Elimination

Kidney function is critical to fluid and electrolyte balance. Bladder function determines continence.

Balancing Fluids

Body fluids are either intracellular or extracellular. Sodium is the primary solute in extracellular fluids. It reflects the osmolality of the blood. Osmolality drives fluid shifting between intracellular and extracellular fluids. To maintain homeostasis, fluid volumes are regulated by the antidiuretic hormone, aldosterone, and other hormones. Variance in hormone secretion is driven by osmolality and is influenced by many factors. Indicate **increase(s)** or **decrease(s)** to complete each statement below.

111. If serum sodium decreases, osmolality _____.

112. If blood osmolality is concentrated, ADH secretion _____ to raise the body's fluid level.

113. If blood osmolality is dilute, ADH secretion _____ to lower the body's fluid level.

114. Hypotension causes a(n) _____ in ADH secretion.

115. Alcohol causes a(n) _____ in ADH secretion.

116. Hypoglycemia causes a(n) _____ in ADH secretion.

117. Aldosterone promotes reabsorption of sodium that will _____ fluid volumes.

Dehydration is a common problem for patients in rehab settings.

118. List at least three causes of fluid volume deficits.

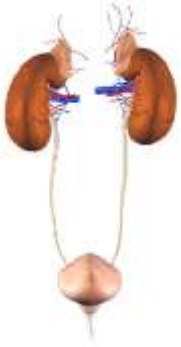
119. List the signs and symptoms of fluid volume deficits.

Co-morbidities and the effects of medications may result in fluid volume excesses.

120. Identify at least three causes of fluid volume excess and indicate whether your selections are localized or systemic problems.

121. Identify interventions for fluid volume excess resulting in edema.

Bladder Function



Neurological control of bladder elimination also is a coordinated effort between the brain and the reflexes at the sacral level of the spinal cord.

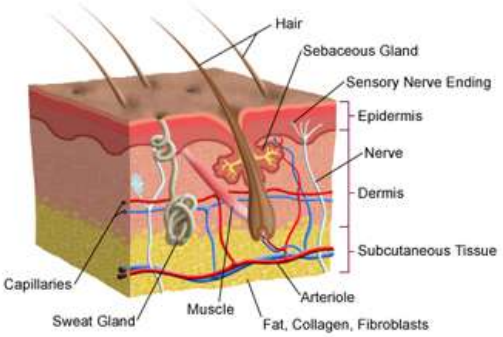
In normal voiding, increased muscle tone in the urethral sphincters and the pelvic floor muscles maintain continence while intravesical pressures slowly rise. When bladder volumes are large enough to stimulate the stretch receptors of the bladder (detrusor) wall, the micturition threshold is breached, pressure increases, and the urge to void is felt.

Sympathetic stimulation increases urethral sphincter tone and inhibits bladder contraction. The cortex controls contractions of the external sphincter via the pudendal nerve (known as the guarding reflex). The reflex arc is actively inhibited in this manner and continence is maintained.

When the decision to void is made, the brain (coordinated by the cortex, pons, and midbrain) allows the external sphincter to relax and sympathetic stimulation decreases. This allows for increased parasympathetic action, resulting in relaxation of the bladder wall.

122. What complication can occur if there is poor coordination of bladder wall contractions and sphincter relaxation?

Skin



The skin primarily functions as a protective barrier for our bodies. It is moisture-proof and protects against dehydration and the invasion of harmful substances such as bacteria, viruses, and some chemicals.

- It contains a layer of subcutaneous tissue that functions as a shock absorber and insulator.
- It contains sweat glands to assist in temperature regulation and the excretion of water, electrolytes, and waste.

Identify which level (**epidermis, dermis, or subcutaneous**) has the following functions.

123. _____ Contains no blood vessels; melanosomes, which determine skin color, are located here

124. _____ A very elastic layer which contains large amounts of collagen proteins and elastin

125. _____ Varies in depth; contains connective tissue, blood, lymph vessels, and nerve endings

Sleep

Adequate sleep is essential for normal body functioning. It impacts all systems, including hormonal regulation, ability to lay down new memories, cognitive processes, energy levels, and more. Depression, decreased immune response, and increased pain are associated with poor quality sleep. (Caffeine can momentarily improve functions impacted by the effects of sleep deprivation, but cannot do so for extended periods of time. However, non-sleep-deprived persons see much bigger gains from the influence of caffeine on cognitive functioning.)

REM and deep sleep cycles have been correlated with laying down new memories and cognitive functioning.

- The first REM cycle occurs about 90 minutes after falling asleep and lasts about 10 minutes.
- Each recurring REM cycle lasts a bit longer, and the last one may last as long as an hour.
- Brainwave patterns during REM sleep are similar to those recorded when awake.
- Pulse and respiration can speed up and become erratic during REM sleep.

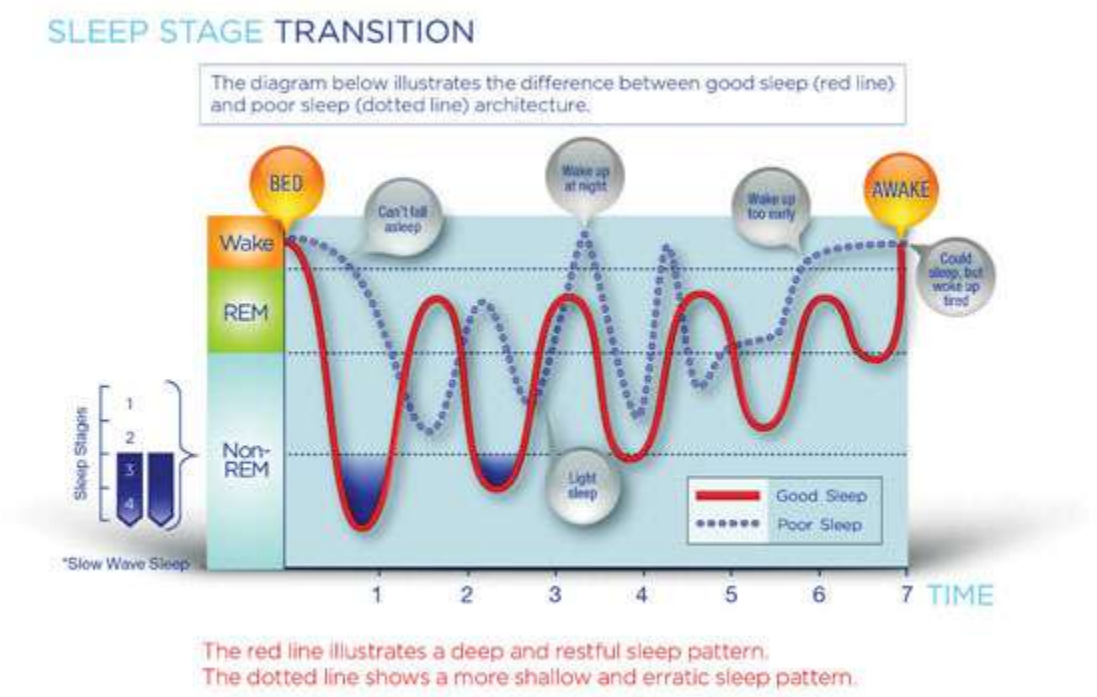
McPherson, 2012, Jacelon, 2011

Answer these questions True or False.

126. _____ Sleep deprivation is cumulative in its impact on the body and cognitive functioning.

127. _____ Chronic sleep deprivation is associated with weight gain.

128. _____ Chronic sleep deprivation is associated with stroke, hypertension, impaired glucose tolerance, and fibromyalgia.



On the Computer: Anatomy & Physiology: Pages 27-28.

Use the All Systems Go! exercise and the Quiz to review material.

On completion of the Quiz, go to the next page in this Workbook and, on the Main Menu of the computer, start the next section (Care of Patients: CVA, SCI, TBI).

Core Curriculum supporting pages are: 109-120, 128-131, 171-185.

Care of Patients: Stroke (CVA), Traumatic Brain Injury (TBI), & Spinal Cord Injury (SCI)

This section of the workbook contains three chapters.

- Care of the Patient: **Stroke**
- Care of the Patient: **Traumatic Brain Injury**
- Care of the Patient: **Spinal Cord Injury**

You may proceed in this order or select the chapter you prefer to study. There are matching chapters in the computer course for each of the above. Simply go to the correct page in the computer course and the workbook to pursue your selection.

On the Computer: Care of the Patient: CVA, TBI, & SCI Pages 1-3

CERTIFICATION REVIEW FOR REHABILITATION NURSING

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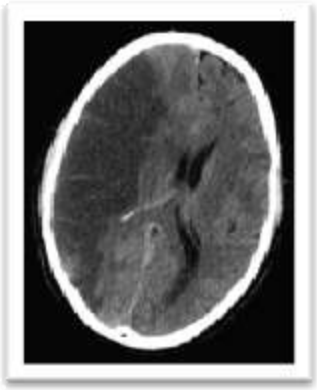


CHAPTER 14

CARE OF PATIENTS: STROKE

The severity of the stroke, area of the brain affected, residual deficits, and co-morbidities are taken into consideration when developing a rehabilitation plan for a patient who has suffered a stroke.

What is Your Job in this Chapter?

In this chapter, your job is to describe the cause and effect of stroke and to review key care strategies for patients with stroke.

Chapter Highlights

- Evidence-based care for acute stroke emphasizes quick response and prevention of secondary complications.
- There are obvious patterns of deficit for right, left, or cerebellar strokes. Rehabilitation nurses recognize these patterns and anticipate patient needs.
- A comprehensive approach to dysphagia management reduces risk, maintains nutrition and hydration, and provides appropriate stimulation for improvement in swallowing function.
- Community reentry strategies require care of the caregiver as well as a thorough assessment of patient safety issues.

There are millions of stroke survivors in our communities, and there are many who have died from stroke. It ranks third for the most common cause of death in the United States.

On the Computer: CVA, TBI, & SCI Pages 4-40

Stroke Risk

Risk can be decreased through lifestyle choices. One of the primary concerns in the prevention of stroke is compliance to antihypertensive medication regimens.

Public education efforts are underway to encourage recognition of risk factors for stroke. Controlling modifiable risk factors with diet, exercise, and healthy choices can reduce the incidence of stroke. Control of hypertension and diabetes is paramount. Research continues to identify other risk factors, such as depression in those under the age of 65 and menopause before age 42 in women.

Jacelon, 2011

1. List ten other risk factors for stroke.

2. List five symptoms or warning signs of stroke.

Types of Stroke

There are two types of strokes.

- Ischemic
- Hemorrhagic

3. Which type is most common?

Residual deficits of stroke often follow common and predictable patterns dictated by the vessels involved. The most common vessel involved is the middle cerebral artery.

4. What psychosocial changes commonly occur following a stroke?

Indicate whether the following deficits are more typical of **right (R)** or **left (L)** hemisphere strokes:

5. _____ Right-sided paralysis
6. _____ Difficulty with depth perception and directional concepts
7. _____ Difficulty with math problems
8. _____ Denial of deficits and lack of insight
9. _____ Impulsivity
10. _____ Difficulty with symbolic interpretation
11. _____ Difficulty with geographic memory
12. _____ Speech and language deficits
13. _____ Left-sided paralysis
14. _____ Difficulty with analytical thinking
15. _____ Impaired balance
16. _____ Unilateral neglect
17. _____ Somatagnosia
18. _____ Cautious, hesitant behavior
19. _____ Socially-inappropriate behavior
20. _____ Figure-ground deficits
21. _____ Constructional and dressing problems
22. _____ Egocentricity
23. _____ Right/Left discrimination problems

Brainstem infarcts affect most cranial nerves and motor control, leaving impairments such as:

- Dysarthria
- Dysphagia
- Ataxia
- Quadriparesis or quadriplegia (tetraplegia)
- Balance and coordination problems
- Double or blurred vision
- Vertigo
- Abnormal respirations
- Temperature fluctuations
- Coma or persistent vegetative state
- Locked-in syndrome

Acute Management

Acute management of a cerebral vascular accident includes identifying whether it is a hemorrhagic or ischemic problem. Research has produced standardized protocols and guidelines for emergent care of patients with stroke. The type of stroke directs interventions. The goal of management in a hemorrhagic stroke is to control the bleeding and, if possible, to limit its damage. Interventions for ischemic strokes strive to destroy the clot and re-perfuse the area. Other interventions may be used to lower blood pressure and prevent cerebral vasospasm. Education and healthcare to prevent recurrent strokes starts here and continues throughout the rest of the patient's life.

Rehabilitative Care

Rehabilitative care assists stroke survivors and their families in self-care, mobility, safety, and management of healthcare. Do not underestimate the impact of cognitive and emotional changes in a patient following a stroke. Role change can be devastating. Teach family members how to adjust to these changes.

24. Identify three complications common to stroke patients.

Mobility and Activity

The ability to move and tolerance to exercise are basic to self-care and functional mobility. Impairment in mobility is one of the most common reasons for admission to rehab services. Rehab nurses are expected to work consistently with the rest of the team to address these problems. Mobility problems from stroke are related to UMN damage of the central nervous system.

25. Which of the following are TRUE?

    a. Most patients develop spasticity in affected limbs immediately following stroke.

    b. It is common for patients to be left with ongoing flaccid extremities following stroke.

    c. Contractures are a high risk in stroke patients with spasticity following stroke.

    d. Flaccid extremities should be handled with care to prevent joint, muscle, and nerve damage.

Neurophysiological Care

A variety of neurophysiological approaches have been used in rehab settings including:

- Bobath's Neurodevelopmental Technique (NDT)
- Brunnstrom's Movement Therapy Approach
- Proprioceptive Neuromuscular Facilitation (PNF)
- Rood's Sensorimotor Approach

These techniques emphasize sensory input, which influences a specific motor output. All neurodevelopmental approaches recognize the brain's ability to reorganize, learn, and adapt by developing new synaptic pathways. Abnormal posture and movements develop when brain damage results in altered or impaired sensation. Rather than compensating for deficits, these approaches emphasize recovery by providing stimuli to enable patients to relearn posture and movement patterns.

Your therapists probably use one or more of these techniques in their practice. It is suggested that you become familiar with the techniques and capitalize on the skills being taught to the patient in therapy, because this will assist you both in moving the patient in bed and in transferring him.

Principles of Mobilization

The basic premise of mobilization is that foundation skills must be developed before more advanced skills will be mastered. This provides a sound guideline for prioritizing care for your patients. Address your patients' needs in a hierarchical system:

- Positioning
- Transitional Activities
- Functional Activities
- Functional Mobility

Positioning

Appropriate Positioning:

- Supports joints
- Prevents the development of contractures
- Inhibits the development of abnormal muscle tone
- Promotes functional recovery

26. What do you need to remember when positioning patients with flaccid paralysis?

27. What strategies will you use for a patient with spastic paralysis to decrease spasticity?

28. What must you remember when doing ROM for a patient with spasticity?

29. Name three antispasmodic medications.

30. What is the most common side effect of antispasmodics?

Transitional Activities

Transitional activities provide the foundation for future movement activities. They focus on increasing strength, developing head and trunk control, and increasing awareness of the body in space. Failure to adequately develop head and trunk control has a significant impact on other activities such as sitting, transfers, and ambulation.

31. Identify three things you can incorporate into your daily care to facilitate the development of head and trunk control.

Functional Activities

As the patient develops enough strength and control, he can begin to increase participation in functional activities, including bed mobility, sitting balance, and transfers. General principles include:

- Assist only as much as necessary
- Allow the patient adequate time to participate
- Use assistive devices appropriately
- Use a consistent technique
- Always maintain the safety of all involved
- Always follow ordered precautions or limitations

32. Identify two strategies that will facilitate rolling in hemiplegic patients.

33. Describe the position a patient should be in to facilitate sitting balance.

34. Many patients with hemiplegia use an AFO (ankle-foot orthosis) during ambulation. What is its purpose?

35. Describe how you insure that the strategies used to transfer patients are consistent among team members.

Functional Mobility

Functional mobility for many of our patients is dependent on selecting appropriate equipment to meet the environmental and functional limitations of the patient.

36. List those aspects of a wheelchair that should be fitted to the patient.

37. Identify at least three hazards patients should be taught to negotiate in the community.

(The Rehab Nursing Series provides additional training on moving and handling patients in the course *Take Care! Safe Patient Handling Works!* You can find information at www.rehabclassworks.com/sph.htm.)

Perceptual Deficits

Many stroke patients must learn to do self-care with one hand. Sometimes this is the non-dominant hand and sometimes this is compounded by apraxias and other perceptual problems. Define the following terms.

38. Somatagnosia

39. Anosognosia

40. Homonymous hemianopsia

41. Figure-ground deficit

42. Form-constancy deficit

43. Unilateral neglect

44. Impairment in geographic-topographic memory

45. Apraxia

46. Dressing apraxia

47. Ideational apraxia

48. Ideomotor apraxia

49. Constructional apraxia

In order to assist your patient to be as independent as possible, there must be:

- A safe environment
- Access to appropriate equipment
- Opportunity to practice skill development in an organized and consistent manner

Organizing the environment and increasing contrasts between foreground and background often are effective strategies used to address perceptual deficits. This can be done by highlighting important items with bright colors, using partitions and dividers in drawers and closets to organize materials, keeping the environment well lit, etc.

Apraxias are best managed with a consistent approach in training, which will allow the patient to lay down new patterns of behavior. Practice is critical to success. Some patients will require the development of a cuing system to assist in initiation of an activity.

Patients with homonymous hemianopsia should be taught to scan the environment. Unilateral neglect is difficult to remedy, requiring much more effort than simply teaching the patient to scan to that side. The patient needs to handle the affected side as much as possible to reintegrate it into his perception of self.

50. Describe key concepts you will use to assist a hemiplegic patient with self-care.

Swallowing Impairments

Dysphagia is a common problem for patients following stroke. Control of the environment, food consistency and rate, and positioning are critical to preventing aspiration and the development of pneumonia. Evidence of problems in the oral phase of swallowing includes:

- Drooling on weak side of mouth
- Asymmetry of the face
- Pocketing food in the cheek on the weak side
- Altered tongue control
- Altered lip control and inability to close lips tightly

- Weak or absent gag reflex
- Extended periods of time required to finish a meal
- Altered oral sensation

51. Identify at least three signs/symptoms of problems during the pharyngeal phase of swallowing.

52. Identify at least two signs/symptoms of problems during the esophageal phase of swallowing.

53. What should you incorporate into your plan of care as a preventive measure if your patient is at high risk for aspirating?

Consistency in approach role-models management strategies for family caregivers and facilitates successful training of the patient. Identify appropriate interventions for each category of care employed in the management of dysphagia.

54. Positioning

55. Environment

56. Dietary selection

57. Rate and amount of food

58. Assistive devices

59. Therapeutic techniques

Alterations in Nutrition

Elderly patients have an increased risk for alterations in nutrition. Premorbid problems may include protein, hydration, and vitamin deficiencies. This is further compounded with stroke or dysphagia. If the patient is 20% or more below ideal body weight, nutritional intake is considered to be poor.

60. What lab values should you monitor to evaluate your patient's nutritional status?

Other issues, such as side effects of medications, paralysis, ill-fitting dentures, or lack of appropriate equipment or resources can contribute to malnutrition.

61. Identify at least three interventions you would use to assist an elderly patient, who is post stroke, with a poor nutritional intake.

Fluid Balance Deficit

Dehydration is common in the elderly and is compounded significantly by dysphagia and changes in environment and routine. This is one of the most common problems our patients face.

62. How will you help a patient with dysphagia maintain an adequate fluid intake?

Bowel Elimination

Constipation is the most common bowel problem faced by the elderly. Stroke may bring its own problems with the development of an uninhibited neurogenic bowel.

63. What signs/symptoms will you see to indicate an uninhibited neurogenic bowel problem?

It is necessary to assess your patient carefully to determine whether the problem is primarily constipation or neurogenic, or a combination of both. Premorbid histories can be helpful in making this determination and in implementing a plan of care. Prior to starting any bowel program, you should make sure the bowel is free of impaction.

64. Describe the interventions you would use if the problem were primarily a constipation problem.

65. Describe the interventions you would use if the problem were primarily one of an uninhibited neurogenic bowel.

Urinary Elimination

An assessment of premorbid voiding patterns and problems will help identify the type of bladder problem your patient is facing following a stroke. The most common bladder problem related to stroke is uninhibited neurogenic bladder resulting in urge incontinence.

Nursing Diagnosis

Urge incontinence related to uninhibited neurogenic bladder secondary to stroke

66. List at least five premorbid conditions that may contribute to bladder incontinence.

67. What signs/symptoms will you see to indicate an uninhibited neurogenic bladder problem?

68. List at least three routine interventions you will use with a patient with uninhibited neurogenic bladder problems.

It is suggested that you begin with timed voiding or habit training and advance to prompted voiding as the patient's cognitive status, strength, and mobility improve. Bladder retraining is most appropriate for stress or urge incontinence; it requires strong cognitive control of the sensation of the need to void.

Define the following bladder programs:

69. Timed Voiding:

70. Habit Training:

71. Bladder Retraining:

72. Prompted Voiding:

If these techniques are unsuccessful, the team may consider the use of medications such as anticholinergics/antispasmodics, musculoskeletal relaxants, calcium antagonists, tricyclic antidepressants, and beta-adrenergic antagonists (propantheline, Pro-Banthine), imiprimine (Tofranil), oxybutynin (Ditropan), flavoxate (Urispas), dicyclomine (Bentyl), terbutaline.

Functional incontinence is a frequent problem for patients with mobility limitations. This type of incontinence results from limits in the environment, which inhibit the patient's ability to use the facilities and remain continent. In order to decrease the likelihood of functional incontinence:

- Make sure appropriate equipment is in reach and available for the patient to use (urinal, wheelchair, bedside commode, etc.)

- Make sure the environment is clear of obstacles
- Meet safety needs
- Adapt clothing as necessary so the patient can easily get in and out of it
- Respond promptly to requests for assistance

Other urinary elimination problems common to patients with stroke include:

- Stress incontinence
- Decreased bladder tone
- Overflow incontinence (due to enlarged prostate)

If the patient is cognitively aware enough to participate, pelvic floor exercises can assist in reducing stress incontinence. Other interventions may include a variety of therapeutic exercises, electrical stimulation, and use of medications such as alpha adrenergics (pseudoephedrine, imipramine, phenylpropanolamine) and estrogens.

If the patient has poor bladder tone, cholinergic medications can be used to increase bladder contractility and decrease outlet resistance.

Post void residuals should be assessed carefully in a patient with obstructive problems leading to overflow incontinence and straining to void. Medical evaluation should be considered if volumes are high and failure to empty is consistent, as surgical repair may be warranted to prevent future problems. In the interim, intermittent catheterization may be necessary to prevent overdistension and reflux.

Impaired Communication

Communication problems following stroke affect receptive and/or expressive communication, including the ability to read, write, or recognize symbols. The patient should be evaluated carefully for safety risks related to impaired communication and steps taken to prevent problems or injury. Recognize that these patients likely will be unable to communicate needs, heed signage, use call lights, etc. Common types of language impairments include:

- **Aphasia:** Difficulty with the comprehension or production of speech with a loss of symbol recognition.

- **Expressive aphasia:** Alterations in speech production (anomia, halting speech, perseveration, improper sentence structure, etc.) secondary to damage to the posterior frontal lobe. Reading and writing often are impaired as well. Comprehension may be intact, and frustration is evident as the patient recognizes errors in speech. This also is known as Broca's, motor, or non-fluent aphasia.
- **Receptive aphasia:** Impaired comprehension and reading problems secondary to damage to the superior temporal lobe. Speech may be present with rhythm and flow, though it is full of mispronunciations. The patient may be totally unaware that he is failing to communicate. Also known as Wernicke's, sensory, or fluent aphasia.
- **Global aphasia:** Damage to the frontal and temporal lobes results in impaired reception and expression of speech. Reading and writing generally are severely impaired.
- **Speech apraxia:** Articulation is impaired due to an inability to control motor movement of speech muscles. Comprehension is intact. Damage is in the motor cortex. Perseveration is common.
- **Dysarthria:** Articulation defects from alteration in the control of speech muscles due to damage to the brainstem, cerebellum, or cranial nerves. Comprehension, reading, and writing are intact.
- **Anarthria:** Damage to the brainstem causes a total loss of speech. Language comprehension, reading, and writing are intact.

Identify the communication strategies you will use for patients who demonstrate:

73. Expressive aphasia

74. Receptive aphasia

Risk of Injury

Sensory-perceptual deficits and impairments in judgment make patients who have suffered stroke at particular risk for injury.

- Falling to the affected side often is undetected by the patient.
- Right hemisphere damage increases the risk of impulsive behavior.

Unilateral neglect, sensory loss, and homonymous hemianopsia increase the risk of injury to affected extremities. Cuing and monitoring are required to avoid injury.

Altered Sexuality Patterns

We are all sexual beings; age and disability do not negate that. Sexuality is expressed through:

- Communication patterns
- Body image and presentation
- Roles
- Development of intimacy
- Physical contact

Early discussion about sexuality is important for the patient and the partner to encourage open communication and address misinformation. The nurse can use the PLISSIT model to address this issue.

- **P**ermission
- **L**imited **I**nformation
- **S**pecific **S**uggestion
- **I**ntensive **T**herapy

By granting **permission**, you encourage the patient and partner to ask questions and express concerns. Of course, if they are not interested, you should not force the issue on them.

Limited information is used to answer questions with relevant information, using responses as a guide to tell how much information and detail the patient or partner is interested in.

Specific suggestions are used to provide direction to the patient and partner as they explore the changes in their relationship. Some specific suggestions for stroke patients may include:

- Allowing the non-disabled partner to take a more active role
- Using positions that do not require support from weakened muscles
- Having the non-disabled partner guide or cue the patient with verbal, gestural, or hand-over-hand actions
- Presenting stimuli on the unaffected side
- Allowing enough light for visualization
- Taking care of bowel and bladder needs prior to sexual activity

Sexual activity patterns prior to the stroke often are indicative of potentials after the stroke. Be alert to complications from medications and chronic diseases; provide education and alternatives accordingly.

Psychosocial Issues

Psychosocial issues common to the stroke population include:

- Self-concept disturbance
- Altered role performance
- Spiritual distress
- Impaired social interaction
- Diversional activity deficit

It is important to build rapport and establish a trusting relationship with the patient and family to understand these issues and to assist them as they cope with the changes in their family.

75. List at least three interventions you can incorporate into your daily care to address these psychosocial issues.

Depression is a particular problem following stroke. It may be situational or a physiological effect of the stroke. Signs of depression include:

- Lack of interest
- Decreased energy (Remember that energy often is low to begin with during the first few weeks following stroke; this may further compound that situation)
- Decreased appetite (Evaluate against symptoms of digitalis toxicity if the patient is taking that medication)
- Sleep disturbances
- Irritability and agitation
- Feelings of worthlessness

Depression significantly interferes with the patient's ability to participate in the rehabilitation process and may adversely affect long-term outcomes. Treatment should be started early and may include antidepressants and psychotherapy.

Risk of Caregiver Role Strain

Community caregivers of the patient with a stroke are often elderly spouses or children with active families of their own. This presents a risk for burnout.

- Encourage use of support systems and respite care
- Teach them how to prevent burnout
- Teach them how to teach the patient to be more independent

When educating the caregiver, be alert to stress levels, fatigue, and cognitive or physical deficits that may impair the ability to learn. Provide information in an organized and sequential manner. Provide written resources that may be used in the home environment.

Community Living

Resources, support, and creativity are important to successful community living. Many stroke patients have one or more co-morbidities requiring follow up and medical care.

76. List at least three frequently-prescribed types of medication which require monitoring that patients with stroke often have prescribed on discharge.

(The Rehab Nursing Series provides additional training on this population in the course *Rehabilitation of Stroke*. You can find information at www.rehabclassworks.com/stroke.htm.)

Read the next page to start the next section.

Core Curriculum supporting pages are: 103-109, 117-129, 131- 144, 188-190, 217-250, 397-407, 422-427.

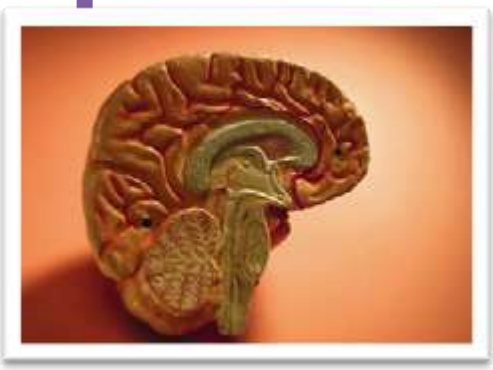
CERTIFICATION REVIEW FOR REHABILITATION NURSING

WORKBOOK

www.rehabclassworks.com

CHAPTER 15

CARE OF PATIENTS: BRAIN INJURY



Brain injury is not always accidental. It is the result of high-risk behavior and choices. It is astounding to realize the number of healthcare workers who care for these patients and still do not wear helmets, use safety equipment, or even consistently keep their children in the back seat and in safety seats/belts. We should be role models and educators of preventing injury!

What is Your Job in this Chapter?

Your job in this chapter is to describe the cause and effect of brain injury and to review key care strategies for patients with brain injury.

Chapter Highlights

- Diffuse brain injury leads to a wide variety of presentations that are often associated with focal injuries in those with impact damage to the brain.
- Patients who have sustained brain injury face all the problems commonly found in stroke, ranging from mild to severe.
- The Rancho Los Amigos Scale of Cognitive Functioning is used to evaluate cognitive function and recovery. There are guidelines for interventions for cognitive improvement at each level of function.
- Memory impairment is one of the most serious problems following brain injury and it creates a tremendous caregiver burden.

On the Computer: CVA, TBI, & SCI Pages 41-73

The majority of persons sustaining brain injuries are not admitted to rehabilitation centers. These injuries are considered minor and are post-concussive syndromes. Many of these patients describe changes in memory, fatigue, irritability, and chronic headache as sequela to minor injuries. Others have moderate to severe brain injuries and may require months or years of rehabilitation to regain function.

Define the following terms.

1. Closed brain injury:

2. Open brain injury:

3. Diffuse brain damage:

Brain injury results from primary and secondary insults to the brain. Primary damage occurs from the actual impact or trauma of the injury and includes:

- **Acceleration/Deceleration forces** which bounce the brain off of the inside of the skull, resulting in coup/contracoup injuries; frontal and temporal lobes are most susceptible to damage from these forces
- **Rotational forces** which shear white matter axons, causing diffuse axonal injuries (One does not have to lose consciousness to have a diffuse axonal injury)
- **Extracranial damage to the scalp, skull, or dura mater,** such as penetration injuries from bullets, which can cause damage at the entrance and exit sites, as well as from concussive waves as the bullet passes through brain tissue
- **Intracranial damage**, which may be focal or diffuse

Secondary insults result from the brain's response to the initial trauma. These include:

- Systemic responses
- Swelling and edema that can lead to brain distortion, shifting, and herniation
- Hypoxia and ischemia of brain cells secondary to pressure and swelling
- A cascade of biochemical events that interfere with metabolites and electrolytes of the brain, causing further damage

Unchecked secondary insults can cause more damage than the original brain injury!

Acute Management

Acute management of a brain injury focuses on controlling the cascading secondary insults, which can create more damage than the original injury. Once this process is stabilized, the team must concentrate on avoiding complications of hypoxia, immobility, and posturing in order to preserve function for future recovery.

Define the following terms.

4. Coma:

5. Persistent vegetative state:

Residual deficits following brain injury are variable, depending on the site and type of injury and complications of recovery. They may or may not be resolved. Evaluations of cognitive processing are used to determine the severity of injury and to track recovery. Evaluation of the length of time a patient remains in posttraumatic amnesia is one method of determining the severity of injury.

6. Define posttraumatic amnesia:

7. Define retrograde amnesia:

8. Define anterograde amnesia:

Describe characteristics of the levels of severity of brain injury.

9. Mild:

10. Moderate:

11. Severe:

12. It is difficult to predict outcomes following brain injury. Name two methods used to predict outcomes following TBI.

13. Identify one descriptive scale used to quantitatively describe outcomes.

Recovery

The mechanisms of recovery from traumatic brain injury are still somewhat unclear. We do know that recovery generally is incomplete, even for those with mild TBI who often are left with residual problems primarily affecting memory and attention span. Key variables associated with recovery seem to be related to:

- Resolution of physiological factors that impair optimal health and function, such as edema, infections, or cardiopulmonary disorders
- Recovery of brain function through the development of new synapses, generation of new nerve fibers, or finding another part of the brain to do the job
- Adaptation and learning of alternative methods of action to achieve the same outcome

The patient's progress may be hindered by other complications related post-acutely to the brain injury.

14. Identify three complications common to brain injury patients.

15. Why should you monitor lab values and intake and output during early recovery periods following TBI?

Cognitive Processes

The Rancho Los Amigos Levels of Cognitive Functioning Scale often is used to evaluate the patient's cognitive and behavioral functioning following brain injury.

Match the Level to the correct description.

I II III IV V VI VII VIII-IX-X

16. _____ Localized response: Blinks to strong light, turns toward and away from sounds, responds to physical discomfort, inconsistent response to commands

17. _____ Confused-appropriate: Inconsistent orientation, recent memory impaired, beginning to recall the past, consistently follows simple directions, maintains goal-directed behaviors with assistance

18. _____ Purposeful-appropriate: Consistent in exhibiting purposeful behavior appropriate to situation

19. _____ Generalized response: Reflexive responses to stimulation or pain

20. _____ No response: No responses to pain, touch, sound, or sight

21. _____ Confused-agitated: Alert, active, potentially aggressive, may exhibit bizarre behavior that is non-purposeful, attention span is extremely short.

22. _____ Automatic-appropriate: Able to perform daily activities in a familiar environment in an automatic manner, noticeably deteriorates in unfamiliar surroundings or changes in routine, unable to realistically plan the future

23. _____ Confused-non-agitated: Able to grossly attend to the environment but is highly distractible, requiring constant redirection; has difficulty with new tasks; becomes agitated when stimulation is too intense for him to handle

24. What is the main objective of treatment during Rancho Levels I-III?

25. What is the main objective of treatment during Rancho Level IV?

26. What is the main objective of treatment during Rancho Levels V-VI?

27. What is the main objective of treatment during Rancho Levels VII-VIII?

Cognitive deficits are some of the hardest problems to address following TBI. Cognitive processing is complex and is dependent on multiple structures. The lowest functional cognitive process is arousal. The RAS system has to be functioning well enough for the person to be awake enough to recognize that a stimulus has occurred.

28. Name the other three components of cognition.

29. What is the most common reason for attention deficits following TBI?

Memory impairments make learning and day-to-day life functioning extremely difficult. Prospective memory refers to the ability to remember to do something in the future. Define these other terms related to memory.

30. Working memory:

31. Long-term memory:

Failure to lay down new memories is as detrimental as failure to retrieve them. Teaching skills to a person following TBI can be next to impossible with the failure of memory. Impairments in executive functioning further compound the issue. Problems may include remembering to use the memory aid, difficulty deciding what to record, and failure to follow through on a task when cued to do so. Studies have

shown little carryover from drill programs and suggest that computerized or timed devices that tell a person what to do seem to be better than those aides dependent on user initiation.

DeLisa, 2010

Select the best answer.

32. Following TBI, a person is more likely to learn with (procedural/verbal) instruction.

33. Following TBI, a person is (likely/unlikely) to be a good self-reporter of ability to learn.

34. Following TBI, a person may learn new tasks best with (errorless/trial-and-error) learning.

35. Following TBI, a person can (usually/sometimes) compensate well with memory aids.

36. What is the key to effective use of memory aids?

Structured environments make it difficult to evaluate the full extent of executive dysfunction that tends to be most apparent when new and novel situations are presented. Impulsivity, poor judgment, distractibility, and lack of insight are just a few of the problems that result from impaired executive functioning.

37. Identify key components of executive functioning.

38. List three categories of intervention for executive dysfunction.

(The Rehab Nursing Series provides additional training on care of patients with cognitive dysfunction in the course *Wandering, Confused, & Agitated? Cognition & Behavior Management*. You can find information at www.rehabclassworks.com/Cog.htm.)

Impairment in Mobility

Impairment in mobility following TBI can be extremely variable, ranging from a mild limp to spastic quadriparesis and locked-in syndrome. The pattern of motor impairment following the injury generally is related to the areas of the brain damaged. Hemispheric damage presents in a pattern similar to stroke; cerebellar damage generally results in spasticity or ataxic disorders. The variations are innumerable, but common patterns of flaccidity and spasticity apply.

It is important that spasticity be managed in order to prevent the development of contractures and to decrease pain. Principles to remember if working with patients with severe motor impairment include:

- Maintaining head in neutral alignment
- Supporting head and trunk in alignment when sitting
- Using therapeutic techniques and positioning to reduce spasticity

Altered Nutrition

There are three main causes of nutrition problems following TBI. They include the development of a negative nitrogen balance during the early post-acute recovery phase, intolerance to tube feedings, and either excessive eating or inattentiveness to eating due to damage to the satiety center and frontal lobes. In addition, there may be significant dysphagia problems. (See the section on dysphagia in the Stroke Chapter.)

List interventions you would use for each of the following problems:

39. Negative nitrogen balance

40. Poor initiation of eating

41. Loss of satiety

Altered Elimination

Bowel and bladder problems following TBI generally are related to cognitive deficits, though other problems, such as side effects of tube feedings or medications, immobility, and nutritional or hydration problems also may be factors. Those issues are best managed by directly addressing them.

42. Describe your intervention strategies for a patient at Rancho Level IV who tends to void wherever he is when he feels the urge.

Risk for Injury

Risk of injury to the patient or others is significant in patients who are marginally mobile and operating with impaired memory and judgment, such as found in Rancho Levels IV-V. It takes creativity and perseverance to prevent injuries from happening. Guidelines are readily available in most organizations regarding the use of restraints and other aids to prevent falls and elopement. In addition, there are multiple commercial products on the market. One of the key issues in preventing falls and elopement is the appropriate management of the environment.

43. Identify at least two interventions you would use to prevent falls in a marginally-ambulatory patient.

Altered Sexuality Patterns

Sexuality problems following TBI range from no problem at all to hyposexuality, sexual immaturity, and sexual inappropriateness. Hyposexuality may be related to hormonal problems or impairments in initiation and motivation secondary to frontal lobe injury. Hormonal issues need to be addressed medically. Having the partner initiate and guide sexual activity may help initiation problems.

More often sexuality problems are related to a loss of self-esteem, depression, and isolation resulting from difficulty sustaining relationships. These issues may arise from egocentric behaviors that are combined with failure to appropriately read social cues from the partner.

44. Identify suggestions you would make to a mother who indicates that her 20-year-old son (Rancho VI-VII) is embarrassing her when she is out in public by being sexually explicit.

Risk of Caregiver Role Strain

Caregiver role strain is as serious an issue following TBI as it is for any other disability. Entire family systems are interrupted following TBI and social isolation, depression, and dissolution of relationships are common.

Marriage survival rates following TBI are poor, with the spouse mourning the loss of a lover, friend, and partner. Family systems that survive seem to need a year or so to find a way to adapt to the structure and lack of flexibility they now may face. Families feel a strong need for support on returning to the community and often are at a loss of what to do once they are out of the system. For some, community programs offer great assistance; for others those programs are out of reach or too short-termed to make a significant impact. Support groups can be lifesavers if they are available.

Delisa, 2010

45. What suggestions will you give the young wife of a 25-year-old who is being discharged from services, functioning at a Rancho Level VI, and who will not be returning to work?

Community Living

Community living often brings with it a desire to return to work or school. Vocational rehabilitation services and school programs can facilitate this return in actual or modified manners. Many laws have been enacted over the years to discourage the impression that those with a disability should sit quietly at home.

The laws impacting children have been especially helpful in establishing education as a right of all individuals and in providing services within the school system for those with congenital disabilities.

(The Rehab Nursing Series provides additional training on this population in the course *Rehabilitation of Brain Injury*. You can find information at www.rehabclassworks.com/Brain Injury.htm.)

Read the next page to start the next section.

Core Curriculum supporting pages are: 103-105, 117-129, 131-144, 147-151, 188-190, 251-268.

CHAPTER 16

CARE OF PATIENTS: SPINAL CORD INJURY

Research continues to try to find a way to cure spinal cord injury. Great advances in understanding the injury process already have changed the way we treat patients. It is hoped that we will see a cure for spinal cord injury in our lifetime.

What is Your Job in this Chapter?

Your job in this chapter is to describe the cause and effect of spinal cord injury and to review key care strategies for patients with spinal cord injury.

On the Computer: CVA, TBI & SCI Pages 74-102

Chapter Highlights

- Function following spinal cord injury is dependent on the level of injury, complications, and the completeness of injury.
- Level of injury determines the significance of the impact on physiological functions of the body. Those with higher level injuries have more problems.
- Prevention of health complications (particularly respiratory, skin, bowel, and bladder) are key components of lifestyle following spinal cord injury and must be managed each and every day.
- Function and level of spasticity change with the resolution of spinal shock. Patients should be prepared for this change.

Spinal cord injury presents complex challenges to the rehab team. Injuries may be complete or incomplete and may occur at any point along the spinal cord. It may be caused by trauma, tumor, infarct, or infectious disease. In young adult males, it most commonly results from trauma. The most common cause of spinal cord injury in children is gunshot wounds.

Non-traumatic cord damage occurs secondary to pressure, disease processes, and anoxia. Cord damage in a trauma or injury is caused by traumatic hemorrhagic necrosis. Actual impingement of the cord during trauma may be from:

- Flexion or flexion-rotation
- Compression
- Hyperextension
- Penetration

Classification of Spinal Cord Injuries

Spinal cord injuries are complete or incomplete, stable or unstable. The neurological level of injury is defined as the most distal segment of the cord that tests as normal for sensation or motor function.

- Sensory level is determined by testing dermatomes.
- Motor levels are determined by testing motor response.

Injuries are graded on the ASIA scale (American Spinal Injury Association Classification of Spinal Cord Injury):

- **ASIA A (complete injury):** No sensory or motor function is preserved in sacral segments S4-5
- **ASIA B (incomplete injury):** Sensory function is preserved below the level of neurological injury and extends through S4-5
- **ASIA C (incomplete injury):** Motor function is preserved below the neurological level of injury; the majority of the muscles are at Grade 2 or lower (nonfunctional)

- **ASIA D (incomplete injury):** Motor function is preserved below the neurological level of injury; the majority of the muscles are at Grade 3 or higher
- **ASIA E:** Normal sensory and motor functions are present

Depending on the level, patients are further classified as:

- Tetraplegia (four extremities + trunk)
- Paraplegia

1. Define the zone of partial preservation.

Spinal Fracture and Neurological Deficits

There is not necessarily a direct relationship between the type of spinal cord injury and neurological deficits. Emergency and acute care management strategies have improved dramatically over the last ten years leading to more mixed and incomplete injuries.

- Simple fractures of the spineous or transverse processes often leave no neurological damage.
- Neurological damage is likely with a compression fracture (wedge), comminuted fracture (burst), teardrop fracture, and dislocation or subluxation of the vertebrae.

Spinal Cord Injury Syndromes

A complete loss of motor and sensory function below the level of injury is called a complete injury. Incomplete injuries demonstrate patterns of damage.

- **Central Cord Syndrome** results from damage to the center of the cord, leaving lower extremities intact while paralyzing upper extremities.

- **Brown-Sequard Syndrome** results from injury to one side of the cord, leaving a loss of voluntary motor control on the affected side and loss of pain and temperature on the opposite side.
- **Anterior Cord Syndrome** results from an infarct of the anterior artery, leaving position, vibratory, and touch intact, but impairing other motor and sensory functions.
- **Posterior Cord Syndrome** results from injury to the dorsal column, leading to a loss of proprioception without impacting sensory and motor function.
- **Conus Medullaris Syndrome** results from damage to the sacral levels of the cord and lumbar nerve roots, leading to an areflexic bladder, bowel, and lower limbs. If the lesion is higher, some reflexes may remain intact.
- **Cauda Equina Syndrome** results from damage to the sacral nerve roots, leading to flaccid paralysis of bowel, bladder, and lower limbs.
- **Sacral Sparing** occurs when the radicular arteries maintain circulation to the outer cord, preserving the nerves carrying sacral sensations.
- **Mixed Syndrome** is used to describe incomplete lesions that do not follow patterns of other syndromes.

Spinal cord injury results in upper and lower motor neuron deficits.

- Injuries above the T12-L1 vertebral level are primarily **UMN injuries**; however, the LMN may be damaged at the level of injury.
- Injuries below the T12-L1 vertebral level are **LMN injuries.**

It should be noted that almost any injury above the cauda equina results in a mixture of UMN and LMN problems.

- Nerves, which travel through the injured site to lower areas, will evidence UMN injury patterns.
- Nerves at the site of injury are generally damaged and demonstrate LMN injury patterns.
- Nerves above the level of the lesion are normal.

Acute Management

The primary objective at the time of trauma is to reduce the risk of further damage. Initial acute care efforts focus on:

- Orthopedic stability
- Corticosteroid therapy to decrease neurological damage
- Maintaining respiratory function
- Maintaining cardiovascular function
- Maintaining nutrition and gastrointestinal function
- Preventing complications of immobility

Immediately following spinal cord injury there is a period of spinal shock.

2. Define spinal shock:

3. How long does spinal shock last?

4. How do you know it is resolved?

5. Identify three common complications you should be concerned about during early acute management of spinal cord injury.

(The Rehab Nursing Series provides additional training on preventing complications of immobility in the course *Go HOM! Preventing Complications of Immobility*. You can find information at www.rehabclassworks.com/Immobility.htm.)

Rehabilitative Care

The purpose of rehabilitative care following spinal cord injury is to maximize remaining function, to assist the patient to adjust, and to adapt the environment to the patient. It is important to recognize the impact of spinal shock in patients with UMN lesions. As spinal shock resolves, flaccidity is replaced with spasticity and a completely different set of motor responses occurs below the level of the lesion. The rehab team should educate and prepare patients for this change so that care needs can be anticipated.

6. Identify three areas of risk that patients with spinal cord injury must manage continuously to prevent injury and compromised health.

Alterations in Respiratory Function

Impairment of the respiratory system is a leading cause of death following spinal cord injury (Zejdlik, 1992). Therefore, care must be taken to manage respiratory function aggressively and effectively from the time of injury forward. Most dysfunction of the respiratory system is related to paralysis of the chest and abdominal muscles. This impact is evident when you consider the amount of work done by various muscle groups during inspiration.

- 40% of effort exerted by the diaphragm
- 60% of effort exerted by the intercostals and accessory muscles

7. Direct neurologic control of the diaphragm arises from which group of nerves?

Patients with spinal cord injury demonstrate ventilatory dysfunction through a high arterial partial pressure of carbon dioxide. This results from failure to effectively blow off the end products of respiration, thereby retaining carbon dioxide. Remember that a low arterial PaO_2 demonstrates alterations in gas exchange. Describe the impact of neurological dysfunction on the respiratory system at each of the following levels.

8. Injury at C3 or above:

9. Injury at C4-T4:

10. Injury at T5-10:

11. What does hypercarbia indicate in a patient with tetraplegia?

12. An increased respiratory rate with shallow respirations may be indicative of (respiratory insufficiency/ineffective breathing patterns).

13. Identify at least five health promotion behaviors that you should teach to patients with respiratory compromise due to spinal cord injury.

Ventilator Dependence

Volume-cycled ventilators are preferred for those who require the support of a ventilator. They can talk while on a portable ventilator system using an uncuffed tracheostomy tube (usually size 6 or smaller). Air passing around the tracheal tube during expiration permits vocalization if the patient can coordinate with the ventilator. Many other devices such as the electrolarynx and tracheostomy tube devices also are available to support communication with a tracheostomy tube.

On the Vent?

Some patients with high cervical injuries may require ventilators only part of the time.

Considerable planning is required prior to sending the patient home with a ventilator. Emergency responses must be rehearsed and backup systems for all components of the ventilator, suctioning, and oxygen delivery systems must readily be available. Community support systems must be informed of the situation and key phone numbers should be posted visibly. A resuscitation bag should be readily available, and caregivers should be trained to use it and all other equipment.

Ineffective Breathing Pattern/Ineffective Airway Clearance

Paralysis of the intercostals and abdominals leads directly to poor movement of secretions, impaired gas exchange, and eventual collapse of the alveoli, hypoventilation, and hypoxemia.

14. List at least three complications that can occur as a result of this situation.

Regular respiratory assessment should be performed until the patient has established a new baseline and has been trained to take over self-management. In addition to the routine methods of respiratory assessment, an assessment of the patient's ability to cough and the force of that cough are necessary. One tool used for this assessment is the one developed by Rinehart and Nawoczenski (1987):

- **Functional**, if able to clear secretions without assistance
- **Weak functional**, if able to clear airway but requires assistance to expel secretions
- **Nonfunctional**, if unable to clear secretions or expel them without major assistance

Care management strategies should be directed at minimizing the impact of functional impairments and preventing the development of complications.

15. What is the purpose of a bronchial hygiene program?

16. List the two most basic components of preventing pulmonary complications.

17. Relative to pulmonary function, why is it important to make sure the patient is positioned properly in bed and in the chair?

While performing bronchial hygiene, it is important to avoid over-fatiguing the patient and to assist to clear secretions as they are brought up. Your enthusiasm and consistency in supporting and educating the patient is key to the development of new healthcare maintenance habits.

18. Identify three other bronchial hygiene strategies you may teach your patients to use for preventive and maintenance care.

19. What instructions will you give your patient regarding the actions that should be taken if congestion increases?

Note that you should be aware of the risk of aspiration and difficulty swallowing in patients with tracheostomies and those with halo supports, which maintain the neck in extension.

Venous Thromboembolism (VTE)

Without prophylaxis and proper care, the incidence of VTE's in patients with spinal cord injuries that result in lower extremity paralysis can be as high as 100%.

20. When are VTE's most likely to develop following SCI?

21. List at least three symptoms of VTE you may find in a person with lower extremity paralysis and loss of sensation.

22. What is the first thing you will do if you suspect a VTE, and why?

23. List three symptoms of pulmonary embolism.

According to Clinical Practice Guidelines from the Consortium for Spinal Cord Medicine, prophylaxis for VTE includes:

- Use of elastic hose/wraps or pneumatic devices (being careful to insure correct placement and use)
- Anticoagulation therapy with low-molecular-weight heparin or adjusted-dose unfractionated heparin (starting 72 hours after SCI if there are no complicating factors)
- Placement of vena cava filter in those patients who have failed anticoagulation prophylaxis or in whom anticoagulation is contraindicated
- Continuation of anticoagulation therapy for 8-12 weeks; continuation thereafter should be based on the patient's condition

Poikilothermia

Poikilothermia refers to the body’s tendency to assume the temperature of the surrounding environment.

24. Which patients are at the highest risk of developing problems related to poikilothermia?

25. List at least three interventions you will use to help keep a patient with poikilothermia at an appropriate body temperature.

Autonomic Dysreflexia

Autonomic dysreflexia is a potentially life-threatening response of the autonomic nervous system to what it perceives as noxious stimuli. It develops after spinal shock is resolved.

26. List the two most common causes of autonomic dysreflexia.

27. List at least six symptoms of autonomic dysreflexia.

28. The Dysreflexia Algorithm (see Appendix at the end of the chapter) provides a decision tree for care of the patient with autonomic dysreflexia. What is the first intervention you should take when you suspect autonomic dysreflexia?

29. When should you administer antihypertensive medication (according to the national guidelines)?

Orthostatic Hypotension

Orthostatic hypotension is a common problem following a spinal cord injury. The higher the level of injury and more complete the paralysis, the greater the likelihood of developing the problem. Causative factors include vasodilation below the level of the lesion, inadequate venous return, and disruption of the sympathetic nervous system. The patient will usually accommodate to the situation over a couple of months; it usually disappears after spasticity develops.

30. List three interventions you can use to counteract the effects of orthostatic hypotension.

31. List two precautions that should be taken with a patient with SCI at risk for orthostatic hypotension.

Skin Integrity

Patients with motor impairments and a lack of sensation are at particular risk for skin breakdown from pressure, injury, frostbite, and sunburn.

Prevention

The primary defense against pressure sore development is prevention. General prevention measures and interventions should include:

- Identifying patients who are at risk and taking appropriate precautions
- Educating patients and consistently role modeling appropriate care
- Using correct techniques for transfers and moving up in bed to avoid friction or trauma to skin

What Cost?

Millions of dollars are spent each year to care for pressure ulcers. In spite of education, technology, and medical expertise, patients continue to develop pressure ulcers. This trend has led to increasing regulation and quality auditing, driving up the cost of healthcare.

As of October 1, 2008, Medicare will no longer reimburse hospitals for the extra care and costs required to manage certain preventable Hospital Acquired Conditions. This list includes pressure ulcers. This is a direct statement on the expectations for the quality of care provided by nursing staff.

- Providing regular skin inspection and using skin care strategies that decrease the risk of trauma or breakdown (using appropriate moisturizers, keeping skin clean and dry, avoiding placement of rubber pads next to skin, controlling incontinence, using patient handling devices to decrease shearing, etc.)
- Monitoring nutrition, weight, and essential labs
- Using appropriate pressure relief devices
- Actively monitoring for early signs of redness and immediately removing and addressing causes (Does it blanch and fade in less than 10 minutes?)

Patients and caregivers should be taught pressure relief techniques as soon as possible and encouraged to participate in and take responsibility for care. **Nurses often confuse patients by failing to follow a consistent program and presenting inconsistent information to them.**

Most patients with impaired sensation need to do pressure reliefs at least every 15-30 minutes while in a wheelchair. Determine your patient's needs by considering the type of cushion the patient is sitting on and his capillary refill. Coordinate with the therapist to identify the most effective plan, and instruct the patient, other team members, and caregivers accordingly.

Compensation

Teach those with sensory impairment to compensate for the loss by thinking and monitoring for risk. Remind them to check temperatures of surfaces and water by using an area that does have sensation (or by asking a caregiver to check). Burns and frostbite are a risk for those with impaired sensation.

Common methods of pressure relief include:

- Changing position in a tilting wheelchair
- Leaning side-to-side
- Leaning forward
- Pushing up on arms of chair to raise body
- Lying down for a period of time

Remember that there is a direct relationship between pressure and time. A large amount of pressure for a short period of time can be just as damaging as a lesser force for a longer period of time. Caution should be used in placing footboards on

the beds of patients with impaired lower extremity sensations because they can contribute to foot breakdown, discourage appropriate turning and positioning, and make it more difficult to turn and position the patient. Use ROM and good positioning instead.

Plan care management strategies with your patient to make sure the plan is feasible and affordable in the discharge setting.

Pressure Ulcers

Two of the most common areas of skin breakdown in rehab patients are the sacrum and heels.

32. Identify a simple way of preventing each of these problems without the use of extra equipment or devices.

Wound Healing

The wounds most commonly found in rehab settings are trauma, surgical, vascular, or pressure related. Wound healing progresses through stages:

- **Inflammatory phase:** inflammation and digestion of wound debris
- **Fibroplastic or proliferation phase:** sprouting of new capillaries, wound contraction, and development of collagen and epithelialization
- **Maturation:** scar formation; scar tissue is easily traumatized

List specific factors impairing wound healing.

33. Factors affecting the wound at the site:

34. Systemic factors:

35. Identify factors which increase the risk of skin breakdown.

Match the stage to the correct treatment described below.

(Stage 1) Nonblanchable erythema or discoloration of intact skin, warmth, edema, induration (hardening of tissue)

(Stage 2) Partial thickness skin loss involving dermis; appears as a blister or shallow crater; wound bed is pink and contains no slough

(Stage 3) Full thickness tissue loss in which subcutaneous fat may be visible (but not bone, tendon, or muscle); slough may be present; appears as a deep crater with or without undermining

(Stage 4) Full thickness skin loss with extensive destruction, tissue necrosis, or damage to muscle, bone, or supporting structures; slough and eschar may be present; undermining is common

36. _____ Cleanse wound by irrigating with normal saline. Carefully fill cavities with packing products and cover with a product that provides barrier protection (follow manufacturer's directions). If drainage is heavy, use a bulky, absorbent dressing. Change dressings daily or when strike-through occurs.

37. _____ Eliminate, or at the very least decrease, pressure on the area. Keep area clean and dry, and manipulate the skin gently when cleansing. Avoid harsh cleansers. Apply protective skin products or ointments.

38. _____ Cleanse wound by irrigating with normal saline. Carefully fill cavities with packing products, and cover with a product that provides barrier protection or use a hydrocolloid or hydrogel product (follow manufacturer's directions). If drainage is heavy, use a bulky, absorbent dressing. Change dressings daily or when strike-through occurs. Cover and protect the wound. Apply protective skin-care products. If the wound is not draining, cover and protect it with a hydrating dressing.

39. _____ If the wound is lightly draining, cleanse by irrigating with normal saline; cover and protect it with a hydrating dressing. If wound is draining a large amount, cleanse by irrigating with normal saline; cover and protect it with an absorbent dressing following manufacturer's directions.

Wound Care Products

Here is a summary of wound care products and their intended uses.

Dressing Type	Function
Alginate	Used to pack and fill wounds and absorb large amounts of drainage. Supports autolytic debridement. Requires a secondary dressing.
Enzymatic debrider	Used to debride necrotic tissue. Requires a secondary dressing to maintain moist healing environment.
Foam	Protects fragile areas and absorbs moderate to large amounts of drainage. Also provides fill and supports autolytic debridement. May be used as a primary or secondary dressing.
Hydrocolloid	Protects superficial partial-thickness or shallow full-thickness wounds while absorbing small amounts of drainage and supporting autolytic debridement. May be used as a primary or secondary dressing.
Transparent film	Provides protection to dry, non-infected wounds. Can tolerate minimal drainage. Also supports autolytic debridement. May be used as a primary or secondary dressing.
Wound fillers: beads, pastes, powders, gel, granules, ropes, pillows	Used to pack wounds and absorb drainage or maintain a moist wound surface.

Hydrofiber	Used to pack and fill wounds and absorb large amounts of drainage (33% more than Alginates). Supports autolytic debridement. Requires a secondary dressing.
Hydrogel	A gel or sheet used to donate moisture to a wound to maintain a moist healing environment. Indicated for partial and full thickness wounds. Requires a secondary dressing.
Antimicrobials	A wound dressing that delivers the effects of antimicrobial agents (antiseptics, cadexomer iodine, honey, hydrofera blue, silver) to infected wounds. Use in partial or full thickness wounds. Requires a secondary dressing.
Charcoal	Used as a "filter" for odor control in wounds. May require a secondary dressing.
Collagen	Gels, pads, particles, powders, sheets or solutions used to enhance deposition of collagen fibers in a full-thickness wound. Requires a secondary dressing.
Composite	A combination of 2 or more physically distinct products manufactured as a single dressing with several functions. Used for partial or full thickness wounds without depth. May be used as a primary or secondary dressing.
Contact Layer	Protects the wound bed from direct contact with other agents and dressings. Used for partial or full thickness wounds with or without depth, infected wounds, donor sites or split thickness skin grafts.
Gauze	Woven or non-woven pads, ribbons, strips, and rolls used to scrub, prep, wipe, absorb, or protect. Impregnated gauze can hydrate, absorb drainage or deliver antimicrobial agents. May be used as a primary or secondary dressing.

(The Rehab Nursing Series provides additional training on skin and prevention of pressure ulcers in the course *Go HOM! Preventing Complications from Immobility*. You can find information at www.rehabclassworks.com/Immobility.htm.)

Managing Elimination Needs

Damage to the central nervous system can result in significant elimination difficulties, and potentially can lead to life-threatening complications.

40. List health risks associated with bowel and bladder dysfunction.

Management of elimination needs following a spinal cord injury requires a thorough understanding of the type of injury and where the patient is in the recovery process. Before planning care, you should:

- Identify the level and completeness of injury.
- Evaluate reflex responses of the sacral area.
- Assess previous patterns and lifestyle.
- Discuss desired outcomes and anticipated daily routines with the patient and caregiver.

It is very important to involve the patient and caregiver in the planning and evaluation process in order to develop a plan they can live with and increase the likelihood of compliance.

41. Why is it important to identify whether or not spinal shock has resolved?

Describe key characteristics for the following neurogenic emptying patterns.

42. Reflex:

43. Autonomous:

44. Motor Paralytic:

45. Sensory Paralytic:

Key Factors for Establishing Elimination Programs

Goals of bowel and bladder programs are to:

- Protect the upper urinary tract from damage.
- Avoid complications such as constipation, overdistention, reflux, or impaction.
- Establish an emptying program that is acceptable, manageable, and cost-effective.

In order to develop an easy and consistent approach to bowel and bladder management, make sure to develop the programs in coordination with each other. There is a significant amount of overlap between the two; mixed messages are very confusing to the patient and caregivers. Compare these foundational principles for bowel and bladder programs. They apply to all programs and are the base from which other interventions begin.

BLADDER

Avoid overfilling. It can lead to bladder wall trauma, overdistention, reflux, loss of contractility, and can contribute to dysreflexia.

Maintain adequate hydration. It will decrease the risk of UTI's. Establishing a regular pattern of intake helps to predict output.

Control factors contributing to dysfunction such as medications, functional limitations, infections, etc.

Maintain skin integrity.

Track intake and output to ensure they are adequate and to establish patterns.

Establish a schedule and stick to it. A schedule or pattern should be established for intake and output.

Use an upright position for emptying. This allows gravity, physics, and the body's musculature to work with you.

BOWEL

Avoid overfilling. It can lead to bowel wall trauma, overdistention, and loss of contractility. It also can contribute to dysreflexia.

Maintain adequate hydration. It helps to keep stool soft and moving through the bowel.

Control factors contributing to dysfunction such as impactions, overly-soft stool, medications, etc. Start with a clean bowel.

Maintain skin integrity.

Track intake and output as well as stool frequency and amount to ensure they are adequate and to establish patterns.

Establish a schedule and stick to it. The bowel is very trainable and responds faster and more easily on a routine schedule.

Use an upright position for emptying. This allows gravity, physics, and the body's musculature to work with you.

Maintain a nutritional diet that is high in fiber.

Encourage activity to promote movement of food through the GI tract.

(The Rehab Nursing Series provides additional training on bladder management in the course *Gotta Go Right Now! Bladder Management in Rehabilitation*. You can find information at www.rehabclassworks.com/Bladder.htm. You can find additional training on bowel management in the course *Full of It! Bowel Management in Rehabilitation*. Information on this course is available at www.rehabclassworks.com/Bowel.htm.)

Specific Interventions

Interventions for management of elimination following spinal cord injury vary according to residual deficits and recovery pattern. Identify the interventions (beyond the basics noted above) that you would use for the following elimination problems.

46. Dysfunction related to spinal cord injury during spinal shock:

47. Reflex neurogenic bowel problems:

48. Autonomous neurogenic bowel problems:

A thorough understanding of laxatives and their effects is critical to appropriate use in the management of bowel elimination. The following table is a guide to basic groups of laxatives. Be sure to look up your medications if you are unfamiliar with them!

Laxative Type	Actions and Considerations
Saline (magnesium sulfate, magnesium hydroxide, magnesium citrate, sodium phosphate, sodium phosphate/biphosphate enema)	Attracts and retains water in the intestinal lumen, increasing intraluminal pressure and causing the release of cholecystokinin. Will potentially alter fluid and electrolyte balance, especially the sulfate salts.
Irritant/stimulant (cascara, senna, phenolphthalein, bisacodyl tablets, casanthranol, bisacodyl suppositories, castor oil)	Directly affects the intestinal mucosa by stimulating the myenteric plexus. Alters water and electrolyte secretion. Bile must be present in order for phenolphthalein to work. Caster oil may be preferred if more complete emptying is required.
Bulk-forming (methylcellulose, psyllium, polycarbophil)	Retains water in the stool, causing mechanical distension.
Lubricant (mineral oil)	Decreases absorption of water in the colon and softens stool. May interfere with the absorption of fat-soluble vitamins.

Now let's work on bladder problems… Describe strategies for:

49. Bladder elimination during spinal shock:

50. Reflex neurogenic bladder problems:

51. Autonomous neurogenic bladder problems:

Patients should be taught about the impact of diuretic foods and alcohol on bladder management strategies. They particularly should be aware of the fact that risk of reflux increases if bladder emptying does not occur more frequently following the ingestion of these products. They also should be cautioned about the effects of over-the-counter medications, such as pseudoephedrine, on bladder function.

Regular follow up and monitoring of kidney and bladder function is necessary in patients with reflex neurogenic bladders. The risk of reflux and eventual kidney damage is real and, if caught early, can prevent further impact on the kidneys.

Maximizing Physical Function

Immediately following SCI, mobility is restricted to prevent further damage to the spinal cord. Over the next several weeks, mobility may continue to be limited by orthopedic devices that support the spine as it heals and by the physical responses to the injury. Remobilization must take these factors into consideration, but must start as soon as possible to prevent further complications from disuse.

One of the most important activities that the patient and caregivers should learn about early in rehabilitation is **range of motion**. They should be taught to do it regularly and correctly, supporting the joint and avoiding rough handling of the extremity.

52. List four benefits of twice-daily range of motion following significant motor deficits from SCI.

53. Why is the risk of pathological fractures significant following SCI?

Handle with Care

Rough handling of the calves during range of motion, transfers, and positioning activities may contribute to VTE or PE development.

Overuse of the upper extremities can contribute to shoulder pain and eventual functional limitations.

Functional mobility is achieved through the use of wheelchairs, which come in a variety of shapes and sizes. Transfer boards and lifting devices facilitate transfer activities. Braces and standing frames assist many to stand, and adapted vehicles further enhance mobility. Wheelchairs should be fitted to the patient.

- Body shape and size
- Functional needs
- Healthcare needs
- Environment in which the patient will be using the chair

Spasticity

Spasticity must be balanced carefully following SCI. Some spasticity is helpful in preventing bone loss and maintaining circulation and muscle mass. Too much spasticity limits functional activity, causes pain, and potentially can put the patient at risk for injury (from hitting objects and falling). ROM, proper positioning, and medications, such as baclofen, are used to decrease spasticity. Baclofen may be given orally or administered intrathecally via an implantable spinal infusion pump.

As spasticity increases following the resolution of spinal shock, patients may need to be followed for some time over the course of the first year or so of recovery until spasticity levels stabilize so that medications and therapeutic activities can be adjusted. This is particularly important if spasticity becomes painful or interferes with functional activities or elimination.

What is Spasticity?

Spasticity is increased reflex activity that results in resistance to passive movement of a limb; it is caused by injury or disease affecting nerve fibers of the corticospinal tract.

54. List three side effects to watch for when administering baclofen, especially when the medication is started.

55. List at least two instructions that should be included in patient education regarding this medication.

Functional Skills

Independence for many following SCI is dependent on the ability to be creative, to problem solve, and to access appropriate equipment. This table is a summary of anticipated levels of functioning following complete SCI. Patients with incomplete injuries may regain more function.

Level of Lesion	Residual Motor Function	Anticipated Functional Ability
• C1-2	• Ventilator-dependent; some movement of head and neck	• Dependent, though may control wheelchair and environment with breath or head control equipment
• C3-4	• Good head and neck control; may require a ventilator part of the time	• Dependent, though may control wheelchair and environment with breath or head control equipment
• C5	• Full head, neck, diaphragm, and shoulder control; some elbow flexion	• Maximum assist for most self-care; able to participate in feeding and grooming following set-up using adaptive aids; will require an electric wheelchair with adapted hand controls or manual chair with wheel rim projections
• C6	• Full head, neck, diaphragm, and shoulder control; strong elbow flexion; some wrist extension, allowing tenodesis	• Able to feed and groom self after set-up; participates in dressing and transfers using adaptive aids; able to propel manual wheelchair on level surfaces; may be able to participate in bowel and bladder programs with adaptive aids

• C7	• Full head, neck, diaphragm, and shoulder control; elbow flexion/extension; wrist flexion/extension; some finger control	• More independent in feeding, grooming, dressing, bathing, and bowel and bladder care, requiring few aids and less set-up; able to perform transfers independently with assistive devices; able to propel manual wheelchair on most surfaces
• C8-T1	• Full head, neck, diaphragm, and moderate-to-full arm function, with moderate-to-full finger control	• Independent in grooming and eating without adaptive aids, though environment may need to be adapted; independent in bathing and bowel/bladder management with equipment; independent in transfers and use of manual wheelchair
• T2-12	• Full upper extremity and head control, with increasing trunk control	• Independent in self-care, though may require equipment for bowel and bladder management and bathing; able to manage manual wheelchair well
• L1-5	• Full control of upper body, with increased control of hip, knee, ankle	• Independent in self-care; able to ambulate with long leg braces
• S1-5	• Full control of upper body with moderate-to-full control of lower extremities	• Independent in self-care; able to ambulate with minor equipment

Tenodesis is very important to functional independence in the patient with a C5-6 injury and much effort is spent on getting that motion to return. It is important to assist these patients with range of motion to the wrist, but to avoid overstretching finger flexor/extensor tendons, which may limit the function of tenodesis.

56. Describe tenodesis and how it supports functional mobility.

Sexuality

Sexual expression is part of who we are. SCI does serious damage to self-esteem and the ability to express one's sexuality. Relationships are at risk following SCI, as they are following most disabilities. It is important to understand your own views on sexuality and to respect the patient's choices when discussing it with him or her.

Preparation

Rehabilitation nurses must be prepared to work with patients whose values and choices regarding sexuality differ from their own.

Indicate **True** or **False** for the following statements.

57. __ UMN lesions leave males without the ability to achieve any type of erection.

58. __ LMN lesions make it impossible to have reflexogenic erections, though weak psychogenic erections are possible.

59. __ Fertility is diminished in males following SCI.

60. __ Sperm can be obtained from males using electrostimulation for artificial insemination in specialty fertility centers.

61. __ Reflexogenic erections are the result of direct physical contact.

62. __ Psychogenic erections are the result of direct physical contact.

63. __ Males who have reflexogenic erections always are able to ejaculate.

64. __ It is advised that bowel and bladder care be done prior to sexual activity to decrease the risk of reflex emptying.

65. __ Females with UMN lesions will not be able to participate in vaginal intercourse.

66. __ Fertility is unchanged in females following SCI.

67. __ Pregnancy should be handled carefully to prevent damage to the fetus from medications and to decrease the risk of complications in the mother with SCI.

68. __ Autonomic dysreflexia always is associated with sexual activity, therefore direct stimulation of the sexual organs should be avoided.

As always, support and encouragement to explore mutually-pleasurable activities should be encouraged. Patients may need more assistance in problem solving motor skill limitations and in planning for sexual activities to avoid accidental bowel emptying or triggering dysreflexia. Education must include information about birth control and pregnancy risks so that female patients can make educated choices.

Patients who are in need of more detailed information or who are interested in fertility issues should be referred to appropriate sources.

(The Rehab Nursing Series provides additional training on sexuality in the course *A Little Romance? Sexuality Education & Counseling in Rehabilitation*. You can find information at www.rehabclassworks.com/Sfunction.htm.)

Community Living

Survival in the community often is dependent on the attitude of the patient, the environment, equipment and resources, and the ability to move around in the community. Without the ability to move around in the community, opportunities for work and education are severely limited as are those for social and spiritual support and recreation. While many adaptations to the environment are easily affordable, transportation is not and may be a limiting factor. It is important to educate the patient about the resources available in the community and to assist in recruiting social and community support prior to discharge.

Discharge Planning

Does your facility have a comprehensive list of accessible transportation options?

What is your local community doing to increase transportation access for those with disabilities?

Safety

Motor and sensory impairments increase the risk of injury following SCI, whether from bumping insensitive toes on the furniture, falling out of the chair, or slowly crossing busy streets. Each patient should be evaluated for potential risks in the community and be educated to avoid or manage them.

69. List at least five things that most patients with motor/sensory impairment should be taught regarding safety in the community prior to return to the community.

(The Rehab Nursing Series provides additional training on this population in the course *Rehabilitation of Spinal Cord Injury*. You can find information at www.rehabclassworks.com/SCI.htm.)

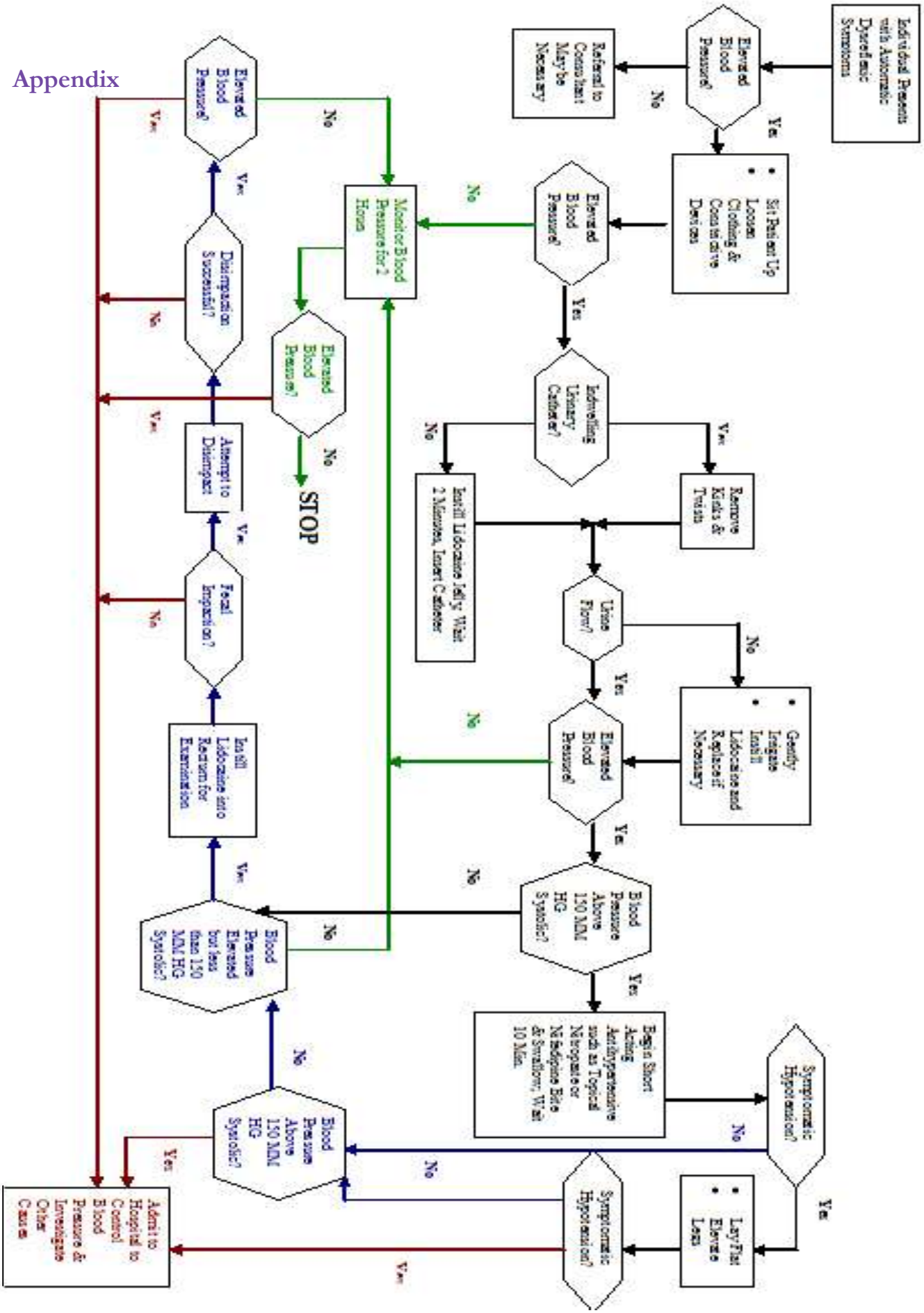
Review the Appendix on the next page.

On the Computer: Care of Patients: CVA, TBI, & SCI Page 103-the Quiz.

Go to page 167 to start the next section on completion of the quiz.

Core Curriculum supporting pages are: 109-120, 117-129, 131-144, 185-190, 268-287.

Appendix


Individual Presents with Autonomic Dysreflexic Symptoms
Elevated Blood Pressure?
No
Referral to Consultant May be Necessary
Yes
Sit Patient Up
Loosen Clothing & Constrictive Devices
Elevated Blood Pressure?
No
Monitor Blood Pressure for 2 Hours
Yes
Indwelling Urinary Catheter?
No
Instill Lidocaine Jelly, Wait 2 Minutes, Insert Catheter
Yes
Remove Kinks & Twists
Urine Flow?
No
Gently Irrigate Instill Lidocaine and Replace if Necessary
Yes
Elevated Blood Pressure?
No
Blood Pressure Above 150 MM HG Systolic?
Yes
Begin Short Acting Antihypertensive such as Topical Nitroglycerin or Nifedipine Bite & Swallow, Wait 10 Min.
Symptomatic Hypotension?
No
Yes
Lay Flat Elevate Legs
Symptomatic Hypotension?
No
Blood Pressure Above 150 MM HG Systolic?
No
Blood Pressure Elevated but less than 150 MM HG Systolic?
Yes
Instill Lidocaine into Rectum for Examination
Yes
Fecal Impaction?
No
Attempt to Disimpact
Yes
Disimpaction Successful?
No
Elevated Blood Pressure?
No
STOP
Yes
Elevated Blood Pressure?
Yes
No
Admit to Hospital to Control Blood Pressure & Investigate Other Causes
Yes

CARE OF PATIENTS: OTHER NEUROLOGICAL DIAGNOSES

This section of the workbook contains one chapter addressing other neurological diagnoses beyond stroke, brain injury, and spinal cord injury.

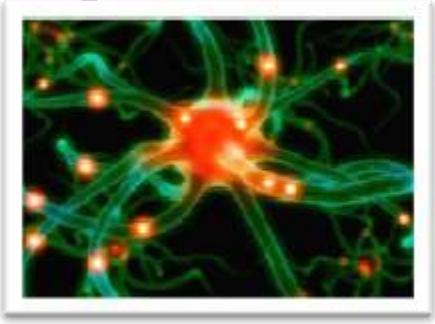
As you work your way through this chapter, think about the rehabilitation care needed by these populations of patients.

On the Computer:

Other Neurological Diagnoses, pages 1-2

CHAPTER 17

CARE OF PATIENTS: OTHER NEUROLOGICAL DIAGNOSES



The clientele who can benefit from rehabilitation is increasing…. (Ruth Stryker, 1996)

Rehabilitation nurses care for patients with a wide variety of neurological diagnoses.

Chapter Objectives or What is Your Job?

The majority of rehabilitation patients fall into several key

Chapter Highlights

- There are many presentations of multiple sclerosis. Because it affects both upper and lower motor neurons, neurological deficits are mixed.
- Amyotrophic lateral sclerosis is a rapidly-progressive disease. Rehabilitation focuses on maintaining function and quality of life.
- Guillain-Barré is a rapidly-progressive disease that can advance quickly to respiratory compromise. Most people recover significantly. Rehabilitation supports recovery and functional return.
- Postpolio syndrome has increased in incidence as polio survivors become older, requiring proactive care to prevent loss of function.

neurological and orthopedic groups. This pattern has been established by need and by payers.

The mix of patients has been changing over the last decade as some patient groups have moved primarily to outpatient and home health settings and the principles of rehabilitation have been applied to more diverse groups throughout the continuum. However, patients with trauma, neurological, respiratory, and cardiac disease remain the mainstay of the rehabilitation population.

This chapter will briefly review a few selected neurological diagnoses with an emphasis on pathophysiology and special needs. **It is clear that basic rehabilitation principles apply to all.**

On the Computer: Care of Patients: Other Neurological Diagnoses, pages 3-18

Multiple Sclerosis (MS)

Multiple sclerosis is a chronic, immune-mediated, demyelinating disease. Loss of myelin means loss of nerve conduction. Presentation is reflective of the site of nerve involvement. This disease is a major cause of disability and adversity in young and middle-aged adults.

Medications are used to manage the disease and its symptoms. Early treatment is most effective. Many of these medications are injectable and require significant responsibility on the part of the patient maintaining the regimen.

1. What is the purpose of using anti-inflammatories during an exacerbation of MS?

2. Identify at least three things patients with MS should avoid to decrease the risk of exacerbation.

Fatigue is one of the primary reasons that those with MS withdraw from work and social interaction. Amantadine is used for treatment to reduce achiness and tiredness.

3. What interventions on the part of the rehabilitation team help a patient with MS manage fatigue?

4. What special considerations need to be made while evaluating and managing elimination problems?

5. Why do you think caffeinated beverages should be avoided in persons with bladder problems secondary to MS?

The **National MS Society** (http://www.nationalmssociety.org/index.aspx) can be very helpful in providing support and resources to those with MS.

Amyotrophic Lateral Sclerosis (ALS)

Amyotrophic Lateral Sclerosis, or Lou Gehrig's Disease, is an aggressive disease of the motor neurons. The etiology of the disease is unknown, and it is invariably fatal. Fatigue and weakness are primary complaints. The disease continuously progresses from this level.

6. What is the primary cause of death with ALS?

7. What is the most likely cause of pain in ALS?

8. What issues are very important to address in a timely and supportive manner with patients and their families?

Guillain-Barré (GB)

Guillain-Barré is an aggressive, inflammatory disease affecting the peripheral nerves. GB frequently develops following a respiratory infection. There is no known etiology for GB, and it shows no preference for sex or age groups.

Flaccid paralysis and autonomic dysfunction are common with disease progression. Patients must be monitored closely during acute onset to prevent life-threatening complications.

9. What bodily system should be most closely monitored in a patient with GB?

10. Management of the patient following acute onset of GB should focus on minimizing complications of _____ (ymolitimbi).

11. Recovery from GB is often (complete/incomplete).

12. During early recovery and rehabilitative care, the patient should be monitored for early signs of respiratory fatigue, such as _____ (abeeehlnrsssst).

13. The patient should not be _____ (dstorveresse) during recovery periods and should be monitored for signs of regression.

Postpolio Syndrome

Postpolio syndrome occurs many years after the original infection with the poliomyelitis virus. It often presents as fatigue, joint and muscle pain, and increasing weakness.

14. Another symptom of postpolio syndrome is (heat/cold) intolerance.

15. Identify at least 3 interventions to maintain or improve function in persons with postpolio syndrome.

16. Energy conservation, regular rest periods, and planned exercises are important to maintaining function. Strengthening exercise should be targeted only at muscle groups with strengths greater than:

    a. 3/5

    b. 4/5

    c. 5/5

Parkinson's Disease (PD)

Parkinson's disease is a degenerative disease of the basal ganglia, which occurs slightly more frequently in men than in women.

17. The three classic characteristics of PD are _____ (rometr), _____(ytidigir), _____(aisenikydarb).

A wide variety of medications are used to control the symptoms of PD, but as of yet there are no products that cure the disease. Medical management has improved a great deal in recent years, and medications can be balanced to minimize side effects. Remember to follow medication schedules closely and to time medications to maximize the impact for daily activities.

18. List three side effects of PD medications that influence a patient's healthcare.

The primary focus of rehabilitation in patients with PD is minimizing secondary complications and maintaining function and safety.

19. List five problems you would anticipate and monitor for in a patient with PD.

It has been noted that regular and consistent exercise improves function, endurance, memory, and elimination for patients with PD. Warm baths, massages, and stretching also are helpful. Patients should be encouraged to ambulate with:

- A wide base of support
- Swinging arms
- Feet lifted high, as in marching
- Long, lengthy strides

Nutrition may become a problem as the disease progresses and it becomes more difficult to eat. Drooling also impacts hydration. It often is helpful to provide small, frequent, high-fiber meals with frequent fluids throughout the day. Handrails, raised toilet seats, and ambulatory devices may be used to maintain functional mobility.

If the patient should freeze in place, avoid trying to pull forward, because this may lead to falls. Instead, assist to rock side-to-side, raise arms, and step backward; then move forward.

20. What does the nurse need to remember about administering medications to patients with PD?

Cerebral Palsy

Assessment of those with CP should reflect the growth, development, and functional skills of each individual. New problems and symptoms are likely to be expressed as the child matures and grows. An emphasis on neurodevelopmental and sensory therapies is important to supporting and normalizing growth and development as much as possible. Community integration is essential for successful habilitation.

21. Describe common problems in positioning for patients with cerebral palsy and strategies to address them.

22. Identify the causes and interventions for nutrition problems in children with cerebral palsy.

23. Describe types of communication problems faced by this population and strategies to enhance communication skills.

Children with cerebral palsy have problems with urinary elimination because of uninhibited neurogenic bladder, limitations in mobility, problems with positioning, and difficulty communicating needs (functional incontinence).

24. Describe typical interventions for bladder management appropriate for this patient population.

25. Why would constipation be a problem for children with cerebral palsy?

26. Describe strategies to help children with cerebral palsy play.

Spina Bifida

Spina bifida results from the failure of the posterior laminae of the vertebrae to fuse in the lower spine, exposing neural tissue. A significant number of cases also involve hydrocephalus.

Describe these two forms.

27. Meningocele:

28. Myelomeningocele:

29. Describe common problems in mobility and positioning for patients with spina bifida and strategies to address them.

30. Describe sensoriperceptual and cognitive problems associated with spina bifida.

31. What type of nutritional problem are these patients at risk for, and what are the adverse consequences of this problem?

32. Describe expected bowel problems and intervention strategies.

33. Describe expected bladder problems and management strategies.

34. Describe strategies to help children with spina bifida play.

35. List at least two strategies that can be used to support parents as they develop social skills in a child with spina bifida or other disability.

36. What issues will you watch for as this child reaches adolescence?

On the Computer: Care of Patients: Other Neurological Diagnoses, page 19, Quiz.

Go to the next page and start the next section on completion of the quiz.

Core Curriculum supporting pages are: 103-105, 191-216.

Care of Patients: Other Diagnoses

There are a variety of other diagnoses that are cared for in rehabilitation settings due to the impact of the injury or disease on functional activity and quality of life. This section will briefly review a few select non-neurological diagnoses with an emphasis on rehabilitative care and special needs.

- Care of the Patient: **Cancer**
- Care of the Patient: **Burns**

- Care of the Patient: **Amputation**
- Care of the Patient: **Arthritis & Chronic Pain**
- Care of the Patient: **Osteoporosis**
- Care of the Patient: **Cardiopulmonary**

Often, other problems are seen in rehabilitation settings, such as complications of diabetes, obesity, blast injuries, and debility secondary to a wide variety of health issues. The principles of rehabilitation care apply to all of these patient populations.

You may proceed in this order or select the chapter you prefer to study. There are matching sections in the course for each of the titles above. Simply go to the correct page in the computer course and in the workbook to pursue your selection.

On the Computer: Care of Patients: Other Diagnoses, page 1-2

CHAPTER 18

CARE OF PATIENTS: CANCER

Rehabilitation is not just for the young. Quality of life and functional ability are important to each and every one of us.

Chapter Objectives or What is Your Job?

Rehabilitation can improve the quality of life for patients with cancer. Your job in this chapter is to review the rehabilitation needs and care of patients with cancer.

On the Computer: Care of Patients: Other Diagnoses, pages 3-5

Rehabilitation following cancer may either facilitate quality of life or ease the burden of caring for a patient with diminishing function. Oncology rehabilitation care addresses this need. The nurse must be fully informed of the disease process, prognosis, and treatments.

Chapter Highlights

- Rehabilitation of this population focuses on recovery and on quality of life. Functional loss is associated with treatment as well as disease.
- Quality of life can be improved through the use of equipment and care strategies to decrease the burden of care.

The rehab team must work conscientiously and closely with the medical team, providing a detailed treatment plan that includes rationale and necessary evidence or support for selected care strategies.

Patient empowerment and education enable patients with cancer to recover, or to live the best quality of life possible, given the circumstances. Energy management and body image enhancement are key components of care with this population.

Fatigue

Fatigue is defined as an overwhelming, sustained sense of exhaustion with decreased capacity for mental and physical work. (NANDA, 2007) The etiology of fatigue in patients with cancer is poorly understood, but many factors contribute to it.

- Medical interventions
- Anemia
- Metabolic disturbances
- Nutritional deficits
- Lack of sleep
- Depression
- Fear and stress
- Pain

1. How does fatigue impact function?

2. List three interventions to address fatigue.

Go to the next page to start the next chapter.

Core Curriculum supporting pages are: 407-422.

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CHAPTER 19

CARE OF PATIENTS: BURNS

Millions of people sustain burn injuries each year. At least half of them will be injured severely enough to have limitations in self-care and require rehabilitation services.

Chapter Objectives or What is Your Job?

In this chapter, your job is to identify rehabilitative points of care for this population.

On the Computer: Care of Patients: Other Diagnoses, pages 6-9

Chapter Highlights

- Severity of burns is determined by the depth of the burn injury and the total amount of the body that is burned.
- Rehabilitation of burn injury begins as soon as the patient is medically stable and focuses on maintaining and regaining function.
- Patient education includes skin care to control the formation of scar tissue and prevent further damage to the fragile, new skin. Vigilance in skin care is often required for up to two years following burn injury.
- Patients require a great deal of support to return to functioning and to previous roles in the community.

Burn injuries occur in the home, on the job, and during recreational activities. Children and older adults are the most common victims.

1. Identify the most common type of burn injury.

2. What is the most common reason for burn injuries in children?

3. What is the most common reason for burn injuries in the elderly?

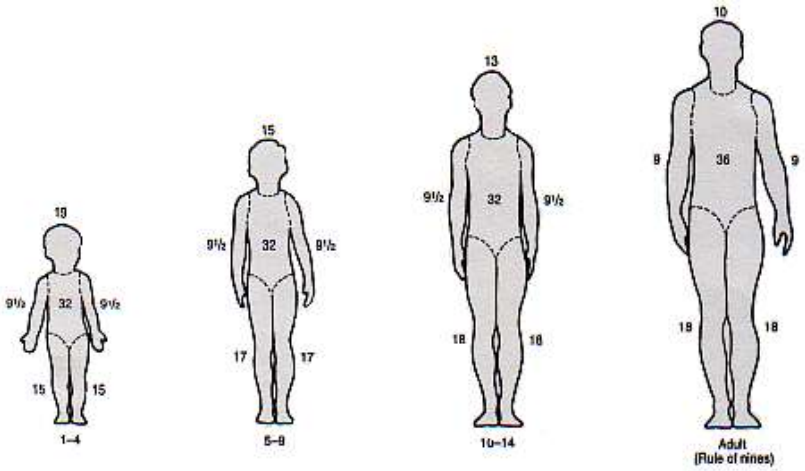
The skin is the largest organ of the body and as such it has multiple functions.

4. Identify at least five functions of skin.

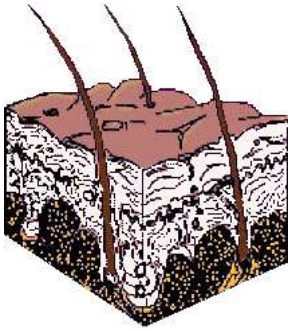
5. How do you classify burn injuries into major, moderate, and minor injuries?

Percentage of Body Surface Involved

The percentage of body surface involved is determined using the **Rule of Nines.**



Depth of Burn Injury



The depth of the burn influences the recovery pattern and dictates treatment methodology.

Identify the depth of injury associated with these types of burn injuries (dermis, epidermis, or subcutaneous).

6. What are the two factors in determining the depth of tissue injury that cannot be changed?

Systemic Consequences of Burn Injuries

The systemic response to serious burn injuries is far more critical than the injury itself. In severe injuries, neurogenic shock is apparent almost immediately, to be followed closely by hypovolemic shock.

7. Describe why this happens.

Fluid replacement and maintenance of a normovolemic state post burn is a prime objective as long as there are open wounds.

Rehabilitation of Burn Injuries

The ultimate goal of burn wound care is to achieve wound closure and avoid complications. Meticulous wound cleansing and debridement are necessary to

prevent complications and facilitate wound healing. Wound healing occurs in phases:

- Hemostasis
- Inflammation
- Proliferation
- Remodeling

8. Remodeling is the longest phase of wound healing. How long would you expect this phase to last?

9. What complications will you try to avoid as you facilitate wound closure?

Fill in the blanks:

10. Areas still covered with eschar or thick exudate need to be cleansed and dressed twice daily with a strong antimicrobial, such as _____, and gauze.

11. Areas that are healing but remain open, moist, and tender require cleansing twice daily and application of a mild antimicrobial, such as _____, and Adaptic/nonadhesive gauze.

12. Skin breakdown and restriction of circulation are complications that may occur from improper application of_____.

Pressure dressings are used to reduce edema and scar tissue formation. Multiple products are available. Initial dressings may include elastic bandages, self-adherent

wraps (COBAN), or tubular cotton elastic wraps. As wounds heal and scar tissue forms, these may be replaced with pressure garments (JOBST). These products should be worn 23 hours per day for maximum effect.

Example of a face mask insert to provide pressure to the contours of the central face.

Pain Management

Assessment and management of pain should be appropriate to the patient's age and cognitive level or state. Interventions should be individualized to each patient. It is important to manage anxiety as part of the pain management regimen. Medications should be given on a scheduled basis for anxiety, for background pain, and PRN for procedures. By the time the patient is fully active in rehabilitation, he probably will need only acetaminophen or NSAID's for management of background pain. During procedures, PO medication, such as hydromorphone, oxycodone, or NSAID's with narcotics, is optimal.

Nutrition

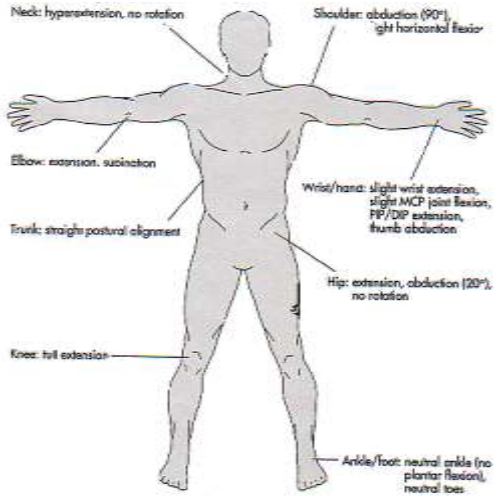
Burn victims are considered the most extreme example of metabolic stress. The intensity of the stress response is proportional to the body surface area burned. Most patients require enteral supplemental feedings because of their increased need for nutrition. Sub-optimal nutrition has a negative impact on multiple facets of recovery.

13. List four negative impacts on recovery from poor nutrition.

Positioning

Positioning is used to:

- Protect wounds
- Lessen edema in the extremities
- Counteract wound and scar contraction
- Maintain tissue in elongated postures



A severe complication, possible with inappropriate positioning for long periods of time, is damage to the nerve or nerve plexus from over-stretching or prolonged pressure. It also is possible for the patient to develop heterotopic ossification, particularly in the elbow joint. Avoiding restraints on a patient who is actively fighting against them may help decrease the risk of developing this complication.

Splints may be used to prevent or decrease scar contractures or to protect exposed joints or tendons. It is helpful if the splints are labeled to assist with application.

14. Identify complications that can occur with splint usage and how to prevent them.

15. Patients with neck burns should be discouraged from using pillows until scar tissue is mature. Can you explain why?

Exercise and Mobilization

Active exercise can start during the inflammatory phase of wound healing. Pain, edema, and loss of tissue elasticity make exercise and activity difficult for patients. In order to restore and maintain mobility, patients must participate in regular, daily therapeutic activity.

16. What is the activity that elongates shortened soft tissue?

17. What strategies are used to improve strength and endurance?

18. Lower extremities affected by pain, edema, and contractures can lead to alterations in gait. What would be the most effective exercise for preventing problems and correcting deficits in the lower extremities?

Adaptation & Community Reentry

Psychosocial issues, including grief and adjusting to self-esteem and body image changes, may be difficult and take years. Ongoing support from family members and caregivers is critical to successful community reentry and resumption of roles.

Support Required

Ongoing support from family and friends is critical to successful community reentry and resumption of roles.

Patients may have multiple skin care problems including itching, breakdown, rashes, sweating, etc., after a burn injury. Education is important for self-care and the prevention of problems. Most problems can be handled with ointments, creams, or oral medication during follow-up with the physician. Sun exposure should be avoided until scars reach full maturity.

19. Explain why sun exposure should be avoided.

20. Identify the most practical methods for avoiding sun exposure.

21. The patient needs to be cautioned that scars and grafted tissue may be less sensitive to heat and pressure. Why does this occur?

The patient should avoid exposure to dust, dirt, and irritant, potentially-toxic fumes as long as there are any open wounds. While in the scar maturation phase of healing, burn scar supports should be worn at all times, and extremes of temperature should be avoided. This is a major consideration when determining the time to return to work. In addition, the PCE or FCE may be used to determine when a patient is able to return to a pre-injury line of work.

22. What are the PCE and FCE?

Go to the next page to start the next chapter.

Core Curriculum supporting pages are 103-105, 339-347.

CHAPTER 20

CARE OF PATIENTS: AMPUTATION

Amputation generally is done to remove a diseased or non-functioning body part. As such, it should be viewed as a ***reconstructive*** *procedure. Even so, can many amputations be avoided? The Healthy People initiative includes a goal of a 40% reduction in diabetes-related amputations.*

What is Your Job in This Chapter?

In this chapter, your job is to describe the types and causes of amputation and to define rehabilitation principles of care for this population.

Chapter Highlights

- Early rehabilitation care focuses on wound healing, facilitating proper stump shaping, desensitizing, and prevention of contractures.
- The rehabilitation nurse works closely with the physical therapist and prosthetist to provide consistency in early stump care and prosthetic use.
- Phantom pain and phantom sensations are common following amputation, particularly if there was pain in the extremity before the amputation. Desensitization and prosthetic use help to decrease these sensations.
- Ambulation with prosthetic devices requires significantly more energy expenditure than normal ambulation.

The most common causes of amputation are circulatory disorders of the lower extremities, such as peripheral vascular disease and diabetes. Other causes include trauma, infection, congenital deformities, and tumors. Most upper extremity amputations are trauma-related. Age has a definite influence on function and adaptation following an amputation. Children will require changes in the prosthesis as they grow and develop.

On the Computer: Care of Patients: Other Diagnoses, pages 10-19

Co-morbidities

Chronic diseases, aging factors, or other disabilities such as stroke, cardiac disease, or vision problems may limit older adults.

1. Describe the impact of co-morbidities such as PVD and DM on the healing of amputation wounds.

Postoperative dressings are utilized to support wound healing. Wound healing is enhanced by ensuring appropriate resources are available and limiting factors are controlled.

2. Identify resources needed for wound healing.

3. List limiting factors which should be managed.

Figure 8 wraps, stump shrinkers, and removable rigid dressings are used for stump shaping and decreasing edema following amputation.

4. Why is it important to reduce edema and properly shape the residual limbs?

5. Which dressing is most likely to be used for a patient with PVD or DM who has a fragile wound?

6. If you are using a Figure 8 wrap, what two things do you want to remember?

Care of the Patient with Amputation

Loss of a body part will result in grief and mourning. We readily recognize the grief that occurs with the loss of a loved one, but do little to bring closure to the loss of a limb. There is no funeral when you lose a leg (McAteer, 1989 as cited in Chin, 1998). Two particularly hard times for patients are when they return home, no longer surrounded by healthcare providers, and when they are being fitted with a prosthesis (which puts focus on the missing limb).

7. List at least three interventions you can use to assist a patient to cope with the loss of a limb.

8. How will you address the concerns of patients with PVD and/or DM who have lost one leg and are fearful of losing the other?

Contractures are a concern following amputation. Development of contractures can significantly impair function.

9. List three strategies you will teach a patient with an above-knee amputation to avoid the development of hip contractures.

10. List three strategies you will teach a patient with a below-knee amputation to avoid the development of knee contractures.

Phantom pain is more likely to be a problem for those who had pain problems prior to the amputation. Significant phantom pain problems generally affect a small portion of total patients with amputation. Relief may be obtained with:

- Pain medication or adjuvant medications, such as amitriptyline. TEN'S may help some patients.
- Encouraging massage, and desensitization with tapping and pressure
- Weight-bearing on a temporary prosthesis, if possible
- Controlling triggers such as touch, illness, and fatigue
- Evaluating for the development of a neuroma; a nerve block or surgical repair may be necessary

Phantom sensations and phantom pain are normal sequela to the severing of nerves following an amputation.

11. What is the difference between the two?

12. What is a neuroma?

Amputation generally is performed at the lowest level that supports function and healing. Energy expenditure increases dramatically following a lower extremity amputation.

- Using a single below-the-knee prosthesis requires up to 40% more energy.
- Using a single above-the-knee prosthesis requires 65-100% more energy.
- Crutch-walking requires about 60% more energy.
- Propelling a wheelchair requires 9-12% more energy.

This energy load is compounded with bilateral prostheses.

13. List three things you should know about your patient and his/her prosthesis in order to work effectively with the team.

14. Limb volume changes directly affect the fit of the prosthesis. What are two risks when the socket does not function correctly?

Go to the next page to start the next chapter.

Core Curriculum supporting pages are: 320-339.

Chapter 21

Care of Patients: Osteoarthritis, Rheumatoid Arthritis, & Chronic Pain

Osteoarthritis, also know as degenerative joint disease, is the most common form of arthritis. It is asymptomatic in many, and is known as the wear-and-tear disease of the aged.

Rheumatoid arthritis (RA) is a chronic, inflammatory disease. As with most forms of arthritis, patients with RA must live with chronic pain. There are a wide variety of reasons for chronic pain, and its management is critical to quality of life.

What is Your Job in This Chapter?

In this chapter, your job is to describe risk factors for osteoarthritis and the disease

Chapter Highlights

- Osteoarthritis attacks weight-bearing joints and is a wear-and-tear disease. Prevention includes weight control and avoiding joint injury.
- Rheumatoid arthritis is an inflammatory autoimmune disease that attacks people of all age groups and in many forms.
- Joint replacement is done in both populations to improve function. Rehabilitation following joint replacement facilitates use of the new joint and prevents complications.
- Energy management techniques are important for patients with rheumatoid disease to prevent inflammation, fatigue, and pain.

process of rheumatoid arthritis. You will review care strategies for rehabilitation, joint replacement, and energy conservation and management. The role of the rehabilitation nurse is to maximize function and reduce chronic pain. (Remember that there are many forms of arthritis, including gout, systemic lupus erythematosus, scleroderma, ankylosing spondylitits, and others, that are supported by rehabilitative care throughout the continuum.)

On the Computer: Care of Patients: Other Diagnoses, pages 20-30

Osteoarthritis

Osteoarthritis primarily attacks large, weight-bearing joints. Risk factors associated with the development of osteoarthritis include:

- Obesity
- Joint injury
- Repeated stress/strain of the joint

Other factors include age, inactivity, and other joint-damaging diseases. The disease develops through a slow, non-inflammatory process, resulting in joint pain, stiffness, and potential swelling of the involved joints related to a loss of articular cartilage.

An absence of cartilage leads to bone grating against bone, which can result in ulceration of subchondral plates, sclerosis of subchondral bone, and the development of bone spurs.

1. What is the most common cause of functional limitation for a person with osteoarthritis?

2. Identify at least three routine treatment options for management of osteoarthritis.

3. Why would a total joint replacement be done in a patient with osteoarthritis?

Joint Replacements

Joint replacements can provide relief from pain, enhance mobility, and improve functional independence. Laminectomy or spinal fusion may help those with osteoarthritis of the spine. Other health issues may limit eligibility for joint replacement interventions.

4. List at least three precautions that should be taken by patients who have undergone total hip replacements.

Symptoms of dislocation include:

- Acute groin pain
- Shortened extremity in external rotation
- Popping sensation heard or felt in the joint

VTE and PE are the most frequent complications of joint replacement surgery. Prophylaxis is highly recommended. Complaints of numbness or parasthesia may indicate nerve impingements.

5. **True or False:** Patient assessment for blanching, pain, edema, and a positive Homan's sign is a highly accurate method of identifying VTE's.

Rheumatoid Arthritis

There are many different types of arthritides, some more limiting than others. (For more information, contact the Arthritis Foundation). Rheumatoid arthritis attacks adults and children. It affects the joints as well as other systems and tissues. The severity of the disease varies greatly, sometimes having periods of remission and exacerbation.

Systemic symptoms of rheumatoid arthritis include:

- Fatigue
- Weight loss
- Generalized pain
- Fever
- Generalized weakness

Joints are symmetrically affected, tender, and painful. They are particularly stiff after inactivity. While any joint may be affected, the small joints of the hands and feet are most frequently involved.

Joint pathology begins with inflammation of the synovial membrane. Inflammation may spread to the articular cartilage, joint capsule, ligaments, and tendons. The synovial membrane spreads, becoming thick and fibrous. This is known as pannus formation. Pannus limits joint mobility and erodes articular cartilage, causing further joint destruction, pain, joint deformity, and loss of function.

Pannus

Pannus limits joint mobility and erodes articular cartilage, causing further joint destruction, pain, joint deformity, and loss of function.

RA is managed by controlling inflammation, slowing joint destruction, controlling pain, and adapting functional activities. Strategies for care include:

- Resting inflamed joints (splints)
- Systemic rest (naps)
- Joint protection
- Exercise
- Pharmacological therapy
- Psychological support

6. Describe instructions you would give your patient for joint protection.

Energy Conservation

Rheumatoid disease (as well as others) limits endurance and energy levels. Exercises that increase endurance are beneficial to those with rheumatoid arthritis. These may include swimming, bicycling, dancing, jogging, etc. However, energy conservation still may be necessary.

7. List at least five energy conservation strategies you can teach your patients with endurance limitations. (Not limited to patients with RA).

Pharmacological Management

Medications are used to promote comfort, reduce inflammation, and slow or stop the disease process and resulting joint destruction. However, if joint destruction is too advanced, joint replacement may be an option.

8. What are the two types of anti-inflammatories used in management of RA?

9. List examples of disease-modifying anti-rheumatics used to slow or stop disease activity.

Review your understanding of RA and OA by comparing the two here. Label each symptom listed below with an R (Rheumatoid) or an O (Osteoarthritis) to identify the disease process with which it is associated.

10. _____Juvenile forms are systemic, polyarthritic, or pauciarticular.
11. _____Primarily affects weight-bearing joints.
12. _____Primarily affects small joints.
13. _____Joint involvement is symmetrical.
14. _____Accompanying symptoms include fatigue and weight loss.
15. _____Affects more women than men, at a 3:1 ratio.
16. _____Synovium is inflamed.
17. _____Ligaments and tendons eventually become inflamed, stiff, and shortened.
18. _____Slowly progressive.
19. _____Degenerative disease process.
20. _____Joint involvement is asymmetrical.
21. _____Trauma maybe a contributing factor.
22. _____Cartilage detaches from joint.
23. _____Bone spurs develop.
24. _____Pain and stiffness occur at rest and decrease with activity.
25. _____Pain occurs with activity and is relieved by rest.

Pain

The perception of pain is a complicated process influenced by physiological, emotional, and cultural responses.

Pain can be described or classified in many ways, such as acute/chronic or malignant/non-malignant. Healthcare professionals and patients often have problems managing pain because they are:

- Uninformed regarding pain management strategies
- Unable to assess pain adequately
- Concerned about the regulation of controlled substances
- Concerned about patient addiction
- Concerned about side effects and tolerance to analgesics

Nociceptors

Pain receptors called nociceptors are located throughout the body. Once tissue damage occurs, the firing threshold for these nerves is lowered. Sharp pain travels via fast fibers and aching pains via slow fibers. All pain is modulated by chemical and feedback responses of the body.

Pain messages travel up the spinothalmic tract to the thalamus and sensory cortex. The brain causes the release of endorphins in response to the stimulus. All pain can be managed by affecting responses in this pain pathway. Different drugs and techniques modulate different parts of the system. The substantia gelatinosa is described as the gate for reception of pain responses. By closing the gate (distraction, hypnosis, touch, massage, pressure, heat, etc.), pain perception can be reduced. (**Gate Control Theory**)

Types of Pain

Pain usually is classified into one of three syndromes.

- **Neuropathic Pain** is caused by aberrant sensory responses in the peripheral or central nervous systems. This feels like shooting pains on a background of burning or constricting sensations.

- **Nociceptive Pain** is caused by stimulation of nociceptors and is described as constant aching or gnawing. Nociceptive pain may be somatic or visceral. Somatic pain generally is well-defined, while visceral pain is more vague and poorly localized, though patterns are common.
- **Ideopathic Pain** is any pain syndrome that is considered excessive when related to the degree of pathology involved. This classification is risky to use, as it may be associated with malingering.

Malingering

Malingering is a problem in the management of chronic pain. Patients who are malingerers use pain to avoid something else that is more uncomfortable, emotionally or physically. Treatment for this population goes beyond pain management to address psychosocial issues.

Provide at least one example of each type of pain.

26. Neuropathic:

27. Nociceptive:

Chronic Pain

Pain that lasts longer than three to six months is considered chronic. Chronic pain is cyclic, with compensation leading to more pain, leading to more compensation, until the patient is deconditioned, emotionally distraught, and impaired in every aspect of life.

Fill in the blanks to complete the cycle.

28. Acute injury ➔a)_____ (udgargni) and immobilization ➔ development of scar tissue ➔b)_____ (pnia), stiffness and limited ROM ➔c)_____ (minmatfonlai) and tendonitis ➔d)_____ (seaweskn) and decreased participation in functional activities.

The domino effect of the pain cycle leads to:

- Decreased ability to perform one's job or schooling, and an increase in missed work/school activities
- Decreased participation in social and family activities
- Weight gain and further loss of endurance
- Continued decline in performance, putting job at risk
- Focus on relief and exhaustion of resources
- Financial problems
- Depression
- Continued decline in activities and endurance

Pain Management Strategies

Pain treatment includes palliative and medically-corrective techniques. Pain management emphasizes altering the pain experience and enhancing the patient's internal locus of control by teaching strategies to help the patient help himself. Primary interventions focus on exercise, strengthening, and stretching.

29. List at least five non-pharmacologic methods of pain management.

Pharmacologic Management

Analgesics may be given orally, IM, IV, and intrathecally, and may be used alone or in combination with other modalities and nerve blocks. Analgesics can be classified into three categories.

- Non-opiod
- Opiod
- Adjuvant

30. Which of the above groups of drugs have ceilings (the maximum dose above which there is no further effect or there is a risk of toxicity)?

Provide an example of each type of medication.

31. Non-opiod:

32. Opiod:

33. Adjuvant:

Surgical Management

Surgical interventions are reserved as alternatives until other options and modalities have been exhausted. They are very expensive, and it still may take patients months of therapy before they can resume their previous activities and lifestyle.

Surgical techniques include:

- Spinal cord stimulators (Signal closes gate, preventing pain message from reaching the brain.)
- Implantation of intrathecal pumps (Delivers small doses of pain medication directly to the central nervous system.)
- Joint replacement for orthopedic disorders

In extreme cases:

- Rhizotomy/cordotomy
- Sympathectomy

Go to the next page to start the next chapter.

Core Curriculum supporting pages are: 135-137, 302-320, 329-339, 383-396.

CHAPTER 22

CARE OF PATIENTS: OSTEOPOROSIS

Osteoporosis is caused by a reduction in bone mineral density, increasing risk of spinal, hip, and other fragility fractures. Serious concerns and complication from prolonged immobility are the loss of calcium and the increased risk of osteoporosis. Early mobilization is critical to preventing these complications.

What is Your Job in This Chapter?

Your job in this chapter is to list risk factors and preventive care strategies for osteoporosis. You will review key care strategies that facilitate safe return to the community for patients with hip fractures.

On the Computer: Care of Patients: Other Diagnoses, pages 31-36

Chapter Highlights

- Osteoporosis can develop relatively quickly in your patients who are not weight-bearing.
- Prevention of osteoporosis is a priority. Fractures occur easily and can be devastating to quality of life.

The depletion of calcium from long bones is a serious concern for immobilized patients, putting them at risk for fractures and kidney stones. Osteoporosis also is becoming a common problem in our elderly patients. Hip fractures often are the causative factor that leads to institutionalization, dependency, and death. The effect of menopause on bone density is well-documented; women are urged to begin preventive care as early as possible.

- Women lose as much as 20-30% of calcium in long bones during the first 2-3 years after the onset of menopause.
- Patients with spinal cord injuries may lose as much as 1/3 of the calcium from their bones during the first six months after injury.

Prevention is the best method of management. Remember that vitamin D is needed for optimal absorption of calcium. It easily is enhanced by sun exposure.

- Premenopausal women or postmenopausal women who are taking estrogen need 800-1200 mg of calcium/day.
- Postmenopausal women who are not taking estrogen need 1200-1500 mg of calcium/day. Mauk, 2007

Medications to maintain or improve bone quality have expanded options for treating osteoporosis in women. Management includes identifying the best medication for each patient. However, adherence after the first year is often poor.

Licata, 2007

Careful management of immobilized patients is required to prevent hypercalcemia, renal impairment, and the development of kidney stones. This includes:

- Cautious use of calcium supplements
- Early mobilization, which includes weight-bearing and muscle tension on long bones (through range of motion, standing tables, electrical stimulation, etc.)

1. Find the 13 risk factors for osteoporosis in this puzzle.

C K R P H S L E M P Q T I A D F J N U W M

R E G U L A R A L C O H O L I N T A K E R

A F P G L E C R C J L O W P T B J Z D U E

Z A I G Y P Q L S M D E Z V V N Y I U S K

W M P P T C E Y C D N O L B J L C P T O A

L I A C I D F M H J O Q Z Y X A N M L H T

O L M N R P T E A A M K I N T E R I C R N

C Y A B A C D N E C F I J I K M N Q L V I

A H B C P D E O F L I G O H K P S E M K E

L I T V I U X P W M T N Z A Y B A C Y D N

W S E C L F H A G O S I A J K N L M D N I

N T O P L Q R U S I B T U C V Z X Y O U E

O O A B U C D S D R R E G F T I J H O K F

I R L M N P O E Q K O R U S T I V W S X F

G Y Y Z A C E B D L N E G F H I V J L K A

Q B L N M F A I R S K I N O Q P R E O S C

U J T V F U W Y X M Z Z A B E D C F C G H

R L I E J K O M L P F E M A L E N Q A R G

D P C S T V W U X E T Y Z A C D B E F G I

M T E I D M U I C L A C W O L H J K I L H

S N M N P O S M O K E R Q T R S V U T W X

Fractures

Fractures can be deadly for elderly patients. Complications are common, and risks further increase when the patient has other health problems. Be particularly alert for signs and symptoms of DVT and pneumonia.

2. List three ways you can decrease the risk of the development of these complications.

Return of function is a serious concern for elderly patients following fractures. Consequently, efforts of the rehab team should be directed towards maximizing function and safety in an effort to return the patient to the home environment. Failure to access appropriate services at appropriate times can lead to continued institutionalization. The best predictors of outcome include:

- Absence of dementia
- Younger age
- Social support system

Exercise is critical to continued recovery from fractures and to slowing the progression of osteoporosis. There are several principles that provide a foundation for exercise programs.

- Principle of specificity
- Principle of progression
- Principle of reversibility
- Principle of initial values
- Principle of diminished returns

3. Describe the impact of the principle of reversibility on your discharge teaching of a patient preparing to return home following a hip fracture.

Go to the next page to start the next chapter.

Core Curriculum supporting pages are 289-302, 329-339.

CERTIFICATION REVIEW FOR REHABILITATION NURSING

WORKBOOK

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CHAPTER 23

CARE OF THE PATIENT: CARDIOPULMONARY

The ability to breathe and expend energy often is taken for granted. These abilities quickly are compromised by obstruction, impaired perfusion, and immobility. Recognizing the difficulties experienced by a healthy individual who suddenly gets the flu should lend significantly to preventive and rehabilitative efforts for rehab patients.

What is Your Job in This Chapter?

In this chapter, your job is to describe the impact of cardiopulmonary problems, to distinguish between obstructive and restrictive respiratory disease, to

Chapter Highlights

- Cardiac rehabilitation is a very structured and monitored recovery process that controls risk while advancing function.
- The patient must adapt to a changed lifestyle to prevent the recurrence of a cardiac event. This may require significant emotional support.
- Patients progress through inpatient and outpatient care and eventually self-monitor their progress. They learn to measure workload (MET system is used) and to recognize symptoms that indicate they should stop an activity.
- Restrictive and obstructive pulmonary diseases are common co-morbidities for rehabilitation patients, requiring proactive care.

review the rehabilitation care principles applied to them, and to learn about the components of cardiac rehabilitation programs.

On the Computer: Care of Patients: Other Diagnoses, pages 37-47

Respiratory function may be affected generally by problems such as smoking, immobility, allergy, or infections. Or, there may be particular problems related to airway clearance, breathing patterns, gas exchange, or the ability to sustain spontaneous ventilation. Risk factors include excessive or thick secretions, immobility, ineffective cough, damaged lung tissue, decreased lung or chest wall compliance, inflammation, and vascular congestion.

Prevention

Limiting exposure to environmental irritants prevents pulmonary disease. Early detection provides the widest range of options for control and management. However, onset often is insidious, and intervention is usually delayed until the problem interferes with the quality of life.

Obstructive Pulmonary Disease

This group of diseases is defined by **increased resistance to the passage of air into and out of the lungs secondary to narrowing of the bronchial tubes.** It is diagnosed by evaluating the amount of air the patient is able to forcibly expire. Causes include irritants or disease processes causing damage to the bronchial tree.

1. List four diseases that can result in obstructive pulmonary disease.

Restrictive Pulmonary Disease

Any disease or problem that limits lung expansion by loss of lung tissue, loss of functioning alveoli, or decreased lung and chest wall compliance can be identified as a restrictive pulmonary problem. These limitations may be extrapulmonary (outside of the lungs) or pulmonary in nature.

2. Identify three problems that can result in extrapulmonary restrictions.

3. Identify four disease processes that can result in pulmonary restrictions.

Cardiac Disease and Pulmonary Function

Right-sided ventricular failure results from hypertrophy and dilation secondary to obstruction in the pulmonary vessels, causing the ventricle to pump against resistance. This converts circulation from the typical high-flow, low-resistance system to a low-flow, high-resistance system.

4. Fill in the blanks to indicate the pattern of this disease process.

⇧ pulmonary vascular resistance ⇨ a._____ ⇨ pulmonary hypertension⇨

b. _____ ⇨ cor pulmonale ⇨ c._____

Since many of these patients are not going to get remarkably better, rehab approaches should be concerned with management, prevention of further complications, and assisting the patient to be as functionally independent as possible, by teaching pacing and energy conservation techniques.

Nursing Diagnosis: INEFFECTIVE AIRWAY CLEARANCE

5. Identify signs and symptoms commonly seen in patients with ineffective airway clearance.

Interventions focus on assisting the patient with coughing and expectoration of sputum through:

- Controlled cough techniques (splinting and assisted cough)
- Staged cough techniques (sip, purse lips, exhale 2-3 times, then cough)
- Assisted cough techniques (quad cough)
- Daily bronchial hygiene

6. Identify five reasons that postural drainage and chest physiotherapy would be contraindicated.

Nursing Diagnosis: INEFFECTIVE BREATHING PATTERN

Dyspnea is the most common complaint in patients with ineffective breathing patterns.

7. Identify signs and symptoms commonly seen in patients with ineffective breathing patterns.

There are several options for management of this problem. It is helpful to work with the patient to determine what works for him, and then to keep plans simple and focused on those intervention strategies. If interventions are successful, oxygen levels will be improved and respiratory rate will slow.

8. List four interventions that may be used for these patients.

Sleep Apnea

Obstructive sleep apnea is associated with obesity. Central sleep apnea occurs when there is malfunctioning of involuntary respiratory control centers in the brain. In SCI, voluntary respiratory control may be impaired in high injuries, while involuntary control is preserved.

Weight loss may only temporarily decrease symptoms of obstructive sleep apnea, leading most patients to eventual use of alternative strategies including:

- Avoiding the supine position while sleeping
- Use of an orthodontic splint to maintain an open airway at the hypopharynx
- Ventilatory support with positive airway pressure machines

Immobility & Disuse Syndrome

The effect of immobilization—even for relatively short periods of time—is dramatic on healthy persons and of serious consequence for those who are ill or recovering from injury. Changes begin to occur in as little as 24 hours.

Describe risk factors for each of these systems.

9. Integumentary:

10. Gastrointestinal:

11. Urinary:

12. Respiratory:

13. Cardiovascular:

14. Musculoskeletal:

15. Cognitive/Psychosocial:

Use this acronym to remember the basic principles of preventing complications from immobility.

GO HOM

H=Hydrate

O=Oxygenate

M=Mobilize

Complete these phrases to list the mainstays of preventive care for patients at risk for disuse syndrome.

16. Reposition _____ (uglaylrre).

17. Use _____ (sepusrer) -reducing devices as necessary.

18. Maintain adequate _____(yhitanord).

19. Ensure a well-balanced _____(etdi).

20. Establish a consistent _____ (wobel) program.

21. Ensure complete _____ (rlbaded) emptying.

22. Aggressively maintain _____ (nmpuyarol) hygiene.

23. Promote _____ (ltacricnoui) through positioning and ROM.

24. Encourage participation in _____(fels)-_____ (arce).

25. _____ (bzemiloi) as soon as possible.

Nursing interventions are based on establishing effective ways for the patient to care for himself using medical management and energy conservation techniques.

26. Describe interventions you would use for a patient who has had multiple complications from trauma (including multi-system failure), is extremely deconditioned, was recently weaned from the ventilator, and still is requiring oxygen use.

Nursing Diagnosis: ACTIVITY INTOLERANCE

27. Identify other signs and symptoms commonly seen in patients with activity intolerance patterns. (Two are listed.)

- PCO_2 greater than 45 mm Hg
- PO_2 below 60 mm Hg
-
-
-

Cardiac Rehabilitation

Persons with cardiac disease generally are under the age of 60. Costs of cardiac care, including healthcare, medications, and lost productivity, are in the hundreds of billions of dollars. Supervised exercise programs, education, and lifestyle changes have dramatically improved outcomes for these patients. Ongoing research is identifying the optimum amounts and types of exercise that are safe for patients, as well as the type of patient most likely to comply with and benefit from different types of programs.

Coronary Artery Circulation

Resting coronary blood flow is about 5% of total cardiac output.

28. List the three factors that affect coronary artery perfusion.

29. Most coronary circulation occurs during ventricular (diastole/systole).

30. As heart rate increases, the coronary artery filling time (increases/decreases).

31. Anginal episodes may be relieved by (rest/activity).

32. Conditions such as CHF may cause anginal symptoms because high diastolic interventricular pressure (increases/decreases) blood flow to cardiac tissue.

Cardiac Rehabilitation: Acute Care

33. Identify the goal of acute care of the cardiac patient.

34. Describe intervention strategies used to achieve this goal.

Cardiac Rehabilitation: Inpatient

35. Identify the goal of inpatient cardiac rehabilitation.

36. Describe intervention strategies used to achieve this goal.

37. What is the primary focus of education during this phase?

Cardiac Rehabilitation: Outpatient

38. Identify the goal of the third phase of cardiac rehabilitation.

39. Describe intervention strategies used to achieve this goal.

40. What is the primary focus of education during this phase?

Exercise Prescription

41. How are exercises prescribed for cardiac patients?

42. List criteria for terminating an exercise session.

43. What is a general guideline a patient can use for resumption of sexual activity?

Lifestyle Changes

44. List six lifestyle changes which frequently are recommended to patients with cardiac disease.

45. Describe psychosocial issues that need to be addressed in patients with cardiac disease.

46. Describe work-hardening techniques that may be utilized to facilitate a return to work.

Complete the quiz on the Computer: Care of Patients: Other Diagnoses, pages 48. Then, go to the Main Menu to complete the Posttest. READ instructions carefully. Print your POSTTEST results page! You will not be able to go back and retrieve your subset scores. An 80% or better score on the POSTTEST is required for continuing education credit.

Core Curriculum supporting pages are: 135-137, 365-382.

Answer Key

~Chapter 2~ The Impact of History & Legislation on the Practice of Rehabilitation

1. Social changes at the turn of the 20th century led to:
   - The concept of caring for those less fortunate than us.
   - The development of special schools that provided vocational training for the crippled, blind, and deaf.
   - The establishment of public health departments in major cities, causing improvements in hygiene and nutritional status. This was closely followed by the development of immunization programs.
2. World War I impacted the development of rehabilitation services by bringing a focus to rehabilitation for surviving soldiers.
   - In 1917, the Surgeon General of the United States developed the Federal Division of Special Hospitals and Physical Reconstruction at Massachusetts General Hospital to treat wounded soldiers.
   - Frank Granger trained physical reconstruction aides that were sent to France to treat war casualties.
   - Initial efforts to provide vocational training for soldiers resulted in the passing of the first Rehabilitation Act and Vocational Rehabilitation Law. The Veteran's Administration was created.
3. Epidemics and the passage of the Social Security act dramatically impacted rehab services by expanding rehabilitation care strategies and defining the rehabilitation process.
   - The polio epidemic led to the development of specialty hospitals and clinics.
   - Sister Elizabeth Kenny used muscle manipulation and eliminated the use of rigid orthoses to manage polio.
   - Passage of the Social Security Act of 1935 defined rehabilitation as *a process that helped disabled persons become capable of engaging in financially-compensated occupations.*
4. A new method of treating infection (Sulfa) was developed. Methods of managing trauma and handling shock were becoming more sophisticated.
5. A decrease in mortality and an increase in the health status of society.
   - The introduction of the automobile and the impact of the industrial revolution created a potential for injury that had not previously existed.
   - Increasing leisure time encouraged participation in recreational activities and their associated risk of trauma.
   - Technological and therapeutic advances extended the lives of victims.
6. Emergency healthcare improvements:
   - Triage principles were developed and helicopters were used to transport the injured.
   - The concept of treatment at the scene expanded and led to the development of paramedics and a significant decrease in mortality.
   - Technological advances and further development of chemotherapeutic agents also increased survival rates.
7. The scope of rehab was expanded to include chronic diseases and needs of the elderly.
   - Independent living movements, initiated in Berkley, California, focused on self-determination, community awareness, and community access, resulting in legislation

that demanded accessibility and access to care.
    - Medicare legislation stimulated the demand for rehabilitation nurses, especially by insurance companies.
    - In 1965, the Workmen's Compensation and Rehabilitation law passed due to rising concerns over the quality of work environments and care of injured workers.
8. The needs of the disabled became a social concern.
    - Reimbursement was very attractive in rehabilitation settings and was used as an alternative when the prospective payment system hit acute care.
    - Trauma centers were developed and technology continued to save more lives.
    - Traumatic injuries from autos and recreational activities climbed, leading to the development of protective legislation.
9. The Americans with Disabilities Act, which:
    - Requires private businesses to be accessible, including hotels, healthcare centers and offices, shopping centers, restaurants, etc.
    - Prohibits discrimination in the workplace in employment practices and in physical accessibility.
    - Requires equal access to public transportation.
    - Requires equal access to telecommunications without additional billing for services.
    - Does not supersede any local or state law that provides more protection to the disabled.
10. Many issues impact the field:
    - Ethical issues: Do we save everyone? Who chooses? Should euthanasia be legal? Who has access to services? What about managed care? What about healthcare reform?
    - Passage of new laws increasing access and opportunities for the disabled
    - Increased efforts at prevention
    - Aging with a disability now an issue
    - Increased numbers of people with multiple disabilities
    - Increased access to technology to improve the quality of life for disabled individuals
    - Continued demand for rehab nurses to meet the needs of an aging population; increased number of people with disabilities; and increased life spans (which in and of itself increases the likelihood of disability)
    - Continued legislation will direct care delivery and access. Nurses can and should get involved in the legislative process to provide input for policy making and healthcare planning and to guide the development of the future of healthcare and the profession.
11. Individualized Education Plan
12. 1920
13. 1943
14. 1967
15. 1965
16. 1935
17. 1965
18. 1966
19. 1975
20. 1997
21. 1990
22. 1973
23. 1968
24. 1991
25. 2003

~Chapter 3~ Foundations of Rehabilitation Nursing

1. Activity
2. Impairment
3. Participation
4. True
5. True
6. True
7. Caregiver
8. Counselor
9. Advocate
10. Educator
11. Collaborator
12. Coordinator
13. Questions may include:
    - Are there any religious practices important to you while you are here?
    - Do you need access to any religious books or articles?
    - Do you need access to a minister or spiritual advisor?
14. You can:
    - Educate yourself about the faiths in your community.
    - Understand your own spirituality.
    - Know who and where your resources are.
15. Interventions include:
    - Develop rapport and provide support.
    - Refer to appropriate minister or spiritual advisor.
    - Provide opportunities to practice faith.

~Chapter 4~ Nursing Theories Applicable to Rehabilitation

1. Neuman
2. Roy
3. King
4. Orem
5. Rogers
6. Hall
7. The Core (person), the Care (body), and the Cure (disease) are interlocking realms in this model. Rehab is a process of learning to live within limitations; nursing focuses on nurturing and teaching.
8. Energy fields are key components of this theory. People are viewed within the context of the environment and patterns. Change is unidirectional, with rehabilitation focused on developing a person into a more complex individual via the experience of disability and care. Nursing is *knowing*, rather than *doing*. Nurses knowingly assist the process of change.
9. King's theory reflects an open system in which health is maintained via adjustment to stressors. Goal attainment is a key concept. The nursing process functions within the social system, sharing perceptions with the patient to identify goals and work together towards achieving them.
10. Neuman's theory is also an open system. The person is a unique and holistic system, with nursing focused on interventions that minimize stress. Nursing focuses on primary, secondary, and tertiary prevention; nursing goals focus on strengthening lines of resistance. Nursing assessment is holistic.
11. In Orem's theory, the person is viewed as one who takes deliberate action to meet needs. When the person is unable to do that (self-care demands exceed self-care agency), a need for nursing is created. Self-care deficits are universal, developmental, or health-deviation problems. As the patient recovers, nursing care is delivered in a wholly compensatory, partly compensatory, or supportive/educative manner.
12. In Roy's theory, a focus on adaptation supports the patient in responding to changing needs in a changing environment. With an emphasis on mutual respect, the nurse addresses basic physiological needs, self-concept, role mastery, and interdependence.
13. Health Perception-Health Management, Self-Perception, Role-Relationship, Coping-Stress Tolerance, and Value-Belief patterns.
14. Hardiness
15. Locus of Control
16. Self-responsibility
17. Health Belief Model

~Chapter 5~ The Economics of Healthcare

1. Medicare
2. Medicaid
3. Workers Compensation
4. Private Insurance
5. Options include:
    - Risk for caregiver role strain related to insufficient resources
    - Risk for impaired home maintenance/management related to insufficient resources
    - Risk for ineffective management of therapeutic regimen related to insufficient resources
6. Interventions include:
    - Coordinate care and referrals to maximize resources.
    - Provide education and realistic options.
    - Empower the patient/caregiver to be creative in the pursuit of options.

~Chapter 6~ Rehabilitation Teams & Teamwork

1. Social Worker
2. Therapeutic Recreational Specialist
3. Psychologist
4. Physical Therapist
5. Physician/Physiatrist
6. Occupational Therapist
7. Rehabilitation Nurse
8. Neuropsychologist
9. Patient
10. Speech-Language Pathologist
11. Multidisciplinary
12. Interdisciplinary
13. Transdisciplinary
14. **Multidisciplinary strengths:** Roles are clear; limited coordination is required.
    Multidisciplinary weaknesses: Encourages fragmentation and duplication of effort; patient/family participation is limited; involves little collaborative work or goal planning; may be less effective/efficient; length of stay and cost may be higher.
15. **Interdisciplinary strengths:** Has potential to reduce costs, decrease length of stay, and improve outcomes. All team members have holistic view of patient. Care can be comprehensive, consistent, and non-

fragmented. Supports the development of care paths.
Interdisciplinary weaknesses: System is complex; involves a significant amount of collaboration, coordination, and communication; and is time-consuming. Roles are variable. Leadership issues/problems are more common.

16. **Transdisciplinary strengths:** Fewer persons interacting with patient decreases stimulation and stress. It is a very holistic approach that may conserve staff and resources.
Transdisciplinary weaknesses: This approach is very complicated; lack of expertise may limit quality of care. Significant collaboration and communication are required.
17. Strategies to decrease relocation stress include:
    - Reducing environmental differences between old and new settings; promoting continuity of care in new environment
    - Transferring all personal items (e.g., mobility aids, eyeglasses, hearing aids, dentures, prostheses, and belongings) with the person
    - Transferring during daytime hours
    - Offering the person decision-making opportunities throughout the relocation experience
    - Offering help in maintaining contact with significant others by making telephone calls, writing letters, and visiting with previous roommates when applicable
18. According to CARF, the person coordinating the patient's care:
    - Is responsible to ensure achievement of outcomes.
    - Has authority to ensure the provision of care.
    - Is knowledgeable about the program being provided to the patient.
    - Is available to interact with the patient, team, and other stakeholders.
    - Facilitates the patient's orientation to the program and predicted outcomes.
    - Ensures communication with internal and external sources.
    - Uses financial information in decision making about the provision of services for the patient.
    - Facilitates the involvement of the patient throughout the rehab process.
    - Obtains appropriate information to facilitate follow-up activities of the organization in its evaluation of program performance.
    - Ensures discharge/transition arrangements are completed.
    - Facilitates implementation of discharge/transition recommendations.
19. The purpose of case management is to:
    - Facilitate the patient's functioning in the least restrictive environment.
    - Facilitate health and return to work or school.
    - Ensure timely and effective care.
    - Ensure appropriate management of resources.
20. As early in the patient's care process as possible
21. Improve efficiency in working with case managers by:
    - Establishing a consistent communication system and keeping them informed
    - Providing access to your documentation
    - Ensuring they understand your recommendations and the reasoning behind them
    - Collaborating regarding discharge planning
    - Assisting in identifying times to meet with families and team members
22. Well-defined goals are:
    - Clear, specific and meaningful.
    - Realistic and attainable.
    - Measurable and related to anticipated outcomes.
    - Congruent with funding resources and equipment.
    - Dynamic and able to adapt to the changing needs and progress of the patient.
23. It prevents stagnation and can increase creativity.
24. Strategies for resolving conflict include:
    - Create an effective atmosphere for discussion and compromise by preparing yourself for a positive outcome.
    - Clarify perceptions of all involved parties.
    - Focus on shared needs and a positive outcome.
    - Focus on the current issue; do not dwell on past behaviors or issues.
    - Generate a list of options—ask for the other person's list first.
    - Develop a list of steps to resolve the conflict.
    - Make a mutual benefit agreement which will provide a long-term solution.

~Chapter 7~ Meeting Standards: Quality Improvement & Program Evaluation

1. Accessibility and safety of those with disability
2. True
3. True
4. False. Internet access has improved ease of access, but data collection and reporting have provided the data to access.
5. False. Benchmarking is used to compare data against the best, oneself, or another standard.
6. False. ASPIRE is a CARF guideline for quality improvement.
7. Plan, Do, Check, Act, as a process of quality improvement

8. Doing the right thing, right the first time, on time, all the time, and continuously looking for ways to improve
9. Cause-and-effect diagram or fishbone tool
10. Pareto chart
11. Flow chart
12. Efficiency and effectiveness of care
13. Yes
14. FIM®
15. WeeFIM®
16. OARS (Older Adults Resources & Services)
17. OASIS
18. Yes
19. EBP is a problem-solving approach to integrate critical appraisal of the evidence concerning a clinical problem with clinical experience and patient needs, values, and preferences.
20. Evidence or Standard
21. Guideline
22. Option

~Chapter 8~ Populations with Special Needs: Growth & Development

1. definable, sequential
2. complex
3. General
4. Cephalocaudal
5. Proximodistal
6. Developmental task
7. Deviant development
8. Delayed development
9. 3 years
10. 1 year
11. 4 years
12. 3-5 years
13. 12 years and up
14. 5-12 years
15. Age 12 and up
16. 2-5 years
17. 5-12 years
18. Birth to 18 months
19. Adolescence
    - Encourage decision-making
    - Provide information and rationales
    - Respect privacy
    - Support social relationships
20. Middle childhood
    - Maintain contact with peers
    - Provide honest, complete explanations
    - Encourage responsibility and skill mastery
21. Early childhood
    - Focus on abilities
    - Maintain daily routines
    - Incorporate play into care
22. Toddlerhood
    - Honestly explain reasons and procedures
    - Maintain routines and ritualistic behaviors
    - Keep safe
    - Adapt toys/environment to encourage play
23. Infancy
    - Support parental bonding
    - Limited use of restraints
    - Place age-appropriate toys in visual field
24. Rehabilitation is used to assist a person to relearn lost skills; habilitation is used to assist a person to learn new skills that have not yet been mastered.
25. Acquired disabilities result from trauma, infection, or other conditions occurring after birth. Congenital disability is the result of a genetic disorder or is present from time of birth and not related to external factors present at birth.
26. Monitor patterns of growth, carefully evaluate physiologic functioning, maintain well-childcare, prevent complications, facilitate respite care
27. Establish a communication system. Facilitate mobility and positioning to prevent problems, and maximize function and interaction. Teach self-care skills. Adapt play activities. Facilitate and adapt educational techniques.
28. Assisting to build self-esteem, assisting to develop appropriate social skills, facilitating parenting skill development, and addressing issues of the future and independent living.
29. This is a series of amendments to the 1970 act that defined handicapped children and made funds available for them. The 1975 amendment requires provisions of educational and support services for all children older than age 3 years, including Individual Education Plans. An amendment in 1984 expanded services.
30. This is a federal mandate providing services for children with disabilities 0-5 years of age. It mandates education and services for children 3-5 years old with a developmental disability in the least restrictive environment. Creates or expands early intervention services for children from birth to 3 years of age under Part H of the statue.
31. Individual Education Plan
32. Individual Health Plan
33. Individual Transition Plan

~Chapter 9~ Populations with Special Needs: Effects of Aging

1. Cardiovascular
    - Decreased arterial blood flow which increases risk of stroke
    - Decreased work capacity
    - Decreased sensitivity of baroceptors, which increases risk of orthostatic hypotension
    - Decreased heart rate and stroke volume, which increases risk of developing CHF, hypertension, arterial occlusion, and MI

2. Hematological
    - Anemia
    - Hypoalbunemia
    - Decrease in body water
    - Increase in fat that potentially alters effects of medications
3. Renal
    - Decrease in glomerular filtration rate leading to decreased creatinine clearance
    - Increased risk of dehydration
    - Altered clearance of medications
4. Respiratory
    - Decreased pulmonary reserves and vital capacity
    - Decreased respiratory fluids leading to increased risk of respiratory infections and pulmonary plugs
    - Poor tolerance of oxygen debt
5. Sensory
    - Decreased night vision and depth perception
    - Decreased auditory acuity; decreased sense of smell and taste
    - Decreased perception of deep pain, touch, and vibratory sensations
6. Gastrointestinal
    - Decreased caloric needs
    - Decreased absorption of nutrients
    - Decreased GI motility
7. Endocrine
    - Decreased glucose tolerance
    - Potential hyperthyroidism
8. Neurological
    - Decreased short-term memory
    - Alterations in balance and coordination
9. Musculoskeletal
    - Decreased activity contributes to loss of bone mass and nitrogen
10. Skin
    - Decreased subcutaneous fat
    - Dermal thinning
    - Decreased collagen
    - Decreased elastin causes poor wound healing

~Chapter 10~ Psychosocial Issues in Rehabilitation

1. Fighting back, depression, tired of fighting, learned helplessness, anger, noncompliance, sick role
2. Emphasis on body beautiful, personal productivity, and potential belief that the person deserved it
3. Paternalism, glad it wasn't me, development of understanding of how easily they could be in the same condition as the patient
4. Family and friends can be supportive or unrealistic. If they keep pushing unrealistic expectations, the patient may lose respect for them and the relationship can suffer, leaving the patient with less support and socialization. Other responses can be avoidance or encouragement of maladaptive behaviors. The history of the relationship before the disability will likely predict the relationship following a disability.
5. The responses of children vary according to the type of injury and the developmental level of functioning. Common themes include feeling different from peers, mourning the loss of activities such as sports, and wondering what the child has done to deserve this punishment.
6. Initial responses may include feeling overwhelmed, having difficulty processing or remembering information, or being hypervigilant and hopeful.
7. Stressors may include fatigue, *this is hard work,* ending of the honeymoon period, facing issues of caregiver fatigue, and isolation.
8. Change
9. Unfreezing
10. Refreezing
11. Movement
12. Restraining forces
13. Driving forces
14. Avoidance - Avoidance.
15. Approach - Avoidance.
16. Double Approach - Avoidance.
17. Approach - Approach.
18. Increased heart rate, insomnia, elevated blood pressure, fatigue and weakness, increased respiratory rate, flushing or pallor, diaphoresis, dry mouth, dilated pupils, body aches and pains (especially chest, back, and neck), voice tremors or pitch changes, trembling, restlessness, palpitations, faintness, dizziness, nausea, vomiting, parasthesias, frequent urination, hot and cold flashes, and diarrhea are a few examples..
19. Admits to feelings of apprehension, lack of self-confidence, helplessness, losing control, or nervousness; exhibits irritability, impatience, criticism of self and others, angry outbursts, withdrawal, crying, tension, or being "keyed up"; shows inability to relax, anticipation of misfortune, lack of initiative, tendency to blame others, self-deprecation, and more.
20. Cannot read social cues or respond appropriately; has decreased motivation and lack of urgency.
21. Anxiety may increase when routine activities are perceived as threatening.
22. Interventions may include:
    - Assessing level of anxiety
    - Removing excess stimulation
    - If appropriate, providing activities that can reduce tension (e.g., physical activity, games)
    - Referring for further evaluation, support, or counseling, as necessary
23. Provide assurance, encourage expressions of feelings, reflect on reality, discuss what can be changed and what cannot, teach relaxation techniques

24. This answer should reflect your personal choices.
25. Provide gentle support. "We sure hope you are right. And, if you are, then you really need to exercise, keep your muscles moving, and stay active so you can take advantage of your return when it arrives."
26. Those without a support system or with a history of ineffective coping; those unable to grieve due to responsibilities
27. Interventions include:
    - Assistance with the normal tasks of mourning
    - Encourage sharing of perceptions of the situation
    - Help identify activities that have been ignored or abandoned since the loss and encourage the selection of one to resume
    - Identify community resources available for support and refer for counseling if indicated
28. Overt or covert expressions of dissatisfaction about the inability to control the situation (e.g., work, illness, prognosis, care, recovery rate) that is negatively impacting outlook, goals, and lifestyle
29. To reinforce the patient's role as a decision-maker and give some control back to him
30. Interventions may include:
    - Encouraging to express feelings, especially about the way he or she feels, thinks, or views self.
    - Encouraging to ask questions.
    - Providing reliable information and reinforcing information already given.
    - Encouraging visits and contacts with peers and significant others.
    - Providing opportunity to share with people going through similar experiences.
    - Discussing the difficulty that others (spouse, friends, co-workers) may have with visible changes.
    - Allowing significant others opportunities to share feelings and fears.
    - Referring to community resources if needed.
31. Interventions include:
    - Establishing a trusting relationship.
    - Promoting social interactions.
    - Exploring strengths and resources with person.
    - Discussing expectations.
    - Referring to community resources as indicated (e.g., counseling, assertiveness courses).
32. Interventions include:
    - Approaching aggressive patients with a kind, firm demeanor.
    - Teaching to express hostility in a socially-acceptable manner and channel hostility into productive, useful activities.
    - Teaching sense of personal responsibility for his or her actions.
    - Applying behavior modification techniques.
33. Motor
34. Access
35. Relationship
36. Funding
37. Education
38. Self-Esteem
39. Interventions include:
    - Reducing or eliminating causative and contributing factors.
    - Decreasing barriers to social contact.
    - Teaching social skills.
    - Initiating referrals as indicated.
40. Interventions may include:
    - Using open-ended questions and encouraging talking about experiences with healthcare (e.g., hospitalizations, family deaths, diagnostic tests, blood tests, x-rays).
    - Asking directly, "What are your concerns?"
    - Exploring understanding of the problem and expectations of treatment and outcomes; determining if beliefs are realistic and correct.
    - Assessing problematic factors of prescribed therapy (e.g., time, cost, complexity, convenience, adverse effects).
    - Discussing the risks and benefits of adhering to the prescribed regimen.
    - Affirming right to refuse all or part of the prescribed regimen.
41. You should teach:
    - Warning signs of burn out.
    - To take care of self, too.
    - To get enough sleep, use naps if necessary.
    - Advantages of eating a nutritionally sound diet and getting some exercise.
    - To delegate tasks as necessary.
    - To set priorities and do only what is necessary.
    - How to arrange for respite care.
    - How to use support systems.
    - Importance of maintaining a sense of humor.

~Chapter 11~ Patient & Family Education

1. Create a need to know in the learner.
2. Adults are self-directed learners with experience. Readiness to learn is integrated with roles and expectations. Learning focuses on problem solving. Adults have a wide variety of experiences that influence learning processes. Learners evaluate learning against perceptions of achievement of own goals. Learning activities should be interactive, and the environment should offer mutual respect, trust, collaboration, support, and mutual planning.
3. **Affective** components address attitudes and desire to comply with medication regimens. **Cognitive** components include understanding

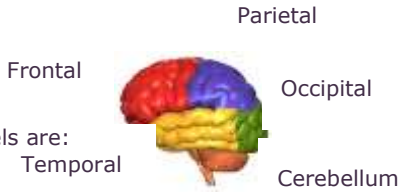
reason for medications, management strategies, and potential risks. **Psychomotor** components include actually setting up and administering medications.

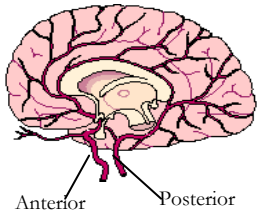
~Chapter 12~ Community Reentry

1. Entryways/exits, kitchen, bathroom, bedroom, water, heat, and energy supplies.
2. Grocery shopping, yard work, paying bills, housekeeping, pet care, car care, laundry, etc.
3. Grab bars in bathroom, tub bench, doorknob turners, rolling cart in kitchen, reacher, adapted phone, computer, etc.
4. Limit access to alcohol, guns, car, and poisons; prevent elopement.
5. CPR, Heimlich maneuver (especially if the person with the disability is dysphagic), notification of emergency services regarding special needs
6. Previous interests.
7. (Answer should reflect your community.)

~Chapter 13~ Anatomy & Physiology Review

1. Left
2. Left
3. Right
4. Left
5. Right
6. Right
7. The correct labels are:
8. Frontal
9. Parietal
10. Parietal
11. Parietal
12. Frontal
13. Parietal
14. Frontal
15. Frontal
16. Frontal
17. Parietal
18. Frontal
19. Cerebellum
20. Cerebellum
21. Frontal
22. Frontal
23. Frontal
24. Frontal
25. Frontal
26. Cerebellum
27. Occipital
28. Frontal
29. Occipital
30. Temporal
31. Temporal
32. Cerebellum
33. Temporal
34. Medulla
35. Internal Capsule
36. Limbic System
37. Hypothalamus
38. Medulla
39. Hypothalamus
40. Medulla
41. Limbic System
42. Medulla





43. Thalamus
44. Basal Ganglia
45. Hypothalamus
46. Medulla
47. Limbic System
48. Medulla
49. Thalamus
50. Limbic System
51. Thalamus
52. Reticular Activating System
53. Pons
54. Pons
55. Limbic System
56. Basal Ganglia
57. Carbon dioxide
58. See picture ⇨
59. To provide collateral circulation
60. There are 8 cervical nerves and 7 cervical vertebrae.
61. Central nervous system, above the level of the reflex arc
62. Peripheral nervous system, below the level of the reflex arc
63. Sensory receptor to spinal cord to motor nerve
64. 2
65. 1
66. 3
67. 5
68. 4
69. 4+
70. 1+
71. 3+
72. 2+
73. 0+
74. Parasympathetic
75. Sympathetic
76. Sympathetic
77. Sympathetic
78. Parasympathetic
79. Parasympathetic
80. Sympathetic
81. Sympathetic

82. Parasympathetic
83. Parasympathetic
84. Parasympathetic
85. Parasympathetic
86. Sympathetic
87. Sympathetic
88. Sympathetic
89. Parasympathetic
90. Parasympathetic
91. Sympathetic
92. Parasympathetic
93. Sympathetic
94. Cardiac cycle, heart rate, diastolic intraventricular pressure
95. Blood volume and arterial compliance
96. Cardiac Output
97. Stroke Volume
98. Shallow
99. Increasing
100. 60
101. Depresses
102. Closure, bolus
103. Tongue, pharynx
104. Airway
105. Occurs after meals, large peristaltic waves moving chyme through the colon
106. Occurs when stool enters the rectum, resulting in peristaltic waves of the lower colon
107. Diet, hydration, exercise, medications, sensori-motor function, cognition, systemic and local factors, metabolic factors, health state, psychosocial and learning factors
108. Relax
109. Contraction
110. Relaxation
111. Decreases
112. Increases
113. Decreases
114. Increase
115. Decrease
116. Increase
117. Increase
118. Diarrhea, diuretics, diabetes insipidus, dysphagia, wound exudates, or excessive diaphoresis
119. Poor skin turgor, thickened secretions, thirst, fatigue, dry skin, weight loss, constipation, or concentrated urine (If it includes advances to ICF loss, symptoms will include weakness, restlessness, confusion, tetany, hyperpnea, and fever.)
120. **Systemic:** SIADH, abnormal renal function, CHF, pulmonary edema, excess Na or fluid intake, hyperaldosteronism. **Localized:** edema, impaired lymph drainage
121. Monitor weight, ROM, elevation of affected extremity
122. Detrusor External Sphincter Dyssynergy
123. Epidermis
124. Dermis
125. Subcutaneous
126. True
127. True
128. True

~Chapter 14~ Care of Patients: Stroke

1. Hypertension, TIA's, obesity, smoking, high cholesterol, heavy alcohol use, diabetes, race (negroid), cardiac valve disease, carotid stenosis, age, family history, male, substance abuse, and blood disorders such as sickle-cell anemia
2. Sudden severe headache, sudden weakness or inability to move an extremity or side of face, numbness or sensory loss, difficulty swallowing or speaking, vision problems, unexplained dizziness, unsteady gait or sudden falls, altered cognition
3. Ischemic
4. Alterations in role performance, alterations in sexuality patterns, social isolation, diversional activity deficits, caregiver role strain, ineffective coping, self-care deficits
5. Left
6. Right
7. Left
8. Right
9. Right
10. Left
11. Right
12. Left
13. Right
14. Left
15. Right
16. Right
17. Right
18. Left
19. Right
20. Right
21. Right
22. Right
23. Left
24. Dehydration, aspiration pneumonia, or deep vein thrombosis/pulmonary embolism
25. C & D are True
26. Support and protect joints
27. Long slow stretch in ROM, positioning in extension, facilitation/inhibitory stimulation, medications
28. Long, slow stretching is of more benefit than quick stretches of multiple repetitions.
29. Baclofen, Valium, Dantrium, or Tinzanidine
30. Drowsiness
31. Increased participation in rolling and positioning, bridging, controlled upright activities that avoid fatigue, and use of a tilt table
32. Bend knees, lead with head/arms.
33. Weight balanced on both hips, feet spread for wide base of support, hands on either side for support.
34. It prevents the ankle from turning in, lifts the toes off the floor when bringing the foot forward,

and improves heel strike, increasing gait stability.
35. Use of communication tools and planning among team members and caregivers
36. Height, width, arm height, leg rest length, seat length
37. Curbs, doors, and stairs/ramps
38. Somatagnosia: Altered proprioceptive and postural sense, leading to inability to identify body parts
39. Anosognosia: Severe denial of disability and impairments
40. Homonymous hemianopsia: Visual impairment of the nasal half of one visual field and temporal half of the other, resulting in a loss of half of the overall field due to damage to the optic nerve behind the optic chiasm
41. Figure-ground: Difficulty distinguishing the foreground from the background
42. Form-constancy: Inability to distinguish between items of similar shape and form
43. Unilateral neglect: Decreased awareness of one side of the body; often associated with denial. Most often affects the left side of the body.
44. Impairment in geographic-topographic memory: Difficulty remembering and using topographical and geographical orientation to find one's way around the environment
45. Apraxia: Inability to perform skilled motor activities when there is sufficient muscle strength, coordination, and sensation
46. Dressing apraxia: Altered spatial perceptions interfere with ability to dress self; often associated with constructional apraxia
47. Ideational apraxia: Failure to understand concepts related to the skill; unable to associate words and images with the performance of a motor task
48. Ideomotor apraxia: Motor planning issue where the patient understands the concept, but is unable to do it on command; may be able to perform the task spontaneously
49. Constructional apraxia: Unable to produce or copy two- or three-dimensional designs
50. Teach strategies that incorporate both sides of the body for feeding, grooming, and dressing; allow adequate time to practice and learn techniques. Set the patient up where he is safest (lying rather than sitting, chair rather than side of bed), organizing materials to compensate for perceptual deficits. Evaluate need for adaptive equipment such as plate guard, non-skid mats, rocker knife, long-handled sponge, soap-holder wash cloth, flip-top lids on bottles, grab bars, safety strips in bathtub, tub or shower seat, denture holder, Velcro closures on clothing, elastic shoe strings, long-handled shoe horn, etc. Organize environment for effective participation in household-maintenance-type chores (bed making, bill paying, laundry, etc.). Consider eligibility for constraint induced therapy. (The Rehab Nursing Series provides additional training on activities of daily living in the course *1, 2, Buckle My Shoe: Functional Skill Development*. You can find information at www.rehabclassworks.com/ADL.htm.)
51. Delayed or absent swallow, coughing, history of aspiration pneumonia, weight loss, fear of eating or drinking, wet-sounding voice while eating or drinking, frequently clearing throat, complaints of something sticking or burning the back of the throat
52. Burping, indigestion, substernal pain from esophageal reflux, complaints of bad taste in mouth or bad breath, coughing or wheezing, high incidence of dental cavities
53. Incentive spirometry, deep breathing and coughing, and postural drainage
54. Upright, preferably in a chair, with chin slightly tucked (sit down if assisting to avoid encouraging patient to tip head). Try to organize meds so they can be given while patient is upright. Patient should rest before meals and stay up for a half an hour after meals (especially if he has esophageal problems) to discourage risk of aspirating foods stuck in the vellecula.
55. Avoid distracting environmental stimuli, including excess conversation. Provide the patient the opportunity to eat several small meals, rather than 3 large ones, to avoid fatigue.
56. Food should be warm/cold to increase sensory stimulation. It should form a cohesive bolus and not readily dispense in the mouth. If the problem is in the pharyngeal phase, and/or if swallow is delayed, thicken liquids. Sticky foods may be preferred if food hangs in the pharynx or vellecula.
57. Avoid the use of straws for patients with pharyngeal phase problems or delayed swallows. Feed 1/2 teaspoon at a time (placed on back of the tongue towards unaffected side). Make sure the mouth is empty and the swallow complete before offering next bite.
58. Use a mirror to assist patients in self-monitoring for drooling (oral phase problem). Cut-away cups can help avoid head tipping when drinking.
59. Oral motor exercises can strengthen the tongue and mouth. Brisk downward strokes on the chin can stimulate lip closure. Gentle pressure on cheek can help patient to sense and clear food that is pocketed. Make sure lips are closed, because swallow reflex cannot initiate if lips are not closed. Patients with right hemisphere lesions may require consistent verbal cues while eating. Modified superglottic swallowing can assist patients with pharyngeal problems to complete the swallow and avoid aspiration. Icing techniques may be recommended for those with an absent swallow reflex. If the patient has problems with pharyngeal residue, you may be instructed to have the patient turn his head all the way to the affected side while swallowing or to swallow twice and then rinse with thickened liquids with each bite. Sucking liquids through a straw may be helpful for patients who need to strengthen the soft palate. (The Rehab Nursing Series provides additional training on dysphagia in the course *Apple a Day: Nutrition & Dysphagia Management*. You can find information at www.rehabclassworks.com/nutrition.htm.)

60. Evaluate protein and oxygen-carrying capacity of the blood (anemia). Serum albumin, serum transferrin, BUN, RBC's, HgB, ferritin, transthyretin (prealbumin), retinal-binding protein, insulin-like growth factor (IGF-1), fibronectin, serum B_{12} , and others.
61. Coordinate care, identify realistic goals, monitor weight and lab results, provide appropriate supplements, assist to eat if fatigue or cognitive problems limit self-feeding skills, provide support and social interaction during meals, and evaluate meals for appeal and correct as necessary.
62. Provide foods which are high in fluid content and offer thickened liquids frequently. Consider implementation of the Frazier Free Water Protocol. Monitor intake/output, weight and lab values. Avoid hypertonic fluids, high salt intake, and excessively fast re-hydration. If necessary, supplement with IV fluids.
63. Internal and external sphincters, saddle sensation, sacral reflexes, and BBC intact. Emptying is involuntary and sudden due to the patient's failure to recognize and respond to the sensation of the need to defecate in a timely or socially-appropriate manner. Stool may be hard and smearing is common.
64. Use fluids, bulk, and fiber strategically to change the consistency of the stool. Increase fluid and activity levels. Use an upright position for defecation. Use stool softeners as necessary. If this in ineffective, use suppositories, stimulants, irritant cathartics, or low volume enemas.
65. Use fluids, bulk, and fiber strategically to change the consistency of the stool. Increase fluid and activity levels. Use an upright position for defecation. Establish a consistent time of day for emptying capitalizing on the gastrocolic reflex. Encourage the patient to spend adequate time on the commode to support emptying. Use suppositories, if necessary, to facilitate emptying at the desired time.
66. Effects of aging (decreased strength of bladder contraction and pelvic floor muscles), medications (diuretics, cholinergics, anticholinergics, antihypertensives), constipation, pelvic prolapse, stress incontinence, enlarged prostate, effects of long-standing diabetes or other chronic disease
67. Internal and external sphincters, saddle sensation, sacral reflexes, and BBC intact. Bladder capacity may be reduced. Post void residuals will be low. Emptying is involuntary and sudden due to failure to recognize and respond to the sensation of the need to void in a timely or socially-appropriate manner. Urgency is common and nocturia may be a problem.
68. Correct complicating factors such as constipation and UTI's. Manage side effects of medications, if possible. Administer antidiuretics early in the morning. Hydrate adequately during the day so that fluid intake may be reduced after supper. Avoid foods with a diuretic effect (caffeine, grapefruit juice, etc.). Maintain skin integrity and avoid use of incontinence products which are expensive and increase the risk of skin breakdown.
69. Set voiding times according to a clock schedule.
70. Determine the patient's previous pattern of voiding and assist to void just before routine times.
71. Focus is on consciously delaying the urge to void through the use of distraction and schedules.
72. Encourages patients to take more responsibility for voiding and to assist with clean-up should there be an accident. As a method of cueing, ask the patient if it is time to use the bathroom. Respond promptly when the patient indicates the need to void.
73. Allow enough time to communicate, encourage automatic speech responses, encourage imitation and singing (melodic intonation). Use self-talk (describing what is going on), parallel talk (another describing what is going on), cueing with the first word or letter, and expansion (adding detail to partial statements- "Karen?" "Where is Karen?"). Anticipate needs and allow mistakes. Use communication boards and encourage gestures. (The Rehab Nursing Series provides additional training on care of patients with communication disorders in the course *He Said/She Said? Disorders of Communication*. You can find information at www.rehabclassworks.com/Communication.htm)
74. Remove excess stimulation, speak naturally (understanding is improved by context) and concisely. Use gestures, tactile cues, and facial expression.
75. Provide support, encourage problem solving, role play, provide education, involve support systems, assist to deal with loss and change, use laughter, allow them as much control as possible, recognize and track progress. Address financial concerns, role changes, and caregiving demands, and refer to support groups.
76. Coumadin, antihypertensives, diuretics, antidepressants

~Chapter 15~ Care of Patients: Brain Injury

1. Non-penetrating injury
2. Penetrating injury resulting in brain tissue exposure and disruption of normal protective barriers
3. Damage that occurs throughout the brain
4. A coma is a state of unconsciousness in which there is no arousal or awareness and no response to stimulation. Score is equal to or less than 8 on the Glasgow Coma Scale.
5. The patient may be aroused, but level of consciousness cannot be determined.

Sleep/wake cycles may be present. Stimulation may demonstrate reflexive, but not localized responses.

6. Loss of memory of day-to-day events following the trauma
7. Loss of memory of events prior to the trauma
8. Loss of memory following the trauma
9. **Mild** (post concussion syndrome): Commonly results from contusive injuries and can occur without associated loss of consciousness. Mild TBI accounts for approximately 80% of all TBI's. Loss of consciousness lasts no longer than 20 minutes with GCS of 13-15. Physical symptoms include nausea, headache, dizziness, tinnitus, visual disturbance, olfactory deficit, extended periods of fatigue. Cognitive deficits include poor short-term memory, concentration, irritability, and depression.
10. **Moderate:** Represents a more extensive pattern of injury than mild TBI. Loss of consciousness lasts longer than 20 minutes and has a score of 9-12 on the Glasgow Coma Scale. It usually requires treatment in a formal rehabilitation setting. Typically, patients are able to return to an altered preinjury lifestyle despite that fact that long-term deficits (either pronounced or subtle) may persist.
11. **Severe:** Effects of extensive diffuse axonal injury spread throughout the cortex and upper and lower brainstem. Focal damage, in the form of hemorrhage and hematoma, plus secondary complications frequently are present. Loss of consciousness lasts more than 6 hours with a score of 8 or lower on the GCS. Many residual deficits occur and may not be resolved. Recovery is ongoing and may last for months or years. Cognitive, behavioral, and social disturbances are variable for each individual.
12. Glasgow Coma Scale scores taken 2-3 or 4-7 days post-injury and length of time in PTA
13. Glasgow Outcome Scale
14. Hydrocephalus, aspiration pneumonia, heterotopic ossification, seizures, hypothalamic dysfunction, or endocrine disorders
15. To monitor for signs and symptoms of SIADH or diabetes insipidus
16. III
17. VI
18. VIII-IX-X
19. II
20. I
21. IV
22. VII
23. V
24. Sensory stimulation to achieve a response
25. Safety and trust
26. Increasing attention span, orientation and participation in routine, structured activities
27. Maximizing memory and executive functioning
28. Selection or focused attention, strategic control, and processing speed
29. Impairment of strategic control
30. Immediate memory that has limited storage capacity and is vulnerable to distractions
31. Storage of information for days or years
32. Procedural
33. Unlikely
34. Errorless
35. Sometimes
36. Consistency and limiting training to one or two items at a time; establishing methods that compensate for limitations in executive functioning and remembering to look at them.
37. Cognitive flexibility, self-monitoring, ability to adjust actions and simultaneously consider multiple alternatives and their potential outcomes, planning, judgment, motivation, and organizational skills
38. Structure environment, train specific behaviors, use of cognitive remediation, and use of behavior modification
39. Increase protein and caloric intake. (The Rehab Nursing Series provides additional training on dysphagia in the course *Apple a Day: Nutrition & Dysphagia Management*. You can find information at www.rehabclassworks.com/nutrition.htm.)
40. Cue and direct to eat. Feed if necessary.
41. Control the environment to avoid excessive eating and eating of inedible or poisonous products.
42. Monitor behavior for indications that he is about to void and rapidly redirect him to the appropriate location. Attempt habit training by taking him to the bathroom just prior to the times he regularly tends to void so that he might use the toilet before he is urgent and thus maintain continence.
43. Keep environment clear, decide whether side rails are better up or down, consider a bed alarm or sitter, keep call light in reach, anticipate needs, and keep assistive aids in reach.
44. You may suggest an emphasis on retraining social skills with behavior modification techniques, such as providing appropriate cueing throughout the interaction, rehearsing appropriate responses, removing from the conversation when comments are inappropriate, requesting that others provide immediate, direct feedback when he is out of line, and praise for appropriate behavior.
45. Assist her to focus on the positive and to accept him as he is while trying to facilitate continued gains. Encourage to seek out resources and support systems and to openly discuss feelings. Make sure she has time for herself and that strategies for living in the community are rehearsed prior to discharge.

~Chapter 16~ Care of Patients: Spinal Cord Injury

1. 1-3 segments below the injury level with variable response patterns
2. Absence of reflexes below the level of the injury
3. Up to six weeks, although the amount of time is variable
4. There is a return of reflexes below the level of the injury.
5. PE/DVT, pneumonia, and ilieus
6. Bowel, bladder, and skin
7. C 3-5
8. Ventilator-dependent in most cases with absent cough
9. Absent or weak cough with ventilatory capacity 50-70% of normal and increased use of accessory muscles for breathing
10. Poor to fair cough with ventilatory capacity close to normal
11. Ineffective ventilation, generally due to poor chest wall movement in tetraplegia
12. Respiratory insufficiency
13. Maintain a clean airway, stay active, avoid smoking and smoky areas, avoid persons with respiratory infections, maintain good posture, and use bronchial hygiene and assisted cough techniques.
14. Hypoxia/hypoxemia, hypercarbia, atelectasis, or pneumonia
15. Promote ventilation and humidification of airways, prevent retention of secretions, increase respiratory muscle strength and endurance, and prevent pulmonary complications
16. Activity and hydration
17. To decrease the amount of effort required and to maximize the effectiveness of inspiration
18. Assisted cough, breathing exercises, incentive spirometry, ventilatory muscle training, intermittent positive-pressure breathing, and/or ultrasonic nebulizer
19. Increase hydration and frequency of bronchial hygiene efforts, monitor temperature, and notify the physician.
20. 3-5 weeks post-injury
21. Low-grade fever pattern, warmth or redness, asymmetrical enlargement of leg, or increase in spasticity
22. Immobilize the area and patient to decrease the likelihood of breaking off parts of the clot and causing an embolism.
23. Sudden onset of hypoxia, dyspnea, and/or apprehension
24. Those with injuries high above the thoracolumbar outflow of the sympathetic nervous system
25. Appropriate use of blankets, clothing, fans, air conditioning, spray bottles, etc.
26. Full bladder or full bowel
27. Elevated blood pressure, pounding headache, blotchy red skin above the level of the lesion, red flushed face, anxiety, sweating above the level of the lesion, slow heart rate, stuffy nose
28. Check the patient's blood pressure, and then elevate the head.
29. After the bladder check and before bowel disimpaction
30. Elastic stockings or leg wraps, abdominal binder applied before sitting up, slow acclimation to upright position, and mobilization as soon as possible
31. Don't place abdominal binder over rib cage and don't leave the patient unattended if there is a risk of fainting.
32. Frequent turning and proper positioning
33. Factors affecting the wound at the site are necrotic tissue (eschar, slough), foreign bodies (gauze shred, sutures), lack of moisture (heat lamps, exposure to air), and infection.
34. Systemic factors are age, health status, hypotension, anemias, edema, pulmonary disease, irradiated tissue, diabetes mellitus, acute conditions (e.g., infectious process, fever), and nutritional factors. (During wound healing caloric intake should be 2500-4000 daily, protein-albumin 3.0 grams, with vitamin/mineral supplements, especially zinc, vitamin A, and vitamin C).
35. Moisture, immobility, and systemic factors
36. Stage 3
37. Stage 1
38. Stage 4
39. Stage 2
40. Impaction, reflux, infection, and skin breakdown
41. Intervention strategies are different after reflexes have returned.
42. UMN damage, sensory and motor loss, hyperactive BBC and anal reflexes, and reflexive defecation without voluntary recognition or control
43. LMN damage, sensory and motor loss, and absent BBC and anal reflexes; leakage and smearing.
44. LMN damage resulting in absence of motor control; sensation intact.
45. LMN damage resulting in absence of sensation; motor control intact
46. Make sure bowel sounds are active. Use bulk formers, stool softeners, and irritant cathartics carefully to support the formation of soft-formed stool. Use small volume enemas and/or manual evacuation to empty the bowel.
47. Use bulk formers, stool softeners, and irritant cathartics carefully to support the formation of soft-formed stool. Educate regarding effects of stimulant food products. Use irritant suppositories (to stimulate the reflex arc) to establish routine emptying times. Use abdominal massage and valsalva maneuvers, if the patient is able, to facilitate movement of stool through the rectum. Gradually taper stimulants to glycerin suppositories and/or digital stimulation for reflexive emptying.
48. Use bulk formers, stool softeners, and irritant cathartics carefully to support the formation of soft-formed stool. Use small volume enemas and/or manual evacuation to empty the bowel.

49. If the patient is actively diuresing, use indwelling catheters to avoid overdistention. Switch to scheduled intermittent catheterization when intake and output balance. Establish a fluid schedule the patient will follow consistently in preparation for future management of a reflex bladder.
50. Maintain a routine fluid schedule. Use medication to manage hyperactivity of the bladder and/or sphincters. Establish a consistent method of emptying the bladder.
51. Use intermittent catheterization or manual expression to empty the bladder at regular times.
52. Decreases risk of DVT development, heterotopic ossification formation, and contracture development; reduces spasticity.
53. Risk is increased due to the possible development of disuse osteoporosis secondary to limited weight bearing on long bones and loss of muscle tension, if there is no spasticity, on the bones.
54. Drowsiness, weakness, nausea, and vomiting
55. Avoid alcohol or other CNS depressants; take with food or milk.
56. It is the action which results from hyperextension of the wrist to create a pinch grasp. It can be supported with equipment to create a functional pinch allowing for increased participation in activities requiring hand function.
57. False
58. True
59. True
60. True
61. True
62. False
63. False
64. True
65. False
66. True
67. True
68. False
69. Use intact areas of sensation and eyes to compensate for sensory loss. Protect areas that have limited sensation. Dress appropriately for the weather. Control the environment to prevent hypothermia or heat stroke. Practice wheelchair skills and safety; know how to get up from falls. Alert community response teams to your needs. Use good judgment when traveling in the community; seek assistance as necessary.

~Chapter 17~ Care of Patients: Other Neurological Disorders

1. To speed relief of current symptoms; they do not change outcomes
2. Stress, overheating, over-exercising, and infection
3. Planned exercise, adaptation of environment, use of energy-saving appliances, and other energy conservations strategies.
4. Understand that there may be mixed patterns of neurogenic deficits; management strategies may need to change frequently to match the disease process.
5. They can further stimulate/irritate an already hyperactive bladder and increase urgency.
6. Paralysis of respiratory muscles
7. Paresthesias are most often related to compression or entrapment neuropathies. Pain most commonly occurs because of immobility and its consequences, such as adhesive capsulitis, mechanical back pain, pressure areas, and neuropathic pain (though this rarely occurs).
8. Life support, development of living will, and respite care
9. Respiratory
10. Immobility
11. Complete
12. Breathlessness
13. Overstressed
14. Cold
15. Energy conservation, work simplification, frequent rest periods, use of adaptive equipment, and cautious use of exercise to improve endurance and strength.
16. a
17. Tremor, rigidity, bradykinesia
18. Orthostatic hypotension, voiding problems, constipation, insomnia, psychosis, and confusion
19. Falls, dysphagia, voiding problems (especially retention), constipation, gait alterations, loss of functional skills, and side-effects of medications
20. Give them on time to facilitate symptom management and maximize function.
21. Risk of skin breakdown, difficulty maintaining functional positioning, and facilitation of functional movement. Some strategies used to address these problems are use of special seating, physical therapy, and adaptive equipment.
22. There is an increase in the number of calories that those with cerebral palsy burn due to spasticity. Oral feeding also becomes very difficult, which increases the length of time it takes to eat. Some interventions for nutrition problems include use of adaptive equipment, special feeding techniques, special diets, and enteral support.
23. Poor oral motor control may impair speech (dysarthria). Some strategies used to enhance communication skills are speech therapy, communication boards, and computerized communication devices.
24. Continent patients may be assisted to the bathroom when it is necessary. Others may require diapers or intermittent catheterization. It is important to make sure fluids are sufficient to maintain a healthy urinary tract.

25. Lack of mobility, nutrition/fluid deficits, impaired voluntary motor skills limiting ability to Valsalva, and abnormal muscle tone
26. Floor activities, supportive/adaptive toys, and positioning aids
27. Protrusion of the meninges through a gap in the spine
28. Spinal cord and nerve roots are exposed through a gap in the spine
29. Lower extremities are flaccid, and sensation is impaired. Generally, a wheelchair with protective seat cushions is required for mobility. Patients must learn to position their lower extremities properly to prevent injury.
30. Cognitive problems are related to severity of hydrocephalus, if present. Impaired lower extremity sensation increases the risk of injury and skin breakdown.
31. Patients are at risk for excessive weight gain that limits mobility, which may increase the risk of skin breakdown, especially if seated in an ill-fitting chair.
32. Flaccid bowel needs a regular routine and appropriate stool consistency. ACE procedure provides best results for avoiding complications and incontinence.
33. Expect flaccid bladder, which is generally managed with intermittent catheterization. A Mitrofanoff stoma may be used to improve continence and reduce complications.
34. Floor activities, sandboxes, etc., at wheelchair height
35. Community integration with school support may require special training. Assist families to reorganize and maintain an intact structure for all family members. Share the workload. Use appropriate, structured community resources when they are available.
36. Changes to body image, which is a special issue for adolescents; dependency issues with parents/caregivers

~Chapter 18~ Care of Patients: Cancer

1. It can contribute to difficulty remembering, inability to finish activities, decreased social interactions, and decreased ability to meet personal and homemaking needs.
2. Improve quality of sleep, provide counseling to facilitate positive coping, and teach energy management/conservation strategies.

~Chapter 19~ Care of Patients: Burns

1. Thermal injury from dry or moist heat (not electrical or chemical burns)
2. Scalding most commonly burns young children in the home, usually by water from bathing or cooking. The flame from matches and lighters burns older children more frequently.
3. Scalding also most commonly burns the elderly, usually from bathing or cooking in the home.
4. Protection against infection/trauma, identification/body image/identity, regulation of body temperature/sweating, fluid and electrolyte balance, sensory functions, and metabolism of vitamin D
5. **Minor:** Less than 10% of the body
   Moderate: 10-20%
   Major: Greater than 20%, or less than 10% if the patient is a child or older than 50 years, or any burn involving electricity, smoke or major trauma
6. Duration of exposure, degree of tissue temperature elevation
7. Increased vasoconstriction→increased permeability, increased histamine, and cardiac depressant factor in the circulation. The larger the burn or the more co-morbidities, the more intense the effect.
8. It may last years as collagen fibers reorganize.
9. Infection, hypertrophic scarring, and contractures
10. Silver sulfadiazine
11. Bacitracin or Neosporin
12. Pressure dressings or splints
13. Increased infection rate (immunosuppression), metabolic exhaustion, increased wound healing time, and increased weight/muscle loss that can be in excess of 10% of body weight
14. Pain, sensory impairments, and wound/skin breakdown are possible. Prevent with cautious application, slowly increasing time in splints, and discontinuing use immediately if a problem is noted.
15. They may develop neck flexion contractures, wich may in turn affect eating and speech patterns.
16. Stretching all involved areas to increase range of motion (may be passive or active)
17. Walking, hand and foot pedal bikes with increasing resistance, and any exercise with a functional purpose
18. Walking and gait training
19. Skin is more prone to burning due to a decreased sensitivity to heat and the sun. Increased pigmentation can occur from sun exposure.
20. Maximum SPF sunblock to all burned areas, sunglasses, and hats or clothing to cover recovering tissue
21. There are fewer nerve endings. Sensation will never be the same. The patient must use extra caution.

22. Physical Capacity Evaluation and Functional Capacity Evaluation are used to measure strength, grip, range of motion, etc. They determine the impact of the injury, identify safety issues, and indicate readiness to return to work.

~Chapter 20~ Care of Patients: Amputation

1. Slow wound healing, wound breakdown, infection, malnutrition, or sepsis
2. Sufficient oxygenation, hemoglobin, circulation, and nutrition (protein, vitamins, and minerals)
3. Protect the wound bed and maintain its moisture, prevent infection, and manage co-morbidities
4. To make it easier to fit/wear a prosthesis and prevent complications from edema
5. Careful wound dressing with figure 8 wraps would most likely be used. A rigid removable stump protector may be worn over this. Some may prefer a rigid removable dressing.
6. Things to remember:
   - Wrap with greater compression distally.
   - Rewrap every 4 hours or more often, if needed, to prevent slipping and bunching.
   - Wrap smoothly around end of stump and avoid dog-ears.
7. Develop supportive relationships, support through the process of mourning, encourage handling of residual limb, reinforce support system, keep the patient informed, and encourage participation in care.
8. Acknowledge the reality of the risk, teach preventive care, and arrange for and encourage regular follow-up care
9. Do not use a pillow under limb; adduct limb, support with trochanter roll, lay prone, and use resistive exercises.
10. Lay prone, use resistive exercises, use amputee board in wheelchair, and do not use a pillow under knee.
11. Phantom Sensations: sense that limb is still there
    Phantom Pain: feeling of pain in limb not there
12. A hypersensitive conglomeration of nerve fibers that may form on the end of the stump
13. Instructions given patient, suspension system, and gait training instruction
14. Skin breakdown and instability

~Chapter 21~ Care of Patients: Osteoarthritis, Rheumatoid Arthritis, & Chronic Pain

1. Damage to weight-bearing joints, which limits mobility
2. Resting the involved joint, heat, cold, ultrasound, NSAID's, supportive devices, inter-articular steroid injections, weight loss for obese patients, or appropriate exercise
3. To relieve pain, restore function, and improve joint stability
4. No flexion beyond 90 degrees, avoid hip adduction, avoid bending over, do not cross legs
5. False
6. Instructions should include:
   - Stop activity when pain increases.
   - Use proper body mechanics.
   - Change position frequently.
   - Alternate activities.
   - Sleep on a supportive, comfortable surface.
7. Energy conservation strategies should include:
   - Alternate rest/activity.
   - Prioritize and schedule activities.
   - Delegate as necessary.
   - Use work areas of appropriate height.
   - Sit instead of stand.
   - Avoid a large purse; distribute items in pockets.
   - Modify the environment.
   - Simplify work; use energy saving tools and devices.
8. NSAID's and corticosteroids.
9. Anti-malarials, gold salts, cytotoxics such as methotrexate.
10. Rheumatoid
11. Osteoarthritis
12. Rheumatoid
13. Rheumatoid
14. Rheumatoid
15. Rheumatoid
16. Rheumatoid
17. Rheumatoid
18. Osteoarthritis
19. Osteoarthritis
20. Osteoarthritis
21. Osteoarthritis
22. Osteoarthritis
23. Osteoarthritis
24. Rheumatoid
25. Osteoarthritis
26. **Neuropathic**: shoulder/hand syndrome, reflex sympathetic dystrophy, or neuromas
27. **Nociceptive**: stomachache, surgical pain, or burns
28. Chronic pain cycle:
    a) guarding c) inflammation
    b) pain d) weakness
29. Relaxation, visualization, distraction, biofeedback, exercise, massage, heat/cold therapy, or acupuncture, to name a few
30. Non-opiod and adjuvants

31. NSAID'S, acetaminophen
32. Morphine and other opioid compounds
33. Elavil and Dilantin

~Chapter 22~ Care of Patients: Osteoporosis

1. Answers to word puzzle: female, family history, blond, fair skin, low calcium diet, inactive, smoker, regular alcohol intake, high caffeine intake, nulliparity, early menopause, lean, medication side effects
2. Adequate hydration, early mobilization, DVT prophylaxis, and adequate oxygenation
3. Failure to maintain or progress in the exercise program will result in a decline in function.

~Chapter 23~ Care of Patients: Cardiopulmonary

1. Asthma, chronic bronchitis, emphysema, cystic fibrosis
2. SCI and other causes of respiratory muscle weakness, pleural disease, chest wall stiffness
3. Pneumonia, atelectasis, collagen diseases, pulmonary embolism
4. The correct answers are as follows:
   a) Increased pulmonary artery pressure
   b) Increased right ventricular work
   c) Right ventricular failure
5. Short of breath, cough (with or without sputum), tracheobronchial congestion, wheezing, decreased breath sounds, increased temperature
6. The occurrence of dyspnea or pain during the activity, lack of available suction for patients with copious secretions, obesity, predisposition towards pathological fractures
7. Prolonged expiration, shortness of breath, tachypnea, forward and flexed position, nasal flaring, use of accessory muscles, or hypoxemia
8. Pursed-lip breathing, upright positioning, deep breathing/incentive spirometry, diaphragmatic breathing techniques
9. Impaired circulation and skin breakdown
10. Constipation, anorexia
11. Urinary retention
12. Congestion, decreased depth of respiration
13. Increased cardiac workload, hypercoagability
14. Bone loss, weakness
15. Confusion, overstimulation
16. Regularly
17. Pressure
18. Hydration
19. Diet
20. Bowel
21. Bladder
22. Pulmonary
23. Circulation
24. Self-care
25. Mobilize
26. Begin with progressive exercise and out-of-bed activities. Maintain hydration and nutritional support. Teach energy conservation and issue appropriate adaptive equipment. Teach work simplification. Titrate oxygen to activity requirements. Maintain pulmonary hygiene.
27. Fatigue, weakness, general malaise, dependency, shortness of breath, dyspnea, angina, tachycardia, orthostatic hypotension
28. Cardiac cycle, heart rate, and diastolic intraventricular pressure
29. Diastole
30. Decreases
31. Rest
32. Decreases
33. Limit physical and psychological consequences of the acute cardiac illness.
34. Risk assessment, early physical activity, and education
35. Close supervision and monitoring in a supervised exercise program
36. Support for lifestyle changes, resources for stress reduction, increasing exercise tolerance levels, and use of logs to track goal achievement
37. Lifestyle changes
38. Increase tolerance for activity and reduce monitoring
39. Support and social groups, organized education, and exercise programs
40. Self-monitoring and life-long lifestyle changes
41. Individualized program based on medical history, testing, current status, lifestyle, and level of fitness
42. Fatigue, angina, dizziness, dyspnea, nausea, change in cardiac rhythm, increased heart rate greater than 20 beats per minute, increase in blood pressure outside of recommended range, decreased heart rate more than 10 beats per minute, or decrease in systolic pressure more than 10mm HG
43. Able to walk up 2 flights of stairs without shortness of breath or angina
44. Dietary changes, weight control, smoking cessation, decreased alcohol intake, stress management, and maintaining exercise
45. Self-esteem, depression, or anxiety related to lifestyle and role changes
46. Simulated work-related tasks, cardiovascular conditioning, body mechanics, and stress management. (The Rehab Nursing Series provides additional training for cardiopulmonary co-morbidities in the course *Cardiopulmonary Rehabilitation*. You can find information at www.rehabclassworks.com/Cardio.htm.