

STUDY GUIDE FOR
Applied
Pathophysiology

**A Conceptual Approach to the
Mechanisms of Disease**

Carie A. Braun
Cindy M. Anderson

THIRD EDITION

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Study Guide for
Applied
Pathophysiology:
*A Conceptual Approach
to the Mechanisms of Disease*

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Preface

This third edition study guide comes at a time when the idea of conceptual organization and learning conceptually has gained significant traction. Where a traditional systems-based approach places diseases within a single body system, the conceptual approach taken here provides practice test questions, case studies, and concept mapping activities around the *mechanisms* of disease. By providing supplemental practice opportunities for the core concepts of altered human function, students can apply a deeper understanding to a host of diseases, rather than trying to memorize facts about specific conditions.

As with the first edition, this study guide is designed as a student learning tool for the health professions. We have added more case studies and practice exam questions. All of these additions are designed to promote application and to appeal to the visual learner.

At its core, this study guide continues to emphasize student learning, application of knowledge, active learning strategies, and critical thinking. We are excited for the opportunity to share this learning tool and continue to welcome your valuable feedback!

Introduction

This is the study guide to accompany Braun and Anderson's *Applied Pathophysiology: A Conceptual Approach to the Mechanisms of Disease*, third edition. It is a learning resource that will help you retain important information and comprehend basic functions and processes of the human body. To help you get the most out of your studies, this study guide offers a variety of exercises that will help reinforce the material you have learned and build your critical thinking skills.

Each chapter includes the following:

- **A list of the chapter Key Terms.** Key terms appear in boldface type the first time they appear in the text, and are defined in the Glossary at the end of the textbook. (Definitions can also be found in a medical or standard dictionary.)
- **Chapter Review quiz questions.** Quiz questions reacquaint you with the material covered in the text and test your comprehension of the concepts presented.
- **Case Studies.** Additional case studies test your critical thinking skills and your ability to apply the knowledge you've gained with a series of short-answer questions.
- **Concept Map Exercises.** This learning activity uses the concept maps in the textbook to help you master definitions and concepts. Concept maps can be considered a “web” of information. Individual terms have a tendency to get lost, but a web of interconnected terms is more easily maintained in memory.

Pathways to Student Success

Effective studying doesn't just happen. It involves carefully selecting and creating a suitable study site, putting yourself into the right frame of mind, and being aware of your personal learning style and some pretty basic study strategies.

SELECTING A STUDY AREA

To find the right study area, look for a distraction-free area where you can arrange your study materials properly. Make sure it has adequate lighting, is set at the right temperature, and is located among pleasant surroundings. Before you begin to study, find a calm, comfortable place to study. As you select your study site, choose an area with the fewest distractions. After you find a study site you enjoy using, keep using it for subsequent study sessions. Using the same area creates familiarity and helps you begin studying as soon as you settle into the area. Next, find the arrangement for studying you most enjoy. For most students, a desk with a comfortable, straight-backed chair makes the ideal study arrangement. You can arrange your study materials on the desk and easily reach them whenever necessary. Other students feel most comfortable in a large chair or sofa, with their books and other study materials spread out on the floor at their feet.

A word of caution here: Don't get too relaxed. It's not a good idea to curl up on your bed to study; you're familiar with your bed as a sleeping place, and you may get sleepy. Sitting outside under a tree with a gentle breeze blowing might sound nice, but not when that gentle breeze becomes a distraction, ruffling papers in the wind. So choose your study arrangement carefully, weighing the value of the comfort it provides with its ability to meet your study needs.

To help you decide which study arrangement and study area are right for you, ask yourself these questions:

- Do I have sufficient work space?
- Can I keep the work space uncluttered?
- Do I have adequate lighting?
- Am I in a position that supports my back and eliminates muscle strain?
- Are there as few distractions as possible in the area?

Whichever study arrangement you choose, stay with it. Get into the habit of assuming your study position so you can get down to the business of studying quickly, with few distractions. Lighting, temperature, and surroundings all play a part in creating a successful study site. Use either natural lighting or incandescent lighting for your study area, not fluorescent lighting. Your eyes are less likely to tire under direct light, like an incandescent lamp, than under indirect light. Keep the light from shining in your eyes by using overhead light or lighting from behind. The light should shine evenly on your work.

Choose a study area that's not too warm. Heat stress can decrease accuracy, speed, dexterity, and physical acuity. For most efficient studying, keep your study area cool—between 65°F and 70°F (18°C and 21°C).

Pleasant surroundings can greatly enhance study effectiveness. The sensations experienced while studying can be used later to trigger associations at test time. Pleasant surroundings also stimulate alertness. Minimize noise distractions while you study so you won't be disturbed. Turn your cell phone off, or unplug the phone extension in your room. Leave the television off. You might also consider adding white noise to your environment. Instrumental music, the sound of a bubbling aquarium, and muted street sounds are examples of white noise. White noise helps cover distracting background sounds, such as the sounds of traffic or your roommate talking on the phone, and fills in periods of silence. In silence, even the sound of your own tapping pencil can be annoying.

Your physical comfort greatly affects your attitude about studying. When studying, make sure you assume a comfortable posture, use an appropriate reading angle, and move around periodically to enhance study effectiveness. Read while sitting in an upright position with your back straight or bent slightly forward. Other postures—particularly lying down—impair alertness and concentration. To decrease eyestrain, hold reading material at about a 45-degree angle from the flat surface of your desk or table to give you a clear view of the whole page. Reading material should also be kept at least 15 inches from your eyes. And, remember to take a break about every hour to walk around, particularly if you need to ponder a point or repeat some facts to yourself. Walking around periodically when studying can enhance your brain's ability to learn new information and retain information. Do a few stretching exercises to get your circulation going and lessen muscle fatigue or tightness in your shoulders.

GETTING STARTED

One of the biggest challenges to effective studying is getting started. The first step in meeting that challenge is to break down large tasks into smaller ones. Several small tasks seem more achievable than one overwhelming one, and each smaller accomplishment provides moral support to finish the other tasks. By taking small steps in the direction you want to go, you may end up at your destination sooner than you thought.

For instance, you may not feel like reading your assignment, but if you tell yourself that you'll read for 5 minutes, at least you'll get a little reading done. After a few minutes, tell yourself that you'll read for a few more minutes, and so on. Pretty soon, you'll have read for a half hour or maybe even an hour and be well on your way to accomplishing—if not finishing—your assignment.

When beginning a study session, set a course for your studying or establish a purpose for it. Ask yourself, "What do I want to get out of this session? What do I need to know from the material?" After skimming the material, decide how deeply you need to become involved with it.

You may be responsible for detailed knowledge and intricate notes, or you may need only a passing acquaintance with the material. Either way, plot your course before you start.

Remove the usual distractions—the telephone, television, and talk radio. Take care of your personal distractions, such as hunger or feeling hot. Schedule your study time so that it doesn't conflict with another activity you really want to do. Thinking about what you're missing can be a distraction in itself. Find the right time to study, when you're feeling most efficient and receptive to information. Take a short break every hour to keep your study time energized. When concentration begins to lag, it's time for a break.

KNOW YOUR LEARNING STYLE

If you know your learning style, you can structure your study sessions using the learning materials that most benefit your own personal learning style. There are various styles of learning, including visual, auditory, and kinesthetic.

If you are an individual who learns best by watching how something is done or by reading about it, you are a visual learner. To make the most of this learning style, take advantage of all the visual information available to you, including such written and graphic information as books, handouts, demonstrations, Internet resources, personal notes, medical or scientific journals, periodicals, and videos. You can also make yourself flashcards or leave notes to yourself regarding difficult concepts on your bathroom mirror or the fridge. Tune into medical documentaries on television, or browse Internet medical sites for additional information.

If you learn best by hearing things, then you are an auditory learner. To make the most of this learning style, use as much auditory information as you can find. Dictate sample questions or questions from this study guide or the textbook into your own recording device and play them back in your car. Join (or start) a study group that meets regularly to share ideas and discuss concepts you're learning in class. Listen to audio books in the car or while you're moving through your day, or seek out an electronic medical dictionary that offers audio pronunciations of medical terms.

On the other hand, you're a kinesthetic learner if you prefer to jump right in and learn by doing. To make the most of this style of learning, take advantage of every opportunity to attend workshops, go on field trips, participate in group or class projects, tutor or teach others, or volunteer in a medical setting.

STUDY STRATEGIES

By using a number of study strategies, you can give yourself the greatest chance to recall information later—on tests, quizzes, or even in a clinical setting. Using different strategies gives your brain more pathways to use

when recalling information. Aside from setting up a good studying site and tuning in to your personal learning style, here are a few more tips for good study results.

● **Practice and repetition.** In learning, practice makes permanent! Practice helps the storage of information in long-term memory. Rehearsing is one method of practice. You can repeat information aloud or in a discussion, write or diagram the information repeatedly, or read and re-read information quietly several times. In general, speaking aloud and writing the information yield better results because they are more active processes, compared with the more passive practice of silent reading.

● **Spaced study.** Also known as “distributed practice,” this method consists of alternating short study periods with breaks. Study goals are set by time (e.g., reading for at least 15 minutes) or task (reading a minimum of three pages). After reaching these goals, you can take a 5- to 15-minute break. This strategy works because it rewards your hard work, is completed in manageable portions of time, and can keep you from confusing similar details when you have to study complex, interrelated information. And because the work is completed under a deadline of time or task, your time spent studying is used more efficiently.

● **Interference reduction.** Interference happens when new information conflicts with background knowledge. For example, if you’re trying to learn a lot of new terms, and two of the terms are similar, you might have trouble remembering either one of them. To avoid interference, try to relate new information to previously learned information—think about what makes the new information different from the older information.

● **Associations.** Forming acronyms or acrostics can help you recall lists of information. An acronym is a “word” created from the first letter of each item on a list. For example, Roy G. Biv is a popular acronym for the colors of the rainbow in order: red, orange, yellow, green, blue, indigo, violet. Acrostics are phrases or sentences represented on the vertical axis that are created from the first letter or letters of words in a list. For example, in music, an acrostic representing the lines on the treble clef is Every Good Boy Does Fine, which stands for the notes of the scale as they appear on the treble clef, from top to bottom: E, G, B, D, F. Acronyms and acrostics associate key information to an easily remembered word or phrase, thereby improving memory of the information.

● **Lists.** Lists help you organize ideas by categorizing the information according to some common theme. The arrangement of a list depends on your goals and the course emphasis and content. Recalling the name of the theme helps you remember the details of the items on that list.

● **Imagery.** The use of visual aids in studying can help you recall familiar and unfamiliar information. Imagery provides a different way of storing

information, since visual images are stored differently in the brain than words. You can also use color as a visual aid by using various colors to highlight different types of information in your text or notebook, or adding doodles or symbols to your notes.

Learning From the World Around You

The best way to learn about pathophysiology is to immerse yourself in the subject. Tell your friends and family what you are learning. Discover more about recent health advances from television, newspapers, magazines, and the Internet. Our knowledge about and understanding of the human body is constantly changing. The work you will do using this study guide can serve as a basis for lifelong learning about the functions and functional alterations of the human body.

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Introduction to Pathophysiology

Chapter

1

KEY TERMS

acute	iatrogenic	pathophysiology
asymptomatic	idiopathic	precipitating factors
chronic	illness	prevalence
clinical manifestations	incidence	primary prevention
complications	insidious	prognosis
concept	local	remission
diagnosis	morbidity	risk factors
disease	mortality	secondary prevention
endemic	multifactorial	signs
epidemic	nosocomial	structure
epidemiology	nursing diagnoses	subacute
etiology	objective	subjective
exacerbation	pandemic	symptoms
function	pathogen	syndrome
health	pathogenesis	systemic
homeostasis	pathology	tertiary prevention

Chapter Review

1. In 2015, there was an outbreak of mumps in Iowa. A total of 604 cases were reported within just a few months. A dramatic increase in the number of cases of a disease within an area (such as a community or a state) is called a(n):
 - a. epidemic.
 - b. pandemic.
 - c. endemic.
 - d. sociodemic.

2. The avian flu is currently present in bird populations in many countries. At this time, the avian flu is not easily transmissible to humans. There is a concern, however, that the avian flu could mutate and become easily transmissible between humans. If this happens, and a large population of people is affected across the globe, it will be called a(n):
 - a. endemic.
 - b. pandemic.
 - c. epidemic.
 - d. sociodemic.

3. How does epidemiology contribute to the understanding of disease?

4. Observable signs and symptoms of the disease along with the clinical lab findings are called:
 - a. biochemical responses.
 - b. clinical manifestations.
 - c. congenital responses.
 - d. developmental manifestations.

5. Evidence of the alterations within the body as perceived by the patient is called:
 - a. lesions.
 - b. injuries.
 - c. symptoms.
 - d. signs.

6. List four or more human diversity factors that impact the variations in health and disease:
7. The process of assigning a name to a human response that is occurring in relation to an alteration within the body is called:
 - a. disease.
 - b. nursing diagnosis.
 - c. syndrome identification.
 - d. etiology.
8. René missed class this morning because she was ill. She has fever, lethargy, generalized body aches, and headache. Which of the following is not a systemic manifestation?
 - a. Fever
 - b. Lethargy
 - c. Generalized body aches
 - d. Headache
9. All of the following that René is experiencing are considered symptoms except:
 - a. fever.
 - b. lethargy.
 - c. generalized body aches.
 - d. headache.
10. Rhonda was infected with the varicella virus (chicken pox). This type of illness that develops quickly and does not last over an extended period of time is called a(n):
 - a. acute disease.
 - b. chronic disease.
 - c. etiology disease.
 - d. iatrogenic disease.

11. Ruby is a 33-year-old female. She was diagnosed with multiple sclerosis last year. Her health care provider told her that her disease progression would occur over a number of years and would most likely include periods of exacerbation and remission. This is an example of a(n) _____ disease.
- acute
 - chronic
 - idiopathic syndrome
 - palliative disease
12. When Ruby experiences exacerbations of her multiple sclerosis, her symptoms:
- disappear.
 - flare and become severe.
 - indicate remission of the disease.
 - indicate a need for increased activity.
13. Allen was diagnosed with pancreatic cancer. During the early stages of this disease, Allen was asymptomatic. This means that he:
- was in remission.
 - was in the idiopathic stage of the disease and did not experience symptoms.
 - did not have any noticeable symptoms even though laboratory or other diagnostic tests may have indicated that the disease was present.
 - experienced a nosocomial syndrome.
14. The series of events that proceed from the cause of the disease to the development of clinical signs and symptoms is called _____ of the disease.
- the syndrome
 - the pathogenesis
 - the etiology
 - the diagnosis
15. Compare and contrast the concepts of prevention versus intervention.

16. Jamie needed to have a catheter placed to decrease urinary retention while she was hospitalized. She proceeded to develop a urinary tract infection. The placement of the catheter contributed to this _____ illness.
- unexpected
 - nosocomial
 - iatrogenic
 - unfortunate
17. Sam was recently diagnosed with lung cancer. He was told that it was probably caused by smoking, besides his family history of lung cancer. What is the etiology of cancer in this case?
- Multifactorial
 - Genetic
 - Environmental
 - Smoking
18. Stacy has had sinusitis for 3 months. At this point, her sinusitis is considered:
- acute.
 - subacute.
 - chronic.
 - low grade.
19. John has asthma that gets worse with exercise. He needs to use an inhaler 10 to 15 minutes before gym class. The inhaler is designed to provide medication to relieve which type of clinical manifestations?
- Local
 - Systemic
 - Insidious
 - Idiopathic
20. Go through the list of key terms. Define these as you go through the list. Below, write down the ones that you could not immediately define. Write the definitions and talk through what these terms mean with others in your class or with your instructor.