Study Guide to Accompany

Advanced Pediatric Assessment

Second Edition

A CASE STUDY AND CRITICAL THINKING REVIEW

| ELLEN M. CHIOCCA |

The only study guide to focus specifically on the assessment of infants and children. This companion study guide to Advanced Pediatric Assessment, Second Edition incorporates case studies, certification-style review questions, and anatomic labeling exercises to enhance and reinforce the specialized learning experience of nurse practitioner students. This study guide is the only one to focus specifically on the assessment of infants and children. Its chapters align with corresponding textbook chapters to facilitate exam success and mastery of skills required to expertly conduct the pediatric history and physical examination.

Case studies reflecting real-life practice scenarios and certification-style review questions help students to excel on the exam not only through mastery of the content but also by creating familiarity with the test blueprint. Exercises feature numbered anatomic sketches on which students label anatomy parts. These exercises help PNP and FNP students foster the critical thinking and in-depth knowledge they will need for their expanded scope of practice as advance practice nurses. Chapters follow a standardized format that includes overview, learning outcomes, essential terminology, and critical thinking exercises in two formats—short answer and case study. The chapters also present certification exam–style multiple-choice questions and answers, and blank sample documentation to show examples of subjective and objective findings that are necessary to record.

Key Features:

• Serves as a valuable companion resource for the second edition of Advanced Pediatric Assessment
• Reinforces critical thinking information required for the Pediatric and Family Nurse Practitioner Certification Exams
• Mimics the exam format with case studies and certification-style review questions
• Includes anatomic labeling exercises and key terminology
• Provides a basis for class discussion with case studies

Also Available!

Advanced Pediatric Assessment, Second Edition

Advanced Pediatric Assessment and Study Guide set
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Study Guide to Accompany Advanced Pediatric Assessment
Ellen M. Chiocca, MSN, CPNP, APN, RNC-NIC, is a clinical assistant professor in the School of Nursing at DePaul University. She received a master of science degree in nursing and a postmaster nurse practitioner certificate from Loyola University, Chicago, and a bachelor of science degree in nursing from St. Xavier University. Prior to joining the faculty at DePaul University, she taught at Loyola University, Chicago, from 1991 to 2013. Ms. Chiocca’s clinical specialty is the nursing of children. Her research focuses on how various forms of violence affect children’s health. She is certified in neonatal intensive care nursing and as a pediatric nurse practitioner. In addition to teaching at DePaul, Ms. Chiocca also continues clinical practice as a pediatric nurse practitioner at a community clinic in Chicago. Ms. Chiocca has published more than 25 journal articles and book chapters, and is also a peer reviewer for the journal *Neonatal Network*. She is currently pursuing a PhD in nursing.

Ellen M. Chiocca, MSN, CPNP, APN, RNC-NIC
I would like to dedicate this book to the memory of two great women—Barbara Chiocca Fogarty (1940–1989) and Ellen Mitchell Gaughan (1943–1975). My aunts, one paternal, one maternal. Each was the first woman on one side of the family to earn a college degree. Both women loved school, learning, and books. Both women encouraged me to achieve in school. I think about both of my aunts frequently, and I miss them. I know that a little part of each of them lives on in me. And to Bella and Ralph, always.
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Preface

The purpose of the *Study Guide to Accompany Advanced Pediatric Assessment, Second Edition: A Case Study and Critical Thinking Review* is to assist the student or novice pediatric health care provider in solidifying the specialized knowledge and skills that are required when conducting a pediatric history and physical examination. Each chapter of this *Study Guide* aligns with the corresponding textbook chapter. The chapters in this book follow a uniform format, presenting a chapter overview, expected learning outcomes for the chapter, essential terminology, and critical thinking exercises in two formats: short-answer, and case study. The chapters continue with certification exam–style, multiple-choice questions (with answers), and sample documentation to show examples of subjective and objective findings that are necessary to record.

It is important for all health care providers to be sure that children receive the highest quality care possible at a time when their young bodies and minds are growing and developing. It is my hope that this *Study Guide* will help to augment the student's learning, and increase the learner's confidence in providing comprehensive, high-quality care to children of all ages.

*Ellen M. Chiocca*
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I would like to thank Elizabeth Nieginski, executive editor at Springer Publishing Company, who helped me bring the idea of this *Study Guide* to life. She was very open to and enthusiastic about my ideas, and always encouraging along the way.

I must acknowledge the beautiful, innocent, and loving children that I have had the honor and privilege to care for in my 32 years as a pediatric nurse.

And thank you, of course, to Ralph and Isabella, for everything.
CHAPTER OVERVIEW

Health assessment of infants, children, and adolescents requires specialized knowledge and skills. Rapid anatomic, physiologic, developmental, and psychosocial changes occur from the moment an infant is born and continue through adolescence. These changes affect how the pediatric health care provider must approach the health care encounter, including how to communicate with the child and family, what historical information to obtain, how to conduct the physical examination, and in what sequence. Because of a child’s physical and psychological immaturity, the child as patient is never viewed in isolation, but as part of the parent–child dyad, family, and community.

Expected Learning Outcomes

After reading Chiocca, *Advanced Pediatric Assessment, Second Edition*, Chapter 1, the learner will be able to:

1. Understand the anatomic and physiologic differences that exist between infants, children, and adults
2. Explain the potential clinical implications of multiple body system immaturity in the pediatric patient
3. Explain why the health care provider’s approach to the pediatric history and physical examination changes with the child’s age and developmental level
4. Discuss how a child’s developmental level affects the health care provider’s approach to communication with the child and caregiver
5. Discuss the parent–child relationship in the context of the pediatric health care encounter

Essential Terminology

**Absorption**—in pharmacokinetics, the movement of a drug from its entry site into the bloodstream

**Alveoli**—small, balloon-like structures in the lung where gas exchange takes place

**Apocrine gland**—a type of sweat gland; does not become active until puberty

**Blood–brain barrier**—the semipermeable membrane that protects the brain from toxins and harmful substances in the blood
Cell-mediated immunity—a type of acquired immunity mediated predominantly by T lymphocyte cells

Cephalocaudal—head to toe

Distribution—in pharmacokinetics, the movement of a drug throughout the bloodstream

Eccrine gland—a type of sweat gland

Epidermis—the outermost, avascular layer of the skin

Esotropia—inward deviation of the eye

Eustachian tube—the structure that connects the middle ear to the nasopharynx

Excretion—in pharmacokinetics, the process of removing drug metabolites from the body, usually through the urine or stool

Humoral immunity—a type of acquired immunity mediated predominantly by circulating antibodies

Innocent murmur—nonpathologic heart murmur

Lordosis—convex curvature of the spine

Menarche—the first menstrual period

Metabolism—in pharmacokinetics, the breakdown of a drug that occurs in the liver

Milia—epidermal cysts in neonates caused by the accumulation of sebum

Myelination—the formation of the myelin sheath around a nerve, which permits nerve impulses to move more quickly

Nystagmus—rapid involuntary movements of the eyes

Passive immunity—immunity produced by the transfer to one person of antibodies that were produced by another person

Pinna—the visible part of the ear seen outside the head

Proximodistal—near to far; for example, shoulder to fingertips

Stratum corneum—the outermost layer of the epidermis

Thelarche—the onset of breast development in girls; heralds the onset of puberty

CRITICAL THINKING EXERCISES

Short-Answer Critical Thinking Exercises

1. What is meant by the phrase, “children are not just little adults”? Be specific and give examples.

2. Name the six age groups that are discussed in Advanced Pediatric Assessment, Second Edition, and specify the corresponding age parameters for each.

3. For each body system or function listed in Table 1.1 of the Advanced Pediatric Assessment, Second Edition textbook, name and discuss at least three clinical implications of anatomic and physiologic immaturity.

4. What are the clinical implications of young children having a greater body surface area than adults?
5. Neonates and infants have reduced catecholamine stores. How does this affect their response to a hypotensive event?
6. Discuss the pharmacologic implications of body system immaturity in the pediatric patient.

Critical Thinking Case Study Exercises

Exercise 1
Cara is a 2-month-old infant who has been brought to the clinic by her mother for a well-infant exam. Her mother states that she has been using powdered formula for Cara, but the cost has become an issue because her husband lost his job, so she has been diluting the formula slightly more than the manufacturer’s directions dictate. In addition, Cara’s mother states that since it is summer, she has been sure to give Cara extra Nursery Water when the weather is hot and humid, because their home lacks air conditioning in their home.

1. Is slight dilution of infant formula harmful to an infant this age? Why or why not?
2. Does the administration of extra Nursery Water affect Cara in any way? If so, how?
3. Which body system is it important to think about in this situation?

Exercise 2
Patrick is a 10-month-old who was brought to the urgent care center by his father. Patrick has been running a low-grade fever for approximately 2 days, with copious green nasal secretions. He is alert, happy, and playful during the exam, but upon auscultation of the chest, crackles are heard bilaterally. The provider uses a bulb syringe to remove all nasal secretions, and auscultates Patrick’s chest again. Despite the fact that Patrick is now crying and much less cooperative, his lungs are clear.

1. Explain how the presence of nasal secretions affects the assessment of breath sounds in a child this age.
2. Does the presence of nasal secretions from Patrick’s nose have anything to do with his breath sounds? If yes, explain.
3. Is Patrick still an obligate nose breather?

Exercise 3
Jeremiah is a 4-month-old who is brought to the clinic by his mother for a health maintenance exam. He was born at 37-weeks gestation after his mother began premature labor due to a urinary tract infection. There were no perinatal complications and Jeremiah went home with his mother after 48 hours. Jeremiah is being exclusively breastfed and has not received any solid food. Today, his mother has several concerns: (a) that Jeremiah is unable to hear, (b) that he may be anemic, and (c) that his left eye turns inward at intervals.

1. What primitive reflex could be elicited to assess Jeremiah’s hearing? Is that reflex still present in an infant this age?
2. Should blood be drawn to assess for anemia? Why or why not?
3. Does Jeremiah need an ophthalmology referral? Why or why not?
Exercise 4

Tina, aged 15 years, comes to the school-based health center with moderate dysmenorrhea. As she watches the health care provider complete documentation, Tina notices health posters on the clinic wall that prompt her to ask questions about things she has read on the Internet and learned in health class. She asks the following:

1. How does one know when puberty starts and what happens first?
2. What causes acne to start in adolescence?
3. What causes body odor to start in adolescence?
4. What does it mean that the brain is not fully mature until late adolescence?

REVIEW QUESTIONS

1. Neonates are more prone to respiratory conditions than older infants, children, and adults. One reason for this is that the number of alveoli present in the term infant is:
   a. Ten percent of the total number of alveoli found in the adult lung
   b. Fifteen percent of the total number of alveoli found in the adult lung
   c. Twenty-five percent of the total number of alveoli found in the adult lung
   d. Fifty percent of the total number of alveoli found in the adult lung

2. Which of the following anatomic or physiologic differences in the respiratory tract exists in young children?
   a. Proportionately smaller epiglottis
   b. Larynx is located two to three cervical vertebrae lower
   c. Proportionately smaller soft palate
   d. Diaphragmatic breathing until approximately age 6 years

3. The trachea is proportionately shorter and smaller in diameter in young children. The clinical implications of this include all of the following except:
   a. Greater potential for airway obstruction
   b. Decreased resistance to airflow
   c. Inhaled air is warmed and humidified less effectively
   d. The risk of aspiration is increased

4. Infants and toddlers are more prone to middle ear infections and effusions because their:
   a. Eustachian tubes are short and straight
   b. Eustachian tubes lie in a relatively vertical plane
   c. External auditory canal is short and straight
   d. External auditory canal is straight with an upward curve
5. The younger the child, the more rapid the heart rate because of:
   a. Low body weight
   b. Low oxygen demands
   c. High oxygen demands
   d. High blood pressure

6. Infants are more prone to hypothermia because of which of the following?
   a. Increased body surface area
   b. Proportionately smaller head
   c. Overdeveloped sweating and vasoconstriction mechanisms
   d. Moderately high amounts of subcutaneous fat

7. Renal function, including the glomerular filtration rate, is immature until age:
   a. 1 year
   b. 2 years
   c. 3 years
   d. 5 years

8. When prescribing oral medications to a 4-month-old, the pediatric health care provider must consider which of the following?
   a. Pancreatic enzyme activity is decreased until approximately age 4 to 6 months; this may affect bioavailability of certain drugs
   b. Gastric pH is acidotic, affecting oral medication absorption
   c. Hepatic enzyme activity is decreased until approximately age 3 to 4 years; this speeds up drug metabolism in children
   d. Infants and young children have a rapid gastric emptying time, affecting the rate of drug absorption

9. Care must be taken when prescribing topical medications to infants and children younger than age 2 years because:
   a. Infants and young children are more likely to rub off the medication
   b. A thin epidermis results in more rapid absorption of drugs
   c. Topical medications are not effective in this age group; the equivalent oral form of the drug must be prescribed
   d. It is too difficult to titrate a safe dose in this age group

10. Infants are more prone to increased body temperature and febrile seizures because of:
    a. Overdeveloped peripheral vasodilation mechanisms
    b. Underdeveloped peripheral vasodilation mechanisms
    c. Increased flushing when crying
    d. Decreased body surface area
11. The length of a young child’s small intestine is larger with a greater surface area relative to body size. This results in:
   a. Less water absorption
   b. More water absorption
   c. Less electrolyte loss with liquid stools
   d. Firmer stools

12. The respiratory rate lowers to near adult levels around age 8 to 10 years because:
   a. Respirations become thoracic
   b. Cardiac function improves
   c. Less respiratory secretions are produced
   d. Tidal volume increases

13. Children have a higher metabolic rate than adults. Because of this, children are more prone to:
   a. Wound infection
   b. Weight gain
   c. Growth delay
   d. Dehydration

14. A child’s radial pulse may not be easily palpable until age 6 years because of:
   a. Undeveloped left ventricular muscle
   b. High resting cardiac output
   c. Low systolic blood pressure
   d. Displaced apical impulse

15. Rib fractures are uncommon in young children because:
   a. The ribs do not protrude from the thorax
   b. The ribs are inflexible in young children
   c. The percentage of cartilage in ribs is high
   d. The normally protruding abdomen protects the ribs

16. Transient esotropia is within normal limits until age:
   a. 3 months
   b. 6 months
   c. 9 months
   d. 12 months

17. Infants and children metabolize drugs more slowly than adults because of:
   a. Low serum bilirubin concentrations
   b. Impaired liver conjugation reactions
   c. Higher levels of plasma albumin and globulin
   d. Decreased hepatic enzyme function
18. Which of the following is a clinical implication of an immature neurologic system in children?
   a. Beginning control of bowel and bladder does not occur until about age 2 years
   b. Neonates and very young infants have a less permeable blood–brain barrier, preventing the passage of large, lipid-soluble molecules
   c. The blood pressure is more consistent in the neonatal period
   d. Gross motor development occurs more slowly than fine motor development

19. Infectious illnesses are common in children aged 6 years and younger because of:
   a. An active reticuloendothelial system
   b. Underdeveloped cell-mediated and humoral immunity
   c. Higher amounts of fetal hemoglobin at birth
   d. Continued passive immunity after age 6 months

20. Young children have well-developed lymph tissue at birth and it continues to grow beyond normal adult size. At what age does lymph tissue begin to decrease to normal adult size?
   a. 6 to 8 years
   b. 8 to 10 years
   c. 10 to 12 years
   d. 12 to 14 years