How to Use the   
Student Worksheets

The Student Worksheets were created for use with *Berkowitz’s Pediatrics: A Primary Care Approach,* 6th Edition. Each chapter of the textbook has its own corresponding worksheet composed of the chapter’s case study, case study questions, and case resolution.

**Getting Started**

Download this file and save it somewhere it can easily be accessed. We recommend using Microsoft Word for the best user experience, but the file can be opened by any word processing program that supports Microsoft Word Document (.docx) files.

To answer the case study questions, simply place your cursor below the question and start typing.

**Navigating the Document**

To locate a specific chapter, you can do any of the following:

* Scroll to its location in the document.
* In the Microsoft Word ribbon, click “View” and then check the box next to “Navigation Pane.” You will now see all the chapter numbers listed on the left side of the window. Simply click on one to navigate to that chapter.
* In the Contents pages, locate the desired chapter title. Then hold down the Control (Ctrl) key on your keyboard and click on the chapter title.

*Note: This guidance was written based on Microsoft Word capabilities. Functions may vary in other programs.*

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# Chapter 1

Primary Care: Introduction

Questions

CASE STUDY

As a primary care physician, you evaluate a 2-year-old boy who is presenting to the office for the first time. The mother states he has always been small; he was born at term but weighed only 2,272 g (5 lb). She is a single mother, and he is her only child. He speaks only 5 words and is quite active. The physical examination is normal, but the boy’s height and weight are less than the fifth percentile. The mother reports her son is immunized, but she does not have his immunization records with her at this visit.

1. What are the 4 components of primary care?

2. What are the main characteristics of a medical home? What are the eligibility criteria for designating a practice as a medical home?

3. What is the difference between a consultation and a referral?

4. Why are laboratory tests done during a routine health maintenance visit?

Case Resolution

You ask the mother about her son’s former physician and obtain signed permission to get the prior medical records, including immunizations. You attempt a hearing assessment as the initial step in evaluating his speech delay, but the patient does not cooperate. You ask the mother about access to food and complete a referral to the Special Supplemental Nutrition Program for Women, Infants, and Children and provide her with information about the Supplemental Nutrition Assurance Program (ie, food stamps). You provide the patient with an age-appropriate book from Reach Out and Read and make a return appointment for 1 month hence to continue care and determine whether the patient needs any immunizations.

# Chapter 2

Talking With Parents

CASE STUDY

An 8-month-old boy with a 1-week history of cough and runny nose; a 2-day history of vomiting, diarrhea, and fever; and a temperature of 38.3°C (101°F) is evaluated in the emergency department (ED). The mother is very concerned because her son’s appetite has decreased, and he has been waking up several times at night for the past 2 days.

A nurse interrupts and says that paramedics are bringing a 5-year-old trauma victim to the ED. The appearance of the 8-month-old child is quickly assessed; he seems active and alert. Bilateral otitis media is diagnosed. Before leaving the examination room the physician says to the mother, “Your son has a viral syndrome and infection in his ears. I am going to prescribe an antibiotic that you can begin giving him today. Give him ibuprofen as needed for the fever. Don’t worry about his vomiting and diarrhea; just make sure that he drinks plenty of liquids and don’t give him milk or milk products for a few days. Bring him back here or to his regular doctor if his fever persists, he doesn’t eat, he has too much vomiting or diarrhea, he looks lethargic, or if he isn’t better in 2 days.”

Questions

1. How much information can most parents absorb at one time? Did this mother receive more information than she can reasonably be expected to remember?

2. How do you assess parental concerns? Did the physician sufficiently address the mother’s worries?

3. How do you know whether a parent has understood all the information? Was this mother given a chance to clarify any questions she had?

4. What are some barriers to effective doctor-parent communication?

5. How does the setting itself influence communication?

Case Resolution

The doctor-patient interaction presented in the case study illustrates several of the “not to” points discussed herein. The physician did not acknowledge parental concerns or make sure that the mother had understood the diagnosis and treatment plan. The mother was presented with more information than she could have reasonably been asked to remember. This interaction could have been improved had the physician conveyed to the mother that her concerns were appreciated and reassured her that her child was going to be all right. Furthermore, the physician should have told the mother the name and dosage schedule of the antibiotic to be prescribed and limited the number of “as needed” instructions.

# Chapter 3

Talking With Children

CASE STUDY

The moment you walk into the examination room, the 2-year-old girl begins to cry and scream uncontrollably. She clings to her mother and turns her face away. The mother appears embarrassed and states that her daughter reacts to all physicians this way. After reassuring the mother that you have received such welcomes before, you sit down at a comfortable distance from the girl and her mother. You smile at the girl and compliment her on her dress, but she does not seem to be interested in interacting with you at this point. You place an age-appropriate book on the examination table, indicating to the child that the book is for her. You begin your interview with the mother and try not to look at the girl. Out of the corner of your eye, you see that her crying is easing and she has begun to examine the book you had placed on the table.

Questions

1. How does the age of children influence their understanding of health and illness?

2. Should physicians speak directly with children about their illnesses?

3. At what age can children begin to communicate with physicians about their illnesses?

4. How can older children be involved in the management of their health?

5. How can positioning and placement of children in the examination room affect the overall tone and quality of the visit?

Case Resolution

You learn from the mother that her daughter has been in good health. The mother has brought in the child for a routine health maintenance visit. You assess that the child’s development is normal and her immunizations are up-to-date. As you and the mother talk, the child appears more relaxed and less frightened. You use the book to engage and distract the child during the examination. She begins to respond to your questions and cooperate with the examination, but she chooses to remain on her mother’s lap. Praising a child who is cooperative helps reinforce preferred behavior.

# Chapter 4

Talking With Adolescents

CASE STUDY

This is a first-time visit for a 15-year-old girl who is accompanied by her mother. The mother is concerned because her daughter’s grades have been dropping since beginning high school, and she appears fatigued and irritable. The mother reports no new activities or recent changes in the home situation and no new stressors in the family. Both parents are employed, the girl has most of the same friends she has always had, and her siblings currently are doing well academically. The girl is healthy and has never been hospitalized. After the mother leaves the room, the girl is interviewed alone.

Questions

1. When interviewing adolescents, what is the significance of identifying their stage of development?

2. What are important areas to cover in the adolescent interview?

3. What issues of confidentiality and competence need to be discussed with adolescents before conducting the interview?

4. When should information be disclosed to others, despite issues of confidentiality?

Case Resolution

The adolescent should be informed about confidentiality and the specific exceptions to maintaining it. Nonthreatening topics, such as home life, school, employment, and other outside activities should be explored first, followed by questions about sexuality, gender, sexual orientation, sexual activity, and illicit drug use. Suicidal behavior or depression and safety issues should also be reviewed with the teenager alone and again with the parent if there is a need for a more formal or immediate mental health evaluation. In addition, computer and cell phone use as well as sleep hygiene should be evaluated. Identified high-risk behaviors and their consequences should be discussed with the adolescent at the end of the interview, and a plan for future visits should be arranged. The mother should then be invited back into the examination room before the conclusion of the visit to discuss nonsensitive issues, unless permission has been obtained from the teenager to disclose and discuss confidential topics.

# Chapter 5

Telephone Management  
and E-medicine

CASE STUDY

The mother of an otherwise healthy 10-month-old girl calls and tells you that her daughter has a fever. The girl’s rectal temperature has been 39.4°C to 40.0°C (103°F to 104°F) for the past 2 days. Although she is fussy with the fever, she plays normally after receiving acetaminophen. The girl is eating well and has no runny nose, cough, vomiting, diarrhea, or rash.

Mother also mentions 2 other concerns that she has been meaning to bring up with you. The first involves questions about feeding and how to introduce table foods; the other is sleep problems. Her daughter has been waking up several times a night for the past month, and mother feels exhausted.

Questions

1. How do telephone and face-to-face encounters between physicians and patients differ?

2. What are some general guidelines for effective doctor-patient communication via telephone?

3. What historical information is necessary for appropriate telephone management?

4. What points are important to cover in home treatment advice?

5. For nonurgent issues, what are the possible roles of telephone encounters or e-medicine in patient care?

Case Resolution

The physician learns several facts that result in the recommendation that the child be seen that day. (Had the call been received at night, a visit the next day would have been advised.) These facts include the child’s age, the height and duration of the fever, and lack of any symptoms of localized infection.

The other concerns of feeding questions and sleep issues present excellent opportunities for management through a follow-up telephone call, electronic communication, or office visit, depending on parent preference and clinic resources.

# Chapter 6

Informatics

CASE STUDY

You are a physician in a small pediatric practice. Your hospital implemented an electronic health record (EHR) system, which has been made available within the hospital and in the offices of its affiliated practices. The hospital chief of staff asks you to participate on the hospital’s informatics committee. You have served in the past on other clinically oriented steering committees, but you do not consider yourself a technology expert and you express your trepidation to the chief of staff, who asks you to speak with the head of the informatics committee.

Questions

1. What are the important informatics concepts to understand?

2. What are the important drivers of health information technology?

3. What are the challenges to physician acceptance of electronic health records?

4. What are the special pediatric considerations in electronic health records?

Case Resolution

You speak with the head of the informatics committee. You learn that you have been asked to participate because of your understanding of physician workflow in the office setting and that you are intended to advocate for the highly specific data needs and policies associated with the pediatric population. You are expected to use your pediatric expertise and draw on your leadership experience to obtain stakeholder buy-in of information systems. Additionally, in collaboration with other pediatricians and physicians, you will work to improve the efficiency, effectiveness, and relevance of the EHR in supporting the physicians’ work and working to achieve improved patient outcomes.

# Chapter 7

Counseling Families   
About Internet Use

CASE STUDY

A 16-year-old girl is accompanied by her mother for a routine visit. The girl is doing well in school, is active in team sports, and has a small circle of friends who are well-known to her mother. The mother describes no new problems at home and no changes in behavior. However, the mother is concerned that her daughter “spends too much time on the computer.”

Questions

1. What are the commonly used internet services?

2. What are the benefits and risks of the internet?

3. What strategies may be used to make the internet safer to use?

4. What signs may indicate that an adolescent is engaging in risky online behaviors?

Case Resolution

The pediatrician learns that the adolescent uses her laptop computer for 1 to 2 hours every afternoon to complete her homework assignments and is on the internet for an additional 2 to 3 hours every evening streaming videos on YouTube, posting images and thoughts to her Instagram and Snapchat accounts, and occasionally checking her Facebook page. The pediatrician advises the girl that, for safety reasons, personal information should never be shared over the internet, adding that colleges and employers often research prospective candidates online. The pediatrician also asks whether the patient has received, witnessed, or participated in hurtful or distressing communications or imagery online. With both the mother and daughter present, the pediatrician discusses the option of drafting a parent-child contract that clearly establishes the rules for acceptable internet use in and out of the home, including appropriate time limits. The pediatrician also directs the mother to internet-based resources for safeguarding the home environment and mobile devices, as well as a workshop at the local library on internet security.

# Chapter 8

Cultural Competency   
Issues in Pediatrics

CASE STUDY

You are seeing AJ, a 12-year-old Mexican American boy, for a well-child visit. His mother speaks Spanish and “a little” English, is single, and works full time in motel custodial services. After school and during summers, AJ is cared for by his 17-year-old brother and his maternal grandmother, who lives a block away. AJ’s weight and body mass index are well above the 95th percentile for his age. When discussing his diet, you learn that his mother buys packaged foods that he can make for himself when she is away. She is concerned that he will not eat if she does not buy the processed, fatty foods he likes. Additionally, these types of foods are more plentiful than healthier options at the local market at which she shops. AJ sometimes eats at his grandmother’s home, but she is elderly and does not cook much anymore. When discussing physical activity, AJ states that he wants to play soccer. His mother is concerned about this, however, because he often complains of headaches and stomachaches when it is time for practice, and she does not want to buy the equipment if he will quit after a few weeks, as has happened in the past.

As is your practice with all adolescents, you ask to speak with AJ alone. During your assessment, you learn that he is attracted to boys but has not shared this information with anyone. He is certain that his brother will not approve and that his mother will be heartbroken. He is sometimes teased at school because he is “not tough enough,” and he fears some of the bigger bullies might try to jump him if he hangs around after school to participate in any after-school sports activities.

Questions

1. What is the definition of culture?

2. What is cultural competence? What is cultural destructiveness?

3. What is meant by unconscious bias?

4. Why is it important to use a certified interpreter when talking to the parent with limited English proficiency? When is it appropriate for the pediatric patient to interpret for their parent?

5. How does understanding the perspective of the patient and the parent affect medical decision making?

Case Resolution

While speaking with AJ alone, you express support for his early sexual identity development, identify safe adults in his life with whom he can discuss his feelings and concerns, and identify community resources for LGBTQ+ individuals. When AJ’s mother returns to the room, you also discuss AJ’s and his mother’s perspectives about food, his weight, and his activity level, using a medically trained interpreter to ensure clear communication with his mother. You identify some of this family’s strengths: AJ’s mother’s desire to help him be healthier; AJ’s relationship with his grandmother, who cooks healthy traditional foods; and AJ’s supportive relationship with his older brother. After discussion, the patient decides that he would like to learn to cook from his grandmother and will commit to cooking a family dinner once a week, which delights his mother. His brother has also agreed to take him to soccer practice and games for a neighborhood soccer team. AJ likes this idea, because he feels safe from bullies with his brother present and feels that soccer will help him be stronger and more confident. You arrange for a follow-up visit in several months to check in with AJ and his mother about their progress and to brainstorm about further interventions. This will include 1-on-1 time with AJ and further discussion of his sexuality.

# Chapter 9

Global Child Health

Questions

CASE STUDY

You are watching television when the programming is interrupted by breaking news that a severe earthquake has struck a developing country you have recently visited. You wonder if and how you could become involved in efforts to help the country respond to the disaster, prevent diseases, and rebuild its health care infrastructure.

1. What are the global trends in childhood disease and mortality? How does this compare with the United States?

2. What is global health?

3. What is the role of the pediatrician in global health?

4. What are the key organizations in global health with which pediatricians work?

5. How can the pediatrician carry out international work in an ethical and effective manner?

6. What are useful global health resources?

Case Resolution

You learn about a US-based NGO with a long history of partnership and work in the earthquake-stricken country. You research that NGO further and learn that it is a reputable group with long-term interests in the country. You speak to friends who have recently visited the country and learn more about what skills and resources are needed. You arrange to join a team of experienced health workers from the NGO by taking time from work and garnering support from your family to manage in your absence. You undergo an in-depth orientation of the site, people, sociopolitical situation, team roles, and expected activities through a series of discussions with all participants.

# Chapter 10

Child Advocacy

CASE STUDY

A 7-year-old boy is brought to the emergency department by his mother with acute onset of respiratory distress. He awoke from sleep with a coughing fit and has not been able to catch his breath since. His mother explains that her son was admitted to the hospital with similar symptoms 1 month previously and was diagnosed with asthma at that time. Although the boy was prescribed 2 inhalers during his hospital admission, his mother reports she no longer has these because her son has not needed them. She also explains that her child has a daily nighttime cough and frequent coughing with exercise. After administration of an oral steroid load and 3 doses of ipratropium bromide and albuterol sulfate, the child’s breathing improves somewhat. He is admitted to the inpatient pediatric service for ongoing asthma management and care.

Questions

1. What does it mean to be a child advocate?

2. Aside from caring for individual patients, how can pediatricians promote the well-being of their communities?

3. What is the role of the pediatrician in child advocacy?

4. What are the levels of advocacy?

5. How does the pediatrician implement advocacy?

Case Resolution

Managing this child’s asthma is only the first aspect of thorough pediatric care. For the pediatrician to advocate for this patient and prevent a third admission for a subsequent and potentially worse asthma exacerbation, it is necessary to obtain essential information, such as the patient’s social history and the environment in which he lives. A thorough social history is obtained and reveals that the child lives with his mother and grandmother. The mother recently lost her job, and she and her son moved into a 1-bedroom apartment with the child’s grandmother. The apartment has old carpeting, and the mother expresses concern about mold on the walls. The child’s grandmother smokes cigarettes, but she avoids smoking in the apartment when the child is home. The patient and his family are counseled about his diagnosis of asthma and potential asthma triggers. The grandmother expresses interest in smoking cessation, and resources are provided. The family receives an asthma action plan and education on the use of a metered dose inhaler with a spacer, and the pediatrician uses the teach-back method to ensure understanding of the plan of care at discharge. The pediatrician becomes concerned about the high prevalence of asthma in the community and explores coalitions in the area that recognize similar concerns. He becomes a member of the coalition steering committee and works with the local health department and other community stakeholders to develop a home-based intervention program in which community health workers provide families with in-home environmental assessments, education, and support. As a result of the coalition’s efforts, the child’s home is 1 of many apartment complexes in the area assessed by the local housing authority, and resultant action is taken to bring the property up to health and safety standards.

# Chapter 11

Health Systems Science

CASE STUDY

You are seeing Sara, a 14-year-old girl with multiple health issues (ie, asthma, obesity, acanthosis nigricans, mood disorder, attention-deficit/hyperactivity disorder, posttraumatic stress disorder) for a follow-up visit for a recent concussion. You know her family (ie, mother and sister) well. She has frequent emergency department visits for abdominal pain, asthma exacerbations, and headaches. You frequently lack sufficient time during visits to address all her concerns and the health issues you want to discuss. The mother has been unemployed for several years. Your team has had some challenges reaching her family when visits are missed. You sincerely want to help Sara and her mother meet their health goals for Sara but feel that providing the best care during office visits is not making a significant difference in her health.

At today’s visit, the mother asks for head imaging because she is concerned about Sara’s ongoing dizziness and headaches; however, her neurologic examination is normal and she does not have any “red flag” symptoms or signs that warrant head imaging. You want to be patient- and family-centered, but you are concerned about the risks and costs of unnecessary testing.

Questions

1. How might you approach the conversation with Sara and her mother in response to their request for imaging?

2. How are evidence-based medicine, “less is more” conversations, and shared decision making related to high-value care?

3. What other health systems science-related issues do you recognize in Sara’s story, and what systems strategies might be considered to improve her health and experience of care?

4. What microsystem-level actions could you and your care team use to improve the health care and outcomes of similar patients in your pediatric practice?

5. What macrosystem-level actions could you and your colleagues take to improve the health care and outcomes of similar children in your health system or community?

Case Resolution

You respond to the family’s request for imaging using the guidance of the American College of Physicians for these conversations. You determine the perspectives of Sara and her mother (“What are you afraid we will find?” and “What do you think is going on, and what are you worried about?”); explain your reasoning for not recommending imaging (“The good news is that you do not have any worrisome symptoms.”); make it clear that you are on Sara’s side (“I wish more testing could help you, but it can actually make things worse.”); and make a clear follow-up plan and review red flag signs and symptoms (“I want to see you in 2 weeks, but contact us sooner if there are changes that concern you.”).

With your understanding of health systems science–related concepts, such as social determinants of health and how system issues can negatively affect health, you work with your clinical (ie, microsystem) team to connect Sara’s mother to a community health worker. The health worker meets with Sara and her family in their home to learn more about some of the challenges they are experiencing in accessing basic necessities as well as the health care system. The health worker connects Sara’s mother to a primary care provider to help her address her own chronic illnesses and helps Sara’s family access county services for housing and food. Your clinical team decides to initiate a QI project with the goal of reducing the number of missed follow-up visits for pediatric patients. In the course of the project, your team develops a care management approach for children with multiple chronic diseases. As part of your successful project, you begin screening for adverse childhood experiences to better recognize their effect on health, and several colleagues in your practice share what you have learned with the local health department and school system.

# Chapter 12

Population Health  
for Pediatricians

CASE STUDY

You are preparing to see a patient familiar to your practice for an acute visit. You have not seen her for 11 months and, as you review the chart, you recall that the child is 5 years old and was born with a myelomeningocele at L4-5. She underwent surgery as an infant with placement of a ventriculoperitoneal shunt and gastrostomy tube. She has used a motorized wheelchair for 2 years and requires intermittent urinary bladder catheterization. Generally, she has done well and continues to see specialists in gastroenterology, neurosurgery, neurology, and urology. She attends public school, where she has an Individualized Education Program; receives occupational, speech, and physical therapy; and qualifies for in-class assistance. On further review, you note she is insured by your local Medicaid managed care plan and you receive a monthly capitation payment for her care in addition to potential value-based incentives around certain quality indicators.

Questions

1. What are the specific challenges associated with caring for this child?

2. How do you begin to organize her multiple special needs?

3. What are the clinical implications of the methodology by which you are paid for her care?

4. What strategies can you use to ensure this child receives the entirety of care required for her to thrive?

5. Who is your team?

Case Resolution

Your medical assistant performs a pre-visit chart review that includes identification of any potential gaps in care, recent hospitalizations or emergency department visits, review of specialty notes for updated medication doses, pending laboratory tests or diagnostic testing, and immunization records. The school Individualized Education Program is reviewed to ensure therapies are occurring at the appropriate frequency with associated progress reports demonstrating improvement. During your morning huddle with your care team, you determine that the child has seen 2 of her subspecialists since she last visited your office, so your team updates her medication list and overall care plan to reflect the latest information. You also determine that she is overdue for a health supervision visit, and your staff converts her acute visit today to such a visit to include her annual influenza vaccine. You note that she has a registered nurse who acts as her case manager, who is provided by her Medicaid managed care program, and ensure that your team connects with the case manager and social worker to help coordinate care and address any social determinants of health that may pose a challenge. During her visit you include the family in all decision making about her care and provide a written summary of the visit and a specific action plan. Your office securely messages the family in 48 hours to reinforce the care plan and ask if there are any other questions.

# Chapter 13

Principles of Pediatric   
Therapeutics

Questions

CASE STUDY

An 18-month-old girl who has had a cough, runny nose, and fever for 2 days is brought to your office for evaluation. The previous night she awoke from sleep crying and pulling at her ear. The patient has no other symptoms. Her mother states she has had previous ear infections; the most recent occurred 2 months ago. The last time she took amoxicillin she broke out in hives. Otherwise, the patient has no significant medical history.

On physical examination, the patient is febrile with a temperature of 38.9°C (102°F) and has yellow rhinorrhea. The ear examination reveals a red, bulging, nonmobile tympanic membrane in 1 ear, while the other tympanic membrane appears normal. The remainder of the examination is benign.

1. What are the current clinical practice guidelines for antibiotic treatment of otitis media? How does treatment change with the age and symptoms of the patient?

2. How does the previous reaction to a medication influence the antibiotic choice?

3. How do factors (eg, parental work, child care) affect administration of the medication?

4. What role do over-the-counter medications have in the management of the patient’s symptoms?

Case Resolution

After obtaining the history and performing a physical examination, the pediatrician determines that the patient has acute otitis media. Depending on the age of the child and the severity of symptoms, American Academy of Pediatrics clinical practice guidelines suggest a stratified approach to therapeutics. For infants and children between 6 and 24 months of age, pediatricians can treat with antibiotics if the diagnosis is certain or observe the patient without antibiotics if the patient is otherwise healthy. In this case, the pediatrician discusses the options with the family and, because of the severity of pain and previous ear infections, chooses to treat the infection. The antibiotic of choice for treatment of otitis media is amoxicillin at a dose of 80 to 90 mg/kg/day. The mother states that her daughter had hives with amoxicillin, a type 1 hypersensitivity. Other antibiotic choices would include cefdinir 14 mg/kg/day in 1 to 2 doses per day. Treatment of pain is essential with otitis media. The patient can take oral acetaminophen or ibuprofen.

The mother raises a concern about her daughter’s cough and runny nose and would like to use an OTC cough medication. The US Food and Drug Administration does not recommend use of cough preparations in this age group. Educating the mother about conservative therapies, including nasal suctioning, humidification, and nasal saline, to treat her daughter’s respiratory symptoms is more appropriate.

If the patient were not allergic to amoxicillin, it would have been the drug of choice. It is inexpensive, has a narrow microbiological spectrum, and is palatable. Amoxicillin does require refrigeration, which would be of concern if the family were traveling. While this case illustrates several obvious constraints, it is important to emphasize that choosing the appropriate medication is dependent on the intrinsic needs of the patient and extrinsic factors that can affect adherence and, ultimately, the effectiveness of treatment.

# Chapter 14

Pediatric Pain and Symptom Management

Questions

CASE STUDY

You are caring for a Kayla, a 10-year-old girl with stage 4 neuroblastoma who is at home receiving palliative care. Her tumor is refractory. She receives oral chemotherapy and transfusions as an outpatient to offset the bone marrow depletion caused by her tumor. Pain from her metastases is becoming increasingly problematic, especially in her chest wall and right femur. Her spine is also involved, but she does not experience weakness. Although fatigued, she derives great pleasure from attending school and being surrounded by friends and family members, playing as she is able. She hates the hospital and her parents have chosen to avoid it, intending to keep her comfortable at home until she dies. You have remained closely involved throughout her illness and would like to help with the management of her symptoms.

1. What is the approach to pain management in children?

2. How does the physician assess the level of pain in children?

3. What is meant by adjuvant therapy?

4. What are nonpain symptoms that can cause distress?

5. What is the management of nonpain symptoms?

Case Resolution

Kayla lived for 4 more months, was never again admitted to the hospital, and until her last days, remained engaged and as playful as her fatigue allowed. Her primary care pediatrician teamed with the pediatric palliative care team at the closest children’s hospital and was assisted with many of the decisions about symptom management. In her last days, the patient was on methadone, morphine boluses, lorazepam, citalopram hydrobromide, gabapentin, ondansetron hydrochloride, polyethylene glycol 3350, senna, and as-needed methylphenidate hydrochloride. Her pediatrician made home visits and remained available for evolving symptoms. The pediatrician was in the child’s home when the child died.

# Chapter 15

Complementary and  
Integrative Medicine in  
Pediatric Primary Care

CASE STUDY

A 14-year-old girl is brought to your office for follow-up on her migraine headaches. She has no other significant medical history but has experienced intermittent migraine headaches over the past few years. The headaches occur approximately weekly in the evenings, do not wake her from sleep, and improve with ibuprofen (400 mg), which was previously prescribed at your office. At this visit, the girl states that she wishes she did not have to take medication for her headaches. Her mother reports that a family friend has suggested acupuncture or herbs for the headaches and asks whether there are other complementary and integrative medicine (CIM) approaches that they could try.

Questions

1. What are CIM therapies?

2. How does a provider explore if any CIM approaches are appropriate for the treatment of chronic or recurrent conditions, such as headaches, in a child or an adolescent?

3. What is the best way to determine whether a family is using CIM?

4. What is the best way to communicate with a family about CIM therapies?

5. What is the best way to monitor the safety of CIM approaches?

Case Resolution

Explaining that CIM is not your area of expertise, you ask the family to return in 1 week to discuss this further. After consulting the National Center for Complementary and Integrative Health website and conducting a brief review of the medical literature, you find that there are data on efficacy and safety of CIM therapies for migraine headache prevention, including acupuncture and self-hypnosis. At the follow-up visit, you discuss these options with the family. The girl is interested in both modalities but decides to try acupuncture first. You offer her support for this choice and ask that she keep close track of her headaches and return in 1 month to let you know how she is doing with the acupuncture treatments and her headaches.

# Chapter 16

Principles of Pediatric Surgery

Questions

CASE STUDY

A 4-month-old boy is evaluated by his pediatrician for swelling in the groin and is diagnosed with a right inguinal hernia. His parents are told that their child will be referred to a pediatric surgeon. The parents are concerned about surgery in such a young infant and ask their pediatrician multiple questions. Is he big enough to have surgery? Will he be able to eat before the surgery? Will he be in pain? Will he need to have blood drawn? Will he need to be hospitalized? Will he be put to sleep for the procedure?

1. What are the typical questions parents ask if their child is undergoing surgery?

2. What is the role of the primary care physician in advising patients and parents about surgical procedures?

3. What is the role of the surgeon in advising patients and parents about the surgery?

4. What are general guidelines for feeding infants and children prior to surgery?

5. What are the risks of general anesthesia in infants and children?

6. How long is the hospitalization after surgery?

7. How do physicians prepare children who are about to undergo surgery?

8. What laboratory studies are needed prior to surgery?

Case Resolution

In this case, the pediatrician reassured the parents that many patients have been referred to this surgeon. The parents were assisted by the pediatrician in crafting their questions for the surgeon. The surgeon subsequently confirmed the diagnosis of an inguinal hernia and recommended surgery. All details were provided, and the parents’ questions were answered. The patient was scheduled for outpatient surgery, and everything went smoothly. Postoperatively, there were no concerns, and the patient saw the surgeon and pediatrician in the course of standard follow-up care.

# Chapter 17

*Image Gently* Approach  
to Pediatric Imaging

Questions

CASE STUDY 1

A 15-year-old boy comes to your office reporting back pain after exertion for the past week. He reports no significant recent trauma. He plays varsity basketball but has not had any falls during recent games. He is otherwise healthy, with no significant medical history.

The pain does not prevent him from playing sports or attending school. He has no history of prior episodes of back pain. He reports that the pain is relieved by nonsteroidal anti-inflammatory drugs. On physical examination, he has left-sided paraspinal focal tenderness in the L3-L4 region. He has limited range of motion twisting to that side.

CASE STUDY 2

A 10-year-old girl is brought to your office with runny nose, congestion, cough, and headache. You saw this patient 6 weeks ago as well as 4 months ago, when she had similar symptoms. Her mother reports full compliance with the antibiotic regimen you prescribed but states that her daughter’s symptoms have never fully resolved. On physical examination, the child is afebrile with purulent nasal discharge. Tenderness to palpation is elicited over the cheeks and forehead.

1. How does imaging contribute to the diagnosis of a patient’s condition?

2. How does the physician determine which imaging studies are appropriate for an individual patient?

3. What is the ALARA principle?

4. What information is available for counseling patients about the risks of diagnostic radiation?

5. Where can appropriate imaging recommendations for pediatric patients be found?

6. Does patient history influence the choice of imaging studies?

Case Resolution

CASE STUDY 1

**Case Study 1: The Importance of the Patient History**

Back pain is a common symptom in active adolescent patients. Many studies have evaluated the use of imaging in patients with atraumatic back pain. In the absence of significant trauma, most studies have found that there is little value in imaging otherwise healthy adolescents who present with musculoskeletal pain. If this patient had experienced significant trauma or demonstrated focal neurologic findings suspicious for significant injury to the spinal cord or a disk, MR imaging would be the most appropriate examination. Radiographs of the spine are not helpful in assessing disk disease or central nervous system injury. Radiographs are helpful in adult patients to evaluate the extent of multilevel disk disease. For this patient, the physician should obtain a comprehensive history and perform a complete physical examination to help define the differential diagnosis and assist in the determination of the appropriate imaging study. See Resources for Physicians at the end of the chapter for a link to the ACR Appropriateness Criteria for back pain in a child.

**Case Resolution**

The physician should recommend rest, nonsteroidal anti-inflammatory drugs, and stretching exercises for 4 to 6 weeks. If the pain persists after that time, magnetic resonance imaging of the lumbar spine without contrast would be a reasonable next step in the workup of this patient.

CASE STUDY 2

**Case Study 2: Symptom Duration and Response to Treatment**

Imaging should be obtained in cases of chronic sinusitis that do not respond to treatment and persist for months without resolution. Computed tomography of the sinuses is useful in the evaluation of the soft tissues, extent of disease, and any potential intracranial complications. Computed tomography also provides important anatomic detail should surgery be required. Radiographs have limited utility in evaluation of sinusitis because of the lack of soft tissue, anatomic detail, and low sensitivity. This is particularly true in very young children whose sinuses are not yet well aerated. Imaging is not appropriate in the setting of acute sinusitis in an otherwise well child. See Resources for Physicians at the end of the chapter for a link to the ACR Appropriateness Criteria for child sinusitis.

**Case Resolution**

The physician should order a computed tomography scan of the sinuses, because the patient has signs and symptoms of chronic sinusitis despite treatment. Had the patient been presenting for the first time with signs and symptoms of sinusitis, medical treatment would be indicated and imaging would be considered were the patient not to respond to that medical management.

# Chapter 18

Simulation in Pediatric  
Health Care

CASE STUDY

An 8-year-old boy presents to your office for a follow-up appointment after an asthma exacerbation. He reports feeling better while at home this morning, but on the car ride to your office his chest started “hurting,” and he began to experience shortness of breath. During his intake he appears to be in a moderate amount of distress, with evidence of tachypnea and tachycardia. His pulse oximeter reports a value of 90%. Your staff administers nebulized bronchodilator therapy and oxygen, and a call is made for paramedic transport to the nearby hospital. Within the next few minutes the staff becomes concerned that he may need emergent airway support, but you are not sure if the equipment is functioning properly since the last time it was used. The paramedics arrive and safely transport the child to a facility that provides a higher level of care. Although emergency interventions were not required during this situation, you and your staff feel that you could have been better prepared. You decide to take measures to optimize the function of your staff and office environment for the rare emergency.

Questions

1. What is simulation?

2. How does simulation apply to health care?

3. What modalities of simulation are available for medical training?

4. How does one create and deliver simulation training?

5. Why should a primary care physician use simulation?

Case Resolution

You and your staff review what occurred in the case of the child who experienced a severe asthma exacerbation and identify the educational and environmental needs of your practice. You determine that your educational objectives are related to accessing the emergency equipment, having well-defined staff roles when advanced life support measures are required, and providing effective bag-valve mask ventilation. You obtain an inexpensive mannequin to serve as a model for the child and write the script of the case. You discuss with your office staff what your plans are and that the goal is to improve office function in emergent situations. You schedule an appropriate time and deliver the mock scenario with the entire office staff. It is discovered that some of the equipment is not operational, and some staff members voice a lack of confidence in their bag-valve mask skills, which they have not had to use for some time. A practice session is held in which staff members can practice the skill of bag-valve mask ventilation on the mannequin and receive constructive feedback on technique. Afterward, you lead a discussion with the group, review the points that require improvement, and develop a plan to rectify the equipment issues, knowledge gaps, and skill gaps. The mock code intervention was universally well received by the staff, and confidence in the ability to manage emergent situations in the office setting was improved.

# Chapter 19

Pediatric Hospital Medicine

Questions

CASE STUDY

A 15-month-old girl presents to a community hospital emergency department with fever, cough, and rhinorrhea. On initial evaluation, she is found to be in moderate respiratory distress, with decreased air movement and scattered bilateral wheezes and crackles on lung examination. Her oxygen saturation is 87% on room air and rises to 96% with the application of 1 L/min of supplemental oxygen via nasal cannula. The physician diagnoses the patient with bronchiolitis and treats with nebulized albuterol and an oral dose of prednisone. The hospital has no inpatient pediatric service, so the emergency physician calls the local children’s hospital to arrange a transfer. The emergency physician signs the patient out to a hospitalist, who accepts her onto the inpatient pediatric service and arranges for ground basic life support transport.

1. What is the role of hospitalists in inpatient pediatric care?

2. How can hospitalists implement principles of family-centered care and evidence-based medicine into the clinical care of hospitalized children?

3. How can hospitalists promote quality improvement and patient safety in the hospital setting?

4. What communication strategies can hospitalists use to ensure safe transitions of care within the hospital and back to the outpatient medical home after discharge?

Case Resolution

The patient is admitted to a monitored bed, and, after the initial assessment, the hospitalist concurs with the diagnosis of bronchiolitis. Based on current clinical practice guidelines, the hospitalist discontinues the use of systemic steroids and bronchodilators. The hospitalist obtains the number of the primary care physician (PCP) from the family and places a call on the day of admission; during the call, the hospitalist learns that the patient has a penicillin allergy that was not reported by the parents during the history and physical examination. The hospitalist also begins to explore the possibility of initiating a quality improvement project in the management of bronchiolitis, which would use the clinical practice guidelines to create a set protocol for admissions with an order template in the electronic health record. The patient improves over the subsequent 3 days and is transitioned off oxygen. The hospitalist, together with a discharge planner, reconnects with the PCP, faxes a discharge summary, and arranges a follow-up appointment 3 days after discharge at a time when the parents are available. The patient is seen by the PCP at the scheduled appointment time. The parents tell the PCP they were told to monitor her respiratory effort, oral fluid intake, and urine output, all of which have been normal. While the parents have noticed that she still has a runny nose and cough, these symptoms have improved since discharge from the hospital.

# Chapter 20

Pediatric Genomic Medicine

Questions

CASE STUDY

A 4-year-old boy with moderate global developmental delay is brought to his pediatrician’s office for evaluation. The patient has an unremarkable family history and normal physical examination findings. Previous evaluation included normal karyotype and fragile X syndrome DNA test results. The patient’s parents would like to know whether there is anything else that can be done to determine the etiology of the delay. In addition, his mother has recently read about companies that offer multiple genetic tests to consumers and wonders whether these tests will be useful as well.

1. What is microarray technology, and how is it useful in pediatric practice?

2. How is next-generation sequencing technology affecting current practice?

3. What are the limitations of these new technologies?

4. What is direct-to-consumer genetic testing?

Case Resolution

The patient’s microarray testing results show a small microdeletion in chromosome 6. Parental testing indicates that the microdeletion is present in the patient’s father, who has had normal development. Further testing includes whole exome sequencing, which shows a potential missense mutation in *CASK,* a gene on the X chromosome that may cause developmental delay. This alteration is not found in the patient’s mother, implying that it is most likely deleterious. The parents receive genetic counseling about future pregnancies.

# Chapter 21

Principles of Quality  
Improvement: Improving  
Health Care for   
Pediatric Patients

CASE STUDY

During a routine staff meeting at your group pediatric practice, it was noted that many of the patients cared for by your practice are behind in their immunizations. The reasons for this are unclear, because you and your colleagues are strong proponents of the timely administration of preventive immunizations. You want to develop a mechanism to determine what factors are resulting in delayed vaccine administration.

Questions

1. What is quality improvement?

2. How does assessing the delivery of recommended health maintenance relate to quality?

3. How is the prevention of medical errors related to quality improvement?

4. What is the difference between harm and error?

5. What factors are associated with medical errors?

6. What is meant by organizational culture?

Case Resolution

During your staff meeting, you decide to use a Plan-Do-Study-Act cycle to examine the organization’s vaccine administration practice, identify barriers to timely vaccine administration, and develop a plan to ensure that vaccines are administered in a timely fashion.

Plan: The charts of all patients seen for routine care in the past 3 months are pulled. The charts are audited using a premade checklist to identify vaccines given, vaccines missed, and barriers to administration. After analyzing the data, it becomes clear that many opportunities for immunization were missed because of inability to get parental consent. This seemed to coincide with a television program that discussed increasing rates of autism spectrum disorder associated with vaccination.

Do: At your next routine staff meeting, you present the data to your colleagues. You recommend rebutting the television show with a fact sheet and a discussion between the physician and parents. Your colleagues agree to implement this change, because it is low cost and easy to put into practice.

Study: Three months after implementation, you collect data and discover fewer missed opportunities for immunization and that your program has had some success. Some parents are still resistant to immunizing their children for fear of autism spectrum disorder.

Act: You present the follow-up data to your colleagues, and they agree to continue to implement the current strategy. The decision is made to reexamine the data again in 3 months to determine whether the program continues to be effective.

# Chapter 22

Pediatric Palliative Care:  
Principles and Practice

CASE STUDY

Jason is a 17-year-old boy with spastic quadriplegia, severe global developmental delay, seizures, dystonia, and cortical blindness who is supported by a tracheostomy but is not ventilator dependent. He was born at 24 weeks’ gestation and had a turbulent neonatal course. Since leaving the intensive care unit at 6 months of age, he has lived at home, cared for by his family, a loyal home nursing team, and his primary care pediatrician. Medically he has been fairly stable, with only episodic respiratory infections and numerous orthopedic procedures. Over the past 2 years, however, he has spent substantially more time in the intensive care unit because of increasing respiratory fragility. With so many hospitalizations and so little time feeling well at home, his parents have begun questioning whether the intensive medical care Jason receives translates into quality of life for him and his family.

Questions

1. What is pediatric palliative care, and how is it practiced?

2. What children receive palliative care, and what are the benefits and barriers to these services?

3. What are some of the essential considerations when communicating with families of seriously ill children?

4. How do children of different ages understand serious illness, death, and dying?

5. What role do primary care pediatricians have in the palliative care of their patients?

Case Resolution

The hospital-based palliative care team arranged to meet with Jason’s parents. During their conversation, they helped the parents articulate what gave Jason’s life meaning, what happiness was for him, and what their hopes were. Jason’s parents decided they would still opt for ventilatory assistance should he become compromised by an acute, likely reversible illness but could not imagine cardiac resuscitation being consistent with their goals. Therefore, a limitation was placed on cardiac resuscitation, and a Physician Orders for Life-Sustaining Treatment form was completed. With the parents’ permission, the palliative care team spoke with Jason’s primary care pediatrician and home nursing team.

The palliative care team continues to meet with Jason and his family for each hospital admission and connects regularly with Jason’s primary care pediatrician for ongoing care transitions and health care needs.

# Chapter 23

Neonatal Examination  
and Nursery Visit

CASE STUDY

You are performing an examination on a 16-hour-old newborn who was born at 39 weeks’ gestation to a 28-year-old, healthy, primigravida via normal spontaneous vaginal delivery. No complications occurred at delivery, and the Apgar score was 8 at 1 minute and 9 at 5 minutes. The newborn weighed 3,200 g (7 lb 1 oz) and was 50 cm (19.7 in) long at birth, with a head circumference of 34 cm (13.4 in). The mother received prenatal care beginning at 10 weeks of gestation; had no prenatal problems, including infections; and used no drugs, alcohol, or tobacco during the pregnancy. Her blood type is O Rh-positive. She is negative for hepatitis B surface antigen and group B streptococcus, and she is nonreactive for HIV, syphilis, chlamydia, and gonorrhea. The father is also healthy.

On physical examination, the newborn is appropriate size for gestational age, with length and head circumference in the 50th percentile. Aside from small bilateral subconjunctival hemorrhages, the rest of the physical examination is entirely normal.

Questions

1. What aspects of the maternal and birth history are important to review before performing the neonatal physical examination?

2. What other history is important for a complete newborn assessment?

3. What aspects of the physical examination of newborns are essential to explain to parents?

4. What physical findings mandate a more extensive workup prior to discharge?

5. What is the routine hospital course for a normal newborn?

6. What are important points to cover with parents at the time of discharge for a healthy, full term newborn?

7. What laboratory studies, if any, should be performed prior to discharge?

Case Resolution

The parents should be advised that the newborn’s weight, length, and head circumference are all normal. The examination is reviewed at bedside, and the subconjunctival hemorrhages should be shown to the parents and their benign, self-limited nature explained. Parents should be reassured about all other normal aspects of the physical examination. The newborn’s blood type from cord blood should be obtained, because the mother has blood type O Rh-positive. Routine neonatal screening, feeding, sleeping, elimination, bathing, and safety should be reviewed. Before discharge, the newborn should receive the hepatitis B vaccine and should undergo newborn screening tests and bilirubin assessment. A follow-up appointment should be made for 48 hours after discharge to follow breastfeeding progress. Results of all newborn screening tests should be reviewed when available.

# Chapter 24

Maternal Perinatal Mood and Anxiety Disorders: The Role of the Pediatrician

CASE STUDY

You are evaluating a 3-week-old boy who is the product of a 39-week gestation pregnancy to a 30-year-old gravida 1, para 1 mother who has been breastfeeding the newborn. The newborn’s birth weight was 3,650 g (8.0 lb), and the newborn now weighs 3,380 g (7.5 lb). The mother expresses concern about her ability to breastfeed. She also admits to being exhausted and feeling detached from the baby. She is overwhelmed by being a mom, something she had looked forward to since she was a little girl. She has difficulty concentrating and has no appetite. She asks you if it is normal to feel this way.

Questions

1. What is the spectrum of perinatal mood and anxiety disorders?

2. What are the signs and symptoms of perinatal mood and anxiety disorders?

3. What are the risks to newborns of mothers who experience perinatal mood and anxiety disorders? To older children?

4. What is the role of the pediatrician in assessing mothers for perinatal mood and anxiety disorders?

5. What screening instruments are available to assist in assessing mothers for perinatal mood and anxiety disorders?

6. What are the risks and benefits of the use of psychopharmacology during pregnancy and postpartum if breastfeeding?

7. What resources are available to offer to mothers who may be experiencing perinatal mood and anxiety disorders?

Case Resolution

While many of this mother’s symptoms are common, her self-assessment that she is unable to function suggests that she is experiencing peripartum depression rather than baby blues. You ask her if it is all right to contact her obstetrician to see if she could be seen sooner. She agrees. When you reach her obstetrician, she schedules the mom to come in the following morning. The obstetrician tells you she has a therapist in her office who will be able to meet with the mother at that time.

# Chapter 25

Newborn Screening

Questions

CASE STUDY

A 1-week-old boy is brought to the pediatrician’s office for a positive newborn screening test result for congenital adrenal hyperplasia. The baby was a product of a 38-week gestation and was born by normal spontaneous vaginal delivery to a 30-year-old gravida 2, para 2 woman with an unremarkable pregnancy. Birth weight was 3,300 g (116.4 oz), and the baby is feeding and acting appropriately. Family history is unremarkable, and the physical examination is normal.

1. What are the proposed benefits of newborn screening?

2. Which newborn screening tests are most commonly performed?

3. How are the results of newborn screening tests reported to physicians?

4. How should a patient with an abnormal newborn screening result be managed?

5. What are the most common causes of false-positive and false-negative results?

6. What are the ethical issues and future challenges surrounding newborn screening?

Case Resolution

The patient should undergo a full evaluation, including an electrolyte panel, because of the possibility of salt-wasting congenital adrenal hyperplasia. Confirmatory testing, including measurement of precursor hormones such as 17α-hydroxyprogesterone and subsequent molecular testing, as well as glucocorticoid therapy should be considered in consultation with a pediatric endocrinologist.

# Chapter 26

Caring for Twins and   
Higher-Order Multiples

Questions

CASE STUDY

An expectant mother visits you. She has been advised by her obstetrician that a sonogram shows she is pregnant with twins. She asks about care of twins and what special considerations she should keep in mind as she looks forward to the delivery. In particular, she is concerned about the feeding schedule and whether she will be able to breastfeed.

1. What is the incidence of twin births?

2. What is the difference between fraternal and identical twins?

3. What major medical problems may affect twins and higher-order multiples?

4. What developmental and behavioral problems are associated with raising twins?

Case Resolution

The mother is advised that breastfeeding is not only possible but recommended. She is told about the options for timing and positioning of the newborns. The issues of family history and child passenger safety are also discussed, and anticipatory guidance on the potential stress of raising multiples is given.

# Chapter 27

Male Circumcision

CASE STUDY

An expectant mother learns that the sex of her fetus is male. She visits you prenatally. She talks about circumcision in addition to issues related to breastfeeding and car passenger safety. Her husband is circumcised. She is unclear about the medical indications for circumcision and asks your opinion about circumcision in the newborn period.

Questions

1. What are the benefits of male circumcision?

2. What are the indications for circumcision in older children?

3. What are the techniques used to perform circumcision?

4. What are the complications of circumcision?

5. What is the current status of insurance coverage of circumcision?

Case Resolution

The risks and benefits of circumcision should be discussed with the mother. The father should be encouraged to participate in the decision-making process. If the parents elect to forgo circumcision for their son, they should be instructed on the appropriate care of the uncircumcised penis, which involves gentle external washing without retraction of the foreskin.

# Chapter 28

Nutritional Needs

Questions

CASE STUDY

At a routine health maintenance visit, a mother asks if she may begin giving her 4-month-old daughter solid foods. The infant is taking about 4 to 5 oz of formula every 3 to 4 hours during the day (about 32 oz per day) and sleeps from midnight to 5:00 am without awaking for a feeding. Her birth weight was 3.2 kg (7 lb), and her present weight and length (5.9 kg [13 lb] and 63.5 cm [25 in], respectively) are at the 50th percentile for age. The physical examination, including developmental assessment, is within reference limits.

1. What are some of the parameters that may be used to decide when infants are ready to begin taking solid foods?

2. Up to what age is human milk or infant formula alone considered adequate intake for infants?

3. At what age do infants double their birth weight? At what age do they triple their birth weight?

4. What allergy risks are associated with the early introduction of solid foods?

Case Resolution

The infant is ready to begin some solid foods because she is consuming 32 oz of formula per day and continues to be hungry. In addition, she has reached a weight of 5.9 kg (13 lb) and has almost doubled her birth weight. The mother is counseled to begin feeding her daughter a single-grain infant cereal mixed with formula. (The cereal should be fed by spoon, not given in a bottle.) Within a few weeks, once the infant is taking the cereal well, other first foods, such as fruits and vegetables, may be introduced. After she tolerates cereal and several fruits and vegetables, more allergenic foods, such as egg or diluted nut butters, should be introduced in small amounts to reduce the risk that she will develop a subsequent food allergy.

# Chapter 29

Breastfeeding

CASE STUDY

A 25-year-old pregnant woman comes to your office with her 18-month-old for a well visit. When asked, she reports that she had a difficult time breastfeeding her first child because of pain; however, she gave pumped milk for 4 months. She hopes to breastfeed directly for at least 6 months with this baby. She would like to know what advice you can give her. She expects a normal delivery, has had no breast surgery, and is not on any medications; however, she smokes cigarettes occasionally. She plans to return to work when the baby is 4 months old.

Questions

1. What is the normal physiology of lactation?

2. What are the benefits of breastfeeding?

3. What are the contraindications to breastfeeding?

4. What management maximizes a mother’s success at breastfeeding?

5. How does the pediatrician manage some of the common problems that may arise during breastfeeding?

Case Resolution

In the case presented, the mother is aware of the many benefits of breastfeeding. You examine her breasts and note normal anatomy and easily expressed colostrum. The mother should be encouraged to breastfeed and reassured that she should be able to make adequate milk with early effective breast emptying. You recommend she stop cigarette smoking completely for her own health as well as the baby’s; if she is unable to do so, however, she should be advised that breastfeeding is still superior to formula. In the hospital, she should request that her newborn be placed skin to skin with her in the delivery room and continue rooming-in to breastfeed on demand. If this is not possible, she should initiate hand expression in the first hour after the birth. Reassure her that the hospital and your office will give her support and guidance with breastfeeding. Even though she is anticipating returning to work, she should initially nurse exclusively. She can begin to introduce the bottle with pumped milk at 1 to 2 months of age. Her workplace should provide an area for nursing mothers to pump and refrigerate the milk. You encourage her to explore the lactation policies at her workplace and seek out nursing support groups.

# Chapter 30

Sleep: Normal Patterns   
and Common Disorders

CASE STUDY

During a routine 6-month health maintenance visit, a mother states that although her 6-month-old son falls asleep very easily at approximately 10:00 pm every night while breastfeeding, he wakes every 2 to 3 hours and cries until she nurses him back to sleep. A review of the dietary history reveals that the infant is breastfed approximately every 3 hours and was begun on rice cereal 2 weeks prior to this clinic visit. His immunizations are current. The boy has no medical problems, and his physical examination is normal.

Questions

1. How old are most infants when they can begin to sleep through the night (≥5 hours at a time) without a feeding?

2. What factors contribute to frequent nighttime awaking during infancy?

3. What advice can be given to parents to facilitate an infant’s sleeping through the night?

4. What are sleep disturbances experienced by older children and adolescents?

5. What advice can you give parents about helping children develop good sleep hygiene?

Case Resolution

The 6-month-old has disordered sleep associations. He has been conditioned to nighttime feedings, although he is old enough not to require them for nutrition. The physician suggests several steps the mother can take to try to solve her son’s sleep problem. She can begin by gradually lengthening the interval between daytime feedings to 4 to 5 hours. When the baby cries at night, she can wait progressively longer before feeding him and then eventually eliminate the feedings altogether. He will learn to fall asleep on his own without requiring feeding.

# Chapter 31

Oral Health and  
Dental Disorders

CASE STUDY

The parents of a 9-month-old girl bring her to the office because they are concerned that their daughter has no teeth yet. Growth and development have proceeded normally, and the physical examination is unremarkable.

Questions

1. What is the typical first tooth to erupt, and at approximately what age does that occur?

2. What is meant by “mixed dentition”?

3. When should oral hygiene using a toothbrush and fluoride toothpaste begin?

4. What groups of children are at high risk for dental caries?

5. What are the indications for the application of fluoride varnish?

Case Resolution

The parents of the infant should be reassured that the absence of teeth in their 9-month-old daughter is normal. Her first tooth may not appear for a few months. Provided she is growing and developing normally, there is no cause for concern.

# Chapter 32

Normal Development and Developmental Surveillance, Screening, and Evaluation

Questions

CASE STUDY

The parents of a 12-month-old girl are concerned that she is not yet walking. They report that she sat independently at 7 months and began crawling at 8 months. She can pull herself up to stand while holding on to furniture but is not cruising. Her birth and medical history are unremarkable. The physical examination is within normal limits, and review of your records reveals no concerns on a developmental screening test administered at 9 months of age.

1. How is developmental delay in children defined?

2. What are the 5 major domains in which development is assessed?

3. How should you advise the parents in the case study about the acquisition of gross motor skills, such as walking?

4. What developmental screening tests could you administer to further assess her development?

5. What is the appropriate next step for the child with suspected developmental delay?

Case Resolution

The parents of the child may be reassured that their child is developing normally for her age. Although most children begin walking at approximately 12 months of age, commencement of walking anytime up to age 18 months is considered to be within normal limits. The American Academy of Pediatrics recommends that standardized developmental screening be performed when developmental surveillance identifies high-risk factors for developmental delay and routinely at the 9-, 18-, and 24- or 30-month health maintenance visits. Administration of a formal screening tool is likely not necessary at this visit but can be considered again at the 15-month visit if lack of progression in the child’s gross motor skills is noted or if any other risk factor is identified at that time.

# Chapter 33

Speech and Language   
Development: Normal Patterns and Common Disorders

CASE STUDY

The parents of a 3-year-old girl bring her to see you. They are concerned because their daughter has only an 8- to 10-word vocabulary, and she does not put words together into phrases or sentences. They report that she seems to have no hearing problems; she responds to her name and follows directions well.

In general, she has been in good health. Aside from delayed speech, her development is normal. During the physical examination, which is also normal, the girl does not speak.

Questions

1. What expressive language skills should a child have by age 3 years?

2. Approximately how many words should 3-year-olds have in their vocabulary?

3. By what age should children’s speech be intelligible to strangers at least 75% of the time?

4. What factors may be associated with delayed speech development?

5. What tests are used to assess children’s hearing, speech, and language development?

Case Resolution

The child described in the case history has delayed development of expressive language skills. At the age of 3 years, she should have a 250-word vocabulary and speak in 3-word sentences; in addition, her speech should be primarily intelligible to strangers. Because of the delay, she should be immediately referred for a hearing assessment and speech and language evaluation. Hearing loss is an important diagnosis to rule out. Simply because her parents report no hearing problems does not mean she does not have a deficit. She may have learned to respond to nonverbal cues, or she may hear only some things.

# Chapter 34

Literacy Promotion in Pediatric Practice

CASE STUDY

You are seeing a 9-month-old boy for the first time for a well-child visit. The child has a completely negative history and seems to be thriving. The patient’s mother works part-time as a housekeeper, and his father is a seasonal worker in agriculture. The infant is up-to-date on his immunizations. The family history is noncontributory, but his mother mentions that her 6-year-old daughter needs to repeat kindergarten. Teachers have advised the mother that her eldest daughter is cooperative, but she has not yet mastered letters and early reading. Mother says she is not concerned because the teacher said with “a little more time” her daughter will be fine.

Questions

1. How are reading and language developmentally related?

2. What are the consequences of low literacy when children get older?

3. How are literacy and health outcomes related?

4. What are the components of the Reach Out and Read model?

5. What can pediatricians do to promote literacy in families?

Case Resolution

You speak to the mother about the benefits of reading aloud to her children. You give the 9-month-old a board book with pictures of baby faces. You demonstrate, showing how the 9-month-old is interested in the pictures and engages with vocalizations as you describe each page. At the end of the visit you also find a gently used rhyming book that the mother can take home for her 6-year-old daughter.

# Chapter 35

Gifted Children

CASE STUDY

A 3-year-old girl is brought to your office for well-child care. Her parents believe that she may be gifted, because she is much more advanced than her sister was at the same age. The parents report that their younger daughter walked at 11 months of age and was speaking in 2-word sentences by 18 months. She is very “verbal,” has a precocious vocabulary, and constantly asks difficult questions such as, “How do voices come over a radio?” The girl stays at home with her mother during the day but recently began attending a preschool program 2 mornings a week. She enjoys preschool and plays well with children her own age. She also likes to play with her sister’s friends from school.

The girl is engaging and talkative. She asks questions about what you are doing during the examination and demonstrates impressive knowledge of anatomy. The physical examination is normal.

Questions

1. How are gifted children identified?

2. What characteristics are associated with giftedness?

3. What are the best approaches for optimizing the education of gifted children?

4. What is the role of the pediatrician in the care of gifted children?

Case Resolution

The physician should reaffirm the parents’ observations that their child is gifted. The parents should be encouraged to explore programs in which their daughter’s talents may be fostered, but they also should be advised that even gifted children need time for play and unstructured activities.

# Chapter 36

Children and School: A Primer for the Practitioner

Questions

CASE STUDY

An 8-year-old boy is brought in by his parents in early April because his third-grade teacher informed them that he is currently failing in school and may not be promoted to the fourth grade. Review of his medical, developmental, and school histories reveals that he was a colicky infant and continued to be difficult as a toddler. His language skills were somewhat delayed, although not enough to warrant a full evaluation. His preschool teacher felt that he was easily distracted when doing seat work. In kindergarten, he had some difficulty learning all his letters, numbers, and sounds. Early reading was difficult in kindergarten and first grade but improved by the end of the first-grade year. Second grade was fairly good, except for continued concerns about inattention and distractibility. By third grade he was struggling more, especially with writing, and not performing within grade level in several areas. He also continued to be inattentive and distractible in his classroom.

Examination reveals a well-developed and well-nourished boy whose growth parameters are within normal limits for his age. He appears somewhat anxious in the examination room, and when asked about school he tells you that he feels he is just not as smart as the other children in his class.

1. Should grade retention be considered when a child is failing in school?

2. What are the potential disadvantages of grade retention?

3. What are factors to consider when evaluating a child for school failure?

4. What steps should be taken at this time by the parents and the school for the boy in this case study?

5. How could early intervention have affected the boy’s performance?

Case Resolution

The pediatrician should advise the family to request in writing a psychoeducational evaluation for special education eligibility from the school. The pediatrician can also institute an evaluation for attention-deficit/hyperactivity disorder by gathering information from the family.

# Chapter 37

Immunizations

Questions

CASE STUDY

A 20-month-old boy who emigrated with his family from Botswana because his mother is attending graduate school at a local university is brought to the office for a checkup. He has his World Health Organization Expanded Programme immunization card from his homeland showing that he received a BCG vaccine at birth; 3 doses of diphtheria, tetanus toxoids, and pertussis vaccine at 2, 4, and 6 months of age; 3 doses of live oral poliovirus vaccine at 2, 3, and 4 months of age; 3 doses of hepatitis B vaccine at birth and at 2 and 9 months of age; and a monovalent measles vaccine at 9 months of age. It is August, and his parents plan to enroll him in child care; they are eager for him to receive any needed vaccines. His parents report that he is a healthy boy with no immune problems. They report that they will be living with his uncle, who has HIV infection. The boy has had a 3-day history of a runny nose, cough, and tactile fever. His physical examination is normal other than mild clear coryza and a rectal temperature of 37.9°C (100.3°F). The physician must determine what vaccinations may be given to the patient.

1. What are the different kinds of vaccines?

2. What are the mechanisms of action for live and inactivated vaccines?

3. What are the routinely recommended immunizations for healthy pediatric populations?

4. What are the considerations for immunizing select pediatric populations, such as immunocompromised children?

5. What are reliable resources for up-to-date information about immunizations?

6. How can a pediatrician address parental vaccine refusal?

Case Resolution

The boy was appropriately immunized for Botswana recommendations through the age of 9 months; however, his immunizations are considered delayed according to the US schedule. He is past due for the fourth dose of diphtheria, tetanus toxoids, and acellular pertussis (DTaP), and the first dose of measles, mumps, and rubella (MMR) and varicella-zoster virus (VZV) vaccines. Additionally, he has not received hepatitis A vaccine (HAV) or any conjugate vaccines. The dose of monovalent measles vaccine does not change his need to receive 2 doses of MMR and VZV vaccines after age 12 months in the United States. His uncle’s immune status does not affect his receipt of MMR or VZV vaccines. His current respiratory illness is considered mild, and he does not have significant fever (<38°C [<100.4°F]); thus, his illness does not preclude him from receiving immunizations.

During this visit, he may receive DTaP, the first dose of MMR plus VZV (alone or as a combination MMRV); 1 dose of *Haemophilus influenzae* type b conjugate vaccine; dose 1 of 2 of conjugate pneumococcal vaccine, which should be administered 2 months apart; and dose 1 of 2 of HAV, which should be administered at least 6 months apart. He is too old to receive the oral rotavirus vaccine. All Vaccine Information Statements should be provided. The patient is scheduled to return in 2 months (ie, in October) for his next dose of conjugate pneumococcal vaccine and dose 1 of 2 of inactivated influenza vaccine. He will need a fourth dose of inactivated poliovirus vaccine before school age.

# Chapter 38

Health Maintenance in Older Children and Adolescents

CASE STUDY

Before a 13-year-old girl enters a new school, she is required to undergo a physical examination. She has not seen a primary care physician in many years and has been healthy. Currently she has no medical complaints. Her examination is completely normal.

Questions

1. What are the important components of the history and physical examination in healthy older children and adolescents?

2. What immunizations are recommended for older children and adolescents?

3. What laboratory tests should be performed at health maintenance visits? Why?

4. What are significant topics to cover for anticipatory guidance in this age group?

Case Resolution

The young adolescent should first be interviewed with the parent and then alone. Her medical and psychosocial history should be reviewed. A complete physical examination should be performed as well as a pelvic examination if she is sexually active and has a history of lower abdominal pain, abnormal vaginal bleeding, or vaginal discharge. If she is sexually active and asymptomatic or not sexually active, only general laboratory screening tests should be performed and the results reviewed with the patient. The remainder of the visit should be spent discussing issues such as nutrition, exercise, illicit substance use, sexuality and sexual activity, and safety. Results of the physical examination and screening tests should then be discussed with the parent or guardian who accompanied her to the office. If necessary, a follow-up visit should be scheduled. Otherwise, the adolescent should be seen annually.

# Chapter 39

Health Care for International Adoptees

CASE STUDY

Jaxon is a 14-month-old boy adopted from Thailand. His biological mother was a 26-year-old commercial sex worker who entered a maternity house during her pregnancy to receive care and relinquish the baby for adoption. His mother reported that she was physically and sexually abused as a child and became a street child at age 14 years. She used illicit drugs 5 years previously but none since. She identifies the father as a European customer but has no other information. Jaxon was born at 32 weeks’ gestational age and was placed in an incubator but did not have any respiratory problems. He has been in foster care in the home of a Thai family with his care supervised by an internationally respected adoption organization. He was selected by his parents at the age of 4 months, and they have received monthly progress reports on his growth, development, and medical status. Reportedly, he has had several “colds” and 1 ear infection but otherwise has been growing and developing well. Before departure to pick up Jaxon, his adoptive parents met with you to prepare for his arrival.

The parents placed a call to you from the Bangkok airport because Jaxon would not stop crying. They report that on the morning his foster mother left him with them, he cried quite a bit but had settled by bedtime and seemed to be adjusting well during the week. Over the past 12 hours preceding the telephone consultation, however, he has not stopped crying, and he refuses to eat. He has been drooling, and they question if his discomfort is related to teething; they have not noticed any other symptoms of teething, however. They are gravely concerned that he does not like them and is having attachment difficulties.

Questions

1. What factors influence the prevalence of international adoption?

2. What are some of the potential health problems of the international adoptee?

3. What is an appropriate medical evaluation for the international adoptee?

4. What is the role of the pediatrician in caring for the child and newly formed family?

Case Resolution

In the telephone consultation, the parents report that they have not observed any injuries and no areas seem tender when they examine Jaxon, per your suggestion. They elect to give him some diphenhydramine and fly home with the plan to make an office visit on arrival. Although they are exhausted, they travel directly to your office for an acute care visit. They report that Jaxon remained inconsolable and that the flight home was miserable for him and everyone around them. On entering the examination room, Jaxon was screaming and noticeably uncomfortable but trying to find comfort in his father’s arms.

His temperature was 38.9°C (102°F) axillary, his pulse rate was 144 beats per minute, and his respiratory rate was 30 breaths per minute. His examination was notable for extensive oral and pharyngeal vesicular lesions with erythema, but he had no labial lesions. He had multiple shotty cervical nodes, and the rest of the examination was noncontributory. A diagnosis of herpangina was made. He was given a dose of ibuprofen, and 15 minutes later he was quiet, able to swallow electrolyte solution, and cuddling in his father’s arms. His parents were reassured that this was an acute infection and not an indication of poor bonding; in fact, Jaxon was already seeking comfort from them. Additional testing for infections included obtaining antibodies to HIV, rapid plasma reagin for syphilis, and hepatitis C and hepatitis B panel, which was especially important because of his biological mother’s history of being a commercial sex worker. Other testing included complete blood cell count, lead level, and thyroid function. An appointment was made for 2 weeks hence to complete the assessment, including a developmental assessment; this evaluation was deferred because he was acutely ill at the time of the initial office visit.

# Chapter 40

Health Care Needs of  
Children in Foster Care

CASE STUDY

A 13-year-old girl is brought to your office by her foster parent for a general physical examination. The foster parent states that the girl has been living in her home for the past 2 weeks. When the child was initially brought by the social worker, she was wearing dirty clothes and smelled of cigarette smoke. Neither medical records nor immunization records are available for your review, and the teenager is not sure the last time she saw a doctor. The girl states that she often missed school to help care for her sick grandmother. She gets very quiet when you ask about her family. She states that she misses her younger sisters but does not mention anything about her mother. When asked about her mother, she states that she does not care to see her because her mother “cares more about her boyfriend than she does me and my sisters.” The only history known by the foster parent is that the child was failing school because of frequent absences and that there were extensive amounts of pornography and drug paraphernalia found in the home at the time of removal. The social worker also told the foster mother that an expired albuterol inhaler was found in the home with the girl’s name on it. The foster parent states that the teenager seems “sad” all the time, and 2 nights previously when asked about school, she began to cry and ran to her room.

On physical examination, the patient is sad appearing and quiet, but cooperative. Her weight is in the 25th percentile and her height is in the 50th percentile for her age. She has poor dentition with multiple dental caries. She has a few basilar wheezes on lung examination and has scattered bruises on her anterior shins; no other abnormalities were noted.

Questions

1. What are the medical, psychological, and behavioral issues that commonly affect children in the foster care system?

2. What is the role of the primary care pediatrician in providing a medical home for the child in foster care?

3. How does a child’s legal status as a child in foster care affect how medical care can be delivered?

4. What are the appropriate health care referrals and community resources to access for a patient who is in foster care?

Case Resolution

This case illustrates many of the common issues that affect children when they are placed in foster care. Medical and immunization records are frequently unavailable to the medical examiner, and chronic medical needs have often gone unmet. This child’s poor hygiene and frequent school absences point to a history of parental neglect and, given the presence of drug paraphernalia, her mother likely was involved with substance abuse.

This child should undergo a thorough assessment for behavioral problems, developmental delays, and education-related disabilities. The child states that she does not want to return to her parents’ care, but she still misses her family members. This may be remedied through her child welfare plan, for example, by arranging for her to remain in contact with her siblings throughout their foster placement. Because of her experiences in her prior home environment, she has depressive symptoms and is likely to have other unmet mental health needs, which require referral to a mental health provider. She also needs evaluation by her new school system to determine her specific educational needs and appropriate grade placement.

The girl has poor dentition, which is a common finding in the foster care population, and she requires a referral for dental care. The presence of mild wheezing in a child who states that she feels fine otherwise is a likely marker for untreated reactive airway disease and may be a reflection of poor continuity of medical care prior to her placement. Routine adolescent care should be initiated at this visit, including a thorough history of drug and alcohol use as well as reproductive history. Anticipatory guidance on menstruation, sexuality, and drug use should be considered. Her vaccines should be updated. She should be scheduled for a revisit in 2 months for the second human papillomavirus vaccine and to establish an ongoing relationship, monitor her asthma, and talk about any concerns she may have.

# Chapter 41

Working With Immigrant Children and Their Families

CASE STUDY

A 7-year-old boy presents with vomiting and clinical signs of dehydration. The family thinks he has empacho (a Latin American folk illness). You tell the family that you suspect that he has viral gastroenteritis. You want to draw some blood samples for testing and give him fluids intravenously. The parents are skeptical; they refuse the blood work and want to leave, against medical advice.

Questions

1. What are the ways in which different immigrant families view illness and health?

2. What are barriers to accessing health care that children in immigrant families face?

3. What questions help the physician understand the health beliefs of immigrant families?

4. What are the considerations when interacting with parents who do not speak English?

Case Resolution

You reach an agreement with the family for a community healer to come and perform a therapeutic massage while allowing you to place an intravenous line and administer fluids. The patient is significantly improved after the massage and intravenous fluids. The family appreciates that you respected their beliefs and agrees to return for a routine health supervision visit in 2 weeks.

# Chapter 42

Well-Child Care for  
Children With Trisomy 21 (Down Syndrome)

CASE STUDY

A 6-month-old girl with trisomy 21 (ie, Down syndrome) whom you have known since birth is brought to your office for well-child care. She and her parents have been doing well, although she has had several episodes of upper respiratory infections. Her medical history is significant for a small ventricular septal defect, which has since closed spontaneously, as well as 1 episode of otitis media at 5 months of age. Her weight gain has been good—along the 25th percentile on the growth chart for children with Down syndrome. Currently, she sleeps through the night and has a bowel movement once a day. She has received all the recommended immunizations for her age without any problems.

The infant smiles appropriately, grasps and shakes hand toys, and has some head control but cannot roll from supine to prone position. Since 1 month of age, she has been enrolled in an early intervention program. An occupational therapist visits her at home twice a month.

On physical examination, she has typical facial features consistent with trisomy 21, a single palmar crease on each hand, and mild generalized hypotonia. Her eyes have symmetric movement, and her tympanic membranes are clear. She has no cardiac murmurs.

Questions

1. What is the prevalence of trisomy 21 (ie, Down syndrome) in the general population? What is the association of maternal age with trisomy 21?

2. What are the clinical manifestations of Down syndrome?

3. What medical conditions are associated with trisomy 21 in the newborn period, during childhood, and in adolescence? When should screening tests for these conditions be performed?

4. What is the role of early intervention services for patients with trisomy 21 and their families?

5. What specific psychosocial issues should be included in the anticipatory guidance and health education provided by the physician?

6. What is the prognosis for the child with trisomy 21?

Case Resolution

The family should be encouraged by the healthy progress of the patient. For this visit, anticipatory guidance should consist of a review of early intervention services, available resources, and general support services for the patient and her family. The increased risk for upper respiratory infections and otitis media should be reviewed. Medical screening should include thyroid screening, subjective hearing screening, and a formal evaluation by a pediatric ophthalmologist. If the results are normal, the next visit should take place 3 months hence.

# Chapter 43

Well-Child Care   
for Preterm Infants

CASE STUDY

A 10-week-old girl was discharged from the neonatal intensive care unit (NICU) 2 weeks previously, where she had resided since birth. She was the 780 g (27.5 oz) product of a 26-week gestation born via spontaneous vaginal delivery to a 32-year-old primigravida. The perinatal course was complicated by premature rupture of membranes and maternal amnionitis. Several aspects of the neonatal course were significant, including respiratory distress that required surfactant therapy and 2 weeks of endotracheal intubation; a grade 2 intraventricular hemorrhage diagnosed at 1 week after birth; hyperbilirubinemia, which was treated with phototherapy; several episodes of apnea, presumably associated with the preterm birth; and a history of poor oral intake with slow weight gain.

The parents have a few questions about her feeding schedule and discontinuing the apnea monitor, but they feel relatively comfortable caring for their daughter at home. She is feeding well (2 oz of 22 cal/oz post-discharge formula for preterm infants every 2–3 hours) and, according to the family, is becoming progressively more alert. She sleeps on her back in a crib.

The infant’s weight gain has averaged 25 g (0.9 oz) per day. The remainder of the physical examination is normal, with the exception of dolichocephaly and esotropia of the left eye.

Questions

1. What constitutes well-child care in preterm infants?

2. What are the nutritional requirements of preterm infants in the months after discharge from the hospital?

3. What information must be considered in the nutritional assessment and developmental screening of preterm infants?

4. What immunization schedule is appropriate for preterm infants? Do they require any special immunizations?

5. What specific conditions or illnesses are more likely to affect preterm infants than term infants?

Case Resolution

The current feeding schedule for the infant should be continued because appropriate weight gain has occurred. Iron and multivitamin supplementation is recommended until the infant is consuming 750 mL/day of formula. Discontinuation of the apnea monitor can be considered after the infant reaches term gestation (40 weeks) and has been event-free. The first set of immunizations should be administered at this visit, and any questions the family has should be answered. A follow-up visit should be scheduled for 3 to 4 weeks hence. Formal developmental testing should be arranged to take place in 1 to 2 months, and the parents should be encouraged to continue placing the infant on her back alone in her crib to sleep.

# Chapter 44

Care of Children With Special Health Care Needs

CASE STUDY

A 5-year-old girl with a physical disability is brought to your office for her first visit for a routine physical examination for school entrance. She was the result of a full-term pregnancy complicated by an elevated screening α-fetoprotein and subsequent fetal ultrasonography that demonstrated a lumbar myelomeningocele and no hydrocephalus. Delivery was by elective cesarean section, with an Apgar score of 9 at both 1 minute and 5 minutes, to a 25-year-old gravida 1, para 0–1 mother. The mother used no illicit drugs, alcohol, or any other medications during pregnancy but was not on vitamins or folate supplementation at the time of conception. At delivery, a low lumbar spinal malformation was noted, with no other malformations. The quadriceps muscles were strong, but the feet demonstrated a rocker-bottom deformity.

Shortly after birth, the myelomeningocele malformation was closed by neurosurgery. Later, the girl underwent orthopedic surgical release of Achilles tendon contracture and currently is ambulatory with the use of ankle-foot orthoses. She has a neurogenic bladder and requires intermittent catheterization. She also has chronic constipation that is managed with a bowel regimen. Her cognitive function is age-appropriate.

She will be entering a school program for the first time since moving to this community and has not established care with any specialists.

Questions

1. Why is early identification and intervention important for newborns, infants, and children with special health care needs?

2. What role do primary care physicians play in the care of children with special health care needs?

3. What are the appropriate referrals and resources for families of children with special health care needs?

4. What specific psychosocial issues should be addressed whenever children with special health care needs visit their primary care physician?

Case Resolution

Although the girl’s medical condition of low lumbar spina bifida seems stable, the physician should inquire about any ongoing problems or concerns. A complete examination should be done. Routine screening laboratory tests and immunizations required for school entry should be performed. The family should be evaluated for financial stability and support services. The mother should be placed on folate supplementation for prevention of recurrence in future children. The patient should be referred to the local spina bifida clinic for comprehensive specialist care by orthopedists, urologists, and physical therapists. Integration into the regular classroom should be recommended. The school should be contacted to arrange for adaptive physical education and for intermittent catheterization by school nursing personnel. A follow-up visit is scheduled with the primary care physician in 2 months to review the child’s integration into services.

# Chapter 45

Injury Prevention

CASE STUDY

A 16-year-old girl was brought to the emergency department after being rescued from her submerged vehicle. The girl was texting a friend while driving and crashed into a pond. After several weeks in the intensive care unit, she was transferred out for rehabilitative care from her injury.

Questions

1. How pervasive are childhood injuries?

2. What are different approaches to injury prevention? How could this particular injury have been prevented?

3. What is TIPP and how should it be used when counseling families?

4. What are some general guidelines for effective injury prevention counseling?

5. How does a child’s age affect the advice offered to a family?

Case Resolution

Your experience with this case prompts you to become more involved in advocacy about adolescent drivers and accident prevention. You have the opportunity to engage families in injury prevention as well as to influence the individuals who manufacture the products and pass the laws that affect children’s risk of injury.

Some of the factors that influenced the injury and outcome include a significantly increased risk of fatal crash for adolescent drivers, evidence that graduated driver licensure laws and other restrictions on young drivers reduce deaths, passage and enforcement of laws pertaining to cell phone use in cars, vehicle design, road conditions, availability of emergency rescue services and access to specialized pediatric care, and pediatrician counseling to caregivers and adolescents advocating family driving rules.

# Chapter 46

Fostering Self-esteem

CASE STUDY

A 4-year-old girl is brought to the office for her annual physical examination. She has been healthy. The mother is concerned that her daughter is shy and does not seem eager to play with other children. She does not attend child care or group activities outside the home, and she spends most of her time with her mother, grandmother, and 7-year-old sister, with whom she gets along well. Both parents work outside the home.

The girl’s medical history is unremarkable with the exception of an episode of bronchiolitis at 8 months of age. She has reached all her developmental milestones at appropriate ages, speaks clearly in sentences, can dress herself without supervision, and can balance on 1 foot with no difficulty.

Her physical examination is entirely normal. At times during the visit, her mother sharply tells her to “Sit up straight,” “Stop fidgeting,” and “Act your age.” The mother rolls her eyes as she says, “She doesn’t know how to act.”

Questions

1. What is self-esteem?

2. How do parents or other caregivers affect the development of their child’s self-esteem positively and negatively?

3. What role does discipline play in the development of self-esteem?

4. How does illness affect self-esteem?

5. What suggestions can primary care physicians give parents and other caregivers to help foster positive self-esteem in children?

Case Resolution

The health maintenance visit provides an opportunity for promoting parental support of the child’s self-esteem. The pediatrician can interview the shy child and demonstrate the use of sincere general compliments to coax the child’s engagement. The interviewer might invite her to speak about herself (eg, “What are your favorite things?” “What is your favorite color?”), while using humor and enthusiasm to engage her in sharing some details. This models interactions, which allows the child to demonstrate her autonomy, with the hope that this approach will be repeated by the parent at home. The health professional can reassure the girl and her mother that the child’s overall health and development are normal. Additionally, after expressing appreciation for the careful, protective experience the parent has managed for the child, the physician should attempt to normalize the child’s behavior for the parent. Although it may be important to directly discuss shyness in a developmental context, whether the girl is shy is not certain, and the parent’s sense of deficiencies should be challenged by a view of developing competencies. Concrete suggestions should be offered for positive communication, such as minimizing “don’t” and “no” phrases and being cognizant of how the parent speaks about the daughter. The parent should be encouraged to think about the child’s temperament when considering involvement in multiple school activities but be reminded that the parent has not yet seen the child in an independent setting, where she may negotiate quite well and show sociability not yet evident at home.

# Chapter 47

Sibling Rivalry

CASE STUDY

An 8-year-old boy is brought to the office for an annual checkup. During the course of the evaluation, his mother reports that her son and his 6-year-old sister are always fighting. She says her son hits his sister and pulls her hair, and nothing she does prevents them from fighting. The boy is a B student and has no behavior problems in school. The medical history and physical examination are completely normal.

Questions

1. What is sibling rivalry?

2. What is the physician’s role in counseling a family about sibling rivalry?

3. What is the role of anticipatory guidance in preparing older children for the birth of a new sister or brother?

4. How does birth order and an individual’s sex affect sibling rivalry?

5. What are some of the unique considerations related to sibling rivalry between stepsiblings?

6. What are some practical suggestions to share with parents about sibling rivalry?

Case Resolution

The mother should be advised not to serve as a referee. She should learn how to validate each child’s feelings about the other. The physician can help her by talking to her son about his feelings. The mother should be advised to have a discussion with her children during which each child has the opportunity to define areas of conflict and the means to resolve them. The mother has the right and responsibility to prohibit physical fighting and encourage verbal dialogue.

# Chapter 48

Toilet Training

CASE STUDY

A 2-year-old boy is brought to the office for a well-child visit. His mother, who is about to begin toilet training her son, asks your advice. The mother says that by the time her daughter was 2 years old she was already toilet trained, and she wants to know if training her son will be any different. The boy was the product of a full-term pregnancy and a normal delivery. He has been in good health, and his immunizations are current. He is developmentally normal, uses some 2-word phrases, and has been walking since the age of 13 months. His physical examination is normal.

Questions

1. When should the physician begin discussing toilet training with parents?

2. What factors help determine a child’s readiness to begin toilet training?

3. Is toilet training in boys different from toilet training in girls?

4. What are some of the methods used to toilet train children?

Case Resolution

The mother in the case history should be advised that this is a good time to initiate the toilet training process. She should be told that boys, as a group, are successfully toilet trained at a later age than girls. Her son can be assessed to determine whether he can follow at least 8 of the following 10 instructions: “Bring me the ball,” “Go to the door,” “Sit on the chair,” “Pick up the doll,” “Open the door,” “Give the pen to your mom,” “Put the ball on the table,” “Put the doll on the floor,” “Take off your shoes,” “Open the book.” If the boy can do so, the mother should be given the stepwise approach to initiating the toilet training process. The mother should be informed that it may take months to years to achieve nighttime continence after daytime continence is achieved.

# Chapter 49

Crying and Colic

CASE STUDY

The parents of a 2-week-old neonate bring their son to the emergency department because he has been crying persistently for the past 4 hours. He has no history of fever, vomiting, diarrhea, upper respiratory tract infection, or change in feeding. The newborn is breastfed.

On physical examination, the neonate appears well developed and well nourished. His weight is 3.37 kg (7.4 lb), which is 0.20 kg (0.4 lb) more than when he was born. Although he is fussy and crying, he is afebrile with normal vital signs. The remainder of the physical examination is within normal limits.

Questions

1. What is the normal crying pattern in newborns and young infants?

2. What is colic?

3. What conditions are associated with prolonged crying in newborns and young infants?

4. What are key factors in the history of crying newborns and infants?

5. What tests or studies, if any, are indicated in crying newborns and infants?

6. What are a few of the management strategies that can be used by parents to soothe their crying or colicky newborns and infants?

Case Resolution

The newborn is experiencing an acute episode of unexplained crying. Despite a normal physical examination, he was observed for 1 hour in the emergency department because his crying persisted. A septic workup was done, which resulted in the diagnosis of a urinary tract infection.

# Chapter 50

Discipline

CASE STUDY

A 3-year-old boy is being threatened with expulsion from preschool because he is biting the other children. His mother states that he is very active and aggressive toward other children. In addition, his language development is delayed. She is at her wits’ end about what to do. The birth history is normal, and the mother denies the use of drugs or cigarettes, but she drank socially before she realized she was pregnant. The medical and family histories are noncontributory, and the physical examination is normal.

Questions

1. What is the definition of discipline?

2. What are the 3 key components of discipline?

3. What is meant by parental monitoring?

4. What are 4 different parenting styles?

5. What strategies can parents use to discipline children?

6. What are the guidelines for using time-out?

7. What is the relationship between corporal punishment and child abuse?

Case Resolution

Further history should be elicited about the mother’s disciplining techniques. It is also significant that the child’s speech is delayed. The boy’s ability to articulate his feelings may be limited, and a formal speech and hearing assessment is warranted. The preschool should be advised that the evaluation is underway. A report from the preschool concerning the boy’s behavior is requested.

# Chapter 51

Temper Tantrums

CASE STUDY

During a routine office visit, the parents of a 3-year-old boy express concern about his recent behavior. They report that whenever he is asked to do something he does not want to do, he throws a “fit.” He cries fiercely, falls to the floor, bangs his hands on the floor, and kicks his feet until his parents give in. He often displays such behavior at bedtime or mealtime if he is asked to turn off the television or eat foods that he does not want. He has 2 to 3 such episodes per week. The parents state that their home life has not changed, and the boy’s teacher reports that he displays no such behaviors at preschool.

Questions

1. At what age are temper tantrums common in children?

2. What aspects of child development contribute to temper tantrums?

3. How do parents’ reactions encourage or discourage temper tantrums?

4. What appropriate management strategies may help control problematic tantrums?

5. What factors or aspects of problematic tantrums may indicate underlying pathology?

6. What referrals, if any, are appropriate for the management of temper tantrums?

Case Resolution

The child seems to be having normal, age-appropriate tantrums. The boy’s tantrums occur when he is asked to do something that he does not want to do. In these situations, the parents should try to ignore the tantrums as much as possible and not give in to the child’s wishes.

# Chapter 52

Breath-Holding Spells

CASE STUDY

A 15-month-old girl is brought to the office because of parental concern about seizures. In the past month she has passed out momentarily 3 times. Each episode seems to be precipitated by anger or frustration on her part. Typically, she cries, holds her breath, turns blue, and passes out. Each time she awakens within a few seconds and seems fine. The medical history and family history are unremarkable, and the physical examination is entirely within normal limits.

Questions

1. What are breath-holding spells?

2. What is the differential diagnosis of breath-holding spells?

3. What, if any, laboratory studies are indicated in the evaluation of breath-holding spells?

4. What measures can be taken to prevent breath-holding spells? Are anticonvulsant agents necessary?

5. What are the effects of breath-holding spells on family functioning?

6. What, if any, are the long-term sequelae of breath-holding spells?

Case Resolution

The child has a history and physical examination suggestive of BHSs. The girl’s episodes are consistent with cyanotic BHS. The episodes are preceded by an identifiable emotion, brief in duration, and followed by a rapid recovery of normal consciousness and activity. Assessment of the hemoglobin level revealed mild iron deficiency anemia. The child received iron therapy, and the parents were reassured about the benign nature of BHSs.

# Chapter 53

Fears, Phobias, and Anxiety

CASE STUDY

A 5-year-old girl is brought into the office by her mother, who complains that her daughter has been afraid to sleep alone since the occurrence of an earthquake. The house did not sustain any significant damage, but the entire family was awakened. The mother says that the girl has become more timid. As nighttime approaches, she becomes particularly fearful. She will not stay in her bed, and she is comforted only by sleeping with her parents. In addition, the girl has begun bed-wetting since the earthquake, and the mother wonders whether she should put her daughter in diapers. The physical examination, including vital signs, is normal, except for the observation that the child is very clingy and whiny.

Questions

1. What are normal childhood fears and when do these fears commonly occur?

2. What strategies are used to deal with these fears?

3. What are phobias? What are social phobias?

4. What is school phobia, and how is it best handled?

5. What are common anxiety disorders in children and adolescents?

6. How can families deal with childhood disturbances that emerge after natural and artificial disasters?

Case Resolution

The girl’s fear of sleeping in her bed was triggered by a significant environmental event. Although earthquakes are uncontrollable, the girl can be empowered to cope with manageable aspects of an earthquake as much as possible. She should be assured that in the same situation, many adults probably would also fear sleeping alone. The parents should stock a box with shoes, a flashlight, a radio, and water and place the box under the child’s bed. In addition, they may have their daughter get into her bed and then shake it, simulating the jiggling that she would experience during an earthquake. The girl should also practice getting out of bed and standing in the doorway. To combat the child’s fear of separation during times of natural disaster, the parents should reassure their daughter that they will all be together.

# Chapter 54

Thumb-sucking   
and Other Habits

CASE STUDY

A 5-year-old boy is brought to the office because of thumb-sucking. His mother claims that she has tried nearly everything, including tying his hands at night and using aversive treatments on his thumbs, but nothing has worked. She reports that her son has been teased at school and has few friends. He is in good general health, and his immunizations are up-to-date.

His growth parameters are at the 50th percentile. Except for a callus on the right thumb, the physical examination is normal.

Questions

1. What are common habits in children?

2. What is the significance of transitional objects?

3. What are the consequences of common habits in children?

4. What are strategies used to break children of habits?

5. How are benign habits differentiated from self-injurious behaviors?

Case Resolution

It is important for the physician and the mother to empower the boy to stop thumb-sucking before he finds himself ridiculed by his classmates. He might be allowed to suck his thumb at certain times and in certain places (eg, “You can suck in your room after school for 15 minutes”). Books geared at children and parents to help stop thumb-sucking are recommended, and the boy is rewarded for times when he is not sucking his thumb.

# Chapter 55

Enuresis

CASE STUDY

A 9-year-old boy who is in good general health is evaluated for a history of bed-wetting. He is the product of a normal pregnancy and delivery, and he achieved his developmental milestones at the appropriate time. The boy was toilet trained by the age of 3 years, but he has never been dry at night for more than several days at a time. Bed-wetting occurs at least 3 to 4 times a week even if he is fluid restricted after 6:00 pm. The boy never wets himself during the day, has normal stools, and is an average student. His father had enuresis that resolved by the time he was 12 years old.

The boy’s physical examination is entirely normal.

Questions

1. What conditions account for the symptoms of enuresis?

2. What is the appropriate evaluation of children with enuresis?

3. What is the relationship between enuresis and emotional stresses or psychosocial disorders?

4. What management plans are available for enuresis?

5. How do physicians decide which management technique is appropriate for which patients?

Case Resolution

The boy has primary nocturnal enuresis. The history of childhood enuresis in the father is significant. Two management options, behavior modification and treatment with desmopressin or imipramine, can be discussed with the family. The child’s symptoms will probably spontaneously improve over time.

# Chapter 56

Encopresis

CASE STUDY

A 7-year-old boy is seen with a report of soiling his underpants. His mother states that he has never been completely toilet trained and that stool-related accidents occur at least 2 to 3 times a week, mainly during the day. The boy rarely has a spontaneous bowel movement without assistance. He sits on the toilet for just a few minutes and passes small, pellet-like stools. His mother has not previously sought medical care for this problem.

The boy is quite fidgety during the physical examination. His vital signs are normal, and his height and weight are at the 25th percentile. His abdomen is soft but distended, with palpable loops of stool-filled bowel. A small amount of stool is present around the anus and in the boy’s underpants. Digital examination of the rectum reveals hard stool. The rectal tone is normal, as is the rest of the physical examination.

Questions

1. What is the definition of encopresis?

2. What is the difference between retentive and nonretentive encopresis?

3. What are some physiologic conditions that contribute to encopresis?

4. What conditions may be mistaken for encopresis?

Case Resolution

The boy exhibits typical manifestations of retentive encopresis. His condition should be managed with the use of laxatives, stool softeners, and toilet retraining with a star chart. The possible diagnosis of attention-deficit/hyperactivity disorder should be addressed separately but may be contributing to his inability to attend to the task of toileting.

# Chapter 57

Culturally Competent Care for Diverse Populations: Sexual Orientation and Gender Expression

CASE STUDY

The mother of an 11-year-old boy makes an appointment with you to discuss her son’s “behavior problems.” He is the youngest of 4 children and is doing well in fifth grade, but she is concerned that her son does not like typical “male” activities. He dropped out of Little League, will not join other sports teams, and prefers riding his bike by himself. Additionally, he still likes dressing up in costumes and prefers playing with girls rather than boys. His mother finally mentions that she is worried that her son will be gay and is wondering what she can do to help him develop “normally.”

Questions

1. What is meant by gender expression, sexual orientation, and gender identity?

2. What is the role of the pediatrician in counseling parents and patients about gender expression, sexual orientation, and gender identity?

3. What are some of the consequences of discrimination against sexual orientation and gender identity minority populations?

4. How can the physician help families support their children who are lesbian, gay, bisexual, transgender, or queer/questioning (LGBTQ+)?

Case Resolution

The child is displaying behaviors that do not meet his mother’s expectations for male gender expression. The pediatrician should let the mother know that gender expression, sexual orientation, and gender identity are separate and distinct and that a broad range of normal exists for each of these. Neither sexual orientation nor gender identity can be predicted from the behaviors described.

Many adolescents go through a period of questioning their sexuality. The child’s mother should be informed that no matter her child’s sexual orientation or gender identity, a major risk factor for engaging in unsafe behaviors in adolescence is parental rejection. Attempts to change a person’s sexual orientation do not work and are in fact dangerous; they are associated with significant depression and thoughts of suicide. For this child to develop normally, he needs supportive adults in his life—ideally, his parents—who accept and love him.

Particularly because of this child’s social withdrawal, it is important to determine if he has been a victim of bullying at school or on sports teams, or if he is experiencing depression. An appointment for the child should be scheduled, and some time should be spent during the visit without his parents present. This will provide an opportunity to evaluate the child’s strengths and note if he is displaying any signs of anxiety or depression. Any of the following sample questions about gender identity and sexual orientation asked of the child should be adapted to his developmental stage. Concerning gender, “What is your gender? What pronouns do you use?” “Do you consider yourself male, female, both, or neither?” “Some people feel as though there is a mismatch between their sex assigned at birth and the gender they feel themselves to be. Does that resonate with you?” Concerning sexual orientation, “To whom are you attracted?” “Do you have a partner or partners”? “What is the sex of your partner(s)?” “Are you intimate with your partner?” “What parts of your body do you use for intimacy?”

The child should be assured that his responses to these questions will be kept confidential. The pediatrician could also facilitate a discussion between the patient and his parents while modeling support and acceptance. An ongoing dialogue with the mother will also help the pediatrician determine if or when referrals to support and educational groups, such as PFLAG (formerly parents, families and friends of lesbians and gays), are appropriate.

# Chapter 58

Reproductive Health

CASE STUDY

An 18-year-old female college student in good health comes in for a routine health maintenance visit during her spring break. She is unaccompanied by her parents and has no complaints, stating that she just needs a checkup. She enjoys college, passed all her fall and winter classes, and has some new friends. She denies tobacco use but says many of her friends smoke e-cigarettes. She occasionally drinks alcohol and has tried marijuana once. Although she is not currently sexually active, she is interested in discussing contraceptive options. Her last menstrual period, which occurred 2 weeks previously, was normal. She is taking no medications. Her physical examination is entirely normal.

Questions

1. What issues are important to discuss with adolescents at reproductive health maintenance visits?

2. What are the indications for a complete pelvic examination?

3. When is a Papanicolaou test indicated as a part of the reproductive health visit?

4. What methods of contraception are most successful in adolescent patients? What factors about each method should be considered?

5. What are the legal issues involved in prescribing contraception to minors in the absence of parental consent?

Case Resolution

A more detailed history should be obtained about the adolescent’s menstrual history and daily activities (eg, With whom does she spend most of her time? What does she like to do in her spare time?). Additionally, the indications for a pelvic examination should be reviewed because most teenagers are not familiar with the new recommendations to delay the Pap smear until 21 years of age. Because the patient does not meet the new criteria for a Pap smear, the pelvic examination can be deferred. A discussion should follow about barrier and hormonal methods of contraception and their role in the prevention of pregnancy and STIs. Particular attention should be paid to the use of long-acting reversible contraceptives. Emergency contraception should also be reviewed with the patient. Written information as well as useful website addresses should be given to the adolescent for future reference. A follow-up visit should be scheduled for sometime in the next few months, especially if the patient decides to begin contraception

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# Chapter 59

Vaginitis

CASE STUDY

An 11-year-old girl is brought to your office with vaginal itching for 1 week and a yellow discharge on her underwear for the past 4 days. The girl reports no associated abdominal pain, vomiting, or diarrhea. She has no urinary problems and denies any history of sexual abuse. Although she occasionally bathes with bubble bath, she most often takes showers. Except for the vaginal complaint, she is healthy, and she takes no medications.

The physical examination is notable for a soft, nontender abdomen with no organomegaly. Bowel sounds are audible in all quadrants. The genitalia are sexual maturity rating (ie, Tanner stage) 2. The labia majora and minora and the clitoris all appear normal, and the hymen is annular in shape with a smooth rim. A scant amount of yellow discharge, along with minimal perihymenal erythema, is noted at the vaginal introitus. The anal examination is normal, with an intact anal wink.

Questions

1. What are the most common causes of vaginal discharge in prepubescent girls? In pubescent girls?

2. What basic history-related information must be obtained from all females whose chief complaint is vaginal discharge?

3. What specific methods are used to perform a genital examination in prepubescent girls? In pubescent girls?

4. What is the appropriate laboratory evaluation for prepubescent girls who complain of vaginal discharge? For pubescent girls? How does this evaluation differ for pubescent girls who are sexually active?

5. What are the various treatment options for girls with vaginitis?

Case Resolution

The girl and her parents should be assured that the discharge is consistent with a nonspecific inflammatory process. She should be instructed to take sitz baths for 1 week, discontinue bubble baths and the use of soap in the genital area, and wear loose-fitting clothes and cotton underwear. The girl should be reexamined in 1 to 2 weeks for resolution of her symptoms. No laboratory studies or medications are warranted at this time.

# Chapter 60

Sexually Transmitted Infections

CASE STUDY

A 17-year-old boy presents with a small red lesion on the tip of his penis. He noticed an area of erythema a few weeks previously, but it resolved spontaneously. He reports no fever, myalgia, headache, dysuria, or urethral discharge. He is sexually active and only occasionally uses a condom. He did not use a condom during his last sexual encounter 2 weeks previously, however, because his partner uses oral contraception. The adolescent has never been treated for any sexually transmitted infection (STI) and is otherwise healthy. His partners are exclusively female.

On examination, he is a sexual maturity rating (ie, Tanner stage) 4 circumcised male with a 2- to 3-mm vesicle on the glans penis. Minimal erythema is present at the base of the lesion, and no urethral discharge is evident. The testicles are descended bilaterally, and no masses are palpable. Bilateral shotty, nontender, inguinal adenopathy is evident.

Questions

1. What conditions are associated with vesicles in the genital area?

2. What risk factors are associated with the acquisition of sexually transmitted infections during adolescence?

3. What screening tests should be performed in the patient with suspected sexually transmitted infection?

4. What recommendations about partners of the patient with sexually transmitted infection should be given?

5. What issues of confidentiality are important to address with the adolescent who seeks treatment for a sexually transmitted infection?

Case Resolution

A diagnosis of HSV-1 and HSV-2 infection can be made clinically. The diagnosis can be confirmed by unroofing a vesicle and gently swabbing the ulcer to examine for HSV via polymerase chain reaction testing. The adolescent should be counseled about HSV and its general mode of transmission, the natural history of primary versus recurrent infection, and the role of antiviral agents. A urine sample also should be sent for nucleic acid amplification testing for the detection of gonorrhea and chlamydia. A serum rapid plasma reagin or venereal disease research laboratory test should be performed as well as a thorough assessment for HIV risk. Testing for HIV should be strongly encouraged, allowing the patient time to ask questions or decline testing. The adolescent should be given a return appointment for 1 to 2 weeks hence to review laboratory results, discuss possible treatment options for recurrent HSV-1 and HSV-2 infection, and explore risk-reduction behavior. Depending on the results of the remainder of the STI screening tests, the adolescent should be followed every 3 to 6 months.

# Chapter 61

Menstrual Disorders

CASE STUDY

A 16-year-old girl presents with a 9-day history of vaginal bleeding. She has no history of abdominal pain, nausea, vomiting, fever, dysuria, or anorexia, and she reports no dizziness or syncope. Her menses usually lasts 4 to 5 days and, in general, occurs monthly. Her last menstrual period was 3 weeks ago and was normal in duration and flow. Menarche occurred at 14 years of age. She is sexually active, has had 2 partners, and reportedly uses a condom “most of the time.” Neither she nor her current partner has ever been diagnosed with or treated for a sexually transmitted infection. She has no family history of blood dyscrasia or cancer, has no history of chronic illness, and takes no medications.

On physical examination, she is in no acute distress. Her temperature is 36.9°C (98.4°F). Her heart rate is 100 beats/min, and her blood pressure is 110/60 mm Hg. Her body mass index is at the 50th percentile. The physical examination, including a pelvic examination, is unremarkable except for minimal blood noted at the vaginal introitus.

Questions

1. What menstrual disorders commonly affect adolescent girls?

2. What factors contribute to the manifestation of menstrual disorders, particularly during adolescence?

3. What relevant menstrual history should be obtained from the adolescent?

4. What options are available for managing primary dysmenorrhea?

5. How is abnormal uterine bleeding managed in the adolescent patient?

Case Resolution

More information should be obtained to exclude the numerous other causes of abnormal uterine bleeding in the adolescent before a diagnosis of anovulatory uterine bleeding can be made. Questions about breast tenderness, galactorrhea, weight loss, fatigue, visual changes, prolonged bleeding, and easy bruising can be particularly important. If the adolescent has no other symptoms, a hemoglobin or hematocrit as well as a complete blood cell count and a pregnancy test should be performed. An endocervical, vaginal, or urine specimen should be sent for nucleic acid amplification testing for gonorrhea and chlamydia. Depending on the severity of anemia and the desire for contraception, the adolescent should be placed on twice-daily iron supplementation and oral combined hormonal therapy for at least 3 months.

# Chapter 62

Disorders of the Breast

Questions

CASE STUDY

A 2-year-old girl is brought to the office for bilateral breast swelling first noticed 3 weeks previously by her mother. The swelling is nontender and does not appear to be increasing in size. No history exists of galactorrhea. The child is otherwise healthy, takes no medications, and is not using any estrogen-containing creams or other over-the-counter products or supplements.

On physical examination, vital signs are normal, and the child is at the 50th percentile for height and weight. A 1.5-cm, firm, nontender mass is palpated below her left nipple. Below the right nipple, a 1-cm, nontender mass of similar consistency is present. There is no discharge from either nipple and no areolar widening. The abdomen is soft, with no masses palpated. The genitalia are those of a normal prepubescent female with no pubic hair and vaginal mucosa that appears red and not estrogenized.

1. What is premature thelarche, and how can it be differentiated from true precocious puberty?

2. What are the most common causes of breast hypertrophy in the infant?

3. When does pubertal breast development normally occur in females?

4. What are the most common causes of breast masses in adolescent females, and how should they be managed?

5. How can physiologic pubertal gynecomastia be differentiated from pathologic causes of gynecomastia in adolescent males?

Case Resolution

The child has a diagnosis of premature thelarche. She has no known exposure to exogenous sources of estrogen or alternative therapies that are associated with breast growth and has isolated breast tissue development with no other secondary signs of pubertal maturation. Her parents should be informed of this diagnosis and reassured that the condition is self-limited and does not indicate that the child is starting puberty. The child should be scheduled for a follow-up visit in 3 to 4 months to remeasure the breast buds and reexamine the genitalia for the appearance of pubic hair as well as to monitor the patient’s linear growth.

# Chapter 63

Substance Use/Abuse

CASE STUDY

A 17-year-old male is brought to your office by his father with a chief report of chronic cough. You have followed this patient and his siblings for several years and know the family quite well. The father appears very concerned about “this cough that just won’t go away.” The adolescent is not concerned about the cough, however, and reports no associated symptoms, such as fever, sore throat, chest pain, or sinus pain. You ask the father to step out of the room for the rest of the interview and the physical examination.

On further questioning, the patient reports that he vapes (ie, smokes electronic [e-] cigarettes) daily and has tried marijuana as well as cocaine. He denies regular use of these substances but reports exposure to these drugs at parties and when he spends time with “certain friends.” The adolescent is now in the 11th grade, attends school regularly, and thinks school is “OK.” His grades are average to above average, but he thinks he might fail 1 class this semester. Although he formerly played baseball, he stopped last year. He hopes to get a part-time job at a local fast-food restaurant this summer. Currently, he is sexually active with only females of his age and uses condoms occasionally. He denies suicidal ideation and exposure to any firearms.

On physical examination, he appears healthy with an occasional dry cough. He is afebrile, and his respiratory rate, heart rate, and blood pressure are normal. Pertinent findings on examination include slight conjunctival injection bilaterally, nasal turbinate erythema and edema, and mild erythema of the posterior pharynx. The patient is negative for tonsillar hypertrophy. The remainder of the examination is within normal limits.

Questions

1. What are the most common manifestations of substance use/abuse in adolescents?

2. What are the risk factors associated with substance use/abuse in adolescents?

3. What other conditions must be considered when evaluating adolescents with a history of chronic substance use/abuse?

4. What laboratory evaluations, if any, should be performed for the adolescent with suspected substance use/abuse?

5. What are the specific consequences of short- and long-term use/abuse of substances such as alcohol, marijuana, cocaine, opiates, and hallucinogens?

Case Resolution

The adolescent is at high risk for continued substance use/abuse because of his association with friends who use drugs as well as his own ongoing tobacco use, possible school failure, and recent change in extracurricular activities (ie, dropping out of baseball). The physical examination findings also are consistent with his smoking history. The physician should review these risk factors with the teenager in private and acknowledge the difficulty in removing oneself from such an environment. The adolescent’s motivation to change his behavior should be assessed, and referrals to special intervention programs can be discussed. Regardless of the outcome, the physician should continue to see the teenager at an agreed-on interval to monitor his ability to quit smoking and change his high-risk behavior.

# Chapter 64

Eating Disorders

CASE STUDY

A 16-year-old girl is brought to the office by her mother because the mother feels that her daughter is too thin and always appears tired. The mother reports that her daughter does not eat much at dinner and generally says she is not hungry. Recently, the girl bought diet pills that were advertised online. The teenager claims that she has not taken the pills, so she does not understand why her mother is so upset. She says she feels fine and considers herself healthy because she has recently become a vegetarian.

The girl is a 10th-grade student at a local public school and attends classes regularly, although her friends are occasionally truant. She is involved in the drill team, swim team, and student council. She has many friends who have “nicer” figures than she does. Neither she nor her friends smoke tobacco or use drugs, but they occasionally drink alcohol at parties. The girl is not sexually active and denies a history of abuse. Her menstrual periods are irregular, with the last occurring approximately 3 months prior to this office visit.

She currently lives with her mother, father, and 2 younger siblings. Although things are “OK” at home, she thinks her parents are too strict and do not trust her. They have just begun to allow her to date, but she dislikes that she has a curfew.

The physical examination is significant for a thin physique, and vital signs are normal. On the growth chart, her weight is at the 15th percentile and her height is at the 75th percentile; her body mass index (BMI) is 17 (10th percentile). Her weight at a previous visit was at the 40th percentile. The remainder of the physical examination is unremarkable.

Questions

1. What are the common characteristics of disordered eating in adolescents?

2. What are the important historical points to include when interviewing the patient with suspected eating disorder? Which teenagers are considered at risk?

3. How is the diagnosis of anorexia nervosa and bulimia nervosa made?

4. What is the treatment plan for the adolescent with eating disorder?

5. What are the medical complications of anorexia nervosa and bulimia nervosa?

6. What is the prognosis for these conditions? How can the primary care physician help improve the outcome?

Case Resolution

Although the adolescent may not currently meet strict criteria for the diagnosis of AN, her preoccupation with dieting in the context of weight loss and a BMI of 17 is worrisome. Your concerns about the patient’s documented weight loss, menstrual dysfunction, and current eating and dieting behaviors should be discussed openly with the teenager and her family. General laboratory tests should be performed. The adolescent should be referred to a mental health professional and registered dietician with experience in the management of eating disorders for further evaluation. The emphasis should be on the teenager’s overall health and well-being. She should be followed frequently until her weight and eating behaviors have reached the mutually agreed-on goal by all professionals involved in her care, after which she should continue to be seen at regular intervals by her primary care physician.

# Chapter 65

Body Modification: Tattooing and Body Piercing

CASE STUDY

A 16-year-old girl comes to your office for her annual physical examination. Although the girl was previously healthy, her mother is concerned that the girl seems irritable and unwilling recently to participate in family events. The adolescent is currently in 10th grade at a local public school, gets As and Bs in most subjects, is a member of the volleyball team, and has just begun working part-time at a movie theater. Both her parents are employed, and the girl gets along well with her 19-year-old sister, who is currently in college, and her 14-year-old brother. She has many friends in the neighborhood as well as at school.

You interview the adolescent alone and learn that she occasionally smokes marijuana, has tried cocaine on 1 occasion, and attends parties at which many people are drinking alcohol. She has been sexually active in the past but is not currently. She denies depression and describes her mood as generally happy, except when she is forced to spend what she believes is excessive time with her family instead of with friends.

On physical examination, the adolescent’s height and weight are in the 50th percentile for age. Her body mass index is 21. Vital signs are normal. You note a small tattoo at her right hip area. The girl’s mother is unaware of its presence, according to the teenager. She obtained it a few months prior while visiting her sister in college.

Questions

1. What is the epidemiology of body modification in adolescents and young adults?

2. What is the motivation for obtaining tattoos and body piercing in this age group, and is there an association with high-risk behavior?

3. What techniques are used to place tattoos and perform body piercing?

4. What are possible adverse consequences of body modification, and what should be done to manage them?

5. How can the primary care physician assist an adolescent in making a safe and healthy decision about body modification?

Case Resolution

Because the presence of 1 tattoo may be associated with a likelihood to obtain another tattoo, the primary care physician should review safety guidelines for obtaining a tattoo and body piercing with the adolescent and offer the teenager educational material or refer her to select websites to reinforce the discussion. The immunization status of the teenager also should be assessed, with particular attention to tetanus and hepatitis A and B. Additionally, in private discussion with the teenager, the physician should reiterate any concern about the adolescent’s current high-risk behavior and its possible consequences. It also may be worthwhile to discuss with the teenager the pros and cons of telling her parents about the tattoo before they find out inadvertently.

# Chapter 66

Depression and Suicide   
in Adolescents

CASE STUDY

A 15-year-old girl is brought to your office by her mother with the chief report of easy fatigability. The mother is concerned because her daughter is always tired, although several other physicians have told her that the girl is healthy. The adolescent, who states no complaints or concerns, appears quite shy. She is currently in the 10th grade, likes school, receives average grades, and speaks English and Spanish. The mother, a single parent, moved to the United States from El Salvador approximately 2 years ago with her 2 daughters. Currently, they are living with relatives in a two-bedroom apartment. The mother is employed as a housekeeper, and the patient and her sister help their mother clean homes on weekends. During the week they make dinner for the rest of the family as a means of contributing to the rent. When you speak to the girl alone, she acknowledges she has a few friends at school and adamantly denies any drug, alcohol, or tobacco use. She has never been sexually active and reports no history of sexual or physical abuse. She scores 11 on the 9-item Patient Health Questionnaire (PHQ-9). The physical examination is entirely normal, although the girl’s affect appears somewhat flat.

Questions

1. What is the significance of nonspecific symptoms, such as fatigue, during adolescence?

2. What factors contribute to depression in the adolescent?

3. What are the classic signs and symptoms of depression in the adolescent?

4. What are some important points to cover in the history when interviewing the adolescent with suspected depression?

5. What is the purpose of the depression/suicide screening tool (eg, Patient Health Questionnaire-9)? How should the results be interpreted and used?

6. How is the risk of suicide assessed in the adolescent patient?

7. How should suicidal behavior (ie, suicide attempts) be managed in the adolescent?

Case Resolution

The girl’s symptoms may be indicative of depression, because she has a flat affect and seems to be somewhat isolated (ie, insufficient time for friends, recent move to the United States). After much inquiry, she seems to be at low risk for suicide; however, her PHQ-9 score of 11 indicates that she is at moderate risk of depression. The physician should continue to inquire about symptoms of depression and ask her directly about suicidal behaviors, then arrange for cognitive behavioral therapy and close follow up. If depression is confirmed and does not improve with therapy, medication may be indicated. If the girl becomes suicidal, she and her family should be referred to an emergency department for an emergent mental health evaluation and possible intervention, including hospital admission.

# Chapter 67

Fever and Bacteremia

CASE STUDY

An 8-month-old girl is brought to the emergency department with a 2-day history of fever and increased fussiness. She is irritable but consolable by her parents. Her parents believe that her immunizations are current, but they do not have the immunization record with them. On examination, she has a rectal temperature of 39.5°C (103.1°F). The rest of the physical examination is within normal limits, and no source for the fever is apparent.

Questions

1. What are the serious bacterial infections in febrile newborns and infants?

2. What has been the effect of conjugated vaccines against *Haemophilus influenzae* and *Streptococcus* pneumoniae on the incidence of bacteremia and meningitis in febrile newborns and infants?

3. What are the challenges in differentiating between serious and benign febrile illnesses in young children?

4. What diagnostic studies are recommended in the evaluation of febrile newborns, infants, and children?

5. When are empiric antibiotics indicated, and when should febrile newborns and infants be hospitalized?

Case Resolution

The infant is irritable and has a high fever of unknown source. Her vaccine status is uncertain. No source of her infection is revealed on physical examination. Because her fever is 39.5°C (103.1°F), she is irritable, and her immune status is uncertain, a complete laboratory assessment, including a lumbar puncture, should be performed. Management should be determined after all laboratory data are available. If laboratory assessment reveals a focus of infection, such as a urinary tract infection, she should be managed with antibiotics. If laboratory assessment does not reveal a source for the fever and her white blood cell count is greater than 15,000 cells/mm3 or her absolute neutrophil count is greater than 10,000 cells/mm3, she can be administered an intramuscular injection of ceftriaxone as expectant management for occult bacteremia and undergo reevaluation in 24 hours or undergo treatment without antibiotics.

# Chapter 68

Emerging Infectious Diseases

CASE STUDY

A previously healthy 8-year-old boy is brought to his pediatrician’s office in late August with 2 days of fever, fatigue, headache, myalgias, nausea, and gingival bleeding. On the morning of the visit his mother noted a rash on his legs. He lives with his family in the Northeastern United States but recently returned from a 1-week vacation in Key West, Florida. He engaged in extensive outdoor activities, including snorkeling, hiking, and several evening boat trips, and he sustained multiple mosquito bites during the trip. He received all routine childhood immunizations, denies any allergies, and takes no medications. No other family members are ill.

On physical examination, his temperature is 38.7°C (101.7°F) and he is generally ill-appearing. He has photophobia and mild meningismus, and a petechial rash is noted on his trunk and lower extremities. Laboratory studies sent from the office reveal microscopic hematuria, leukopenia (white blood cell count 2,800 cells/mm3), and thrombocytopenia (platelet count 85,000 platelets/mm3).

Questions

1. What is an emerging or reemerging infection?

2. What pathogens are associated with emerging infections?

3. What are some common or emerging infectious diseases that may cause the clinical syndrome in the case scenario?

4. How does recent travel influence the differential diagnosis?

5. What resources can a primary care physician access to help in making a diagnosis?

Case Resolution

The patient was hospitalized and underwent an extensive diagnostic workup for infectious causes of fever and rash. A lumbar puncture revealed mild lymphocytic pleocytosis. The patient received 2 days of empiric antibiotic therapy, which was discontinued when cultures were negative for 48 hours. The pediatrician notified the local health department, which facilitated laboratory testing performed by the state public health laboratory, and the CDC.

Serologic testing at the state health department was positive for immunoglobulin M antibodies against dengue virus. This was confirmed on samples sent to the CDC; additionally, based on reverse-transcriptase polymerase chain reaction testing, cerebrospinal fluid sent to the CDC was found to be positive for dengue virus serotype 1. The patient recovered uneventfully in the following 2 weeks, but a public health investigation was launched that eventually resulted in the identification of 27 total cases of dengue fever acquired in Key West. Subsequently, an adult serosurvey was conducted indicating recent exposure to dengue in 5.4% of the adults studied.

This outbreak, which occurred in 2009 to 2010, represented the first reported cases of dengue fever acquired in Florida since 1934. Although dengue is the most common virus transmitted by mosquitoes in the world, no cases had been acquired in the continental United States between 1946 and 1980 and, subsequently, only sporadic cases were known along the United States (specifically, Texas)–Mexico border. Reported dengue cases have increased 4-fold in Latin America since 1980, and incidence has risen steadily among returning travelers from the United States. Dengue represents a truly reemerging infectious disease, and primary care physicians should be aware of its rising incidence.

# Chapter 69

Febrile Seizures

CASE STUDY

A 12-month-old girl is brought to the emergency department by paramedics because she is having a seizure. She is unresponsive and hypertonic, with arched trunk and extended arms and legs that are jerking rhythmically. Her eyes are open, but her gaze is directed upward. She has bubbles of saliva around her lips as well as circumoral cyanosis. Her vital signs are a respiratory rate of 60 breaths/minute, heart rate of 125 beats/minute, blood pressure of 130/78 mm Hg, and temperature of 41.0°C (105.8°F). An assessment of her respiratory status shows that she is moving air in all lung fields, and no evidence exists of upper airway obstruction.

The paramedics inform you that the girl has been convulsing with varying intensity of tone and movements but has remained unresponsive for approximately 6 minutes. Glucometer testing reveals a normal serum glucose level. Blood samples for other tests are sent to the laboratory, and urine is collected. An intravenous (IV) line is started, and the girl is given lorazepam by IV push. Within 2 minutes the movements cease, and her respirations become slow and even. No signs of trauma are evident on physical examination. Her only abnormality other than her unresponsive mental status is an inflamed and bulging right tympanic membrane.

The girl’s parents tell you that she has had a mildly stuffy nose for 2 days but has been afebrile and has seemed to be her usual self. While she was playing she became irritable, and her parents put her in her crib for her nap. Thirty minutes later they heard grunting noises, found her in the midst of a seizure, and called the paramedics. This is the girl’s first seizure. Her father recalls that his mother once told him that he had several “fever seizures” as an infant.

Questions

1. What are the characteristics of simple febrile seizures versus complex febrile seizures?
2. What is the appropriate evaluation of the child with febrile seizure, whether it is the first or a recurrence?
3. What is the recurrence risk for febrile seizure and the risk of developing unprovoked seizures after a febrile seizure?
4. What are the management options for the child with febrile seizure?

Case Resolution

The girl had a somewhat prolonged simple febrile seizure, a diagnosis that was supported by a positive family history for febrile seizures. Her family is educated about treatment options. They are comfortable with a decision to use only rectal diazepam for a subsequent febrile seizure lasting longer than 5 minutes.

# Chapter 70

Respiratory Distress

Questions

CASE STUDY

A 6-month-old boy has been coughing and breathing fast for the past day. This morning he refused feeding and has been irritable. On examination, the infant is fussy. He has an oxygen saturation of 92%, a respiratory rate of 60 breaths per minute, a pulse of 140 beats per minute, and a normal blood pressure and temperature. Additionally, he has nasal flaring, intercostal and supraclavicular retractions, and occasional grunting.

1. What are the causes of respiratory distress in infants and children?

2. What are the signs and symptoms of respiratory distress in infants and children?

3. What are the signs and symptoms of impending respiratory failure in infants and children?

4. What are the critical interventions for infants and children in respiratory distress?

Case Resolution

The fussy infant has obvious signs of respiratory distress, including tachypnea, tachycardia, grunting, nasal flaring, and retractions. The differential diagnosis includes foreign body, infection (eg, croup, bronchiolitis), and reactive airways disease. The infant is placed in a position of comfort seated on his mother’s lap and provided blow-by oxygen and a treatment with albuterol. A portable chest radiograph is obtained that shows mild hyperinflation but no infiltrate. His pulse oximetry reveals a level of 94%. A respiratory viral panel is obtained and the results reveal the presence of respiratory syncytial virus. The infant falls asleep, and his respiratory and heart rates return to normal. He is diagnosed with bronchiolitis and discharged home, and his mother is advised to return should he experience any further respiratory distress.

# Chapter 71

Stridor and Croup

CASE STUDY

A 2-year-old boy has been breathing noisily for 1 day. For the past 3 days he has had a “cold,” with a runny nose, fever (temperature up to 100.4°F [38°C]), and slight cough. The cough has gradually worsened and now has a barking quality.

On examination, the child is sitting up and has a respiratory rate of 48 breaths per minute with marked inspiratory stridor and an occasional barking cough. His other vital signs include an oxygen saturation of 95%, heart rate of 100 beats per minute, and temperature of 101.2°F (38.4°C). He has intercostal retractions, his breath sounds are slightly decreased bilaterally, and his skin is pale. The remainder of the examination is normal.

Questions

1. What is stridor?
2. What are the common causes of stridor?

3. What is the pathophysiology of viral croup?

4. How are children with croup managed?

Case Resolution

The 2-year-old with the antecedent infection and stridor has the classic signs of mild to moderate croup. Initially, adequate ventilation, oxygenation, and circulation should be ensured. Following this, other diagnostic studies and specific therapy can be considered, such as nasal suctioning, dexamethasone, and racemic epinephrine. A period of posttreatment observation is warranted. If his condition improves, close outpatient management may be considered.

# Chapter 72

Sudden Unexpected Infant Death and Brief Resolved Unexplained Events

Questions

CASE STUDY

A 4-month-old boy is brought to the emergency department by paramedics after being found blue and not breathing by his mother. He had previously been well except for a mild upper respiratory infection. His mother fed him at 2:00 am and found him blue and lifeless lying next to her in bed at 6:00 am. Although the mother smoked cigarettes during pregnancy, the pregnancy and delivery were otherwise normal. The infant received the appropriate immunizations at 2 months of age.

1. What factors are associated with sudden unexpected infant death?

2. What is the relationship between sudden infant death syndrome and sudden unexpected infant death?

3. What should parents be advised to help prevent sudden unexpected infant death?

4. What is the appropriate evaluation of the infant who presents with a brief resolved unexplained event?

5. Why are sudden unexpected infant death and brief resolved unexplained events not related?

6. What services are available to families whose infant has died from sudden unexpected infant death?

Case Resolution

The infant succumbed to SUID. Despite resuscitative efforts by the paramedics, he could not be revived. The mother was advised of the diagnosis of suspected SUID and referred to appropriate agencies and support groups. The coroner was notified of the case. The mother was advised that a coroner investigator would visit her to learn more about the circumstances surrounding the sudden death of her infant.

# Chapter 73

Syncope

CASE STUDY

A 16-year-old girl presents to your office with the chief report of fainting at marching band practice on the day prior. She has been in marching band for the past 2 years and states that nothing like this has occurred before. She is concerned about fainting again. She tells you that she “wasn’t able to eat or drink” on the day she fainted because she was too busy studying for finals.

She reports that practice was fairly routine up until her fainting episode. Prior to the episode, she was standing in the field, listening to her teacher give instructions for a new routine. The last thing she remembers after standing awhile was feeling lightheaded and sweaty. The next thing she can recall is lying on the ground with her classmates and teacher around her. She denies any chest pain, shortness of breath, or palpitations prior to the episode. Her teacher told her she was unconscious for approximately 10 to 15 seconds without any shaking of extremities. She was immediately back to baseline after she woke up. She denies incontinence. She says that when she stands up too quickly she sometime feels lightheaded for a few seconds, but she had never fainted before yesterday.

When asked, she denies any past significant medical history. Her mother states that she is very healthy. She has only gone to the emergency department 1 time previously, when she was 2 years old. At that time, she passed out for 30 seconds after crying. She was diagnosed with a breath-holding spell and has not had any other issues since. There is no family history of sudden death and seizures. When questioned alone, she denies use of any illicit drugs or any sexual activity. Her mother asks if it is okay for her to continue to participate in physical activities. She has recently read about sudden death in high school athletes.

The girl’s physical examination is unremarkable, and all vital signs are within normal limits for age. Electrocardiography shows normal sinus rhythm with normal voltages and intervals for her age.

Questions

1. What are the causes of syncope?

2. What workup is recommended to evaluate for syncope?

3. When should patients who experience syncope be referred to a subspecialist?

4. Which pediatric subspecialists assist in the evaluation of a patient with syncope?

5. Which patients presenting with syncope are at greatest risk for sudden death?

Case Resolution

The adolescent girl describes symptoms consistent with vasovagal syncope. Her family history, physical examination, and electrocardiogram are not suggestive of underlying cardiac disease. The patient and her family should be informed that certain factors, such as dehydration, fatigue, and hunger, can precipitate syncope. Behavioral changes, such as eating breakfast and drinking plenty of water, should be implemented to prevent or limit recurrence of syncope. The patient should be encouraged to carry a water bottle in school, and if necessary a physician note should be sent to the school to allow her to do so. Management with medications is not indicated at this time.

# Chapter 74

Shock

CASE STUDY

A 7-month-old boy is brought in by his parents with a history of vomiting and diarrhea for 2 days. He also has had a low-grade fever and, according to his parents, has become progressively more listless. Vital signs show a heart rate of 200 beats per minute, respiratory rate of 30 breaths per minute, and blood pressure of 72/35 mm Hg. The infant is lethargic, and his skin is mottled. Capillary refill time is 3 seconds. His anterior fontanelle is sunken, and his mucous membranes are dry. The abdomen is flat and nontender, and hyperactive bowel sounds are heard.

Questions

1. What is shock, and what clinical signs can help in the recognition and assessment of shock?

2. What are the stages of shock?

3. What are the different types of shock, and what are the possible causes of each type?

4. What are the management priorities in treating shock?

Case Resolution

The boy is in barely compensated (ie, not hypotensive) hypovolemic shock resulting from diarrhea, vomiting, and dehydration. He should receive oxygen and cardiorespiratory monitoring, and intravenous access should be rapidly established. Isotonic fluid boluses of 20 mL/kg should be given, with reassessment performed between each bolus. As much as 80 mL/kg may be needed before improvements in mentation, vital signs, pulses, and skin signs are evident.

# Chapter 75

Approach to the Traumatized Child

CASE STUDY

A 6-year-old boy is brought to the emergency department after being struck by an automobile while crossing the street. He was found unconscious at the scene. Initial evaluation shows that he has an altered level of consciousness, shallow respirations, ecchymosis across the upper abdomen, and a deformed, swollen left thigh. The pediatric emergency physician is called in to discuss an initial assessment and management plan for the injured child with the trauma surgeon.

Questions

1. What are the most common mechanisms of injury responsible for trauma in children?

2. What are some of the physiologic differences between adults and children that make children more susceptible to certain types of injury?

3. Which areas of the body are most likely to be injured in a typical automobile versus pedestrian collision?

4. What are the components of a primary survey in pediatric trauma patients?

5. What radiologic and laboratory studies should be performed in children with multiple injuries?

Case Resolution

The 6-year-old boy sustained multiple trauma from an automobile versus pedestrian collision. He presents with altered level of consciousness; respiratory failure (ie, shallow respirations); possible internal organ injury, which has the potential to result in shock; and probable fracture of the left femur, which may also contribute to the development of shock secondary to hemorrhage. These injuries are identified based on a primary and secondary survey. Proper management includes stabilization of the cervical spine, airway management, aggressive early shock treatment with fluid replacement, and a vigilant search for additional injuries. Continued reassessment is also an integral part of emergency department stabilization. Because of the presence of multisystem injuries, after initial stabilization the patient is transferred to a regional pediatric trauma center for extended care.

# Chapter 76

Abdominal Trauma

CASE STUDY

An 8-year-old boy who was riding downhill on a bicycle crashed into a tree and was transported to the local trauma center by emergency medical services. On arrival he was brought to the pediatric emergency department, where the paramedics report that the bike handlebars struck the child’s abdomen. The boy reports dizziness and vomits several times. Initial vital signs show a heart rate of 135 beats per minute, blood pressure of 105/60 mm Hg, oxygen saturation of 98% on room air, and a respiratory rate of 24 breaths per minute. The abdomen is flat but tender to palpation in the mid-epigastric region and left upper quadrant.

Questions

1. What are the most common mechanisms of intra-abdominal injury in children?

2. What are the diagnostic studies used to evaluate abdominal trauma?

3. What is a simple rule for establishing the lower limit of normal blood pressure in children when assessing a child for shock?

4. What are the basic components of the treatment of shock that occur after abdominal trauma?

Case Resolution

The boy in the case study sustained isolated abdominal trauma. Initial presenting signs and symptoms are concerning for internal organ injury, specifically splenic hematoma, pancreatic injury, internal hemorrhage, and compensated shock (eg, tachycardia, tachypnea). The child is managed with standard initial resuscitation, including fluid repletion. Because serial hemodynamic measurement and hematocrits are stable, he undergoes an abdominal computed tomography scan, which demonstrates a splenic hematoma. A pediatric surgeon is consulted and recommends observation with continued monitoring in the pediatric intensive care unit.

# Chapter 77

Acute Abdomen (Appendicitis)

CASE STUDY

A 10-year-old girl presents with abdominal pain of 24 hours’ duration. The pain began in the periumbilical area and now is located in the right lower quadrant (RLQ). She had 1 bout of emesis but no diarrhea. She has no fever or chills. She also has some pain with voiding. On physical examination, she has a low-grade fever and tachycardia. She is lying still in bed. Her abdomen is nondistended, but she has tenderness to palpation in the RLQ. She also has rebound tenderness and guarding in this area.

Questions

1. What is the differential diagnosis for patients with acute abdominal pain?

2. What is the appropriate workup for children with suspected appendicitis?

3. What is the current management for children with appendicitis?

4. What is the expected postoperative course and possible complications following appendectomy?

Case Resolution

The patient was found to have an elevated white blood cell count with a shift to the left and a small number of white blood cells in the urinalysis. Ultrasonography findings were consistent with acute appendicitis. She was administered intravenous fluids and antibiotics and underwent laparoscopic appendectomy. The postoperative course was unremarkable, and the patient was discharged the next day. She did well in follow-up and was cleared for full activity 2 weeks postoperatively.

# Chapter 78

Head Trauma

CASE STUDY

A 2-year-old girl is playing on a window ledge unsupervised. She pushes the screen out and falls onto the concrete sidewalk below, striking her head. A neighbor reports that she is unconscious for 10 minutes. When paramedics arrive, the girl is awake but lethargic. She is transported to the emergency department. Her vital signs are normal. A scalp hematoma is present, and a depressed area of cranial bone is palpated.

Questions

1. What are the priorities in the initial stabilization and management of pediatric head trauma?

2. What is the difference between primary and secondary brain injury?

3. What are the common signs and symptoms manifested by children with head trauma?

4. What are the various modalities available for management of increased intracranial pressure?

5. What are the scoring systems used in the evaluation of mental status in children with head trauma?

Case Resolution

The young child has a significant mechanism of injury, brief loss of consciousness, and a depressed, altered mental status. Initial physical findings prompt suspicion of a depressed skull fracture and overlying soft tissue injury. Appropriate diagnostic tools after evaluation of circulation, airway, and breathing are cranial computed tomography followed by admission for observation, monitoring, and serial neurologic examination. Surgical repair of the skull fracture may be necessary.

# Chapter 79

Increased Intracranial Pressure

CASE STUDY

A 7-year-old boy has a 2-week history of recurrent vomiting. No fever, abdominal pain, or diarrhea has accompanied the vomiting; the vomiting has no particular relationship to meals; and the boy’s appetite has decreased only slightly. The vomiting has gradually increased in frequency and is occurring every night. The day before this visit there were 4 episodes. The boy’s parents have noticed that their son is generally less active; he spends more time playing on the floor of his room and does not want to ride his bicycle or play with neighborhood friends. Some unsteadiness in the boy’s gait has manifested in the past few days. His parents attribute this to weakness from the vomiting.

The child’s vital signs are normal except for a blood pressure of 130/80 mm Hg. Although the boy is somewhat pale and uncomfortable, he does not appear to be in acute distress. His abdominal examination is unremarkable. His speech is grammatically correct but sparse and hesitant, and he seems inattentive. On lateral and upward gaze the boy has coarse nystagmus, and upward gaze is somewhat limited. Dysconjugate left gaze is apparent, with slight failure of left eye abduction. The left eye does not blink as much as the right eye. Fundal examination discloses elevated discs with indistinct margins. No upper extremity weakness is evident. The right foot is slightly weaker than the left, ankle tone is bilaterally increased, and 3 to 4 beats of clonus on the right and bilateral positive Babinski reflexes are present. Some tremor occurs in both arms with finger-to-nose testing. The boy walks with shuffling, small steps; his gait has a slight lurching character; and he veers to the right.

Questions

1. What clinical situations are associated with increased intracranial pressure?

2. What is the pathophysiological process leading to increased intracranial pressure?

3. What studies are used to evaluate the child with increased intracranial pressure?

4. What measures are used to treat the child with increased intracranial pressure?

Case Resolution

The boy has focal signs and symptoms referable to the posterior fossa brain stem and cerebellum as well as symptoms of increased ICP. Emergent CT shows subacute hydrocephalus resulting from obstruction of CSF flow produced by a large mass in the cerebellum and brain stem on the left side. He begins taking dexamethasone and experiences some relief of increased ICP symptoms. Two days later a ventriculostomy is placed and the mass, which is found to be a medulloblastoma, is surgically removed. Because the ICP eventually subsides over the next few days and decreasing ventriculomegaly is evident on CT, a ventriculoperitoneal shunt is not required and the ventricular drain is removed. The boy’s recovery is otherwise uneventful, and he begins the staging evaluation for medulloblastoma radiotherapy and chemotherapy.

# Chapter 80

Management of Dehydration in Children: Fluid and Electrolyte Therapy

CASE STUDY

A 2-year-old boy presents to your office after 2 days of vomiting and diarrhea. His siblings were both ill a few days previously with similar symptoms. At a well-child visit 2 weeks previously, his weight was 12 kg (26.5 lb). Today his weight is 10.8 kg (23.8 lb). He has a pulse of 130 beats per minute, respiratory rate of 28 breaths per minute, and blood pressure of 85/55 mm Hg. He is alert and responsive but appears tired. He has dry mucous membranes, no tears with crying, and slightly sunken-appearing eyeballs. His capillary refill is 2 seconds. He urinated a small amount approximately 6 hours before this office visit. Despite his mother’s best efforts in your office, the patient has vomited all the oral rehydration therapy given to him. You draw blood for analyzing serum electrolyte, blood urea nitrogen, and creatinine levels and initiate intravenous (IV) rehydration by administering 2 boluses each of 240 mL normal saline (NS) (0.9% sodium chloride solution).

Questions

1. How is the magnitude of dehydration in a child assessed?

2. What are the different types of dehydration?

3. How is the type and amount of fluid required by the dehydrated child determined?

4. How is renal status assessed in the dehydrated child?

5. What is the role of electrolyte and acid-base laboratory studies in the evaluation of the dehydrated child?

Case Resolution

The child has moderate dehydration. Based on clinical assessment and weight change since the boy’s last clinic visit, he is approximately 10% dehydrated. He does not show evidence of shock. His laboratory studies show a sodium level of 140 mEq/L, potassium of 3.7 mEq/L, chloride of 112 mEq/L, bicarbonate of 13 mEq/L, blood urea nitrogen of 13 mg/dL, and creatinine of 0.4 mg/dL. His renal status is likely to be adequate because he is urinating, and blood urea nitrogen and creatinine are normal for the patient’s age. The child’s serum sodium is 140 mEq/L, which is in the isotonic range. The serum potassium is 3.7 mEq/L, which is within normal range; however, this level may not accurately reflect this patient’s total body potassium status. The level may decrease substantially as he is rehydrated and acidosis is corrected, indicating total body potassium depletion. His serum bicarbonate is 13 mEq/L, and his anion gap is 15 [140 – (112 + 13)], which is mildly increased and likely related to ketosis or mild lactic acidosis.

The calculation of this child’s fluid and electrolyte needs is as follows, keeping in mind that his pre-illness weight was 12 kg:

**Maintenance**

**Fluid requirement:** 1,000 mL for first 10 kg + 100 mL for next 2 kg = 1,100 mL.

**Deficit**

**Fluid replacement:** 10% of the child’s weight has been lost during this episode of dehydration = 1,200 mL deficit.

**Ongoing Losses**

**Additional fluid:** Estimate this child’s ongoing losses at 10 mL/kg for each stool. He had 1 loose stool while in the office, so 120 mL of additional fluid is added.

**Sodium:** The sodium content of diarrhea is variable; however, it is usually replaced with 0.9% NS.

**Total fluid needs:** 1,100 mL (maintenance) + 1,200 mL (deficit) + 120 mL (ongoing losses) = 2,420 mL/24 hours.

**Electrolyte Needs**

**Sodium:** 0.9% NS is used based on current recommendation.

**Potassium:** Estimate the child’s maintenance and replacement needs to be 20 mEq K+/1,000 mL fluid provided; this estimate can be modified based on follow-up laboratory values, if necessary.

**Treatment**

In the initial phase of therapy, provide NS 40 mL/kg per hour for approximately 2 hours. During this period, the patient’s heart rate normalizes and he urinates. The initial parenteral phase provides 480 mL fluid as NS (0.9% sodium chloride). This amount of fluid is subtracted from the patient’s total fluid needs. The remaining amount to be provided is 1,940 mL fluid. It is not necessary to prepare a special IV solution; 5% dextrose in 0.9% NS with 20 mEq/L KCl to run at 80 mL per hour is appropriate. As his gastrointestinal symptoms improve, IV therapy is discontinued and oral rehydration therapy is instituted. The patient tolerates the oral rehydration therapy well and is discharged home.

# Chapter 81

Acute Kidney Injury

CASE STUDY

A 10-month-old girl has a 2-day history of fever, vomiting, and watery diarrhea. The child has previously been healthy. Her diet has consisted of infant formula fortified with iron, baby food, and some table food. Since the onset of her illness, she has not been drinking or eating well, and she has thrown up most of what she has eaten. Her mother has tried to give her oral electrolyte solution and apple juice on several occasions but has had limited success. The child has had 8 to 10 watery stools without blood or mucus each day. Her temperature has varied between 37.0°C (98.6°F) and 38.8°C (101.8°F); the mother has given her daughter acetaminophen, which she has vomited up. The girl’s 4-year-old brother and her parents are doing well and have no vomiting or diarrhea.

The physical examination reveals a severely dehydrated (estimated amount 15%), listless infant. Her weight is 9.4 kg (20.7 lb), her height is 74 cm (29.1 in), her temperature is 38.4°C (101.1°F), her heart rate is 168 beats per minute, her respiratory rate is 30 breaths per minute, and her blood pressure is 72/40 mm Hg with an appropriately sized cuff. Capillary refill is 2 to 3 seconds. The skin appears dry, but no rash is present. Head and neck, chest, heart, and abdominal examinations are normal. Pending the results of her blood studies, an intravenous fluid bolus of 180 mL normal saline (20 mL/kg) over 20 to 30 minutes is administered. This is followed by 2 more boluses of 180 mL normal saline each. The girl is catheterized to obtain urine and determine the urine flow rate over the next several hours. A urinalysis is performed.

Questions

1. What are the 3 stages of acute kidney injury?

2. What is the etiology of acute kidney injury?

3. How would the physician assess a patient with acute kidney injury?

4. How would the physician manage a child with acute kidney injury?

5. What are the indications for renal replacement therapy?

Case Resolution

A series of diagnostic studies is performed. The laboratory results are hemoglobin, 13.8 g/dL; hematocrit, 41%; white blood cell count, 12,400/mL; neutrophils, 58%; band forms, 6%; lymphocytes, 32%; monocytes, 3%; and eosinophils, 1%. The platelet count is 277,500 platelets/mL. Serum sodium is 136 mEq/L; potassium, 5.1 mEq/L; chloride, 110 mEq/L; bicarbonate, 10 mEq/L; blood urea nitrogen, 84 mg/dL; creatinine, 2.8 mg/dL; and glucose, 68 mg/dL. The urinalysis reveals a specific gravity of 1.015; trace protein, blood, white blood cell count, and nitrite are all negative; and the sediment has many epithelial cells, 1 to 2 red blood cells, and many granular and pigmented casts. Spot urinary sodium is 65 mEq/L, creatinine is 39 mg/dL, and fractional excretion of sodium is 3.4%.

These results, particularly the increased fractional excretion of sodium, are most consistent with a diagnosis of intrinsic AKI. The history points to prerenal failure initially, after which prolonged hypovolemia contributed to ischemia of the kidneys, resulting in intrinsic renal failure. According to the pRIFLE criteria, the laboratory results indicate that the patient is likely in stage 3 failure. Recovery may take a few days to a few weeks. The patient is admitted to the pediatric step-down unit, where fluids are adjusted according to her urine output and electrolytes are monitored frequently.

# Chapter 82

Ingestions: Diagnosis   
and Management

CASE STUDY

A 2-year-old girl is found by her mother with an open bottle of pills and pill fragments in her hands and mouth. She is rushed to the emergency department. She is sleepy but able to be aroused. The vital signs are temperature of 37.1°C (98.8°F), heart rate of 120 beats per minute, respiratory rate of 12 breaths per minute, and blood pressure of 85/42 mm Hg. The pupils are 2 mm and reactive. Skin color, temperature, and moisture are normal. She has no other medical problems.

Questions

1. What history questions should be asked to help identify the substance ingested?

2. What physical examination findings can offer clues to the substance ingested and the seriousness of the ingestion?

3. What other diagnostic tests might be helpful in treating ingestion patients?

4. What are the management priorities?

Case Resolution

Because the respiratory rate of this 2-year-old is slow and the child exhibits symptoms of miosis and altered level of consciousness narcotic ingestion is suspected, and naloxone is administered. The child becomes more alert, and respiratory rate increases to 24 breaths per minute. The father is instructed to retrieve the bottle, and the substance is found to be a prescription narcotic analgesic left in the house by a recent visitor. The child is given activated charcoal, observed overnight in the hospital, and discharged on the following day without sequelae.

# Chapter 83

Disaster Preparedness

CASE STUDY

A family comes in for a well-child visit with their 7-year-old son and 9-month-old daughter, the latter of whom has complex congenital heart disease. The mother is concerned after a recent tornado in the next town resulted in prolonged power outages. She is wondering what the family might do in this situation. The daughter needs daily breathing treatments and often requires oxygen at nighttime. She is on multiple medications and a special formula. All her specialty doctors are at the children’s hospital, which is more than an hour from their house. She is also concerned because her husband has a seizure disorder that requires medication. She asks whether the family should stay together in a disaster or separate to get her daughter to the children’s hospital.

Questions

1. What are the 4 phases of disaster preparedness with which the pediatrician should be familiar?

2. What should be included in disaster preparedness kits? How should medications for all family members be included?

3. When should a family consider getting a backup generator?

4. What is the role of the local hospital and emergency medical services for the family with a child or children with special health care and critical medical needs?

5. What should the pediatrician recommend to the family about children’s immunization records and important medical history?

6. How does the physician assess for the effect of traumatic events on children and their families?

Case Resolution

The family is relieved to discuss the importance of preparing for a disaster. They now have an idea of what is involved in disaster preparation and feel less vulnerable. They plan to create and store an emergency kit with a 3-day supply of food, water, and medications as well as a first aid kit. Additionally, they will refer to the US Federal Emergency Management Agency application for further recommendations. Together with their pediatrician, they complete an emergency information form for the kit. In the event of a disaster, they plan to stay together. The mother also shares her plan to call their local utility company to identify their house as a priority during a power failure and indicates she will consider purchasing a backup generator. Before leaving the office, the mother shares that her son has been sleeping less since the tornado and does not want to go to school because he is afraid of being away from the family. The pediatrician encourages the family to discuss the boy’s fears while ensuring his safety. Having the son participate in making the emergency kit and creating a family plan may help. A follow-up visit is scheduled to reassess his symptoms and decide if further intervention is needed.

# Chapter 84

Approach to the Child  
With Dysmorphism

CASE STUDY

A 13-year-old boy presents to the office for the first time for an evaluation after moving to the area. His parents note that he has unexplained intellectual disability and has had problems with hyperactivity in school. The pregnancy was uncomplicated and the mother, who was a 32-year-old gravida 1, para 1 at the time of the child’s birth, denies alcohol or drug use or exposure to any teratogens during pregnancy. Delivery was by cesarean section secondary to cephalopelvic disproportion, but the Apgar score was 8 at 1 minute and 9 at 5 minutes. As a newborn the patient was noted to have macrocephaly and to be large for gestational age. He did well in the newborn period and had no feeding problems. Subsequently, he had no significant medical illnesses, including no seizures, but at 1 year of age he was noted to be developmentally delayed. This delay continued, and he has been in special education classes throughout his schooling. Family history is negative for any relatives with disabilities.

On physical examination, the boy is at greater than the 90th percentile for height and weight. He exhibits mild prognathism with large ears. His fingers are hyperextensible. A complete physical examination reveals that his testicles appear large (6 cm) and his sexual maturity rating (ie, Tanner stage) is 3. The rest of the examination is normal.

Questions

1. What history is important to elicit in evaluating a child with dysmorphic features?

2. What are the possible causes of errors in morphogenesis?

3. What clues on physical examination can aid in establishing a specific diagnosis?

4. What laboratory tests can confirm a diagnosis?

5. When is it appropriate to obtain a genetics consultation or refer a patient for genetic counseling?

6. What are the benefits of establishing a specific diagnosis?

Case Resolution

The child has features that are suggestive of a dysmorphic syndrome. The most specific finding on examination is macro-orchidism. This finding is associated with fragile X syndrome. The patient is referred to a genetic specialist for diagnosis and counseling. Specific DNA-based molecular analysis is performed and is positive for a fragile site on the X chromosome at Xq27.3.

The parents are counseled that this condition has an X-linked inheritance mode. The child will have a normal life span but may need early intervention services as well as a special education program later in his schooling. He may not be capable of independent living as an adult. The primary care physician will be notified of the diagnosis and coordinate further services. The parents are encouraged to attend a parents’ support group and consult with experts to learn how their child’s full potential may be realized.

# Chapter 85

Craniofacial Anomalies

CASE STUDY

A boy weighing 3,500 g (7.7 lb) is born by normal spontaneous vaginal delivery to a 28-year-old gravida 3, para 3   
mother after an uncomplicated term gestation. Apgar scores are 9 and 10. On physical examination, the newborn is well but has an incomplete, left-sided unilateral cleft of the lip and palate.

No other family member has such a deformity, but the mother and father are distantly related. The mother had prenatal care. During the pregnancy she had no illnesses, took vitamins but no other medications, and did not smoke, drink alcohol, or use illicit drugs.

The mother is planning to feed the newborn with formula and wonders if she should do anything special. She is also wondering if her son’s lip deformity can be repaired before she takes him home from the hospital. Except for the cleft, the physical examination is normal.

Questions

1. What craniofacial anomalies are common in infants and children?

2. What are feeding considerations in the newborn with cleft lip or palate?

3. What is the appropriate timing of surgery for the more common craniofacial anomalies?

4. What are the major medical problems that children with craniofacial anomalies, particularly clefts of the lip or palate, experience?

5. What is positional plagiocephaly? How is its prevalence related to supine sleeping?

Case Resolution

The newborn has a cleft of the lip and palate. The mother is advised that her newborn can be given formula, and she is given a supply of special feeders. She is also given contact information for a parents’ support group and meets other parents of children with similar anomalies. During her visit to the local craniofacial team, she views pictures of children who have undergone a repair and feels relieved.

The mother is advised about the timing of surgery and told that the surgery will be scheduled when the infant is approximately 10 weeks of age. A follow-up appointment in approximately 2 weeks is arranged. Weight gain is monitored, and the adjustment between the mother and the newborn is assessed.

# Chapter 86

Common Oral Lesions

CASE STUDY

A 7-year-old girl is brought to the office for evaluation of a swelling on the inside of her lower lip of 4 to 6 weeks’ duration. Her mother reports that it increases and decreases in size. The girl states that the swelling is not painful, and she cannot remember hurting her lower lip. On examination, a raised, bluish, nontender swelling measuring 0.8  0.7 cm (0.31 × 0.28 in) is apparent on the mucosa of the lower lip.

Questions

1. What is the differential diagnosis of lip masses and other oral lesions?

2. What laboratory tests or radiologic studies are useful in the evaluation of oral lesions?

3. What management strategies are used to treat cyst-like and other intra-oral lesions?

4. When should children with oral lesions be referred to subspecialists?

Case Resolution

The child seems to have a mucocele. Mucoceles may spontaneously regress; however, if the lesion persists the child should be referred to an oral surgeon or head and neck surgeon for surgical excision of the lesion.

# Chapter 87

Otitis Media

CASE STUDY

An 18-month-old boy is brought to your office with a 2-day history of fever and decreased food intake. He has had symptoms of an upper respiratory infection for the past 4 days but no vomiting or diarrhea. Otherwise, he is healthy.

The child appears tired but not toxic. On physical examination, the vital signs are normal except for a temperature of 38.3°C (101°F). The left tympanic membrane (TM) is erythematous and bulging, with yellow pus behind the membrane. The light reflex is splayed, and mobility is decreased. The right TM is gray and mobile, with a sharp light reflex. The neck is supple with shotty anterior cervical adenopathy, and the lungs are clear.

The child has a 10- to 15-word vocabulary and no one smokes in the household.

Questions

1. What are the differences between acute, persistent, and recurrent otitis media?

2. What factors predispose to the development of ear infections?

3. What are the most common presenting signs and symptoms of ear infection in infants and children?

4. How do the treatment considerations differ between acute, persistent, and recurrent ear infections?

5. What are some of the complications of otitis media?

Case Resolution

The child displays the classic signs and symptoms of AOM: fever, upper respiratory infection, decreased appetite, and an abnormal TM on physical examination. Because of his age and fever and the certainty of diagnosis, he should be treated for 10 days with oral amoxicillin. The prognosis is good given his normal speech development.

# Chapter 88

Hearing Impairments

CASE STUDY

A 15-month-old girl is brought to the office because her parents are concerned that she has not yet begun to speak. The child was the product of a term uncomplicated pregnancy. Her 25-year-old mother, who began to receive regular prenatal care during the second month of gestation, had no documented infections during the pregnancy, took no medications, and denies using illicit drugs or alcohol. The child was delivered at home by a midwife, and a newborn hearing screening was never done. The 27-year-old father is reportedly healthy. The family history is negative for deafness, intellectual disability, and consanguinity.

The child, who is otherwise healthy, has never been hospitalized, but she has had 3 documented ear infections. She rolled over at 4 to 5 months of age, sat at 7 months, and walked at 13 months. She can scribble. The parents report that their daughter smiles appropriately, laughs occasionally, and plays well with other children. As an infant, the girl cooed and babbled, but she now points and grunts to indicate her needs. She does not respond to loud noises by turning her head.

The child’s growth parameters, including head circumference, are normal for age. The remainder of the physical examination is unremarkable.

Questions

1. When should deafness be suspected in infants and children?

2. What is the relationship between hearing loss and language development?

3. What are the major causes of deafness in children?

4. Which neonates are at risk for the development of hearing deficits?

5. What methods are currently available for evaluating hearing in infants and children?

6. What are the important issues to address with families who have infants or children with suspected hearing impairment?

Case Resolution

The child has a history that is classically positive for a hearing deficit. She does not turn to loud noises, she has not developed any specific words, and she indicates her needs nonverbally. Although obvious historical risk factors for hearing loss are lacking, behavioral audiography or brainstem auditory evoked response should be performed by an audiologist. The physician’s suspicion should be discussed with the family, and a follow-up visit should be arranged to review hearing test results as soon as possible.

# Chapter 89

Sore Throat

CASE STUDY

An 8-year-old girl has had a sore throat and fever for 2 days. She also has pain on swallowing, a headache, and a feeling of general malaise but no stridor, drooling, breathing difficulty, or rash. Other than the current illness, the girl is in good health. Although she has had sore throats in the past, she has never had one this severe. One week previously, her mother and father had sore throat and fever that resolved after 5 days with no medication.

The child has a temperature of 39.0°C (102.2°F). The physical examination is normal except for red tonsils with exudate bilaterally, palatal petechiae, and tender cervical lymphadenopathy.

Questions

1. What are the causes of sore throat in children?

2. What is the appropriate evaluation of the child with sore throat? What laboratory tests are necessary?

3. What is the appropriate management for the child with sore throat?

4. When should otolaryngologic consultation be obtained?

Case Resolution

The child has palatal petechiae and tonsillar exudate, which are signs and symptoms consistent with streptococcal pharyngitis. A streptococcal rapid antigen detection test is performed and is positive. The child is treated with oral penicillin. Neither of her parents has sore throat symptoms.

# Chapter 90

Nosebleeds

CASE STUDY

A 3-year-old boy is brought to the office on a winter day. He has had 4 nosebleeds in the past week as well as a cold with rhinorrhea and cough, which began the day before the first nosebleed. The nosebleeds occur at night or during sleep and stop spontaneously or with gentle pressure. Other than the cold and nosebleeds, the boy is in good health. He is active, with bruises over both tibias but none elsewhere. The many cuts and scrapes he has had in the past resulted in minimal bleeding. His family has no history of a bleeding disorder or easy bruising.

The child’s physical examination is entirely normal except for a small amount of blood in the left anterior naris.

Questions

1. What are the common causes of nosebleeds in children?

2. What systemic diseases are associated with nosebleeds?

3. How should nosebleeds be evaluated in children?

4. How should minor and severe nosebleeds be managed in children?

Case Resolution

The boy has experienced several nosebleeds of short duration associated with an upper respiratory infection and winter dryness. His history and physical examination are unremarkable for a bleeding disorder or chronic illness. The small amount of blood in his nose is consistent with an anterior nosebleed originating from the Kiesselbach area, with inflammation and drying of the nasal mucosa. Laboratory tests are not indicated. The parents should be instructed to apply petroleum jelly to the septal portion of the left side of the child’s nose twice a day for 3 to 5 days and to humidify the child’s bedroom. They should also be reassured that their child has a common condition that he will outgrow.

# Chapter 91

Strabismus

Questions

CASE STUDY

The mother of an 8-month-old reports that every time her son looks to either side, his eyes seem crossed. Otherwise, he is growing and developing normally. Symmetric pupillary light reflex, bilateral red reflex, and normal extraocular eye movements in all directions are noted on physical examination of the eyes.

1. What is strabismus?

2. What conditions make an infant’s eyes appear crossed? What is the differential diagnosis?

3. What tests are used in the office evaluation of the child with suspected strabismus?

4. Which infants with crossed eyes require referral for further evaluation and treatment?

Case Resolution

The infant has pseudoesotropia. Although the boy’s eyes appear to deviate, the corneal light reflex and cover tests are normal. Physical examination reveals prominent epicanthal folds and a broad, flat nasal bridge.

# Chapter 92

Infections of the Eye

CASE STUDY

A 10-day-old neonate has a 1-day history of red, watery eyes and nonproductive cough with no fever. She is breastfed and continues to eat well. She was the 3,232-g (7-lb, 2-oz) product of a term gestation, born via normal spontaneous vaginal delivery without complications to a 26-year-old woman. The pregnancy was also uncomplicated. No one at home is ill.

On examination, the infant is afebrile with normal vital signs. Examination of the eyes reveals bilateral conjunctival injection with only a mild amount of purulent discharge. Bilateral red reflexes are present. The remainder of the physical examination is within normal limits.

Questions

1. What is the differential diagnosis of conjunctivitis during and after the neonatal period?

2. What laboratory tests, if any, should be performed in neonates with conjunctivitis?

3. When is chest radiography indicated in the evaluation of the neonate with conjunctivitis?

4. What are management strategies for eye infection in older infants and children?

Case Resolution

The newborn has neonatal conjunctivitis. A Gram stain of the purulent discharge should be examined, and cultures should be taken from the eye and nasopharynx. If the Gram stain result is negative for gonococci, empiric treatment for chlamydia may begin with oral erythromycin.

# Chapter 93

Excessive Tearing

CASE STUDY

A 4-week-old girl has had a persistent watery discharge from both eyes since birth. Her mother has noticed white, crusty material on her daughter’s eyelids for the past few days. The infant’s birth and medical history are unremarkable. Examination of the eyes, including bilateral red reflexes and symmetric extraocular movements, is normal, except that the left eye appears “wetter” than the right.

Questions

1. What is the differential diagnosis of excessive tearing in infancy?

2. How do physical findings such as corneal enlargement and haziness influence the differential diagnosis?

3. How should excessive tearing in infants be managed?

4. When should a child with excessive tearing be referred to an ophthalmologist?

Case Resolution

The infant has dacryostenosis. At this stage, it can be managed with medical treatment, such as local massage and cleansing. If her symptoms persist beyond age 6 months, consultation with an ophthalmologist is recommended.

# Chapter 94

Neck Masses

CASE STUDY

A 2-year-old boy is brought to the office with a 1-day history of an enlarging red, tender “bump” beneath his right mandible. He has a fever (temperature 38.7°C [101.6°F]) and sores around his nose, upper lip, and cheek. These sores have been present for 3 days and have not responded to an over-the-counter antibiotic ointment. He had an upper respiratory tract infection 1 week previously, which has almost entirely resolved. He is otherwise in good health. The family has no history of tuberculosis or recent travel, and the child has not been playing with cats or other animals.

The physical examination is completely normal except for fever, mild rhinorrhea, honey-crusted lesions on the nares and upper lip, and a 4-  5-cm, right submandibular neck mass that is erythematous, warm, and tender to palpation.

Questions

1. What are the common causes of neck masses in children?

2. What steps are involved in the evaluation of the child with a neck mass?

3. What clinical findings suggest that neck masses are neoplasms? When should neck masses be biopsied or removed?

4. What is involved in the treatment of the different types of neck masses in children?

5. When should the child with a neck mass be referred for further consultation?

Case Resolution

The boy has signs and symptoms consistent with submandibular bacterial cervical lymphadenitis. The location of the neck mass in relation to the honey-crusted lesions (nonbullous impetigo) implicates spread of bacteria from the primary site of infection to the lymph nodes. Laboratory tests are unnecessary because the child does not appear septic. Culture of the impetigo may be helpful in determining if the organism causing the infection is MRSA. If the affected lymph node is fluctuant, aspiration of fluid for culture is indicated and incision and drainage should be considered. The child should be treated as an outpatient with an oral antibiotic directed against MRSA and group A -hemolytic streptococcus, such as clindamycin or a combination of cephalexin and trimethoprim-sulfamethoxazole, as well as an analgesic for pain as necessary. If methicillin-susceptible *S aureus* is cultured and sensitivities are determined, cephalexin, amoxicillin-clavulanic acid, or dicloxacillin may be administered. If the child appears toxic or if marked lymph node enlargement is present, the child should be admitted for intravenous antibiotics. A purified protein derivative skin test should be placed for tuberculosis. The child should be followed up in 1 to 3 days for clinical improvement depending on the severity of the infection.

# Chapter 95

Allergic Disease

CASE STUDY

A 3-year-old girl is rushed to an urgent care center by her mother after the girl developed a pruritic rash, facial swelling, and hoarseness shortly after eating a peanut butter sandwich. She had eaten peanut butter once before, and her parents noticed a few small hives on her cheek that self-resolved. Previously, the girl has been well except for recurrent nasal congestion every spring that has responded to antihistamines. She has also had an intermittent skin rash that has been managed with topical steroid creams. She has never before had an acute reaction and has no history of asthma. Her father had asthma as a child.

Physical examination reveals a well-developed, 3-year-old girl with marked facial swelling and a generalized rash who is in mild respiratory distress. Vital signs, including blood pressure, are normal. The girl has a diffuse, blotchy, erythematous rash with central wheals; a hoarse voice; and a mild expiratory wheeze on auscultation of her chest. The remainder of the examination is normal.

Questions

1. What are the various symptoms of allergic disease?

2. What is the appropriate evaluation of a child with manifestations of allergic disease?

3. What allergens are common triggers for allergic symptoms?

4. What treatment is helpful for the child with manifestations of allergic disease?

5. Can allergic disease be prevented?

Case Resolution

The symptoms of rash, swelling, and wheezing after exposure to an antigen are suggestive of an anaphylactic reaction. Treatment with epinephrine, antihistamines, and systemic corticosteroids is clearly indicated. The girl should be observed for the occurrence of late-onset reactions. The child and family should be counseled to avoid any foods that contain peanuts. The parents should read all food labels and carry an epinephrine auto-injector (eg, EpiPen) at all times for emergency use. A medical alert bracelet indicating peanut allergy should be ordered and the patient and parents advised that she should always wear it. The patient should be referred to her primary care physician, who should consider referral to an allergist for further evaluation.

# Chapter 96

Wheezing and Asthma

CASE STUDY

A 7-year-old boy is referred to the office after being seen in the emergency department (ED) for wheezing. He has been treated in the ED for wheezing 4 times in the past month and was once hospitalized for 3 days. The boy’s father and paternal grandmother both have asthma.

The child’s physical examination is remarkable for end-expiratory wheezing on forced expiration.

Questions

1. What are the most common causes of wheezing in infants and children?

2. What are the causes of reversible bronchospasm?

3. What is the pathophysiology of reversible bronchospasm?

4. How should the child with asthma be treated?

Case Resolution

The boy requires not only medication but also education for himself and his family as well as longitudinal primary care. It is particularly important to assess possible environmental factors (eg, pets), exposure to smoke, and poor compliance with previous recommendations, all of which have contributed to his recurrent symptoms.

# Chapter 97

Cough

Questions

CASE STUDY

A 3-year-old boy presents with a cough of 4 weeks’ duration. Previously, he has had cough with colds, but this cough is persistent and deeper in quality. The cough seemed to develop suddenly when he was playing at a friend’s house. It occurs all day and disrupts his sleep at night. The boy has had no nasal congestion, fever, or sore throat. No one at home is coughing, and the boy has not traveled recently. Neither the boy nor his family has a history of allergies or asthma. Over-the-counter cough preparations have not helped relieve his symptoms. On physical examination, growth parameters are found to be normal. The child has a persistent cough with no respiratory distress. Chest examination reveals a normal respiratory rate, no retractions, and no use of accessory muscles, although diffuse expiratory wheezing is noted in the right lower lobe. The remainder of the examination is normal.

1. What are common parental concerns about cough?

2. What diagnoses should be considered in the child with persistent cough?

3. What findings from the history and physical examination are important in determining the etiology of cough?

4. What diagnostic workup is appropriate?

5. How should the child with cough be treated?

Case Resolution

The child’s cough began acutely and developed into a chronic cough. The boy has no history of allergies or symptoms consistent with an infectious process. Physical examination reveals localized wheezing. Chest radiography reveals hyperinflation of the right lung. The boy’s symptoms and presentation are most consistent with foreign body aspiration, and he is admitted to the hospital for bronchoscopy.

# Chapter 98

Anemia

CASE STUDY

An 18-month-old girl is brought to the office with a 3-day history of cough, rhinorrhea, low-grade fever, mild scleral icterus, and pallor. During her first week after birth, she had hyperbilirubinemia of unknown etiology that required phototherapy. Her family history is significant for mild anemia in her father; the cause of his condition is unknown. A paternal aunt and grandfather had cholecystectomies while in their 30s.

On physical examination, the girl is tachycardic and tachypneic (no respiratory distress) with scleral icterus and pallor. Her spleen is palpable 3 cm below the mid-costal margin. The remainder of her examination is normal.

Questions

1. What hemoglobin and hematocrit values are associated with anemia?

2. What are the presenting signs and symptoms of children with anemia?

3. What is the appropriate initial evaluation of children with anemia?

4. What emergency situations in children who present with anemia should be recognized by the primary pediatrician?

5. When should a child with anemia be referred to a hematologist?

6. How is the family history relevant in the evaluation of anemia?

Case Resolution

The girl has hereditary spherocytosis. Her history is strongly suggestive of a hereditary hemolytic disorder, and the combination of spherocytes in the peripheral smear, a negative antiglobulin test, and a positive, incubated, osmotic fragility test are diagnostic of the condition. At age 9 years, she undergoes a splenectomy and has no more hemolytic episodes that require transfusions.

# Chapter 99

Bleeding Disorders

CASE STUDY

A 6-year-old girl presents with a several-month history of recurrent epistaxis. Episodes occur every 2 to 3 weeks, with each episode lasting 15 to 20 minutes. Both nares are affected. Her mother also notes that the girl has always bruised easily. On physical examination, several 2- to 3-cm ecchymoses are noted on her lower extremities. Initial laboratory evaluation includes a complete blood cell count, which is normal (platelet count, 300,000/μL); a normal partial thromboplastin time (PTT) of 30 seconds; and a normal prothrombin time (PT) of 12.5 seconds, with an international normalized ratio of 1:1.

Questions

1. What conditions should be considered when easy bruising is the chief finding?

2. What is the appropriate laboratory evaluation for children with clinical signs of bleeding?

3. What management is appropriate for the most common pediatric bleeding disorders?

4. What are the common medical complications that children with bleeding disorders experience?

5. When is consultation with a hematologist appropriate in a child who bruises easily?

Case Resolution

A vWF panel was performed and revealed a vWF antigen of 20%, ristocetin cofactor activity of 30%, factor VIII activity of 40%, and a normal multimer analysis. The girl was diagnosed with type 1 von Willebrand disease. A desmopressin challenge was performed in the clinic, and she had an excellent response. She was prescribed nasal desmopressin and aminocaproic acid for use in significant bleeding episodes.

# Chapter 100

Lymphadenopathy

CASE STUDY

A 12-year-old girl is brought to the office with swelling of the anterior cervical nodes, which has persisted for 2 weeks. Intermittent fever with temperatures as high as 38.3°C (101°F) and decreased appetite have been associated with the condition. On physical examination, her temperature is 38.0°C (100.4°F) and her other vital signs are normal. Three to 4 nontender nodes 1 to 2 cm in diameter are present bilaterally. The remainder of the examination is normal.

Questions

1. When is lymphadenopathy of medical concern?

2. What are the clinical features of childhood diseases that present as cervical lymphadenopathy?

3. What are the diagnostic approaches to the evaluation of children with lymphadenopathy?

4. What is an appropriate therapeutic approach to cervical lymphadenopathy in children?

Case Resolution

The bilateral nature of the swelling and lack of tenderness of the nodes are quite worrisome and are suggestive of systemic involvement. The girl underwent a throat culture and an intermediate purified protein derivative skin test, and a chest radiograph was obtained; the results of all these evaluations were negative. A complete blood cell count revealed leukocytosis with 28,000 white blood cells per deciliter (60% lymphocytes) with a normal hemoglobin and platelet count. A heterophile test result for infectious mononucleosis was positive. Supportive measures were implemented, and the child made a complete recovery in 3 weeks.

# Chapter 101

Heart Murmurs

Questions

CASE STUDY

A 6-year-old girl is brought to the office for a physical examination for school. Her medical history is unremarkable, and her growth and development have been normal. She is asymptomatic. Her physical examination is normal except for a grade 2 of 6 low-pitched vibratory systolic ejection murmur that is loudest at the left lower sternal border, with radiation to the apex and upper sternal border. The murmur increases to grade 3 of 6 with the patient in the supine position.

1. What is the significance of a heart murmur in an asymptomatic child? How reassuring are a negative history and the absence of other physical findings?

2. What workup should be done by the primary care physician?

3. What are the consequences of not recognizing a murmur as being innocent? What are the consequences of an inadequate workup?

4. When should the physician refer a child to a specialist for consultation?

Case Resolution

The healthy girl with no history of cardiovascular symptoms has a heart murmur and an otherwise unremarkable physical examination. The murmur is a typical Still (ie, innocent vibratory) murmur, which is identifiable by its low-pitched, vibratory quality. No further evaluation is necessary. The diagnosis is explained, the girl and her parents are reassured, and the murmur and diagnosis are noted in the medical record.

# Chapter 102

Palpitations

CASE STUDY

A previously healthy 10-year-old girl presents to your office with a report of an episode of a “racing heart.” The episode occurred approximately 1 week before the clinic visit while she was watching television. Her heart suddenly started pounding hard, and the sensation stopped just as suddenly approximately 30 minutes later. During the episode, the child’s mother felt the girl’s chest and noted that her heart was beating extremely fast and hard. The child looked scared during the episode but was in no respiratory distress and was alert. Her parents drove her to the local emergency department (ED), but the symptoms stopped en route. On arrival in the ED, the girl was fine and had normal vital signs and physical examination and a normal result on electrocardiography. In retrospect, she recalls having had brief such episodes in the past.

Questions

1. What is the significance of palpitations in an otherwise well child?

2. How likely is this symptom to be cardiac in origin, and if so, how likely is it to be life-threatening?

3. How can transient cardiac events be documented?

4. What does the primary care physician need to do and know before referring the child to a cardiologist?

Case Resolution

The child wore a Holter monitor, during which time she was asymptomatic. She was then issued an event detector and 2 weeks later successfully recorded and transmitted her electrocardiogram during an episode of palpitations. It demonstrated supraventricular tachycardia at a rate of 250 beats per minute that terminated spontaneously after 20 minutes. Her parents elected to have her undergo electrophysiology study, which demonstrated an aberrant pathway that was successfully ablated without complication. At the 1-year follow-up visit, the patient was free of palpitations, on no medications, and participating actively in age-appropriate activities.

# Chapter 103

Cyanosis in the Newborn

CASE STUDY

A 3,500-g (7.7-lb) term male neonate born to a 29-year-old, gravida 2 para 2, healthy mother by spontaneous vaginal delivery is well until 24 hours of age, when a nurse notes that he is cyanotic. On examination, he appears blue but in no distress. The vital signs are axillary temperature of 37°C (98.6°F), pulse of 130 beats per minute, respirations of 40 breaths per minute, and blood pressure of 80/60 mm Hg in the right arm. His general appearance is normal except for the cyanosis. His heart sounds are normal, and no murmur is heard. His liver is not palpable, and the peripheral pulses are normal and equal in all extremities. Capillary refill is normal. Oxygen saturation is 65% by pulse oximetry.

Questions

1. What are the causes of cyanosis in newborns?

2. What is the appropriate evaluation of cyanosis in newborns?

3. How urgent is the assessment? What are the risks and benefits of further evaluation?

4. Which aspects of management should be initiated by a primary care physician at a community hospital?

5. Which types of treatment may be initiated by the consulting pediatric cardiologist at the referral center?

Case Resolution

Marked hypoxia is present in the absence of other cardiac findings, such as a heart murmur. The oxygen saturation does not rise after the newborn breathes 100% oxygen for 10 minutes. The chest radiograph shows a small, boot-shaped heart and diminished pulmonary blood flow, and the electrocardiogram is normal. Transport is arranged. Because of the marked cyanosis, infusion of PGE1 is begun, and saturation increases to 80%, with the partial pressure of oxygen rising from 33 mm Hg to a safer 48 mm Hg. The neonate is transferred to a tertiary care center, where consultation is obtained. Echocardiography is also performed, which demonstrates tetralogy of Fallot with pulmonary atresia. A modified Blalock-Taussig shunt is placed in the newborn period, and complete repair using a pulmonary artery homograft is performed at 1 year of age.

# Chapter 104

Congestive Heart Failure

CASE STUDY

A 2-month-old boy is brought to the office by his mother, who reports that her son has been eating poorly and breathing oddly for the past few days. The perinatal history is unremarkable. A heart murmur was noted at the 1-month checkup.

The infant is quite thin and irritable. Physical examination shows that the baby’s weight, which was at the 50th percentile at birth, is now at the fifth percentile; his height, which was at the 50th percentile, is now at the 25th percentile. He is afebrile, and his heart rate is 165 beats per minute, with respirations 70 breaths per minute and shallow but without respiratory distress. The skin is pale and diaphoretic, and the mucous membranes are pink. Examination of the head and neck is normal; no jugular distention is present. The lungs are clear. The precordium is hyperdynamic, and the heart sounds are loud; a prominent systolic murmur is audible at the left lower sternal border. The liver edge is palpable 4 cm below the right costal margin in the right midclavicular line, and the spleen is not palpable. The extremities are thin, with normal pulses and no edema. Capillary refill is slightly delayed.

Questions

1. What are the signs of cardiac disease in infants and children?

2. What are the signs of congestive heart failure in children? How do these signs in children differ from those in adults?

3. What underlying disorders can cause congestive heart failure in young infants?

4. What is the appropriate emergent treatment for infants with congestive heart failure?

Case Resolution

The case study is typical of an otherwise normal infant with a large ventricular septal defect (VSD) who becomes symptomatic with the development of CHF. The baby’s growth failure can be attributed to the chronicity of his illness.

The loud murmur and presentation in infancy are strongly suggestive of underlying structural congenital heart disease as the cause of CHF. The time of onset of CHF is also suggestive of a specific mechanism. Onset that is slightly delayed after birth is suggestive of a lesion with changing postnatal hemodynamics, such as left-to-right shunt, that has increased as pulmonary resistance has fallen. (A ductus-dependent defect would have presented more acutely and severely in the first week after birth.)

This infant responded fairly well to oral diuretics and digoxin but continued to grow slowly and tire easily, and the VSD showed no signs of spontaneous reduction in size. He underwent surgical repair of the VSD at 5 months of age with an excellent result and no longer has symptoms or requires medication. His growth parameters are now within normal limits, and his prognosis is excellent.

# Chapter 105

Chest Pain

CASE STUDY

A previously healthy 13-year-old boy comes to the office with a report of recurrent chest pain, occurring approximately once a week over the past 2 months. The pain is stabbing in nature, is located at the mid-sternum, is not associated with any other symptoms, and occurs randomly, both at rest and with exercise. It lasts for 2 to 3 minutes, is ranked by the patient as 4 on a severity scale of 10, and subsides spontaneously. He does not appear very concerned about the pain, but his mother is quite anxious to have it checked out. His teacher has sent him home from school twice because of the pain, and the soccer coach will not let him play until he is cleared by a doctor. His physical examination is unremarkable.

Questions

1. What is the significance of chest pain in an otherwise healthy child?

2. How likely is serious heart disease to be heralded by chest pain?

3. How much testing, and what type, is appropriate in the workup for chest pain?

4. Which patients with chest pain should be referred to a cardiologist? To other specialists?

Case Resolution

The patient and his parents are assured that he has no evidence of a serious medical or psychiatric problem. His heart is strong, his lungs clear, and his circulation good. The patient and family are reassured that chest pain in otherwise healthy children may be mysterious but is common and rarely is a sign of illness. They are gently but definitively advised that the patient requires no further evaluation at this time, but that if the problem does not resolve itself, the child should return for reevaluation.

The boy is delighted to hear that he may return to full sports participation, which is confirmed in writing to the coach. The parents are relieved and grateful for the attention and reassurance of the physician. At subsequent office visits for other purposes, the patient reports no more episodes of chest pain.

# Chapter 106

Hypertension

CASE STUDY

A 16-year-old girl is seen in the emergency department with a history of persistent headaches of 2 weeks’ duration. She has been having occasional headaches for the past 2 years, which have been treated primarily with acetaminophen. She denies any recent weight loss, hair loss, joint pain, sweating, or palpitations. She has no history of swelling of her eyes or legs or blood noticed in the urine. She was born preterm at 30 weeks’ gestational age and was kept in the hospital for 2 weeks. She has no history of urinary tract infection. Her 34-year-old mother and 58-year-old maternal grandmother have been on antihypertensive agents for the past several years; however, she has no family history of renal or heart disease. She is an average student. Her diet includes mostly meat and refined carbohydrates, such as bread and pasta. Additionally, she regularly eats salty snacks but drinks soda only occasionally. She has never been involved in any physical activity on a regular basis. She has never been sexually active and denies the use of illicit drugs, alcohol, or tobacco. She denies taking any medication prior to this visit, including oral contraceptives.

The physical examination is remarkable for a girl with weight, height, and body mass index above the 95th percentile for age. Her pulse is 85 beats per minute, and her blood pressure is 158/78 mm Hg in the right arm in the supine position. Equal pulses are palpable in all 4 extremities. Blood pressure is 164/92 mm Hg in the right lower extremity. Funduscopic examination reveals evidence of arteriovenous nicking but no papilledema. Normal breath sounds are noted on chest examination, along with an active precordium with the apical impulse shifted to the left. No murmurs are heard. The liver is palpable 1 cm below the right costal margin. The neurologic examination is unremarkable; no focal neurologic deficit is present. Urinalysis is normal. Hemoglobin is 11.2 g/dL, and hematocrit is 33%. Sodium is 139 mEq/L, potassium is 3.8 mEq/L, chloride is 102 mEq/L, and bicarbonate is 22 mEq/L. Blood urea nitrogen is 15 mg/dL, and serum creatinine is 0.9 mg/dL. Electrocardiography shows left ventricular enlargement. Computed tomography of the head is normal.

Questions

1. What is the definition of hypertension in children and adolescents?

2. What are the causes of hypertension in children and adolescents?

3. What is the appropriate evaluation of hypertension in children and adolescents?

4. What are the comorbid conditions and long-term complications associated with essential (ie, primary) hypertension?

5. What is the appropriate emergency treatment of symptomatic hypertension?

6. What is the long-term management of children and adolescents with essential hypertension?

Case Resolution

Because of the elevated BP and evidence of end-organ dysfunction (ie, left ventricular hypertrophy), the patient is diagnosed as having stage 2 essential HTN. Her history of prematurity raises the possibility of renal artery thrombosis or stenosis secondary to umbilical artery catheter. First, dietary modifications (ie, diet low in refined sugar and sodium) and increasing physical activity should be addressed. Second, because the patient has evidence of left ventricular hypertrophy and early changes of retinopathy, appropriate antihypertensive medication to control the BP should be initiated. A calcium channel blocker or beta blocker can be used. Renal Doppler ultrasonography is appropriate to determine kidney size, extent of kidney damage, and blood flow to the kidneys.

# Chapter 107

Disorders of Sexual Differentiation

CASE STUDY

A term neonate is being evaluated in the newborn nursery. The mother received prenatal care from the eighth week of gestation, reportedly had no problems during the pregnancy, and took no medications except prenatal vitamins with iron. She specifically denies taking any progesterone-containing drugs. Her previous pregnancy was uneventful, and her 3-year-old son is healthy.

On physical examination, the newborn is active and alert, with normal vital signs. Aside from a minimum amount of breast tissue bilaterally, the physical examination is unremarkable, except for the genitalia. The labioscrotal folds are swollen bilaterally with slight hyperpigmentation and mild rugae. No masses are palpable in the labioscrotal folds. The clitoris/phallus is 1.5 cm in length. Labioscrotal fusion is present, with a very small opening at the anterior aspect. The urethra cannot be visualized.

Questions

1. What conditions should be considered in the newborn with a disorder of sexual differentiation?

2. What should the family of a newborn with a disorder of sexual differentiation be told about the sex of the newborn?

3. What key historical information should be obtained from the family of the newborn with a disorder of sexual differentiation?

4. What laboratory studies must be obtained to aid in the diagnosis?

5. What psychosocial issues should be addressed with the family while the neonate is in the newborn nursery?

Case Resolution

The newborn has ambiguous genitalia. The parents should be informed immediately of this finding, and all references related to sex should be avoided. A karyotype and 17--hydroxyprogesterone analyses should be performed immediately. Additionally, serial serum electrolyte panels should be performed starting at 12 to 24 hours after birth. The physician should meet with the family to further discuss DSDs and explain the diagnostic workup. General psychological services and information about support groups should be provided as well.

# Chapter 108

Inguinal Lumps and Bumps

CASE STUDY

A 2-month-old boy presents to your office for evaluation of a lump that has been evident in his right groin for the past week. The lump has been coming and going, and his mother notices that it is larger when he cries. Today, the lump is prominent, and the infant seems fussy. He has been crying more often than usual and vomited once today. His history is remarkable for having been born at 32 weeks of gestation by spontaneous vaginal delivery. Birth weight was 1,500 g (3.3 lb), and he did well in the nursery, with no respiratory complications. He was sent home at 4 weeks of age and has had no other medical problems. He breastfeeds well and has normal stools.

Physical examination reveals a well-nourished, irritable infant in no acute distress. His vital signs demonstrate mild tachycardia and a temperature of 37.8°C (100°F). His abdomen is soft, and the genitourinary examination is significant for a swelling in the right inguinal area that extends into his scrotum. The mass is mildly tender and cannot be reduced. The remainder of the examination is normal.

Questions

1. What are the possible causes of an inguinal mass?

2. How does age affect the diagnostic possibilities?

3. How does the physician differentiate between acute and nonacute conditions?

4. What diagnostic modalities can help with the diagnosis?

5. What are the treatment options for inguinal masses?

6. What, if any, are the long-term consequences of inguinal masses?

Case Resolution

The infant’s history of prematurity associated with a mass that comes and goes most likely indicates an inguinal hernia. Based on the additional symptoms of pain, fever, and vomiting and the findings of an inflamed, nonreducible mass on physical examination, a high likelihood exists for the diagnosis of incarcerated hernia. The infant is taken to the operating room, where this diagnosis is confirmed. The hernia is reduced and repaired, and the intestine is noted to be viable. The contralateral side is explored and found to be normal. The infant makes an uneventful recovery.

# Chapter 109

Hematuria

CASE STUDY

A 6-year-old boy is brought to the office for a school entry examination. He was the full-term product of an uncomplicated pregnancy, labor, and delivery. Although he has had 4 or 5 episodes of otitis media, he has generally been in good health. He has never been hospitalized or experienced any significant trauma. He has no known allergies, has been fully immunized, and is developmentally normal. However, his mother states that he has reported occasional mild abdominal pain.

The physical examination is completely normal. Height and weight are at the 75th percentile, and blood pressure is 100/64 mm Hg. Screening tests for hearing and vision are normal. Hematocrit is 42. The urinalysis comes back with a specific gravity of 1.025, pH 6, 2+ blood, and trace protein. Microscopic examination shows 18 to 20 red blood cells per high-power field; 0 to 1 white blood cells per high-power field; and a rare, fine, granular cast.

Questions

1. What disease entities cause hematuria?

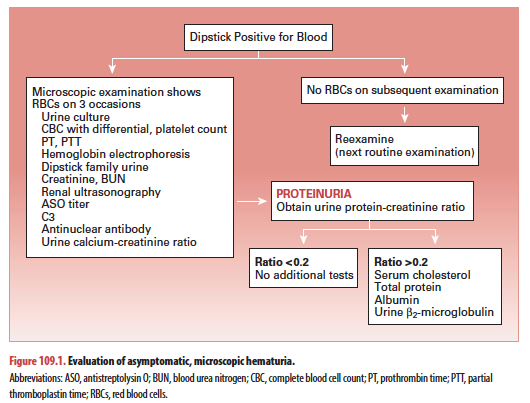
2. How should hematuria be evaluated?

3. How does the approach to hematuria differ in children who report dark or red urine?

4. What is the appropriate follow-up of children with asymptomatic microscopic hematuria?

Case Resolution

The boy shows no worrisome clinical signs, such as hypertension or significant proteinuria. His urine should be rechecked twice more, and if the hematuria persists, his evaluation should follow the algorithm in Figure 109.1.



# Chapter 110

Proteinuria

CASE STUDY

A 14-year-old boy is brought to the office for a sports-related preparticipation physical examination. He has been previously healthy but had 1 hospital admission at age 2 years for management of a fractured humerus. He has no acute concerns. The family history is positive for diabetes mellitus in the paternal grandfather and lung cancer in the maternal grandfather. It is negative for renal disease and hypertension. The boy’s height and weight are at the 75th percentile for age, and his blood pressure is 110/70 mm Hg.

On physical examination, the boy is a well-developed, well-nourished, athletic teenager. No abnormal findings are present. The complete blood cell count reveals a hemoglobin of 14.8 g/dL, a hematocrit of 48.3%, and a white blood cell count of 8,400 cells/mm3 with a normal differential. The urine has a pH of 5, a specific gravity of 1.025, and 3+ protein on urine dipstick test. The rest of the dipstick test is negative. Microscopic examination shows 0 to 1 white blood cell count per high-power field and 0 to 2 hyaline casts per low-power field.

Questions

1. What conditions cause proteinuria?

2. When should the child with proteinuria undergo further evaluation?

3. What type of evaluation should be carried out to assess proteinuria?

4. When should the child with proteinuria be referred to a pediatric nephrologist?

Case Resolution

It is likely that the evaluation of the healthy teenage boy with isolated proteinuria will reveal that he has orthostatic proteinuria, in which case his long-term prognosis is good.

# Chapter 111

Nephrotic Syndrome

CASE STUDY

A 2-year-old boy is brought to the office because of abdominal distention. He has just recovered from a runny nose that lasted 1 week, with no fever or change in activity. His mother reports that his eyelids were very swollen that morning, and she says that his thighs look “fat.” She has noticed that he has fewer wet diapers. He has always been a healthy child, and his immunizations are up to date. The family has a history of asthma and allergic rhinitis. Physical examination shows an active 2-year-old boy. Head and neck examination is clear, except for a few shotty anterior cervical lymph nodes and some minimal periorbital edema. Chest examination reveals some decreased breath sounds at the bases. The abdomen is moderately distended; bowel sounds are active, and a fluid wave is detectable. There is 2+ pitting edema of the lower legs, extending up to the knees. The urine has a specific gravity of 1.030; pH 6; 4+ protein; and trace, nonhemolyzed blood. Microscopic examination shows 4 to 6 red blood cells per high-power field and 10 to 20 hyaline and fine granular casts per low-power field.

Questions

1. What is the differential diagnosis of edema and ascites in previously healthy young children?

2. What criteria are used to determine if children with nephrotic syndrome require hospitalization or can be managed as outpatients?

3. What laboratory evaluation and therapy are instituted initially?

4. What are the important issues to address in parent/guardian education?

5. What is the prognosis of young children with nephrotic syndrome?

Case Resolution

The child most likely has minimal change disease. He appears stable enough to be managed as an outpatient and should be placed on a salt-restricted diet and prednisone. The overall prognosis depends on a close interaction among the parents, pediatrician, and consulting pediatric nephrologist.

# Chapter 112

Urinary Tract Infections

CASE STUDY

A 2-year-old girl is brought to the office with a 1-day history of fever (temperature of 39.4°C [103°F]), vomiting, and mild diarrhea. No history exists of any change in her urinary habits, and she still wears diapers. The child has been somewhat irritable but fully alert.

Physical examination reveals an ill-appearing toddler. Her temperature is 39.2°C (102.6°F), heart rate is 122 beats per minute, respiratory rate is 30 breaths per minute, and blood pressure is 90/60 mm Hg. The neck is supple. Head, eye, ear, nose, throat, chest, heart, abdomen, and genital examinations are normal. Urinalysis shows specific gravity of 1.025, pH 6.0, leukocyte esterase and nitrite both strongly positive, protein trace, and blood trace; the sediment has 15 to 20 white blood cells and 2 to 4 red blood cells per high-power field. The Gram stain shows more than 100,000 gram-negative rods, and the urine culture result is pending.

Questions

1. What are the possible diagnoses for the child with positive leukocyte esterase on urinalysis?

2. What are the indications for hospital admission for the child with a urinary tract infection?

3. What antibiotics are used in the management of urinary tract infection?

4. What is the appropriate diagnostic workup for the child with suspected urinary tract infection?

5. When should renal ultrasonography and voiding cystourethrography be done in the child with a urinary tract infection?

6. If the workup is positive for vesicoureteral reflux, how should the child be treated in the long term?

Case Resolution

The girl is hospitalized because of the vomiting. She is started on intravenous ceftriaxone and improves in 48 hours. Inpatient renal ultrasonography is normal, and she is discharged home with oral antibiotics. Because this is her first episode of UTI and because ultrasonography was normal, VCUG is not indicated. No consideration is given to prophylactic antibiotics because of her history and normal results on renal ultrasonography.

# Chapter 113

Developmental Dysplasia of the Hip

CASE STUDY

A 4-month-old girl is seen for her routine health maintenance visit. She is doing well and has no complaints. The results of the entire examination are within normal limits except for limited external rotation and abduction of the left hip, which is approximately 45°, in comparison to that of the right hip, which is almost 90°.

Questions

1. What factors are responsible for normal growth and development of the hip joint?

2. What specific physical maneuvers help in the evaluation of infants with decreased range of motion of the hip?

3. What are the clinical findings of hip dislocation during and after the neonatal period?

4. What are some of the conditions associated with hip dysplasia that may be noted on physical examination?

5. What is the appropriate diagnostic workup of infants with suspected hip dysplasia?

Case Resolution

The infant has less than 60° of abduction of the left hip, which is a sign of DDH. An anteroposterior radiograph of the pelvis may be ordered to confirm the diagnosis. Regardless of the radiographic findings, the infant should be referred to an orthopedic surgeon for further evaluation and treatment. If hip dislocation is confirmed, the initial treatment will involve bracing with a Pavlik harness.

# Chapter 114

In-toeing and Out-toeing: Rotational Problems of the Lower Extremity

Questions

CASE STUDY

A 3-year-old girl is brought to the office. Her mother is concerned because beginning a few months prior to this visit her daughter’s feet appeared to “turn in” when she walked. The girl has never walked like this before, and she has no history of trauma, fever, pain, or swelling in the joints. The physical examination is within normal limits except for the in-toeing gait.

1. How can observation of a child’s gait help determine the etiology of in-toeing and out-toeing (ie, rotational problems)?

2. What are the common causes of in-toeing and out-toeing?

3. Does evaluation of in-toeing and out-toeing require any laboratory or radiologic studies?

4. What is the natural history of most rotational problems?

Case Resolution

The girl seems to have medial femoral torsion because she has no history of rotational problems. Her entire leg turns in when she walks. Internal hip rotation greater than 70° confirms the diagnosis. The mother can be reassured that this is a normal, age-related phenomenon that most likely will resolve in time. The child can be reevaluated in 4 to 6 months. Orthopedic referral is not required at this time.

# Chapter 115

Angular Deformities   
of the Lower Extremity:   
Bowlegs and Knock-Knees

CASE STUDY

During the routine health maintenance examination of a 2-year-old boy, you observe moderate to severe bilateral bowing of both legs. The child’s mother reports that her son began walking at 10 months. She has not noticed problems with his gait and says he does not trip or fall excessively. On examination, the boy’s weight is greater than the 95th percentile for age, but otherwise he appears to be a healthy black child.

Questions

1. What types of angular deformity affect the lower extremities in children?

2. How does age help determine whether a child has a physiologic or pathologic angular deformity?

3. What clinical measurements can help distinguish physiologic from pathologic angular deformities?

4. To what extent are radiographs used in the routine assessment of angular deformities?

Case Resolution

The boy should be evaluated for pathologic causes of genu varum, especially Blount disease, for the following reasons: his age is at the upper limit of normal for bowlegs and his deformity is severe, he is black, he has a history of early walking, and he has obesity. A standing radiograph of the lower extremities should be obtained, and the boy should be referred to an orthopedic surgeon for further evaluation and management.

# Chapter 116

Orthopedic Injuries and Growing Pains

CASE STUDY

A 6-year-old boy has a 1-week history of leg pains. He wakes up at night and cries because his legs hurt; however, during the day he is fine, with no pain and no movement limitations. He has no history of trauma, fever, or joint swelling. The family history is negative for rheumatic or collagen vascular disease. The boy’s height and weight are at the 50th percentile for age, he is afebrile, and the physical examination is unremarkable.

Questions

1. What is the differential diagnosis of leg pains in school-age children?

2. What laboratory or radiographic studies are appropriate for children with leg pains?

3. How do musculoskeletal injuries in children differ from those in adults (eg, injury type, injury location)?

4. How does the physician decide the extent of the diagnostic workup in a child with extremity pain?

5. What fractures are commonly seen at different ages?

Case Resolution

The child has the benign condition commonly referred to as growing pains. Management involves parental education and reassurance. Local heat, massage, and analgesia (ie, ibuprofen) may be recommended.

# Chapter 117

Sports-Related Acute Injuries

CASE STUDY

A 15-year-old female basketball player reports 6 months of intermittent pain in her left knee. Occasionally the knee gives out while she is playing ball. The patient denies any associated swelling or erythema over the joint. She can walk with no problem and reports no history of direct trauma to the area. She is otherwise healthy.

Physical examination shows the patient to be a well-developed, well-nourished adolescent girl in no acute distress. The examination is normal, with the exception of mild pain to direct palpation of the left patella. No swelling, erythema, or effusion of the knee joint is evident, and full range of motion is noted in the left hip, knee, and ankle. The back is straight.

Questions

1. What are some of the most common orthopedic findings in adolescent patients, and why do they occur in this age group?

2. What is the pathophysiology of overuse syndromes?

3. What is the purpose of the sports preparticipation physical evaluation?

4. What criteria help determine if an adolescent should be disqualified from participation in a competitive sport?

5. What are the current recommendations for the management and rehabilitation of acute soft tissue injuries?

Case Resolution

The teenager has symptoms and physical findings consistent with patellofemoral pain syndrome, which is traditionally referred to as chondromalacia of the patella. Because plain radiographs are rarely helpful in confirming the diagnosis, none are necessary at this time. Management should include strength training for the quadriceps muscles, activity modification, nonsteroidal anti-inflammatory drugs, and ice compresses after activity.

# Chapter 118

Evaluation of Limp

CASE STUDY

A 6-year-old boy with a 2-day history of right knee pain and limp is brought to the office. He has no history of knee trauma, swelling, redness, or associated fever. The medical history is unremarkable. The boy is afebrile, and his height and weight are at the 10th percentile for age. Examination of the right leg reveals decreased abduction and internal rotation of the hip; the knee is normal. The boy limps when he walks and favors his right leg.

Questions

1. What is the differential diagnosis of painful and painless limp in children?

2. What is the differential diagnosis of knee pain in children?

3. What laboratory tests and radiographic studies are indicated in the evaluation of children with limp?

4. What is the appropriate treatment of the child with a suspected infectious cause of limp?

Case Resolution

The child’s history and physical examination seem to be consistent with LCPD. The child’s knee pain is found to be secondary to hip pathology. The diagnosis may have been missed had the physician not examined the hips and noted the abnormality in range of motion. Anteroposterior and batrachian (ie, frog-leg) radiographs of the hips were obtained, which showed joint space widening. Orthopedic consultation was obtained, and hospitalization for bed rest and ensured immobilization were recommended.

# Chapter 119

Musculoskeletal Disorders of the Neck and Back

CASE STUDY

A 4-week-old male infant is brought to the office by his mother, who reports that her son always holds his head tilted to the right. She states that he has held it in this position for approximately 1 week and prefers to look mainly to the left. The infant is the 3.86 kg (8 lb, 8 oz) product of a term gestation born via forceps extraction, and he had no complications in the neonatal period. He is breastfeeding well and has no history of fever, upper respiratory symptoms, vomiting, or diarrhea.

On examination, the head is tilted toward the right side with limited lateral rotation to the right and decreased lateral side bending to the left. Except for the presence of a small palpable mass on the right side of the neck, the examination is within normal limits.

Questions

1. What laboratory or radiologic studies are indicated in infants with torticollis?

2. What is the differential diagnosis of torticollis in infants?

3. What are some of the common musculoskeletal abnormalities that may occur in association with torticollis?

4. What are other common musculoskeletal problems in children and adolescents?

5. What is the current recommended management of children and adolescents with idiopathic scoliosis?

Case Resolution

The history of the infant is consistent with congenital muscular torticollis. Physical examination helps confirm the diagnosis. The hips should be evaluated thoroughly because of the association of congenital muscular torticollis with developmental dysplasia of the hip. A program consisting of neck stretching exercises and repositioning of interesting toys and objects in the infant’s crib to the side opposite the preferred gaze should be instituted. The infant can be reevaluated in 2 to 3 weeks to monitor progress.

# Chapter 120

Vomiting

CASE STUDY

A 10-month-old previously healthy infant was brought to the emergency department by his mother, who reported the sudden onset of green emesis and abdominal pain over the last 4 hours. Vomiting was not associated with meals. The mother denied recent illness, travel, or sick contacts. The patient’s past medical history is unremarkable. His birth weight was 3,200 g (7.05 lb), and his current weight is 9,080 g (20.0 lb). The physical examination is significant for distended abdomen tender to palpation.

Questions

1. What is the mechanism of vomiting?

2. What are the common causes of vomiting in newborns and infants?

3. What are the common causes of vomiting in older children?

4. What is the significance of bilious vomiting?

5. What are the unique features of vomiting related to increased intracranial pressure?

6. What are some strategies for the management of vomiting in older children?

Case Resolution

Bilious vomiting in a previously healthy infant is the warning sign of midgut volvulus and intestinal malrotation. It is a medical emergency due to high risk of extensive small bowel necrosis, which can lead to short bowel syndrome and even death. A prompt fluid resuscitation and urgent upper gastrointestinal series or Doppler ultrasonography are mandatory to confirm the diagnosis and prepare the child for urgent surgery.

# Chapter 121

Gastroesophageal Reflux

Questions

CASE STUDY

A 9-year-old boy reports frequent episodes of epigastric pain right after eating. The pain is associated with nausea and infrequent vomiting. The pain is described as dull and lasts less than 15 to 20 minutes. The patient also reports a burning sensation in his chest after eating and a cough at night. The patient lacks energy, and his voice is hoarse in the morning. There is no history of dysphagia, odynophagia, or weight loss. The physical examination is normal.

1. What are the characteristics of gastroesophageal reflux?

2. What is the difference between gastroesophageal reflux and gastroesophageal reflux disease?

3. What groups of children are at risk for gastroesophageal reflux disease?

4. What is the appropriate workup for an infant with suspected gastroesophageal reflux disease?

5. What is the appropriate management of infants and children with gastroesophageal reflux and gastroesophageal reflux disease?

6. What is the natural history of gastroesophageal reflux in children?

Case Resolution

The patient has symptoms suggestive of GERD (ie, epigastric pain after eating associated with nausea, burning sensation in his chest, and nocturnal cough). Consideration can be given to initiating medications such as H2-receptor antagonists. Alternatively, an upper gastrointestinal endoscopy can be obtained to document the presence of reflux or other forms of esophagitis.

# Chapter 122

Gastrointestinal Bleeding

Questions

CASE STUDY

A 5-year-old boy is evaluated for a history of hematemesis. The mother reports that her son experienced a sudden onset of vomiting of a large amount of blood. She denies that her son picks his nose or has had recent trauma. The boy’s past medical history is significant for a double volume exchange blood transfusion as an infant. The boy has no history of recent upper respiratory infection, chronic cough, recurrent vomiting, abdominal pain, weight loss, or jaundice. He takes no medications. The family has no pets and has not traveled recently.

On physical examination, the boy is pale, frightened, and anxious. His temperature is normal, pulse is 120 beats per minute, blood pressure is 90/60 mm Hg, and respirations are 25 breaths per minute. Weight and height are at the 75th percentile for his age. The sclerae are white and the neck is supple, and there is no lymphadenopathy. Lung sounds are clear, heart sounds are normal, and the abdomen is soft, slightly distended, and nontender, with normal bowel sounds. The liver is not palpable, but the spleen is enlarged, with the tip palpable approximately 6 cm below the left costal margin. There is no evidence of ascites or caput medusae. The boy’s skin is pale without rash or bruises. His extremities are cold, with capillary refill of more than 3 seconds. The results of a complete blood cell count and blood chemistry, including liver function test, are normal except for mild thrombocytopenia. A prothrombin international normalized ratio and partial thromboplastin time determination yield typical results.

1. What is a proper means of assessing children with gastrointestinal bleeding?

2. What are the specific characteristics of upper and lower gastrointestinal tract bleeding?

3. What age-related conditions account for upper and lower gastrointestinal tract bleeding in children?

4. What is the appropriate approach to the child with gastrointestinal bleeding?

Case Resolution

The young child with hematemesis and splenomegaly had esophageal bleeding secondary to extrahepatic portal hypertension. The diagnosis was established during upper GI endoscopy and a negative workup for liver disease. The bleeding was controlled with a banding procedure. Long-term follow-up is indicated for proper management of this patient’s condition and timely referral for surgery, if indicated.

# Chapter 123

Diarrhea

Questions

CASE STUDY

An 11-month-old boy is evaluated for poor weight gain, decreased appetite, and diarrhea for the past 3 months. The parents report 3 to 4 bowel movements a day. They describe stool as “mushy” and “foul smelling.” There are no ill contacts and there is no history of recent travel. The vital signs are normal. The patient appears pale and malnourished with wasted buttocks. His weight is at less than the 5th percentile, and his length is at the 25th percentile. The mucous membranes are moist without ulcers. The abdomen is soft and distended. Bowel sounds are active. There is no hepatosplenomegaly. Extremities are warm and well perfused.

1. What are the major categories of diarrhea?

2. What are the common infectious agents that cause diarrhea in infants and children?

3. What are the manifestations of acute and chronic diarrhea?

4. What conditions lead to persistent diarrhea in infants and children?

5. How is diarrhea managed in infants and children?

Case Resolution

A constellation of chronic diarrhea, poor weight gain, decreased appetite, and foul-smelling stool is suggestive of steatorrhea as seen in patients with celiac disease. Laboratory tests for celiac disease can be requested by the primary care physician and consultation with a pediatric gastroenterologist considered.

# Chapter 124

Constipation

CASE STUDY

A 9-year-old girl is brought to the office by her mother with a report of bloody stool. The mother states that the blood is bright red and seen on the toilet paper and dripping into the bowl but that no blood is mixed into the stool. The child reports perianal pain that is burning during defecation and says that the bleeding is noted toward the end of the bowel movement. On further history, the child has been complaining of intermittent, colicky abdominal pain. This occurs mostly in the afternoon and evening and is relieved with bowel movements. Passage of stool is reported to be infrequent, with multiple skipped days in between. The mother recalls that the toilet has been plugged a few times after her daughter used it. The child has not experienced weight loss and eats an age-appropriate diet that is high in pasta, cheese, processed meat, breads, and candy. At times the child is gassy and looks bloated, but she is otherwise healthy, exhibiting normal growth and development. On examination, vital signs are normal. The patient is at the 65th percentile for height and the 80th percentile for weight. The abdomen is soft and nontender but mildly full in the left lower quadrant. Perianal examination reveals a deep anal fissure, and rectal examination reveals a firm fecal mass. The remainder of the examination is normal.

Questions

1. What is the definition of constipation?

2. How is the stooling pattern related to diet?

3. What conditions are associated with constipation?

4. How do familial factors influence stooling patterns?

5. What is the management of chronic constipation?

Case Resolution

The child has functional constipation with a fissure. The bleeding is very distal, and bright red blood is noted on the toilet paper and in the bowl, not mixed into the stool. The belly pain is visceral, related to gas distention and stool retention, and relieved with defecation. Gassiness implies stool retention and fermentation in the colon. Normal appetite and growth parameters are reassuring. The rectal examination establishes the diagnosis of an anal fissure, and no further testing is necessary for this child at this time.

# Chapter 125

Abdominal Pain

CASE STUDY

A 14-year-old boy is seen by his pediatrician for chronic pain in his epigastric area. According to the patient, he has experienced dull pain in the area since seventh grade, 2 years ago. Pain usually occurs about 1 hour after eating and at night. The pain is intense and lasts longer than an hour. He often drinks water or milk to alleviate the pain. He also reports frequent heartburn after spicy food but denies weight loss or diarrhea. The physical examination reveals abdominal tenderness in his epigastric area. The patient’s bowel sounds are normal. There is no evidence of hepatosplenomegaly or ascites. A rectal examination shows a normal rectal vault and absence of a palpable mass. A stool guaiac test result is positive for occult blood.

Questions

1. What types of abdominal pain occur in children?

2. What characteristics distinguish functional from organic abdominal pain?

3. What are the common organic causes of recurrent abdominal pain in children?

4. What functional gastrointestinal disorders manifest with recurrent abdominal pain in children?

Case Resolution

The patient has symptoms suggestive of peptic ulcer disease. Although less common in pediatric patients than in adults, postprandial epigastric abdominal pain improved by eating, along with a family history, should raise suspicion for peptic ulcer disease, which is often associated with gastroesophageal reflux and chronic gastritis. Male teenagers are affected more frequently than female adolescents. Esophagogastroduodenoscopy is the standard diagnostic method. The patient has evidence of peptic ulcer disease on endoscopy along with *Helicobacter pylori* infection. He is started on triple therapy, including proton pump inhibitor and 2 antibiotics for 10 days, followed by 2 months of acid suppression medications. On follow-up, the patient’s symptoms had fully resolved.

# Chapter 126

Jaundice

CASE STUDY

A 4-week-old boy is brought to the office for a routine weight check because he is breastfeeding. He was the product of a full-term, normal, spontaneous vaginal delivery, with a birth weight of 3,600 g (7 lb, 15 oz). He has been feeding well, exclusively at the breast, with loose stools after each feeding. On physical examination, the infant weighs 4,900 g (10 lb, 13 oz). The examination is normal except that the boy appears jaundiced. On further questioning, the mother states that her son was jaundiced shortly after birth, but she was told that the bilirubin level was all right. She thinks the jaundice may be more noticeable now. His stool is yellow and pasty, although sometimes it appears lighter in color.

Questions

1. What are the common causes of unconjugated hyperbilirubinemia in young infants?

2. What are the common causes of conjugated hyperbilirubinemia in young infants?

3. What are the usual causes of jaundice in older children and adolescents?

4. What is the appropriate management of hyperbilirubinemia in breastfed infants?

5. What diagnostic studies are done to determine the etiology of jaundice?

Case Resolution

Fractionation of the bilirubin revealed 7 mg/dL of conjugated and 3 mg/dL of unconjugated bilirubin; hemoglobin, peripheral blood smear, and haptoglobin were all normal, as was a neonatal genetic screen. Ultrasonography was positive for the triangular cord sign and could not detect a gallbladder. Nuclear scintigraphy showed decreased activity in the intestine, and liver biopsy showed bile duct hyperplasia and an inflammatory infiltrate. Biliary atresia was strongly suspected, and open cholangiography confirmed the condition; portoenterostomy was performed. The infant was started on fat-soluble vitamins (ie, A, D, E, K) and antibiotics for cholangitis prophylaxis.

# Chapter 127

Viral Hepatitis

CASE STUDY

A 15-year-old boy is brought to the office with a 1-week history of intermittent fever, vomiting, diarrhea, and diffuse abdominal pain. His mother reports the appearance of “yellow eyes and skin” on the day before the visit. Her son was previously in good health, and he has not seen a physician in several years. He is taking no medications and has no known ill contacts. He has no history of recent travel outside the United States and denies any unusual food ingestions. His mother reports that he frequently eats at a local fast-food restaurant with his soccer team, but his family does not eat there. He has 1 ear piercing and denies sexual activity, drug use, or tattoos.

The physical examination reveals a temperature of 38.6°C (101.4°F), pulse of 100 beats per minute, and blood pressure of 110/63 mm Hg. The teenager is a well-developed, well-nourished male with yellow skin and sclera. The abdomen is soft, with mild diffuse tenderness, most notably over the right upper quadrant, and normal bowel sounds. The liver edge is palpated 5 cm (2 in) below the right costal margin, and no splenomegaly is present. The rectal examination is normal, with negative fecal occult blood test results.

Questions

1. What are the most common causes of viral hepatitis in children and adolescents?

2. What is the appropriate evaluation for children and adolescents with suspected hepatitis?

3. What complications are associated with viral hepatitis?

4. What treatments are currently available for viral hepatitis, and how does treatment differ depending on the specific etiology?

Case Resolution

The teenager has a classic presentation of viral hepatitis despite no clear history of exposure, such as travel to an endemic area. Statistics point to probable infection with hepatitis A, and exposure possibly occurred at the fast-food restaurant. Because he does not appear to be dehydrated or seriously ill, he can be managed as an outpatient. Serologic testing for hepatitis A, B, and C should be performed, in addition to LFTs and coagulation tests. The parents should be informed of the probable diagnosis, and, if confirmed as hepatitis A infection, all household contacts should receive hepatitis A vaccine or prophylaxis with immunoglobulin. They should also be educated on the infectivity of the disease and counseled about supportive therapy. Public health officials should be consulted for management of other cases of individuals who were possibly exposed. The boy should have limited physical activity while symptomatic and should be scheduled for a follow-up visit in a few days for repeat LFTs and coagulation tests. The prognosis is good.

# Chapter 128

Hypotonia

CASE STUDY

A 6-month-old girl is brought to the office because she no longer reaches for her toys. The pregnancy was full term, but the mother remembers that the fetal kicking was less than with an older brother. Delivery was uncomplicated, and the newborn fed well from birth. The girl began to show visual attention at 2 to 3 weeks, smiled socially at 1 month, and pushed up while prone at 2 months. Although she turned over at 4 months, she has not done this in the past month. She no longer reaches up to the mobile over her crib.

On physical examination, the girl lies quietly on the table and watches the examiner intently. Her growth parameters, including head circumference, are normal. After she has been undressed, it is apparent that she exhibits “see-saw” breathing (ie, abdomen rises with inspiration) and has a frog-leg posture (ie, batrachian position). The cranial nerve examination is normal except for head-turning strength. When she is pulled to a sitting position, her head lags far behind and her arms are straight at the elbows. She cannot raise her arms off the table. When a rattle is placed in her hands, she manipulates the toy, which she regards from the corner of her eye. Deep tendon reflexes are absent, but her pain sensation is intact.

Questions

1. What is meant by hypotonia?

2. How is the level of nervous system involvement determined in infants with hypotonia?

3. What is the significance of a loss of developmental milestones or abilities?

4. When are diagnostic tests appropriate for a child with hypotonia?

5. How are clinical management issues related to prognosis?

Case Resolution

The infant was judged to have hypotonia caused by a neuromuscular condition, in part because of her alert appearance and absent deep tendon reflexes. Neuropathic abnormalities on electromyography and muscle biopsy were also present. A blood test for the survival motor neuron genes did not detect any normal sequences, confirming the diagnosis of spinal muscular atrophy type 1. She had both SMN1 alleles mutated and only 2 copies of the *SMN2* gene. She was begun on an oligonucleotide to support production of sufficient survival motor neuron protein. The family received genetic counseling and became involved in a support group, and the girl made slow motor developmental progress with normal intellectual function. The physician coordinated genetic and neurologic services for the family.

# Chapter 129

Headaches

Questions

CASE STUDY

A 12-year-old girl is brought in with a history of headaches. Although she has been sent home from school twice in the past 6 weeks, she has experienced headaches for at least 1 year. The last episode, 1 week prior to this office visit, was typical. The headache began as a dull feeling over both eyes, radiated up to the top of her head, and eventually became pounding. She had no preliminary visual symptoms or other warning signs prior to the head pain. The episode began during an afternoon class after she had been outside on a hot, sunny day for physical education. The headache worsened after she walked home from school. After she got home, she went to her room, drew the curtains, and lay down on her bed. She experienced some nausea and loss of appetite but no vomiting. She did not get up for dinner. She denied experiencing diplopia, vertigo, ataxia, and limb weakness, and her speech was observed to be articulate and coherent. She took 2 80-mg children’s acetaminophen tablets without significant relief but eventually fell asleep. The following morning, she felt fine.

Between headaches, her behavior has not changed, and she has continued to make above-average grades. She has not experienced any major changes in her home environment. When initially questioned, her mother denied having migraines but did admit to needing to lie down because of headaches approximately once a month. A detailed neurologic examination of the girl is completely normal.

1. How do the symptoms and neurologic examination help differentiate headaches caused by an intracranial space-occupying lesion from headaches caused by a chronic migrainous condition?

2. How do the symptoms and neurologic examination help identify the etiology of the headache?

3. What are the characteristics of headaches caused by intracranial tumors and migraines?

4. How do lifestyle and environmental history help identify headache triggers and help in management of the headache?

5. What is the appropriate treatment plan for patients such as the one discussed in the case study?

Case Resolution

The child’s symptoms and circumstances of the headache suggest a diagnosis of migraine. No laboratory tests or imaging studies are necessary. The girl is begun on amitriptyline hydrochloride and instructed to keep a calendar of headache occurrences. She has 2 headaches in the first 2 weeks, which are aborted effectively with ibuprofen. She has no further recurrences, and the amitriptyline hydrochloride is withdrawn successfully after 3 months.

# Chapter 130

Tics

CASE STUDY

An 8-year-old boy has unusual recurring behaviors that began 2 to 3 months prior to this office visit. He stretches his neck or raises his eyebrows suddenly several times a day. Sometimes he can suppress these actions. The boy’s parents report that in the past 2 years he has displayed several repetitive behaviors, including blinking, grimacing, rubbing his chin on his left shoulder, making a “gulping” sound, and sniffing. Originally, they thought the sniffing was related to hay fever, but the boy has no other allergic symptoms. He does not use profane words. In conversation, he sometimes repeats the last phrase of a sentence that was just uttered by himself or someone else. Additionally, he must touch each light switch in the hallway every time he leaves his room, and he must retie his shoelaces several times until they are exactly the same length. Although his schoolwork has not deteriorated, he has always had trouble completing tasks and finishing homework. His teacher and his best friend have asked about his strange behavior. His mother has a “psychological” problem with her son’s gulping sounds (ie, they recur in her own mind), and she recalls that her father had a habit of frequently looking over 1 shoulder for no apparent reason.

Although during examination the boy does not exhibit any unusual behaviors, he raises his eyebrows twice and places his hand over his mouth several times while his parents are interviewed. Except for mild fine motor incoordination, the neurologic examination is normal.

Questions

1. What are the characteristics of tics?

2. What are some of the other challenges that children with Tourette syndrome may face?

3. What are the considerations in the management of tic disorders?

4. What other problems are associated with Tourette syndrome that also warrant intervention?

Case Resolution

The boy is diagnosed as having TS. After a discussion with his family about the syndrome, he is treated with Catapres patches. A questionnaire is sent to his teacher concerning attention-deficit/hyperactivity disorder symptoms at school. At a 6-week follow-up visit, he has fewer tics and is doing better in school, having been placed in a classroom with only 15 other students for most of the day.

# Chapter 131

Seizures and Epilepsy

CASE STUDY

A 6-year-old boy is evaluated for unusual episodic behaviors. The previous week his mother was awakened by the boy’s brother and found her son lying in bed unresponsive and drooling, with his head and eyes averted to the right, his right arm slightly raised, and his body stiff. His face was jerking intermittently. When the paramedics arrived, the boy’s posturing and movements had stopped. After the event, he could speak but was somewhat incoherent. He was taken to the local emergency department, where his examination and mental status were normal. Screening blood and urine tests were normal, and he was discharged with instructions to see his pediatrician for further recommendations.

His father remembers 2 or 3 other episodes of a somewhat different nature in the past month. These occurred as the boy was being put to bed. They involved some body stiffening and facial grimacing, with the mouth slightly open and the tongue twisted and deviated to one side. The child could not speak but appeared to be trying to talk. Each episode lasted 20 to 30 seconds. Afterward the boy was his usual self and could tell his father what had been said to him.

The child has had no intercurrent illnesses or abnormal behavior apart from these “spells,” and he has lost no abilities. A paternal cousin and grandfather had seizures during childhood but “grew out of them.” The examination is completely normal.

Questions

1. What history would suggest that a child had a seizure?

2. How does the physician determine if a child has a seizure disorder (eg, epilepsy)?

3. How do electroencephalography and other tests help in classifying the type of seizure disorder?

4. How does the physician determine the best course of short- and/or long-term management?

Case Resolution

On evaluation at the emergency department, the seizure was deemed to be a generalized seizure. The previous episodes recalled by the father have characteristics of partial seizures. The tonic-clonic seizure was likely a secondary generalized rather than a primary generalized seizure. The possibility of rolandic seizures is suggested by the circumstances of the prior episodes, drowsiness, facial or oral symptomatology, and family history. This diagnosis was confirmed on EEG. Oxcarbazepine was prescribed. The boy experienced no side effects or seizure recurrences and was able to successfully discontinue the medication 3 years later.

# Chapter 132

Autism Spectrum Disorder

CASE STUDY

The mother of 18-month-old twin boys is concerned because 1 twin is not talking as much as his twin sibling. Both twins are quite active. The mother feels that even though the child is quiet, he is very smart. He likes to figure out how things work. He seems very sensitive to sounds and covers his ears around loud noises. He loves music and even knows which CD his favorite song is on. He will interact with his sibling but does not seem interested in other children.

During the office visit, both boys are quite active. It is difficult to perform an adequate examination because the twin with limited language is crying the entire time. He does not seem to seek out his mother for comfort. Although both children have stranger anxiety, the twin about whom the mother is concerned seems to have extreme stranger anxiety. He appears well otherwise.

Questions

1. What is autism spectrum disorder?

2. How does autism spectrum disorder differ from language delay?

3. How does the physician evaluate a child for autism spectrum disorder?

4. Where can a physician refer a patient with autism spectrum disorder?

5. What types of treatment are available?

6. Should a child suspected of having autism spectrum disorder receive further immunizations?

Case Resolution

The child’s parent completed an M-CHAT-R/F, and the child scored a 4 (ie, intermediate risk). A follow-up interview confirmed that the risk for ASD was significant, and the child was evaluated by a developmental-behavioral pediatrician and the local governmental agency, where he underwent a comprehensive assessment by a multidisciplinary team. The diagnosis of autism was confirmed, and his brother was noted to have a language delay. Both children were placed in an early intervention program. The primary patient was placed in a 1:1 structured teaching environment for 4 months. After exhibiting significant improvement, he was moved to a therapeutic preschool setting that emphasized generalization of his newly acquired skills, speech therapy, occupational therapy, and social skills. His brother received speech therapy 2 times per week. Both are due to start a regular kindergarten class in the fall, with ongoing speech and social support. The primary patient has been placed on a stimulant medication to control hyperactivity and problems with attention.

# Chapter 133

Attention-Deficit/  
Hyperactivity Disorder

CASE STUDY

Cody, a 10-year-old boy, has visited a primary care clinic annually for well-child care, seeing a different pediatrician each time. After falling behind his peers in all academic subjects during the first half of fourth grade, his teacher asks his mother to see if Cody’s doctor can do anything to help him at school. When the appointment is made, the clinic obtains standardized attention-deficit/hyperactivity disorder (ADHD)–specific behavioral rating scales from Cody’s parents and teachers. Before the visit, the pediatrician reviews these rating scales and Cody’s medical history. She discovers that at Cody’s 6-year well-child visit, a colleague documented, “Likely has ADHD, medication is indicated.” The medical records indicate that the family deferred starting stimulant medication and were told to follow up as needed. No further mention of ADHD exists in the record. Cody also has a history of several urgent care and emergency department visits for minor unintentional injuries.

Questions

1. What are the primary symptoms of attention-deficit/hyperactivity disorder? What other conditions should be considered in the differential diagnosis of attention-deficit/hyperactivity disorder?

2. What psychiatric disorders or other neurodevelopmental disabilities commonly coexist with or mimic attention-deficit/hyperactivity disorder?

3. What is the appropriate evaluation of the child with suspected attention-deficit/hyperactivity disorder?

4. What treatment modalities are useful in the management of attention-deficit/hyperactivity disorder?

5. What is the role of primary care in the long-term management of attention-deficit/hyperactivity disorder?

Case Resolution

Cody’s primary care clinic reorganized its system of care to leverage the core concepts of the medical home to improve care for children with chronic conditions, including ADHD. One of the clinic’s nurses, Karen, has been trained to coordinate referrals to behavioral health and other specialists as indicated, communicate and coordinate care with schools and community services, and monitor adherence and response to treatments.

During Cody’s visit, the pediatrician confirms the diagnosis of ADHD and probable comorbid anxiety using American Academy of Pediatrics clinical practice guidelines and standardized criteria. She educates Cody and his family about multimodal evidence-based interventions for these conditions and introduces the family to Karen and the medical home model of care. Karen follows up with the family by telephone 1 week later as planned and learns that they are reluctant to start Cody on any medicine. She guides Cody’s parents to voice their preferences and cultural perspectives on possible interventions and assists them in making another appointment with the same pediatrician, thereby ensuring continuity of care. At the next visit, the pediatrician uses motivational interviewing to help the family find agreement on a watchful waiting approach with close, continuous school and home follow-up by Karen and at least quarterly visits with the same pediatrician. One month later, after a behavioral crisis at school, Cody’s parents request an urgent appointment with same-day access. The pediatrician reviews recent parent and teacher behavioral rating scales at the point of care (gathered by Karen the week prior) and reiterates the available first-line treatment options. The family agrees to pursue an open titration trial of stimulant medication for ADHD symptoms and referral to a therapist who is familiar with behavioral parent training, for evaluation and possible treatment of the anxiety symptoms. Another clinic visit is scheduled in 1 month, and meanwhile, Karen continues to follow up weekly with Cody’s parents, teachers, and therapists.

# Chapter 134

Psychopharmacology in Children

CASE STUDY

An 8-year-old girl has been diagnosed with high-functioning autism spectrum disorder. The local developmental-behavioral pediatrician has recommended treating her anxiety and inattention with atomoxetine hydrochloride. The girl’s mother is quite hesitant to do so. She trusts you, however, and wants your opinion.

Questions

1. What is the means by which the safety and appropriateness of psychotropic medications is assessed?

2. What type blood tests are used to maximize safe administration and how often are they performed?

3. What factors should be considered when placing a child on psychotropic medications?

4. What are the usual side effects of commonly used psychotropic medications?

Case Resolution

You empathize with the mother about this decision but explain that this medication is a reasonable and safe one to try. The patient starts the medication and experiences some nausea in the first few days. With your reassurance, this resolves. The patient’s mother calls a few weeks later to thank you for your advice and to let you know that although her daughter still has difficulties related to the autism spectrum disorder, she seems to be somewhat less anxious and is functioning better at school.

# Chapter 135

Acne

CASE STUDY

A 15-year-old boy comes to your office for a sports preparticipation physical evaluation. He is healthy and has no questions, complaints, or concerns.

The adolescent is well developed and well nourished, with normal vital signs, including blood pressure. The physical examination is entirely normal except for the skin. Multiple closed comedones are noted along the hairline. Erythematous papules and pustules are present across the forehead and over both cheeks. Scattered open comedones are located over the nose and cheeks as well. The chest and back are clear, with no lesions.

Questions

1. Who gets acne?

2. What are some contributing factors in the development of acne?

3. What is the pathogenesis of acne vulgaris?

4. What are the different types of acne lesions?

5. What management options are available for the treatment of mild, moderate, and severe acne?

6. What are the indications for the use of isotretinoin?

7. What is the prognosis for adolescent patients with acne?

Case Resolution

The adolescent should be offered treatment for his mild to moderate comedonal and inflammatory acne. This may include benzoyl peroxide, retinoic acid, and topical antibiotics. The common side effects of the medications (eg, dry skin, peeling) should be reviewed, and the teenager should be instructed to use a noncomedogenic sunscreen. A follow-up appointment should be arranged for 4 to 6 weeks after the initiation of treatment to assess adherence to and tolerance of the prescribed treatment regimen and to address any questions or concerns.

# Chapter 136

Disorders of the Hair and Scalp

CASE STUDY

A 6-year-old girl presents with a 1-month history of swelling on the right side of her scalp that is associated with hair loss. She has previously been in good health, and she has no history of fever. On examination, she is afebrile, has normal vital signs, and appears well. A 2-  2-cm (0.8-  0.8-in) area of nontender, boggy swelling with associated alopecia is apparent over the scalp in the right temporal area. Small pustular lesions are scattered over the involved area. Generalized scaling of the scalp and occipital adenopathy are evident.

Questions

1. What are the common causes of circumscribed hair loss in children?

2. What are the common causes of diffuse hair loss in children?

3. What are the common causes of scalp scaling in children?

4. What features distinguish tinea capitis from alopecia areata?

5. What is the treatment for tinea capitis? Is there a role for topical antifungal agents?

Case Resolution

The child exhibits physical findings of a kerion. Diagnosis can be made clinically on the basis of the appearance of the lesion. The diagnosis is established by microscopic evidence of hyphae and culture confirmation. Treatment with oral antifungals and possibly oral steroids should be initiated. Carriers should also be identified and treated. The child should be examined in 4 weeks to ascertain the response to therapy and check for any adverse reactions.

# Chapter 137

Diaper Dermatitis

CASE STUDY

A 6-month-old boy has a 3-day history of a rash in the diaper area. The mother has been applying cornstarch, but the rash has worsened and spread to the inner thighs and abdomen. The infant has no history of fever, upper respiratory tract symptoms, vomiting, or diarrhea. He was seen in the emergency department 1 week prior to this office visit for acute gastroenteritis, which has since resolved. On examination, a poorly demarcated, shiny, erythematous rash is noted over the convex surface of the buttocks, lower abdomen, and genitalia, with relative sparing of the intertriginous folds. The rest of the physical examination is within normal limits.

Questions

1. What are the common causes of rashes in the diaper area (ie, diaper dermatitis)?

2. What features distinguish the various types of diaper dermatitis?

3. What systemic diseases may present with diaper dermatitis?

4. What are complications that may affect dermatitis in the diaper area?

5. What are some common treatments for diaper dermatitis?

Case Resolution

The infant has irritant contact dermatitis. He has a recent history of gastroenteritis, and stool is known to be particularly irritating to the skin. Treatment includes keeping the diaper area clean and dry with frequent diaper changes and use of superabsorbent diapers as well as topical application of a low-potency corticosteroid ointment or cream and a barrier ointment (eg, petroleum ointment).

# Chapter 138

Papulosquamous Eruptions

CASE STUDY

A 6-month-old girl presents with an erythematous, confluent, slightly raised and scaly rash on the cheeks. The extremities are also covered with a fine papular rash. The infant has had some scaling behind the ears and on the scalp since early infancy, but the symptoms have recently increased. The mother has been applying baby oil to the scalp to relieve the scaliness. Except for some intermittent rhinorrhea, the infant has otherwise been well. Immunizations are deficient; she received only the first set when she was 2 months old. The family history is positive for bronchitis. The infant’s weight is at the 75th percentile and height is at the 50th percentile. Vital signs are normal. The physical examination is normal except for the presence of the rash.

Questions

1. What are the characteristics of papulosquamous eruptions?

2. What are the common conditions associated with papulosquamous eruptions in children?

3. What are the appropriate treatments for common papulosquamous eruptions?

4. When should children with papulosquamous eruptions be referred to a dermatologist?

Case Resolution

The infant’s presentation is characteristic of seborrheic dermatitis. The baby experienced the onset of symptoms as a young infant (most atopic patients develop symptoms after 2 months of age). Seborrheic dermatitis can often affect the head and face of young patients. Xeroderma is also apparent.

The most important topic to discuss with the mother is good skin care. The mother should be advised that although she may use the baby oil to loosen the scale on the scalp, she should shampoo afterward with a mild antiseborrheic shampoo to prevent buildup. A mild topical steroid, such as hydrocortisone 1% ointment, may also be recommended, although chronic use should be dissuaded. If skin scrapings reveal secondary infection with *Candida,* an antifungal cream should be added to the regimen; if a secondary bacterial infection is suspected, a culture should be taken and treatment with topical or systemic antibiotics initiated. Short baths with a mild cleanser and regular application of emollients are critical.

The mother should also be educated on potential flares with vaccinations and infections, as well as with climate changes. It is important that the infant catch up on her vaccinations, but cautioning the mother about a potential flare can prevent concern.

# Chapter 139

Morbilliform Rashes

CASE STUDY

A 10-month-old girl is brought to the clinic with a history of rhinorrhea, cough, and fever for 3 days prior to the onset of a confluent, erythematous rash. The rash started on her face. She has been irritable, and her eyes are red and teary. Her immunizations include 3 sets of diphtheria, tetanus, and acellular pertussis; polio; rotavirus; *Haemophilus influenzae* type b; conjugated pneumococcal; and hepatitis B vaccines. No one at home is ill. The girl was seen in the emergency department 2 weeks earlier because she caught her finger in a car door. On physical examination, the girl’s temperature is 39°C (102.2°F). A confluent eruption of erythematous macules and papules is evident on the face, trunk, and extremities. Rhinorrhea and conjunctivitis are also present.

Questions

1. What are the common causes of febrile maculopapular or morbilliform rashes in children?

2. What features help the differential diagnosis of morbilliform rashes?

3. How does a child’s nutritional status affect the child’s reaction to certain exanthem-inducing viruses?

4. What are the public health considerations concerning viral exanthems in children?

Case Resolution

The infant has the classic symptoms of measles. Normally, such a young infant would not yet have received immunization against measles because the first dose is administered at 12 to 15 months of age with the second dose at 4 to 6 years of age. Immunoglobulin will likely not modify the disease in this patient because her rash is nearly confluent, suggesting exposure more than 6 days ago. She should be evaluated for evidence of complications, including pneumonia. Unimmunized household contacts, as well as pregnant women and other contacts younger than 1 year, should receive immunoglobulin. Treatment is supportive.

# Chapter 140

Vesicular Exanthems

CASE STUDY

A 2-year-old boy is evaluated for a 2-day history of fever (temperature: 39.5°C [103.1°F]), runny nose, decreased appetite, and a rash over the abdomen. He has had no previous known exposures to chickenpox (varicella) and no history of varicella vaccination. He attends child care daily. No one at home is ill. The boy is currently taking no medications except for acetaminophen for fever, and he has no history of dermatologic problems. On physical examination, his heart rate is 120 beats per minute, the respiratory rate is 20 breaths per minute, and temperature is 38.0°C (100.4°F). The boy’s overall appearance is nontoxic. The skin examination is significant for a few scattered erythematous vesicular lesions over the abdomen and 1 erythematous papule on the back. The rest of the examination is normal.

Questions

1. What are the most likely causes of vesicular exanthems in febrile children?

2. How can types of vesicular rashes be differentiated on the basis of patient history?

3. What are the key historical questions to ask?

4. What is the natural course of varicella?

5. What treatment options are available for children with varicella? How is the management different for immunocompromised children?

6. What options are available for vesicular exanthems other than chickenpox?

Case Resolution

The toddler has a classic presentation of primary varicella (chickenpox). Management should include symptomatic treatment with acetaminophen and antihistamines, along with topical preparations such as calamine lotion and oatmeal baths. The parent should be instructed on the natural course of this infection and be informed that the infection is highly contagious. In addition, symptoms indicating possible complications, such as persistent or recurrent fever, tenderness, warmth, redness or swelling of the skin, leaking pus, and shortness of breath, should be reviewed with the parents.

# Chapter 141

Social Determinants  
 of Health: Principles

CASE STUDY

John is a 12-year-old boy who is at your clinic for a sports physical. He is with his older sister because his mother is working and could not bring him in for the visit. He has 3 younger siblings at home. John says he is getting “mostly Cs” in school. When asked why he might be struggling in school, he responds by saying, “I’m trying my best.” He plans on playing football this fall and is excited about the possibility of a “scholarship someday.” His older sister remarks, “You can’t be getting to school late if you want to get good grades.”

Questions

1. What is the value of information about a patient’s school and school performance? What is the best approach to learning about a patient’s school performance?

2. How would you solicit information about a family’s nonmedical needs and concerns?

3. What is the relevance of information about a family’s structure and resources?

4. What role can a pediatrician play in assisting a family’s access to necessary resources?

Case Resolution

A thorough social and family history reveals that John’s mother is a single parent working 2 jobs and that although John has some free time after school, often he is tasked with helping his older sister take care of his younger siblings when his mother is working the night shift. Screening for social needs identifies that his older sister reports that their family is coping with an overcrowded living situation and recently increased cost of rent. A dedicated psychosocial history and screening reveals that John has been having increasing difficulty with math assignments. He also often feels generally anxious and worried, but more so before tests. He is able to confide in his older sister, whom he considers a confidant and advisor. Further probing reveals that John is happiest when he is with his whole family, including his older sister, his mother, and all siblings. Although she is not a parent, John’s sister is most concerned with how she can help John be more successful in school. Although they both wish they had more room in the home, John and his sister are proud of their unique contributions to help their family and the way in which they help each other. In addressing the housing insecurity, you refer the family to a local community housing support agency. You arrange for John to be seen by a behavioral counselor for cognitive therapy for his anxiety. You also share a handout for an after-school educational and tutoring program run by the local parks and recreation department, which John and his siblings can attend and still have family time in the evening. Finally, your office staff forwards a letter to the school system to initiate an evaluation for an Individualized Education Program (IEP). You schedule a follow-up visit to reassess John’s anxiety and the status of the IEP as well as to confirm connection to the housing agency and after-school program.

# Chapter 142

Adverse Childhood Experiences: Trauma-Informed Care

CASE STUDY

Chris is an 11-year-old boy presenting to your clinic for concerns about frequent bedwetting. He is accompanied to the visit by his stepfather. His parents are divorced, and his biological father is currently in jail for domestic violence. His biological father has a history of alcohol use and attention-deficit/hyperactivity disorder (ADHD). His mother has a history of depression. Chris shares that he is embarrassed by his almost nightly bedwetting, and his stepfather adds that Chris has never been dry at night. His stepfather further mentions that Chris was recently suspended from school for 1 day for hitting another child. When the stepfather went to pick up Chris that day, the teacher stated Chris was having difficulty focusing in class and that his reading skills were below grade level. Chris commented, “Yeah, I hit him. He took some of my lunch and I really got mad.”

Questions

1. What is an Adverse Childhood Experiences score, and how is it calculated?

2. What presenting symptoms might trigger an adverse childhood events screening? What questions should you ask the family or patient to help determine the cause of unexplained symptoms?

3. How would you determine Chris’ score? How does this score affect his risk for chronic disease?

4. What is meant by “Pair of ACEs?”

5. What is meant by protective/resilience factors? Can you identify any for Chris in the case study?

Case Resolution

A thorough family and social history reveals that Chris currently lives with his mother, stepfather, and 2 younger sisters in supportive housing. The stepfather has known Chris since he was an infant and has been married to his mother for the past 8 years. The family became homeless 4 years previously when the stepfather lost his job. Since that time, they have lived in various shelters, in their car, and with relatives until being placed in housing 6 months previously. The family continues to struggle with financial hardships and food insecurity. Chris’s biologic father has been incarcerated since Chris was 2 years old; his father has a history of domestic violence, alcohol use, and ADHD. Chris’s mother has a history of learning issues and depression. Chris has attended at least 6 different schools in the past 4 years and has been at his current school for 4 months. His stepfather recalls that Chris had an Individualized Education Program (IEP) a few years previously, but because of the frequent moves, his IEP records have been lost and the school has been unable to locate them either. Chris had been having behavioral outbursts for approximately 2 years but had been doing relatively well this year, until the recent hitting incident. He looks forward to going to school. His teacher likes him and has been working with him outside of class to help remediate his reading skills.

You review the history and conclude that Chris has an ACE score of 5; he has experienced all 5 household dysfunction criteria. Additionally, he has a history of homelessness, a factor that is not included in the original ACEs profile. Further exploration of protective factors is warranted, but based on initial intake such factors include Chris’s positive relationships with his stepfather and his teacher as well as the family’s access to supportive housing. The physical examination is normal, as is the urinalysis. You discuss behavioral management strategies for the nocturnal enuresis. To further understand Chris’s attention and behavior concerns, you provide the family with the National Initiative for Children’s Healthcare Quality Vanderbilt Assessment Scale to be completed by his teacher and parents. To address his learning concerns, you write a letter to request an evaluation for an IEP. You provide a book to Chris and remind him to read 20 minutes every night. The family is already connected to a local community housing support agency, and through this agency, Chris is receiving in-home therapy and his parents are receiving parenting support services. You schedule a follow-up visit to further assess and treat his bedwetting, attention, behavior, and learning concerns.

# Chapter 143

Commercially Exploited Children and Human Trafficking

CASE STUDY

At age 17 years, Joe ran away from home to escape family violence and maternal substance use. He had no money or resources while living on the street, so he exchanged sex acts for money, food, shelter, clothes, and drugs. Many of the other homeless youth were doing the same, and they provided support to each other. None of the youth was operating under the control of a “pimp.” Joe continued to engage in “survival sex” until age 19 years, at which time he met a man who promised to get him more clients and money. Joe agreed to the arrangement and stayed with this man for 1 year, giving him 30% of what he earned. Eventually Joe made the decision to stop this work, but when he announced this to his “friend,” the man beat him and told Joe he could not quit and must continue selling sex to “earn his keep.” Further, the man threatened to tell Joe’s family that he was selling sex unless Joe agreed to deliver drugs to a dealer in another city. Joe’s involvement in commercial sex and the drug trade continued for 6 months. Today, Joe arrives at your clinic and requests testing for HIV and sexually transmitted infections (STIs).

Questions

1. What are some of the risk factors associated with a trafficked individual?

2. What is the typical sequence of events that precede becoming trafficked?

3. In a patient, what are possible indicators of human trafficking?

4. What is the best means of approaching a patient who may be experiencing sex or labor trafficking?

5. Is Joe, the patient in the scenario, being trafficked? Why or why not?

Case Resolution

You build rapport with Joe by asking him what he likes about himself, what he likes to do, and what famous people he likes. You explain the limits of confidentiality and the voluntary nature of all aspects of the visit. Additionally, you explain that you ask all of your patients questions about their health and background, including some questions that are sensitive, to determine if there is some way you can help them feel better and stay safe. He agrees to answer questions. When you inquire about past medical history, he reports prior gonorrhea and chlamydia infections; he has had “lots” of sexual partners. He has a history of “bipolar” disorder. Joe indicates that he is living with an older man and has a history of running away from home multiple times because of maternal drug use. He appears reluctant to provide details of his living situation or other social history. He does not disclose his sex and labor exploitation to you. You are concerned that he has multiple risk factors for exploitation and inquire more about his time when he was living on the street as a teenager. You ask if he was ever in a position in which he had to consider trading sex for something he needed, such as food or shelter. He hesitates, looks away, and then says, “Yes, but I never did it.” He changes the subject and starts talking about his recent genitourinary symptoms. On physical examination you note linear scars on his back, which he vaguely acknowledges as, “from being hit a long time ago.” He provides no details. He has a purulent penile discharge that tests positive for gonorrhea.

You talk to Joe about STIs and condom use. You counsel him about the concept of exploitation by those who seek to take advantage of people, either by forcing or coercing them into having sex for money or exploiting them in other types of work. You ask if he would be interested in any information about this and offer to give him the number of the National Human Trafficking Hotline to call if he or a friend ever feels he, she, or they is being exploited. You offer resources for homeless shelters in case he wants to leave his present living situation and ask if there are other community resources he thinks he might need. You arrange for a follow-up appointment in 2 weeks.

# Chapter 144

Physical Abuse

CASE STUDY

A 6-month-old boy arrives at the emergency department after becoming limp and nonresponsive at home. The mother states that her son was fine when she left him in the care of her boyfriend before going to the store for cigarettes. When she returned 1 hour later her son was asleep, but then he seized and stopped breathing. The infant is being ventilated by bag-valve-mask ventilation. On examination, the infant is pale and limp. His heart rate is 50 beats per minute, and his blood pressure is 130/80 mm Hg. He has no external signs of injury.

Questions

1. What are the types of injury that may be seen in physically abused children?

2. What are the major lethal and other serious injuries associated with physical abuse of children?

3. What are the presenting signs in the child with head injury?

4. What diagnostic studies are indicated in the child with suspected physical abuse?

5. What are the legal obligations of the physician in the area of child abuse?

Case Resolution

The case study is a classic case of abusive head trauma. The infant was left alone with an individual with limited parenting skills. The infant has evidence of increased intracranial pressure and may have traumatic axonal injury or intracranial hemorrhage. The infant is intubated, administered anticonvulsant agents, and admitted to a pediatric intensive care unit. Consultation with neurosurgery, ophthalmology, and social services is obtained. Appropriate imaging studies and skeletal surveys are performed when the infant is sufficiently stabilized, and the child is ultimately diagnosed with subdural hemorrhage, retinal hemorrhages, and rib fractures.

# Chapter 145

Sexual Abuse

CASE STUDY

A 4-year-old girl is brought to the emergency department with the report of vaginal itching and discharge. Her past health has been good, and she has no medical problems. She lives with her biological parents and her 2-year-old brother.

On physical examination, the vital signs are normal and the child is well, except that the genital area is swollen and erythematous and a green vaginal discharge is present. The girl is interviewed briefly but denies that anyone has touched her. The mother states that she has never left her daughter unattended and is angered by the questions about possible sexual abuse.

Questions

1. What are the anogenital findings in prepubescent and postpubescent children who may have experienced sexual abuse?

2. What behavioral problems are common among children who have been sexually abused?

3. What are the pitfalls in disclosure interviews of children who have been sexually abused?

4. What is the significance of sexually transmitted infections in children who have been sexually abused?

Case Resolution

The mother claims that no one has access to her child; however, the girl’s symptoms strongly suggest an infection with *Neisseria gonorrhoeae*. Secrecy about abuse is quite common. The child and mother should be interviewed by a skilled person. Cultures for gonorrhea should be carefully collected and sent to the most reliable laboratory. Antibiotic therapy may be initiated if the child is symptomatic. The case may be referred immediately to social services and law enforcement agencies if a disclosure is made. Alternatively, if the child denies the abuse, the referral may be deferred pending laboratory confirmation of the diagnosis.

# Chapter 146

Failure to Thrive

Questions

CASE STUDY

A 2-year-old girl is brought to the office because of her small size. She was born at term but weighed only 2,200 g (4.9 lb [<5th percentile]) and measured 43 cm (16.9 in [<5th percentile]). The mother is a 30-year-old gravida 5, para 4, aborta 1 who smoked during pregnancy but denies using alcohol or drugs. She received prenatal care for only 2 weeks just prior to delivery, and she claims to have felt well.

The child’s physical health has been good. She is reported to be normal developmentally but speaks only 4 to 5 single words. She has not yet started toilet training.

The family history is negative for medical problems, including allergies, diabetes, and cardiac and renal disease. The mother is 5 feet (152 cm) tall, and the father is 5 feet, 4 inches (163 cm) tall. The girl has 3 siblings, aged 5 years, 4 years, and 3 years, all of whom are normal. The father is no longer in the household. The mother is not employed outside the home, and she receives public assistance. She states that frequently there is not enough food in the home, although she receives food stamps (ie, Supplemental Nutrition Assistance Program).

On physical examination, the girl is below the fifth percentile in height and weight. Although she is quite active, she does not use any understandable words. The remainder of the examination is normal.

1. What are the key prenatal factors that affect the growth of children?

2. How can caloric adequacy of a diet be assessed?

3. How do parental measurements affect their children’s stature?

4. What are the behavioral characteristics of the infant with environmental failure to thrive?

5. What are some strategies to increase caloric intake of infants and children?

6. What, if any, laboratory studies should be routinely obtained when evaluating a child for failure to thrive?

Case Resolution

The term child had a low birth weight, which suggests intrauterine growth restriction. Although the mother reports using no alcohol or drugs, such denial is not uncommon. The child’s growth pattern should be determined to learn if the rate of growth has changed recently, and body mass index should be calculated to check for undernutrition and short stature. A mid-parental height curve should be used to determine if the child’s short stature is related to the parents’ short stature. Intervention should involve mobilizing resources for the child and family to ensure adequate food as well as financial and emotional support.

# Chapter 147

Fetal Alcohol Syndrome

CASE STUDY

A 6-year-old boy is brought into the clinic by his maternal aunt, who expresses concerns about her nephew’s behavior that are echoed by his kindergarten teacher. The teacher has reported that the child has a limited attention span and is often disruptive in class. The child’s growth parameters have remained at the third percentile since birth. He has a smooth philtrum, thin upper lip, and short palpebral fissures.

Questions

1. What conditions and birth defects are included under fetal alcohol spectrum disorder?

2. What are the diagnostic criteria for fetal alcohol syndrome?

3. What is the differential diagnosis of the facial characteristics of fetal alcohol syndrome?

4. What typical behavioral and learning problems are experienced by the child with fetal alcohol syndrome?

5. What therapeutic interventions are appropriate to recommend for the child with fetal alcohol syndrome?

Case Resolution

The child meets diagnostic criteria for FAS. It is recommended to the caregiver that she initiate obtaining “educational rights” over her nephew so she can request an Individualized Education Program from his school administrator. An assessment for ADHD, such as the *Conners 3* or the *National Institute for Children’s Healthcare Quality (NICHQ) Vanderbilt Assessment Scale*, or another standardized measure for ADHD, should be given to the caregiver and teacher to each evaluate the child. Prescription for stimulant medications may be warranted in conjunction with behavioral therapy. Depending on local resources, the caregiver and child may be referred for psychotherapy, including parent-child interactive therapy, in which the patient’s aunt may be coached on how to cope with his behaviors in the most positive, effective manner.

# Chapter 148

Infants of Substance-  
Using Mothers

CASE STUDY

A neonate is born by emergency cesarean section because of abruptio placentae. The mother is a 29-year-old gravida 6, para 4, aborta 2 with a history of crack cocaine and heroin use during pregnancy. The newborn is 36 weeks’ gestational age with a birth weight of 2,400 g (5.3 lb) and length of 43 cm (16.9 in). Physical examination is normal. The newborn does well for the first 10 hours but then develops jitteriness with irritability, diarrhea, sweating, and poor feeding. A urine toxicology test on the newborn and mother are positive for cocaine.

Questions

1. What complications affect the neonate secondary to in utero drug exposure?

2. What withdrawal symptoms does the newborn experience as a result of in utero drug exposure?

3. What typical behavioral and learning problems are found in the child with in utero drug exposure?

4. What are the appropriate treatment strategies for the neonate who has experienced in utero drug exposure?

5. How does the legalization of marijuana affect the counseling of the mother about breastfeeding?

Case Resolution

The case study highlights typical features of the neonate who was exposed to drugs in utero. Management includes testing for hepatitis B, hepatitis C, syphilis, and HIV and administering medication, such as morphine, methadone, or phenobarbital, if irritability does not respond to swaddling or other measures. The situation should be reported to child protective services to ensure an assessment of the neonate’s home environment.

# Chapter 149

Divorce

CASE STUDY

A 7-year-old girl who has been your patient for 5 years is brought in by her mother for abdominal pain that occurs on a daily basis and is not associated with any other symptoms. The pain is periumbilical. In obtaining the history, you learn that the father has moved out of the home and the parents plan to divorce. The mother believes that her daughter’s symptoms may relate to the impending divorce, and she wants to know what else to expect.

Questions

1. What are the problems faced by children whose parents are undergoing divorce?

2. What are the age-related reactions of children in families undergoing divorce?

3. What are the custodial issues and arrangements after divorce?

4. What is the role of the pediatrician in counseling families undergoing divorce?

5. What anticipatory guidance can be offered about custody and remarriage?

6. How can the pediatrician help stepfamilies adjust?

Case Resolution

The case study reflects that functional somatic symptoms are not uncommon, especially in school-age children of divorced parents. The mother and her daughter should be advised how stressful divorce is for children. A careful medical examination may reassure the mother and daughter about the child’s physical well-being. Issues related to custody, financial responsibility, and the need for consistency should all be addressed. The pediatrician also should refer the family to outside agencies, if necessary.

# Chapter 150

School-Related Violence  
and Bullying

Questions

CASE STUDY

A mother brings in her 9-year-old son, Alex, who reports recurrent abdominal pain. His pain has become so severe that Alex misses school frequently. He denies any vomiting or diarrhea. His weight has been stable over the past 6 months. Alex’s mother reports that lately he seems more withdrawn and passive. He used to be engaged in his schoolwork but now, with his frequent absences, has lost interest in school. His mother says he is often anxious or nervous about new situations.

1. How does school-related violence, including bullying, affect a child’s health and well-being?

2. What is the relationship between bullying and adult criminal behavior?

3. What is cyberbullying?

4. Which children are at risk for being bullied or for becoming a bully?

5. What can the pediatrician do to help address violence in the school, home, and communities?

Case Resolution

Targets of bullying often present with psychosomatic symptoms, such as headache or abdominal pain. After organic etiologies have been ruled out, further questioning should focus on psychosocial stresses. Alex’s abdominal pain is worse in the morning before going to school. When asked specifically about bullying, Alex states that a few of his classmates tease him and rough him up each day on his way to school. In the past few weeks, they have been sending him text messages about how they are going to haze him the next day. Alex has not told anyone about the experience because he thought he would be viewed as a coward. Alex shares that he would rather avoid going to school than face potential bullying.

The physician needs to assure Alex that it is not his fault that he is a target of bullying. Prevention should include interventions at the individual, family, and school level. Alex should walk away from the conflict when possible and feel comfortable about reporting the event to school staff. He may want to find a friend with whom he can walk to school. His family needs to understand that bullying is not a normal behavior of childhood. He should be encouraged to talk about bullying events and work with his family to identify solutions. The school should be notified of the event and encouraged to promote a non-bullying school environment.

# Chapter 151

Intimate Partner Violence

Questions

CASE STUDY

A 6-year-old boy is brought in by his mother for an annual well-child visit. He sits quietly as his mother reports no significant medical history. His medical records reflect that at his last visit he was talkative, doing well in school, and enjoyed playing baseball. As you speak with his mother, she seems reticent and does not spontaneously offer information. You determine that the boy’s school performance has declined significantly over the past year and that he no longer wants to play baseball.

On physical examination, the boy has linear ecchymoses over his buttocks, and you notice bilateral areas of bruising on his mother’s upper arms. When you ask about the marks, she becomes tearful. You ask her if she would like to speak privately with you.

1. How often does child abuse and intimate partner violence co-occur?

2. What are potential strategies to screen for intimate partner violence?

3. What are common clinical presentations of victims of intimate partner violence and children exposed to intimate partner violence?

4. What are the long-term consequences of intimate partner violence on children?

5. What are key factors in determining the risk to a target of intimate partner violence?

Case Resolution

When alone with you, the mother reports that the boy’s bruising occurred after her boyfriend hit him with a belt and that her marks occurred when the boyfriend was drunk and angry about the dinner she had prepared. She has contemplated leaving the relationship but is financially dependent on her boyfriend and pregnant with his child. He has threatened to harm her son if she leaves. She is afraid to return home but is not sure what to do.

You contact a social worker who assists in referring the mother and child to an IPV shelter and an IPV advocacy group. The social worker and the agencies work on an immediate safety plan while the mother and child wait in the office. As a mandated reporter of child abuse, you contact the child abuse hotline. The social worker assists you with the requirements in your state to report IPV or childhood exposure to IPV. The mother should be advised that a child abuse report was initiated, and child protective authorities should also be made aware that IPV and child abuse are co-occurring in this family.

# Chapter 152

Cancer in Children

CASE STUDY

A 10-year-old boy has a history of intermittent fevers of 39.0°C (102.2°F) for 1 month. For 2 days, he has experienced increasing shortness of breath with rapid respirations. His face is dusky and plethoric, and the veins in his neck are prominent. He has bilaterally enlarged cervical lymph nodes. The remainder of the examination is normal.

His blood cell count is normal, but the erythrocyte sedimentation rate is 110 mm/h. A chest radiograph reveals a large mediastinal mass.

Questions

1. What signs and symptoms are associated with malignant conditions in children?

2. What oncologic emergencies require immediate attention?

3. What factors correlate with the manifestation of cancer in children?

4. What is the role of the primary care physician in the care of the child diagnosed with cancer?

Case Resolution

The boy undergoes a mediastinoscopic biopsy of the mediastinal mass, which reveals lymphoblastic lymphoma. No evidence of disease in the bone marrow or spinal fluid is present, which would indicate a worse prognosis. Treatment involves chemotherapy, and the prognosis is quite good. Symptoms of SVC syndrome caused by obstruction from the tumor resolve with shrinkage of the tumor secondary to therapy.

# Chapter 153

Chronic Kidney Disease

CASE STUDY

During a consultation for diarrhea and dehydration in a 7-year-old boy, the pediatrician notes growth retardation. The boy’s parents report decreased appetite, decreased level of physical activity, and bed-wetting, despite the patient having been previously potty trained. The medical history is significant for multiple episodes of fever caused by presumed ear infections during his first years after birth and 1 episode of urinary tract infection, without further studies. After hydration, the physical examination reveals a pale and short patient (height 101 cm [39.8 in]; <5th percentile) with a blood pressure of 125/85 mm Hg, the latter of which is indicative of stage 2 hypertension for age, sex, and height. Routine laboratory studies reveal anemia, a serum creatinine level of 1.4 mg/dL, and 3+ proteinuria.

Questions

1. How is renal function estimated in the pediatric patient?

2. What are the relevant questions to ask about medical and family history in the child who presents with chronic kidney disease?

3. What additional diagnostic tests should be performed to determine the etiology of the kidney disease?

4. What are the approaches to the treatment of the child with chronic kidney disease?

Case Resolution

The patient has a GFR of 30 mL/min/1.73 m2. The initial evaluation reveals anemia (hematocrit 28% [normal: 36–48]), low serum bicarbonate (17 mEq/L [normal: 22–26]), hypocalcemia (8 mg/dL [normal: 8.6–10]), hyperphosphatemia (7 mg/dL [normal: 2.7–4.5]), and elevated parathyroid hormone (700 pg/mL [normal: 10–65]). Ultrasonography reveals that both kidneys are small with increased echogenicity, and voiding cystourethrography reveals bilateral vesicoureteral reflux. Management of the primary disease is started with antibiotic prophylaxis to prevent further urinary tract infections, and the patient is referred to pediatric urology. Measures to slow the progression to end-stage renal disease are initiated, involving dietary intervention and management of comorbid conditions. Bicarbonate is started for metabolic acidosis; iron and recombinant human erythropoietin are started for anemia; and calcium carbonate is started as a phosphate binder/calcium supplement. The hypertension associated with proteinuria is best managed with an angiotensin-converting enzyme inhibitor. Growth hormone will be considered after the acidosis, anemia, and hyperparathyroidism are corrected. Immunizations are current. An appointment with the pediatric nephrology team is scheduled.

# Chapter 154

Diabetes Mellitus

Questions

CASE STUDY

A 10-year-old girl presents with a 3-week history of nocturnal polyuria. Her mother reports that her daughter, previously overweight, seems to have lost weight in the past 2 months after receiving nutrition education. Laboratory tests reveal that the girl’s serum sodium level is 130 mEq/L; potassium, 3.2 mEq/L; glucose, 324 mg/dL; and 1+ ketones. Urinalysis reveals specific gravity of 1.025 and moderate glucose and ketones. Her height and weight are within normal ranges for her age, and the remainder of her physical examination is unremarkable.

1. What is the pathophysiology of type 1 and type 2 diabetes?

2. What are diagnostic criteria for differentiating type 1 and type 2 diabetes?

3. What are the objectives of therapeutic interventions in the child with diabetes?

4. What diagnostic evaluations are used in ongoing management of diabetes?

5. What are the acute and chronic complications associated with diabetes?

6. What is the role of “tight glycemic control” in children and adolescents?

Case Resolution

With the presence of ketones, the girl is admitted to the hospital to initiate insulin treatment and determine appropriate dosing. Anti–glutamic acid decarboxylase and anti–islet cell antibody levels are ordered to determine if she has autoimmunity, which would indicate DM1. She and her family require ongoing education. Careful management is necessary to optimize normal growth and development as well as to delay or prevent long-term sequelae.

# Chapter 155

Childhood Obesity

CASE STUDY

A 10-year-old girl is brought to the office by her mother to discuss concerns about the child’s weight, which is 59 kg (130 lb). Her height is 140 cm (55 in), giving her a body mass index (BMI) of 30 (>95th percentile for age). The remainder of the physical examination, including vital signs, is normal. The mother, who also has overweight, says she does not want her daughter to “end up like me.” The patient says she gets teased at school about her weight. The history reveals that this patient is an only child who lives with her single mother in low-income housing in a large city. The mother works the day shift as a nurse’s aide at a nearby nursing home. Because the mother is often tired, meals are simple and frequently consist of prepackaged foods, such as pastries for breakfast and frozen dinners for supper. At school, the girl buys her lunch, which usually includes whole milk, a processed entrée, and a dessert. After school, the girl goes home, where she watches television and snacks on chips and soda until her mother arrives home from work. The mother does not allow her daughter to play outside because the neighborhood is unsafe.

Questions

1. How is obesity defined and measured, and what are some pitfalls in measurement?

2. How do genetic susceptibility and environment interact to influence an individual’s risk for obesity?

3. What are the complications of childhood obesity?

4. What is the role of the primary care physician in addressing childhood obesity?

5. How can obesity be managed in a supportive, nonstigmatizing way?

Case Resolution

The case study describes a girl with obesity who is at substantial risk for retaining obesity into adulthood based on her present weight and her mother’s history of obesity, as well as social and economic risk factors. Strengths for the family include a mother who recognizes her daughter’s weight as a concern and is motivated to make changes. Working with a dietitian, the mother and daughter learn about simple changes for healthy diets. They begin to plan meals and snacks that include fruits and vegetables and can be prepared in advance. The daughter starts making her own lunch each night before school. The mother changes her grocery shopping: She buys 1% milk instead of whole milk and stops buying as many cookies, chips, and soda, except as an occasional treat. A social worker helps find an after-school program at the nearby YMCA. The patient starts attending and, with some special attention from the coach, finds she enjoys basketball and decides she would like to try out for the school team next year. The mother wants to exercise more, so she and her daughter plan after-dinner walks around the track at the local high school.

Over the next 6 months, you follow mother and daughter closely. The most recent growth parameters show that the girl has maintained her weight at 59 kg (130 lb) but has grown 5 cm (2 in) to a height of 145 cm (57 in), giving her a BMI of 28. The mother has lost 2.7 kg (5 lb) during this period, and both she and her daughter are excited about continuing their new lifestyle.

# Chapter 156

Juvenile Idiopathic  
Arthritis and Benign Joint Pains of Childhood

CASE STUDY

A 4-year-old white girl is evaluated for limp. The parents are unclear about the duration of her symptoms, although they believe she began exhibiting knee problems after she was playing with her brother 3 months previously. The parents have observed the patient to walk “like her grandmother” every morning, with marked improvement in her gait after approximately 1 hour of movement. Her activity level has remained about the same, although the morning limp limits her ability to keep up with her siblings. She has no history of rash, fever, weight loss, severe pain, or other joint involvement. On physical examination, vital signs are normal; her left knee is swollen, with a 20° flexion contracture; and the left leg is 1.5 cm (0.6 in) longer than the right leg.

Questions

1. What findings are indicative of juvenile idiopathic arthritis?

2. What is the differential diagnosis for monoarticular arthritis?

3. Which laboratory tests are important in the diagnostic workup of a child with suspected juvenile idiopathic arthritis?

4. What are the most common complications of juvenile idiopathic arthritis?

5. What other organs are involved in juvenile idiopathic arthritis?

6. What are the long-term outcomes for the patient with juvenile idiopathic arthritis?

7. What types of agents are used in the management of juvenile idiopathic arthritis?

Case Resolution

The girl has a presentation consistent with oligoarticular JIA based on the number of involved joints with arthritis, the chronicity of her concerns by history, and abnormal physical examination. Testing for ANA was positive, which puts her at high risk of developing anterior uveitis (younger than 6 years at diagnosis, duration of disease, positive result on ANA test). She is referred to a pediatric ophthalmologist for uveitis screening every 3 months for the first 4 years following diagnosis, and every 6 months for the next 3 years, followed by yearly screening thereafter. She is also referred to a pediatric rheumatologist for assistance in managing her disease and a physical therapist to address her limitation of motion and resultant weakness.

# Chapter 157

Autoimmune Connective Tissue Diseases

CASE STUDY

A 14-year-old girl has a 1-month history of severe fatigue with difficulty sleeping and nonrestorative sleep, hand swelling, generalized aches, low-grade fever, weight loss, and face and leg rashes. She has not felt well enough to go to school for several weeks and states that her fingers are stiff and she cannot type. On examination, she appears tired and does not look well. Vital signs show a temperature of 38.1°C (100.5°F), blood pressure of 138/84 mm Hg, pulse of 98 beats per minute, and respiratory rate of 22 breaths per minute. Her eyes appear puffy, and her ankles and feet are swollen. She has swelling over the joints of her fingers and reports difficulty closing buttons.

Questions

1. What patient findings are concerning for an autoimmune disease?

2. How can the clinical history and laboratory evaluation assist in determining the diagnosis and treatment?

3. What would be your initial diagnosis for the patient in the case study, and what consultants might be helpful in diagnosing and managing the patient?

4. What are the criteria for the diagnosis of systemic lupus erythematosus? Based on the case study provided, does this patient meet criteria for systemic lupus erythematosus?

5. What therapies are used in patients with autoimmune connective disorders?

Case Resolution

Initially criteria were insufficient for a diagnosis of SLE (rashes, but not clarified if photosensitive; swelling and hypertension suggestive of renal disease; arthritis); however, it is clear that the adolescent has findings consistent with SLE. Additional questions about the history reveal that the sun made the girl’s rashes worse, she had mouth sores, in the morning her eyes were puffy, and she sometimes had chest pain and trouble breathing. On physical examination, she was found to have a malar rash and a rash on the hard palate with other mouth sores, pitting edema of her feet and ankles, and mild hypertension. Laboratory results showed a mild anemia and lymphopenia, an ANA of 1:320 in a homogenous pattern, positive anti-ds-DNA antibodies, and low C3 (normal range: 87–158 mg/dL) and low C4 (normal range: 14–36 mg/dL). The urinalysis had 3+ protein and the protein/creatinine ratio was 1.0 (normal range: 0–0.4). With these additional findings the girl meets the criteria for a diagnosis of SLE with lupus nephritis. She is referred to a pediatric rheumatologist and nephrologist, and lupus nephritis (class III) is confirmed on renal biopsy. The girl is started on treatment with steroids and immunosuppression and improves over the next 6 months.