THE AMERICAN BOARD OF PEDIATRICS®

CONTENT OUTLINE

General Pediatrics

In-Training, Certification, and

Maintenance of Certification Examinations

Effective for examinations administered

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INTRODUCTION

This document was prepared by the American Board of Pediatrics for the purpose of developing certification examinations for general pediatricians. The outline, which was developed by a committee of pediatric practitioners and educators, contains the categories that will be reflected in the general pediatrics examinations.

If you have comments or questions about these content specifications, or about how they are used, please send an e-mail to abpeds@abpeds.org.

General Pediatrics Exam Percentage List

1. **Growth and Development**
   A. Normal growth
      1. Measurement
         a. Understand the uses and limitations of the various anthropometric techniques available to assess growth and/or nutritional status
      2. Linear growth and weight gain
         a. Use a growth chart to monitor linear growth and weight gain
         b. Understand the utility of the body mass index
         c. Differentiate between normal and abnormal variations in linear growth and weight gain
         d. Differentiate between normal and abnormal growth velocity in neonates and infants
         e. Understand the effect of chronic disease on linear growth velocity
         f. Recognize the differences in upper body segment-to-lower body segment ratio in children compared with that of adults
      3. Head growth
         a. Differentiate between normal and abnormal variations in head shape and/or growth (eg, craniosynostosis, plagiocephaly, microcephaly, macrocephaly)
         b. Differentiate among the possible causes of abnormal head shape and/or growth (eg, craniosynostosis, plagiocephaly, microcephaly, macrocephaly)
         c. Plan the management of a patient with an abnormal head shape and/or growth (eg, craniosynostosis, plagiocephaly, microcephaly, macrocephaly)
   B. Failure to thrive
      1. Recognize and evaluate a patient with failure to thrive
      2. Differentiate among the possible causes of failure to thrive
      3. Plan the management of an infant with failure to thrive
   C. Obesity
      1. Recognize the various complications associated with obesity
      2. Formulate a differential diagnosis in a patient who is obese
      3. Know which interventions have been effective and ineffective in caring for patients of various ages who are obese
      4. Understand the importance of body mass index (BMI) in identifying obesity and overweight
      5. Identify the genetic and environmental risk factors for obesity, including lifestyle choices
      6. Counsel a family with regard to obesity prevention and treatment
   D. Surveillance and screening
      1. Understand the uses and limitations of various developmental screening tools
      2. Distinguish between isolated, global, and atypical developmental delay
      3. Understand the factors that can cause variations in the normal developmental sequence and recognize their associated features
   E. Developmental milestones (birth to 12 years)
      1. Neonatal period (first four weeks after birth)
         a. Evaluate the developmental progress/status of a neonate through the first four weeks after birth
      2. Two months
         a. Evaluate the motor developmental progress/status of an infant at 2 months of age, including recognition of abnormalities
         b. Evaluate the cognitive and behavioral developmental progress/status of an infant at 2 months of age, including recognition of abnormalities
      3. Four months
         a. Evaluate the motor developmental progress/status of an infant at 4 months of age, including recognition of abnormalities

b. Evaluate the cognitive and behavioral developmental progress/status of an infant at 4 months of age, including recognition of abnormalities

4. Six months
   a. Evaluate the motor developmental progress/status of an infant at 6 months of age, including recognition of abnormalities
   b. Evaluate the cognitive and behavioral developmental progress/status of an infant at 6 months of age
5. Nine months
   a. Evaluate the motor developmental progress/status of an infant at 9 months of age, including recognition of abnormalities
   b. Evaluate the cognitive and behavioral developmental progress/status of an infant at 9 months of age
6. Twelve months
   a. Evaluate the motor developmental progress/status of an infant at 12 months of age
   b. Evaluate the cognitive and behavioral developmental progress/status of an infant at 12 months of age
7. Fifteen months
   a. Evaluate the motor developmental progress/status of a child at 15 months of age
   b. Evaluate the cognitive and behavioral developmental progress/status of a child at 15 months of age
8. Eighteen months
   a. Evaluate the motor developmental progress/status of a child at 18 months of age, including recognition of abnormalities
   b. Evaluate the cognitive and behavioral developmental progress/status of a child at 18 months of age
9. Twenty-four months
   a. Evaluate the motor developmental progress/status of a child at 24 months of age
   b. Evaluate the cognitive and behavioral developmental progress/status of a child at 24 months of age, including recognition of abnormalities
10. Thirty-six months
    a. Evaluate the motor developmental progress/status of a child at 36 months of age
    b. Evaluate the cognitive and behavioral developmental progress/status of a child at 36 months of age, including recognition of abnormalities
11. Four years
    a. Evaluate the motor developmental progress/status of a child at 4 years of age
    b. Evaluate the cognitive and behavioral developmental progress/status of a child at 4 years of age
12. Five years
    a. Evaluate the motor developmental progress/status of a child at 5 years of age
    b. Evaluate the cognitive and behavioral developmental progress/status of a child at 5 years of age
13. Six years to twelve years
    a. Evaluate the cognitive and behavioral developmental progress/status of a child at 6 to 12 years of age

2. **Nutrition and Nutritional Disorders**

A. Normal nutritional requirements

1. General
   a. Identify the age-related changes in the ability to absorb and digest different nutrients relevant to infant feeding
2. Minerals
   a. Understand the dietary mineral requirements of patients of various ages, including those born prematurely, and the circumstances in which those requirements may change

3. Vitamins
    a. Understand the absorption, storage, and metabolism of fat- and water-soluble vitamins in patients of various ages, including those born prematurely
4. Fats
    a. Understand the dietary fat requirements of patients of various ages, including those born prematurely, and the circumstances in which those requirements may change
5. Protein
    a. Understand the dietary protein requirements for patients of various ages, including those born prematurely, and the circumstances in which those requirements may change
6. Calories
    a. Understand the caloric requirements for patients of various ages, including those born prematurely, and the circumstances in which those requirements may change

B. Infant feeding
1. Breast-feeding
    a. Understand the qualitative and quantitative differences between human milk and various infant formulas
    b. Recognize the presence and importance of various antibodies (including secretory IgA) in human milk and colostrum
    c. Understand factors that could interfere with breast-feeding
    d. Understand the significance of colitis in a breast-fed infant
    e. Recognize the effects of maternal ingestion of drugs on breast-fed infants
    f. Know the normal pattern of feeding and stool frequency in breast-fed infants
2. Formula-feeding
    a. Know the content of various infant formulas and milk sources, the indications for their use, and possible side effects
    b. Differentiate milk protein allergy from lactose intolerance
    c. Understand the nutritional supplements that can be used to increase caloric density of formulas and their risks
    d. Know the normal pattern of feeding and stool frequency in formula-fed infants
3. Introduction of cow milk and solid food
    a. Understand the qualitative and quantitative differences between human milk and cow milk
    b. Understand the appropriate age at which cow milk should be introduced into the diet
    c. Know the appropriate age and sequence for introducing solid food into an infant's diet
    d. Understand the consequences of introducing solid food prematurely

C. Deficiency states and hypervitaminosis (including rickets)
1. Vitamin deficiency states
    a. Recognize the signs, symptoms, and causes of vitamin A deficiency, and manage appropriately
    b. Recognize the signs, symptoms, and causes of vitamin B12 deficiency, and manage appropriately
    c. Recognize the signs, symptoms, and causes of vitamin C deficiency, and manage appropriately
    d. Recognize the effects of vitamin D deficiency in patients of various ages, including those who are breast-fed
    e. Recognize the presenting signs and symptoms of vitamin D-deficient rickets, and manage appropriately
    f. Recognize the laboratory and radiologic features of vitamin D-deficient rickets
    g. Recognize the signs, symptoms, and causes of vitamin E deficiency, and manage appropriately
    h. Recognize the signs, symptoms, and causes of vitamin K deficiency, and manage appropriately
    i. Recognize the signs, symptoms, and causes of folate deficiency, and manage appropriately
2. Mineral deficiency states
    a. Identify the conditions that are associated with a deficiency of various trace minerals (eg, zinc, copper, magnesium, chromium)

3. Protein, calorie deficiency states
    a. Recognize the clinical features associated with protein or calorie deficiency, including edema and malnutrition
    b. Plan the diagnostic evaluation of a patient with suspected protein-losing enteropathy, while considering its causes
4. Hypervitaminosis
    a. Recognize the signs and symptoms of hypervitaminosis

D. Principles of nutritional support
1. General
    a. Understand the differences among categories of formula used for special nutritional support and the indications for their use
2. Tube feeding, enteral nutrition
    a. Recognize the complications associated with tube feeding
    b. Judge the advantages of enteral nutrition over parenteral nutrition
    c. Understand the indications for providing enteral nutritional support
    d. Know when to prescribe intermittent (bolus) feeding rather than continuous tube feeding
3. Parenteral nutrition
    a. Know the indications for total and peripheral alimentation
    b. Monitor a patient receiving parenteral nutrition while considering the associated complications

E. Nutritional problems associated with specific diseases, conditions
1. Gastrointestinal disorders
    a. Recognize the gastrointestinal causes of secondary lactose intolerance
    b. Plan appropriate management of lactose intolerance, taking into consideration the mechanisms causing the disorder
    c. Understand the importance of early refeeding in a child with gastroenteritis
    d. Recognize the nutritional deficiencies associated with gastrointestinal disease
    e. Plan dietary management for a patient with a gastrointestinal disorder
2. Renal disease
    a. Plan the dietary management of renal insufficiency in patients of various ages
    b. Recognize the nutritional deficiencies associated with renal disease
3. Hepatic disease
    a. Understand the nutritional causes of growth failure associated with chronic cholestatic disease, including the effects of nutrient digestion and absorption
    b. Know the general dietary recommendations for hepatic disease
    c. Understand the mechanism of rickets associated with hepatic disease
4. Cardiac disease
    a. Plan the dietary management of cardiac disease in a patient who is receiving a fluid-restricted diet
5. Cystic fibrosis
    a. Recognize the specific nutritional problems associated with cystic fibrosis, and manage appropriately
6. Hematologic-oncologic disease
    a. Recognize the specific nutritional problems in a child with a malignancy
7. Neurologically impaired children
    a. Plan the dietary management for a patient with a neurologic impairment
8. Burns
    a. Recognize the specific nutritional problems in children with burns
9. Allergies
    a. Understand and apply current recommendations for feeding infants who are at risk for the development of food allergy

b. Recognize the effects of a restricted diet for multiple food allergies on the nutritional adequacy of a patient's diet

10. Athletes
    a. Know the indications for and adverse effects when student athletes ingest sports energy drinks and protein supplements
    b. Identify the nutritional needs and complications associated with sports and recreational activities, including cheer leading and dancing
11. Vegetarians and vegans
    a. Identify the nutritional complications that can result from vegetarian or vegan diets
12. Dieting
    a. Recognize the possible adverse effects of "fad" weight loss diets
13. Family and cultural practices
    a. Understand the family and cultural determinants that influence dietary practices and nutrition

3. **Preventive Pediatrics**

A. Immunizations

1. General
    a. Plan an immunization regimen for a patient with an immune deficiency, including an immune deficiency as a result of chemotherapy
    b. Plan an immunization regimen for a patient with egg allergy
    c. Plan an appropriate approach to addressing the needs of the vaccine-hesitant family
    d. Recognize adverse reactions to various vaccine constituents and manage appropriately
2. Influenza vaccine
    a. Understand the changing antigen composition of the influenza vaccine (and the importance of its annual administration to children with chronic diseases)
    b. Know the indications, contraindications, and schedule for the inactivated and live attenuated influenza vaccines
    c. Know the safety of the inactivated and live attenuated influenza vaccines
    d. Recognize the importance of annual influenza immunizations for medical office and hospital personnel and medical staff
3. Meningococcal vaccine
    a. Know which serotypes are included in the meningococcal vaccine
    b. Know the indications and schedule for the meningococcal vaccine
4. Pneumococcal vaccine (conjugated and unconjugated)
    a. Understand the composition of conjugated and unconjugated pneumococcal vaccines are multivalent
    b. Know the indications and schedule for the pneumococcal vaccines
    c. Differentiate between appropriate use of conjugated versus unconjugated pneumococcal vaccine
5. Hepatitis vaccines
    a. Know the indications and schedule for hepatitis B vaccine in patients of various ages, including those born prematurely
    b. Know the indications and schedule for hepatitis A vaccine
6. Diphtheria-tetanus combination
    a. Know the differences in the composition of DT and dT
    b. Plan the administration of DT or dT based on the age of the patient
7. Pertussis vaccines (whole-cell and acellular)
    a. Understand the difference between the whole-cell and acellular pertussis vaccines
    b. Know the indications, contraindications, schedules, and possible complications associated with pertussis vaccine
    c. Recognize the effects of waning immunity to pertussis in contacts of infected patients
8. DTaP and Tdap vaccines

a. Know the indications, contraindications, and schedules for diphtheria, tetanus, and pertussis vaccines
b. Plan subsequent DTaP and Tdap immunization for a patient with a prior reaction to DTaP

9. Measles-mumps-rubella (MMR) vaccine
   a. Know the indications, contraindications, limitations, and schedule for the MMR vaccine
   b. Plan appropriate administration of MMR vaccine during an outbreak
   c. Understand the effects on immunity when MMR vaccine is administered to children younger than 12 months of age
   d. Advise a pregnant woman regarding receipt of MMR vaccine
10. Poliovirus vaccine
   a. Know the indications, contraindications, and schedules for the poliovirus vaccine, including under special circumstances (eg, unimmunized adult contacts)
   b. Understand the efficacy and safety of the poliovirus vaccine
11. Haemophilus influenzae type b vaccine
   a. Know the indications and schedule for the Haemophilus influenzae type vaccine
12. Varicella-zoster virus vaccine
   a. Know the indications, contraindications, limitations, and schedule for varicella-zoster vaccine, including after exposure
13. Rotavirus vaccine
   a. Know the recommendations, contraindications, and schedule for the rotavirus vaccine
14. Human papillomavirus vaccine
   a. Know the recommendations, limitations, and schedule for the human papillomavirus vaccine
15. Catch-up immunizations
   a. Plan an immunization schedule for an infant born prematurely
   b. Plan an immunization schedule for a child or adolescent who begins receiving immunizations late or whose immunizations are delayed
16. Immunizations for travel
   a. Know how to obtain information about immunizations for patients and families traveling to foreign countries

B. Screening
1. Blood pressure
   a. Understand when to screen for an increased blood pressure and how to interpret the results
   b. Understand the appropriate technique, including appropriate cuff size, for measuring blood pressure
2. Hematocrit
   a. Understand the potential differences between the hematocrit of a centrally or peripherally obtained blood sample
3. Lead (see also IV.B.14)
   a. Understand the importance of a screening examination for lead during early periodic screening evaluations
4. Hearing (see XXIII.A.5)
5. Vision
   a. Understand the importance of vision screening, including in newborn infants
   b. Understand which conditions can be detected by periodic ophthalmoscopic examinations
   c. Recognize the clinical findings associated with visual impairment
   d. Identify the various causes of visual impairment
   e. Plan the appropriate evaluation of vision in patients of various ages
6. Cholesterol, lipids
   a. Understand the importance of cholesterol/lipid screening examinations

C. Disease prevention

1. Heart disease
    a. Recognize the clinical features associated with hypercholesterolemia/hyperlipidemia, and evaluate appropriately
    b. Know the risk factors associated with hypercholesterolemia/hyperlipidemia
    c. Know the risk factors associated with coronary artery disease
    d. Understand the recommendations of the National Cholesterol Education Program for Children
2. Osteoporosis
    a. Counsel families and patients regarding the effects of diet, exercise, and smoking on the natural history of osteoporosis
3. Respiratory disease
    a. Identify the common environmental irritants present in the home that can contribute to respiratory disease in children
    b. Recognize the possible side effects of environmental tobacco smoke exposure
4. Dental disease
    a. Provide appropriate counseling to parents with regard to dental care for their children
    b. Provide appropriate counseling with regard to fluoride use

D. Anticipatory guidance
1. Safety
    a. General
        1. Counsel parents regarding ways to prevent injuries in their children
        2. Provide age-appropriate home safety information
    b. Automobiles
        1. Recommend appropriate car restraint systems, including car seats, based on the age and weight of the child, including those appropriate for premature infants
        2. Recognize the major causes of automotive fatalities among young drivers (eg, drunk driving)
        3. Understand the effects of non-crash automobile accidents in young children
    c. Stairways
        1. Counsel parents regarding stairway safety
    d. Bicycles
        1. Counsel parents and children regarding bicycle safety
    e. Recreational equipment
        1. Counsel parents and children regarding safety and protection with the use of recreational equipment
2. Poisoning (see IV.A.1)
3. Burns
    a. Counsel parents regarding prevention of burns (eg, matches, electrical burns, fireworks, hot water heater settings)
4. Bites and stings (see also XXXII.C.2.)
    a. Instruct families regarding the acute management of sting anaphylaxis at home
    b. Advise parents regarding the appropriate method to remove an attached tick
    c. Counsel parents and children regarding prevention of animal bites
    d. Advise parents regarding the appropriate use of topical insect repellants in children
5. Water safety
    a. Understand the epidemiology associated with drowning deaths
    b. Counsel parents regarding safety measures for a home pool
    c. Counsel parents and children regarding safe boat use (eg, flotation devices, supervision)
6. Sun exposure
    a. Counsel parents and children regarding sunscreens and exposure to the sun
7. Firearms
    a. Counsel parents and adolescents regarding firearm safety in the home

8. Personal safety (eg, strangers)
    a. Counsel parents regarding the importance of personal safety (eg, strangers) for their children
9. Screen time (eg, TV, computer)
    a. Counsel parents regarding appropriate limits on screen time (eg, TV, computer) for their children
10. Sleep hygiene and safety (see XIII.J, XIII.K, and XXVIII.A)

4. **Poisoning and Environmental Exposure to Hazardous Substances**

A. General

1. Prevention and risks
    a. Advise a family regarding prevention of poisoning in children
2. Poison control centers, online resources
    a. Understand the data available from poison control centers

B. Specific acute poisonings, ingestions, and exposures

1. Unknown or multiple substances
    a. Plan the management of poisoning by an unknown substance or by multiple substances
    b. Understand the importance of asking about intake of complementary/alternative medicines in the investigation of poisoning
    c. Recognize the clinical presentation of radiation exposure and the risk factors (including medical imaging) for such exposure
2. Acetaminophen
    a. Recognize the signs and symptoms of acetaminophen toxicity, and manage appropriately
3. Nonsteroidal anti-inflammatory drugs
    a. Recognize the signs and symptoms of nonsteroidal anti-inflammatory drug toxicity, and manage appropriately
4. Opioids (see XXVI.E.4)
5. Anticholinergic drugs
    a. Recognize the signs and symptoms of ingestion of an anticholinergic drug, and manage appropriately
6. Salicylates
    a. Recognize the signs and symptoms of salicylate toxicity, and manage appropriately
7. Antihypertensive drugs
    a. Recognize the signs and symptoms of ingestion of medications that might cause hypotension, and manage appropriately
8. Tricyclic antidepressant drugs
    a. Recognize the signs and symptoms of tricyclic antidepressant toxicity, and provide appropriate initial management
9. Ethanol, methanol
    a. Recognize the signs and symptoms of ethanol intoxication, and manage appropriately
    b. Understand that ethanol intoxication may mask toxicity caused by ingestion of other drugs
    c. Recognize the signs and symptoms of methanol ingestion, and manage appropriately
10. Hydrocarbons
    a. Plan the management of a patient who has ingested or aspirated a substance containing hydrocarbons
11. Organophosphates
    a. Recognize the signs and symptoms of organophosphate poisoning, and manage appropriately
12. Carbon monoxide
    a. Recognize the signs and symptoms of carbon monoxide poisoning, and manage appropriately
13. Acids, alkali, and alkaloids
    a. Know the common household sources of acids and alkali
    b. Recognize the signs and symptoms of ingestion of a caustic substance, and manage appropriately
14. Lead

a. Recognize the multiple sources of exposure to lead
b. Understand the outcomes associated with lead poisoning
c. Plan appropriate management of an increased blood lead concentration

15. Button batteries, coins
    a. Plan the management of a patient who has ingested a button battery
    b. Plan the management of a patient who has ingested a coin
16. Magnets
    a. Plan the management of a patient who has ingested a magnet
17. Iron
    a. Plan the management of a patient who has ingested iron pills
18. Ethylene glycol
    a. Recognize the signs and symptoms of ingestion of ethylene glycol, and manage appropriately
19. Plants
    a. Recognize the signs and symptoms following the ingestion of a potentially toxic plant, and manage appropriately

C. Exposure to toxic substances in the environment
1. Age-related risk and impact of exposure
    a. Understand the effects of a patient's age when exposed to a toxic substance in the environment
2. History of exposure
    a. Understand how to obtain a history of exposure to toxic substances in the environment
3. Contaminants in food and drinking water
    a. Know the contaminants potentially found in drinking water (eg, mercury, Escherichia coli)
    b. Know the toxic substances that may contaminate food sources (eg, mercury, Escherichia coli)
4. Chemical hazards in the community
    a. Recognize the toxic substances that may contaminate the environment and affect the health of children (eg, pesticides, industrial waste)
5. Chemical exposures in the home
    a. Know the potential exposures that result from a parent's occupation that directly or indirectly affect the health of their children
    b. Identify the common exposures and health problems associated with home renovation and repair
6. Exposures from terrorism (eg, smallpox, anthrax)
    a. Recognize the characteristic skin lesions of anthrax

5. **Fetus and Newborn Infant**

A. Fetus
1. Understand the appropriate use of stress and non-stress tests during fetal assessment
2. Know the factors used by obstetricians to evaluate fetal well-being
3. Understand the significance of fetal arrhythmias, and manage appropriately

B. Normal newborn infants
1. Delivery room management
    a. Temperature control in the delivery room
        1. Recognize the signs and symptoms of heat loss in a newborn infant, and manage appropriately
        2. Recognize the signs and symptoms of cold stress in a newborn infant, and manage appropriately
        3. Recognize the hazards and benefits associated with the use of radiant warmers for neonates
    b. Assessment in the delivery room
        1. Know the components and significance of the Apgar score
        2. Recognize the need to plot anthropomorphic measurements of a newborn infant against gestational age on a growth chart
        3. Recognize the physical and behavioral characteristics of infants born prematurely, at term, or post-term

4. Distinguish between small-for-gestational age and preterm gestation in low-birth-weight infants
5. Understand the respiratory pattern in newborn infants, recognizing that increased pressure may be required for the first breath
6. Recognize that peripheral cyanosis is common in healthy newborn infants

2. Routine care of newborn infants
   a. Vitamin K administration
      1. Plan appropriate vitamin K administration for a newborn infant
      2. Recognize the presenting signs and symptoms of hemorrhagic disease of the newborn in an infant who did not receive vitamin K, and manage appropriately
   b. Eye prophylaxis
      1. Plan appropriate eye prophylaxis for a newborn infant
   c. Fluid requirements
      1. Recognize the differences in daily fluid requirements per kilogram of body weight in preterm and full-term infants
      2. Understand how prematurity and the use of radiant warmers affect insensible water loss, especially in preterm infants
   d. Newborn screening
      1. Understand the limitations associated with the rapid assessment of whole blood glucose concentrations utilizing glucose oxidase test strips in newborn infants
      2. Recognize the differences in hematocrit values in pre- and full-term infants, and the normal ranges for both
      3. Recognize that newborn screening identifies conditions that affect a child's long-term health or survival while recognizing that testing requirements vary from state to state
   e. Cord care
      1. Plan appropriate umbilical cord care
   f. Physiologic evaluation (eg, stool, urine, vital signs)
      1. Recognize disorders associated with delayed or absent passage of meconium
      2. Plan the appropriate evaluation of delayed urination in a newborn infant
      3. Understand the normal variations in blood pressure that are associated with gestational age
   g. Discharge plans
      1. Plan the early discharge of a newborn infant, including follow-up evaluation
   h. Home birth
      1. Plan appropriate evaluation and management of an infant who was born at home
   i. Physiologic jaundice
      1. Plan the appropriate diagnostic evaluation of jaundice in a full-term infant
      2. Understand the differences between physiologic jaundice in pre-term and full-term infants
      3. Recognize the association between breast-feeding and physiologic jaundice in the neonatal period
   j. Breast-milk jaundice
      1. Understand the mechanism of breast-milk jaundice and manage appropriately

C. Abnormal newborn infants
   1. Resuscitation (ventilation, perfusion, suctioning)
      a. Recognize the indications for immediate positive-pressure ventilation in a neonate
      b. Recognize the indication for nasopharyngeal suctioning during resuscitation of a newborn infant
      c. Recognize the indications for external cardiac massage during resuscitation of a newborn infant, and institute appropriately
      d. Understand the metabolic consequences of continued poor perfusion in a newborn infant
   2. Very-low-birth-weight infants
      a. Identify the effects of neurologic immaturity on the Apgar score in a very-low-birth-weight infant

b. Plan appropriate initial care for a very-low-birth-weight infant
c. Understand the prognostic factors for very-low-birth-weight infants

3. Conditions, diseases
   a. Lethargy, coma
      1. Formulate a differential diagnosis of lethargy and coma in a neonate
   b. Hypoxia, ischemia
      1. Formulate a differential diagnosis of neonatal seizures
      2. Recognize the effects of intrapartum asphyxiation on multiple organ systems
   c. Polycythemia, hyperviscosity
      1. Recognize the risks associated with polycythemia in newborn infants, and manage appropriately
   d. Nonphysiologic jaundice (see also XII.G)
      1. Recognize the clinical features and sequelae of acute bilirubin encephalopathy in newborn infants, and manage appropriately
      2. Understand strategies to prevent the development of severe hyperbilirubinemia in newborn infants
      3. Recognize metabolic diseases that can produce conjugated hyperbilirubinemia in neonates
      4. Recognize disorders associated with conjugated hyperbilirubinemia in neonates
      5. Plan the appropriate diagnostic evaluation of conjugated hyperbilirubinemia in a neonate
   e. Intracranial hemorrhage
      1. Recognize the clinical and laboratory features associated with intracranial hemorrhage in a neonate, and manage appropriately
   f. Small-for-gestational age
      1. Understand the mortality rate in small-for-gestational age infants
      2. Understand the physiologic and physical abnormalities that may be present in a small-for-gestational-age infant
   g. Respiratory distress
      1. Respiratory distress syndrome
         a. Recognize the characteristic clinical and radiographic appearance of respiratory distress syndrome in a newborn infant, and manage appropriately
         b. Differentiate respiratory distress syndrome from congenital pneumonia in a newborn infant
      2. Pneumothorax
         a. Recognize the characteristic clinical and radiographic appearance of pneumothorax in a newborn infant, and manage appropriately
      3. Meconium aspiration syndrome
         a. Recognize the characteristic clinical and radiographic appearance of meconium aspiration syndrome in a newborn infant, and manage appropriately
      4. Transient tachypnea of the newborn
         a. Identify the signs and symptoms of transient tachypnea of the newborn, and manage appropriately
   h. Cyanosis (non-respiratory)
      1. Distinguish between persistent pulmonary hypertension with meconium aspiration and cyanotic congenital heart disease in a neonate
      2. Recognize the clinical features associated with a neonate who has persistent pulmonary hypertension following meconium aspiration
   i. Bronchopulmonary dysplasia (see XIII.D.5)
   j. Sepsis
      1. Plan appropriate antimicrobial therapy for suspected sepsis in the immediate newborn period
   k. TORCH infections (see IX.C.1)
   l. Necrotizing enterocolitis

1. Recognize the clinical and laboratory features associated with necrotizing enterocolitis in a newborn infant

m. Intestinal obstruction
1. Recognize the clinical and laboratory features associated with intestinal obstruction in a newborn infant, and manage appropriately

n. Tracheoesophageal fistula
1. Recognize the clinical and laboratory features associated with tracheoesopheal fistula in a newborn infant

o. Abdominal-intestinal wall defect
1. Plan the appropriate evaluation and management of a newborn infant who has abdominal-intestinal wall defect

p. Effects of maternal conditions, medications, and substance abuse
1. Plan the management of a neonate whose mother has abnormal prenatal laboratory findings
2. Plan the management of a neonate whose mother is febrile at the time of delivery
3. Recognize the clinical and laboratory features in an infant of a diabetic mother, and manage appropriately
4. Recognize the clinical and laboratory features of an infant whose mother has ITP, and manage appropriately
5. Understand the risks for a neonate of a nonadherent mother with phenylketonuria
6. Plan the appropriate management of an infant born to a mother with chorioamnionitis
7. Recognize the effects on the fetus and infant of maternal medication use during pregnancy and labor
8. Recognize the clinical and laboratory features associated with fetal alcohol syndrome, and manage appropriately
9. Recognize the clinical and laboratory features associated with neonatal withdrawal syndrome as a result of maternal drug use
10. Recognize the impact of maternal drugs of abuse on a fetus
11. Recognize the effects of maternal smoking on a fetus

q. Multiple congenital anomalies (see VII)

r. Oligohydramnios
1. Identify the features associated with the oligohydramnios tetrad (Potter syndrome), and manage appropriately

s. Deformations (see also VII and XIX.B.13)
1. Recognize the anatomic effects of amniotic bands
2. Understand how positional deformations and/or malformations develop in a fetus

t. Birth injuries
1. Recognize situations that may increase the risk of birth injuries
2. Identify and manage the neurologic injuries that may occur at birth
3. Distinguish between caput succedaneum, cephalohematoma, and subgaleal hemorrhage
4. Recognize the clinical features in an infant whose delivery was complicated by shoulder dystocia
5. Recognize the clinical findings associated with brachial plexus injuries, and manage appropriately
6. Understand the prognosis associated with brachial plexus injuries

6. **Fluid and Electrolyte Metabolism**

A. Composition of body fluids

1. Intracellular, extracellular body fluids
a. Recognize the causes of abnormal increases or decreases in intracellular/extracellular fluid volumes
b. Understand how equilibrium is maintained between extracellular and intracellular fluid

c. Estimate plasma osmolality by assessing appropriate serum concentrations
2. Sodium and potassium
   a. Identify the physiologic requirements for sodium and potassium in patients of various ages
   b. Understand that serum potassium concentration does not reflect total body content of potassium
3. Protein
   a. Recognize the clinical features associated with hypoproteinemia

B. Acid-base physiology
1. Normal mechanisms and regulation
   a. Understand the pulmonary mechanism for regulating acid-base physiology
   b. Calculate an anion gap
2. Acidosis, alkalosis
   a. Identify the arterial blood gas abnormalities associated with an acid-base imbalance
   b. Recognize the clinical and laboratory features associated with metabolic acidosis, and manage appropriately
   c. Formulate a differential diagnosis of acidosis associated with various anion gap values
   d. Identify factors contributing to metabolic alkalosis
   e. Identify factors contributing to metabolic acidosis
   f. Identify the renal compensatory changes associated with primary respiratory alkalosis
   g. Identify the renal compensatory changes associated with primary respiratory acidosis
   h. Recognize the association of chloride and acidosis in the differential diagnosis of metabolic acidosis

C. Electrolyte abnormalities
1. Sodium
   a. Hypernatremia
      1. Identify symptoms associated with hypernatremia, including those associated with rapid rehydration
   b. Hyponatremia
      1. Identify the various etiologies of hyponatremia
      2. Plan the laboratory evaluation of hyponatremia while considering the differential diagnoses associated with the disorder
      3. Distinguish between dilutional hyponatremia and a total body deficit of sodium
      4. Recognize the clinical findings associated with water intoxication in patients of various ages
2. Potassium
   a. Hyperkalemia
      1. Recognize the clinical and laboratory features associated with hyperkalemia, and manage appropriately, including during an emergency situation
   b. Hypokalemia
      1. Recognize the clinical and laboratory features associated with hypokalemia, and manage appropriately, including during an emergency situation
3. Chloride
   a. Recognize the various etiologies of hypochloremia

D. Disease states, specific therapy
1. Pyloric stenosis
   a. Recognize the acid-base changes associated with pyloric stenosis, and manage appropriately
2. Gastroenteritis
   a. Plan fluid therapy for a patient with acute gastroenteritis unresponsive to oral rehydration
3. Acute renal failure
   a. Understand the changing fluid requirements in a patient who has severe oliguria
   b. Plan the management of fluid depletion in a patient with acute renal failure
4. Shock

a. Recognize the clinical signs of shock due to fluid loss, and manage appropriately

5. SIADH
   a. Recognize the clinical and laboratory features associated with SIADH, and manage appropriately
   b. Differentiate SIADH from hyponatremic dehydration
   c. Recognize disease conditions and medications associated with SIADH
   d. Recognize the role of head trauma in the development of SIADH
6. Dehydration, including that associated with cystic fibrosis
   a. Understand the role of changes in extracellular fluid volume in the development of dehydration
   b. Identify early and late clinical signs of dehydration
   c. Recognize the association of hypochloremic/hyponatremic dehydration in patients who have cystic fibrosis
   d. Recognize the clinical and laboratory abnormalities associated with hyponatremic dehydration, and manage appropriately
   e. Recognize the clinical and laboratory abnormalities associated with hypernatremic dehydration, and manage appropriately
   f. Recognize the laboratory abnormalities associated with isotonic dehydration, and manage appropriately
   g. Differentiate diabetes insipidus from other causes of hypernatremic dehydration
   h. Understand the differences between and the rationale for the composition of oral rehydration solutions
   i. Understand the role of oral rehydration solutions in the treatment of acute diarrheal dehydration
7. Hyperosmolar non-ketotic coma
   a. Plan appropriate fluid therapy for a patient with hyperosmolar non-ketotic coma

7. **Genetics and Dysmorphology**

A. General

1. Mendelian inheritance
   a. Autosomal dominant
      1. Recognize the inheritance pattern associated with autosomal dominant disorders
      2. Recognize the inheritance pattern associated with an autosomal dominant disorder with incomplete penetrance
      3. Recognize the inheritance pattern associated with an autosomal dominant disorder with variable expressivity
   b. Autosomal recessive
      1. Recognize the inheritance pattern associated with an autosomal recessive disorder
   c. X-linked recessive
      1. Recognize the inheritance pattern associated with X-linked recessive disorders
   d. X-linked dominant
      1. Recognize the inheritance pattern associated with X-linked dominant disorders
2. Multifactorial inheritance
   a. Understand the role of multifactorial inheritance in genetic disorders
3. Mitochondrial inheritance
   a. Recognize the inheritance pattern associated with mitochondrial inheritance
4. Genetic anticipation
   a. Understand the impact of genetic anticipation on the presentation of genetic disorders
5. Imprinting
   a. Understand the role of imprinting in genetic disorders
6. Associations
   a. Recognize the clinical features associated with genetic associations (eg, CHARGE, VACTERL, VATER)
7. Contiguous gene syndromes

a. Recognize the inheritance pattern associated with contiguous gene syndromes
b. Recognize the clinical and laboratory findings associated with contiguous gene syndromes
c. Recognize the association of contiguous gene syndromes with other syndromes that manifest multiple apparent unconnected defects (eg, velocardiofacial syndrome)

B. Diagnostic testing
1. Prenatal
a. Understand the role and limitations of prenatal genetic testing
b. Understand which genetic disorders can be diagnosed prenatally
c. Understand the role of fetal ultrasonography in prenatal diagnosis
d. Understand the usefulness of maternal blood screening in prenatal diagnosis
2. Postnatal
a. Understand the role of fluorescence in situ hybridization studies in postnatal diagnosis
b. Understand the role of microarray testing in postnatal diagnosis
c. Understand the role of karyotyping in postnatal diagnosis
d. Understand the role of single-gene analysis in postnatal diagnosis
e. Understand the role of trinucleotide repeat analysis in the diagnosis of genetic disorders

C. Chromosome abnormalities
1. Structural (qualitative)
a. Deletions
1. Understand the significance of a gross chromosomal deletion
b. Translocations
1. Understand the risk factors associated with subsequent pregnancies when an infant is born with a translocation chromosome abnormality
2. Understand the risk factors of having another child with trisomy 21 when the mother is a balanced translocation carrier
3. Plan appropriate parental evaluation when an infant is born with a structural chromosomal abnormality
2. Aneuploidy syndromes (quantitative)
a. Turner syndrome (see XI.C.3.b.)
b. Klinefelter syndrome
1. Recognize the clinical features associated with Klinefelter syndrome
c. 47,XYY
1. Recognize the clinical features associated with a 47,XYY chromosome abnormality
d. 47,XXX
1. Recognize the clinical features associated with a 47,XXX chromosome abnormality
e. Autosomal trisomy
1. Recognize the clinical features associated with trisomy 13
2. Recognize the clinical features associated with trisomy 18
3. Recognize the clinical features associated with trisomy 21
4. Understand the specific management issues in infants with trisomy 21
5. Plan the diagnostic evaluation of a patient with trisomy 21

D. Gene abnormalities
1. Fragile X syndrome
a. Know the genetic abnormalities and phenotypic expression associated with fragile X syndrome
2. Short stature (see XI.B.1.)
3. Overgrowth syndromes
a. Recognize the clinical features and risks associated with overgrowth syndrome
4. Neuromuscular disorders (see also XVIII.J and K.)
a. Understand the inheritance pattern in a patient who has a neuromuscular disorder (eg, muscular dystrophy, spinal muscular atrophy)

5. Facial and limb disorders
    a. Identify the clinical features associated with Pierre-Robin sequence
    b. Recognize the genetic and clinical features associated with various types of dysostosis, including Treacher Collins syndrome
    c. Recognize the features of velocardiofacial syndrome and plan appropriate diagnostic evaluation
6. Osteochondrodysplasia (see also XIX.A.1.)
    a. Recognize the inheritance pattern of achondroplasia
7. Craniosynostosis (see I.A.3)
8. Storage disorders (see X)
9. Connective tissue disorders (see XXI.F.)
10. Neurocutaneous hamartoses
    a. Recognize the inheritance pattern of neurocutaneous hamartoses (eg, neurofibromatosis)

E. Genetic counseling
1. Recognize the need for appropriate referral for genetic counseling

8. **Allergic and Immunologic Disorders**

A. Risk factors
1. Understand the role of the environment (eg, indoor pets, passive exposure to cigarette smoke) in the development and severity of allergic disease
2. Recognize the non-environmental factors (eg, genetics, diet, infection) that influence the incidence and severity of atopy in infants and children

B. Allergic rhinitis
1. Recognize the common characteristics of allergic rhinitis, and manage appropriately
2. Understand the association between allergic rhinitis and sinusitis and/or otitis media
3. Differentiate the historical and clinical findings of allergic rhinitis from those of nonallergic rhinitis

C. Asthma
1. Etiology, epidemiology, natural history
    a. Understand the epidemiology of asthma
    b. Understand the natural history of asthma and the factors that affect it
    c. Recognize the early and late effects of an IgE-mediated allergen in a patient with asthma
    d. Recognize the frequency of recurrent wheezing in infants who have bronchiolitis caused by respiratory syncytial virus or rhinovirus
    e. Understand the effects of upper respiratory tract infection in patients who have asthma
2. Diagnosis
    a. Know the diagnostic criteria for asthma
    b. Know the classifications of asthma and their components
    c. Recognize the clinical features associated with exercise-induced asthma
3. Treatment
    a. Acute exacerbation
        1. Recognize the signs of severe obstruction during an acute exacerbation of asthma
        2. Recognize the development of atelectasis during an acute exacerbation of asthma, and manage appropriately
        3. Provide appropriate treatment for a patient who has an acute exacerbation of asthma, including asthma that is not responsive to adrenergic agonist therapy
        4. Recognize the clinical features associated with toxicity to adrenergic agonists in a patient with an acute exacerbation of asthma
        5. Understand the risks and benefits of corticosteroid therapy in the treatment of a patient who has an acute exacerbation of asthma
    b. Maintenance care
        1. Recognize the signs and symptoms of poorly controlled asthma

2. Plan appropriate outpatient management of a patient with asthma (eg, self-assessment, education, pulmonary function testing, drug therapy, asthma action plans)
3. Recognize the characteristics of a child with asthma who is at risk of hospitalization
4. Understand the role of leukotriene antagonists in the management of asthma

D. Atopic dermatitis (see XX.B.)

E. Urticaria, angioedema, anaphylaxis
1. Identify the etiologic agents that commonly cause urticaria, angioedema, and/or anaphylaxis
2. Recognize the signs and symptoms of chronic urticaria, and manage appropriately
3. Recognize the signs and symptoms of anaphylaxis, and manage appropriately

F. Adverse reactions to substances
1. Food
   a. Know the common foods that cause allergic reactions
   b. Distinguish between anaphylaxis and food poisoning
   c. Recognize the relationship between eczema and food allergies, and how to evaluate a patient for both
   d. Understand the natural history of various food allergies
2. Drugs
   a. Recognize the clinical features associated with a drug allergy or hypersensitivity, and manage appropriately

G. Allergy testing and immunotherapy
1. Recognize the importance of positive immediate-type allergic skin tests in school-age children who have asthma
2. Know the indications for allergy skin testing, and what medications can alter the results
3. Understand the indications for serum-specific IgE testing and that results correlate closely with results of allergy skin testing
4. Understand the limitations of allergy testing in children
5. Understand the indications and limitations of immunotherapy, and manage associated side effects

H. Immunodeficiency disorders
1. Presenting signs and symptoms of potential immunodeficiency
   a. Recognize the clinical characteristics of antibody deficiency syndromes after 4 to 6 months of age
   b. Recognize the clinical characteristics of cellular immunodeficiency in the first few months after birth
   c. Recognize the clinical findings associated with combined antibody and cellular immunodeficiency
   d. Recognize the clinical characteristics of phagocytic disorders
   e. Understand that some drugs administered for transplantation may induce immunodeficiency
   f. Recognize the clinical features of graft-versus-host disease
2. Screening tests
   a. Plan the laboratory evaluation of antibody function
   b. Plan the laboratory evaluation of cell-mediated immunity

9. **Infectious Diseases**

A. Public health considerations: prevention of infectious diseases
1. In child-care centers
   a. Recommend appropriate measures to prevent transmission of pathogens to child-care center attendees and their families
   b. Understanding which illnesses require and do not require exclusion from child-care center attendance
2. Hospital and office infection control
   a. Understand the appropriate use of universal, airborne, droplet, and contact precautions
3. Through breast-feeding
   a. Recognize when breast-feeding should be interrupted because of maternal infection

4. Medical evaluation of internationally adopted children
    a. Plan the appropriate infectious disease screening evaluation of an internationally adopted child
    b. Plan the appropriate immunizations for an internationally adopted child
5. Prevention of vector-borne diseases (see also III.D.4)
    a. Identify the measures to prevent tick- and mosquito-borne infections
6. Prevention of infection associated with recreational water use
    a. Recognize which pathogens can be transmitted by contaminated recreational water, while providing guidance about prevention of such infections
7. Antimicrobial resistance
    a. Recognize the effects of excessive antibiotic usage on the development of antibiotic resistance in the community
    b. Understand the diseases for which antibiotic therapy is inappropriate with regard to the development of antimicrobial resistance

B. Infections in immunocompromised hosts
1. Malnutrition
    a. Understand the association of infections with malnutrition
2. Central nervous system disease
    a. Understand the effects of the immature/abnormal hypothalamic thermoregulatory system on the development of fever in infants and children who have diseases of the central nervous system
3. Asplenia
    a. Recognize the increased risk of infection with encapsulated organisms in children with asplenia
4. Malignancy
    a. Plan appropriate antibiotic therapy for a patient with a malignancy who has fever and neutropenia
    b. Recognize the major infections in patients with cancer
5. HIV/AIDS (see IX.C.11)
6. Burn injury
    a. Recognize the major infections seen in patients with burn injuries
7. Indwelling catheters
    a. Plan the appropriate treatment of a patient with an intravenous catheter-associated infection

C. Specific viral pathogens
1. Cytomegalovirus
    a. Plan the diagnostic evaluation for congenital or acquired cytomegalovirus infection in normal and immunocompromised children of various ages
    b. Understand how cytomegalovirus is transmitted beyond the neonatal period
    c. Recognize the various routes by which cytomegalovirus infection can be acquired in a newborn infant
    d. Recognize the signs and symptoms of symptomatic congenital cytomegalovirus infection
2. Epstein-Barr virus
    a. Understand the importance of host factors in the outcome of Epstein-Barr virus infection
    b. Understand the epidemiology of Epstein-Barr virus
    c. Assess the results of laboratory evaluation of a patient in whom Epstein-Barr virus infection is suspected, including the ability to distinguish between acute and past infection
    d. Identify the clinical features associated with Epstein-Barr virus infection in normal and immunocompromised children of various ages
    e. Recognize the potential complications of Epstein-Barr virus infection in normal and immunocompromised children of various ages
    f. Understand the significance of a rash following ampicillin therapy in patients with infectious mononucleosis
    g. Plan the management of a patient with acute or uncomplicated infectious mononucleosis
3. Herpes simplex virus

a. Understand the epidemiology of herpes simplex virus
b. Understand the risk of maternal transmission of herpes simplex virus infection to newborn infants
c. Recognize the clinical features associated with herpes simplex virus infection in children of various ages
d. Plan the appropriate diagnostic evaluation for herpes simplex virus infection
e. Plan the appropriate management of herpes simplex virus infection in children of various ages, taking into account appropriate timing of therapy

4. Varicella-zoster virus
   a. Understand the epidemiology of varicella-zoster virus
   b. Recognize the clinical features associated with varicella and herpes zoster infections in normal and immunocompromised children of various ages
   c. Understand the relationship between varicella and herpes zoster infection
   d. Plan the appropriate management of an immunocompromised patient exposed to varicella
   e. Plan appropriate antiviral therapy for normal and immunocompromised patients who have varicella-zoster virus infection
   f. Plan appropriate control measures to prevent the spread of varicella and herpes zoster
5. Measles virus
   a. Plan appropriate control measures to prevent the spread of measles
   b. Plan appropriate use of intramuscular immune globulin in immunocompromised and unimmunized patients who have been exposed to measles
   c. Recognize the clinical features associated with measles, including complications
6. Mumps virus
   a. Recognize the clinical features and complications associated with mumps
   b. Plan the appropriate management of a patient with mumps
7. Rubella virus
   a. Understand the epidemiology of the rubella virus
   b. Recognize the clinical features associated with congenital and postnatally acquired rubella virus infection
8. Rabies virus (see XXXII.C.2.)
9. Parvovirus B19 (erythema infectiosum)
   a. Recognize the clinical features associated with erythema infectiosum
   b. Recognize the complications of parvovirus B19 infection
10. Human herpesvirus type 6 (roseola)
    a. Recognize the clinical features associated with human herpesvirus type 6 infection
11. Human immunodeficiency virus
    a. Understand the epidemiology of human immunodeficiency virus, including the modes of transmission and how to minimize transmission risk
    b. Understand the effect of a mother's positive test for human immunodeficiency virus (HIV) on the results of her infant's HIV test
    c. Identify the clinical features associated with AIDS in patients of various ages
    d. Plan appropriate screening for human immunodeficiency virus infection in at-risk infants and children older than 18 months of age
    e. Recognize the major opportunistic infections seen in patients with HIV/AIDS
12. Enteroviruses (echo-, coxsackie-, numbered entero-, poliomyelitis)
    a. Understand the epidemiology of the enteroviruses
    b. Recognize the clinical features associated with echo- and coxsackievirus infection in patients of various ages
    c. Recognize the clinical features of associated with enterovirus infection in patients of various ages
    d. Plan appropriate laboratory evaluation for enterovirus infection
13. Influenza virus

a. Understand the epidemiology of the influenza virus
b. Recognize the clinical features associated with influenza virus infection
c. Plan the appropriate diagnostic evaluation of influenza virus infection
d. Plan appropriate antiviral therapy for the treatment of influenza, while considering drug-resistant strains
e. Recognize the risk factors for complications associated with influenza virus infection, including those that lead to hospitalization

14. Parainfluenza virus
    a. Understand the epidemiology of parainfluenza virus
    b. Recognize the clinical features associated with parainfluenza virus infection
15. Adenovirus
    a. Understand the epidemiology of adenovirus
    b. Recognize the clinical features associated with adenovirus infection
16. Respiratory syncytial virus
    a. Understand the epidemiology of respiratory syncytial virus
    b. Recognize the clinical features associated with respiratory syncytial virus infection, and manage appropriately
    c. Plan the appropriate diagnostic evaluation for respiratory syncytial virus infection
    d. Identify and plan prophylaxis for patients at high risk of morbidity and mortality from respiratory syncytial virus infection
17. Rotavirus
    a. Understand the epidemiology of rotavirus infection
    b. Recognize the clinical features associated with rotavirus infection
    c. Plan the appropriate diagnostic evaluation for rotavirus infection, and recognize when diagnostic evaluation may not be necessary
18. Rhinovirus
    a. Recognize the epidemiology of rhinovirus infection
    b. Recognize the clinical features associated with rhinovirus infection
19. Arbovirus (West Nile, dengue fever)
    a. Understand the epidemiology of arbovirus, including West Nile virus
    b. Recognize the clinical features associated with arbovirus infection (eg, West Nile, dengue fever)
20. Hepatitis A virus
    a. Understand the epidemiology of the hepatitis A virus
    b. Recognize the clinical features associated with hepatitis A virus infection in children of various ages
    c. Plan the appropriate diagnostic evaluation of hepatitis A virus infection
    d. Initiate appropriate post-exposure prophylaxis for hepatitis A virus infection
21. Hepatitis B virus
    a. Understand the epidemiology of the hepatitis B virus
    b. Understand the risks associated with perinatally acquired hepatitis B virus infections
    c. Recognize the clinical features associated with hepatitis B virus infection
    d. Understand the importance of follow-up screening evaluations for hepatitis B virus infection
    e. Plan the diagnostic evaluation of suspected hepatitis B virus infection
    f. Plan the management of a neonate or older child exposed to hepatitis B
22. Hepatitis C virus
    a. Identify the risk factors for the acquisition of hepatitis C virus infection
    b. Plan appropriate diagnostic evaluation, including timing of testing, for hepatitis C virus infection
    c. Understand the importance of follow-up screening evaluations for complications of hepatitis C virus infection
    d. Understand the possible long-term outcomes of patients who have hepatitis C virus infections

23. Human papillomavirus
    a. Understand the epidemiology of human papillomavirus infection
    b. Recognize the clinical features associated with human papillomavirus infection
24. Human metapneumovirus
    a. Understand the epidemiology of human metapneumovirus infection
    b. Recognize the clinical features associated with human metapneumovirus infection
25. Calicivirus (norovirus and sapovirus)
    a. Understand the epidemiology of human calicivirus (norovirus and sapovirus) infection
    b. Recognize the clinical features associated with calicivirus (norovirus and sapovirus) infection

D. Bacterial pathogens
1. Anaerobes (general characteristics)
    a. Recognize the common clinical features associated with anaerobic infections
2. Arcanobacterium haemolyticum
    a. Recognize the clinical features associated with Arcanobacterium haemolyticum infection
3. Brucella (brucellosis)
    a. Understand the importance of considering brucellosis in the differential diagnosis of fever of unknown origin
4. Campylobacter species
    a. Understand the epidemiology of Campylobacter infections
    b. Recognize the clinical features associated with a Campylobacter infection
    c. Plan appropriate management for a patient with Campylobacter infection
5. Bartonella henselae (cat-scratch disease)
    a. Understand the epidemiology of cat-scratch disease
    b. Recognize the clinical features associated with cat-scratch disease
    c. Plan appropriate management for a patient with cat-scratch disease
6. Chlamydia and Chlamydophila (chlamydial infections)
    a. Understand the epidemiology of Chlamydia trachomatis
    b. Recognize the clinical features associated with chlamydial infection in patients of various ages
    c. Plan appropriate diagnostic evaluation for chlamydial infection depending on the site of infection (eg, genital, respiratory)
    d. Plan the management of chlamydial infection in patients of various ages
7. Clostridium botulinum (botulism)
    a. Understand the epidemiology of Clostridium botulinum infection
    b. Recognize the clinical features associated with botulism
    c. Plan appropriate management for a patient with botulism
    d. Plan appropriate diagnostic evaluation of botulism
8. Clostridium difficile
    a. Recognize the clinical features associated with Clostridium difficile infection
    b. Plan the appropriate diagnostic evaluation for Clostridium difficile infection
    c. Plan appropriate management for a patient with Clostridium difficile infection
    d. Institute appropriate infection control measures for Clostridium difficile infection
9. Corynebacterium diphtheria (diphtheria) (see also III.A.)
    a. Recognize the clinical features associated with diphtheria
10. Enterococcus
    a. Recognize the clinical syndromes associated with enterococcal infections
11. Escherichia coli
    a. Understand the epidemiology of Escherichia coli infection
    b. Recognize the clinical and laboratory findings associated with Escherichia coli infection in children of various ages, including its association with hemolytic-uremic syndrome
    c. Plan appropriate management for a patient with Escherichia coli infection

d. Recognize the clinical and laboratory findings associated with hemolytic-uremic syndrome
e. Plan the appropriate initial management of hemolytic-uremic syndrome

12. Neisseria gonorrhoeae (gonococcal infections)
    a. Recognize the major clinical features associated with Neisseria gonorrhoeae infection
    b. Plan the appropriate diagnostic evaluation for Neisseria gonorrhoeae infection
    c. Plan appropriate management for a patient with Neisseria gonorrhoeae infection
13. Haemophilus influenzae
    a. Understand the epidemiology of Haemophilus influenzae infection
    b. Recognize the clinical features associated with typable and nontypable Haemophilus influenzae infection
    c. Plan appropriate prophylaxis for individuals exposed to invasive Haemophilus influenzae type B
    d. Plan the appropriate management of a typable and nontypable Haemophilus influenzae infection
14. Helicobacter pylori (see also XII.I.)
    a. Identify risk factors for Helicobacter pylori infection
    b. Recognize the major clinical features associated with Helicobacter pylori infection
    c. Plan the diagnostic evaluation of Helicobacter pylori infection
    d. Plan appropriate management for a patient with Helicobacter pylori infection
15. Kingella kingae
    a. Recognize the clinical features associated with Kingella kingae infection
16. Listeria monocytogenes
    a. Understand the epidemiology of Listeria monocytogenes
    b. Recognize the clinical features associated with Listeria monocytogenes infection
    c. Plan appropriate management for a patient with Listeria monocytogenes infection
17. Borrelia burgdorferi (Lyme disease)
    a. Understand the epidemiology of Borrelia burgdorferi
    b. Recognize the clinical features associated with Borrelia burgdorferi infection
    c. Plan the appropriate laboratory evaluation for Borrelia burgdorferi infection
    d. Plan appropriate management for a patient with Borrelia burgdorferi infection
18. Neisseria meningitidis (meningococcal infections)
    a. Understand the epidemiology of Neisseria meningitidis
    b. Recognize the major clinical features associated with Neisseria meningitidis infection
    c. Plan appropriate prophylaxis for individuals exposed to Neisseria meningitidis
    d. Recognize which patients have an increased risk of invasive or recurrent meningitis
    e. Plan appropriate management for a patient with meningococcal disease
19. Mycobacterium tuberculosis
    a. Understand the epidemiology of Mycobacterium tuberculosis
    b. Recognize the major clinical features associated with Mycobacterium tuberculosis infection
    c. Understand the diagnostic tests useful in the evaluation of tuberculosis (both latent and active)
    d. Interpret the results of a tuberculin skin test, differentiating among positive, false-positive, and false-negative reactions
    e. Identify patients at risk of latent tuberculosis and manage appropriately
    f. Plan appropriate management for a patient with Mycobacterium tuberculosis infection in various circumstances
20. Nontuberculous mycobacteria
    a. Recognize the major clinical features associated with a nontuberculous mycobacterial infection in immunocompetent children
    b. Plan the appropriate management of the complications of nontuberculous mycobacteria infection
21. Mycoplasma pneumoniae
    a. Understand the epidemiology of Mycoplasma pneumoniae
    b. Recognize the clinical features associated with Mycoplasma pneumoniae infection

c. Plan the appropriate diagnostic evaluation of Mycoplasma pneumoniae infection
d. Plan appropriate management for a patient with Mycoplasma pneumoniae infection

22. Pasteurella multocida
    a. Understand the epidemiology of Pasteurella multocida
    b. Recognize the common clinical features associated with Pasteurella multocida infection
    c. Plan appropriate management for a patient with Pasteurella multocida infection
23. Bordetella pertussis (pertussis)
    a. Understand the epidemiology of Bordetella pertussis
    b. Recognize the clinical features associated with pertussis in children of various ages
    c. Plan the appropriate diagnostic evaluation of a patient in whom pertussis is suspected
    d. Plan the appropriate management of pertussis in its various stages, including treatment for contacts of infected patients
24. Pseudomonas species
    a. Recognize the risk factors for the development of pseudomonal infections
    b. Recognize the clinical manifestations of pseudomonal infections and manage appropriately
25. Rickettsial diseases (Rocky Mountain spotted fever, ehrlichiosis)
    a. Understand the epidemiology of Rocky Mountain spotted fever
    b. Recognize the clinical features associated with Rocky Mountain spotted fever
    c. Plan the appropriate management of suspected or confirmed Rocky Mountain spotted fever
26. Salmonella species
    a. Understand the epidemiology of typhoidal and nontyphoidal Salmonella species
    b. Recognize the clinical features associated with typhoidal and nontyphoidal Salmonella infection
    c. Plan appropriate management for a patient with typhoidal or nontyphoidal Salmonella infection
27. Shigella species (shigellosis)
    a. Understand the epidemiology of Shigella species
    b. Recognize the clinical features associated with Shigella infection
    c. Plan appropriate management for a patient with Shigella infection
28. Staphylococcus aureus
    a. Understand the epidemiology of Staphylococcus aureus
    b. Recognize the clinical features associated with Staphylococcus aureus infection
    c. Plan the appropriate diagnostic evaluation of Staphylococcus infection
    d. Plan the appropriate management of methicillin-sensitive and methicillin-resistant Staphylococcus aureus infection
    e. Understand the pathophysiology of staphylococcal toxic shock syndrome and manage appropriately
29. Staphylococcus, coagulase-negative
    a. Understand the association of coagulase-negative staphylococcal infections with the presence of central venous catheters or other foreign bodies
    b. Understand that a positive culture for coagulase-negative staphylococci may represent specimen contamination or infection
30. Streptococcus agalactiae (group B streptococcus)
    a. Understand the epidemiology of Streptococcus agalactiae
    b. Plan the appropriate management of an infant born to a mother with a positive culture for group B streptococcus
    c. Recognize the major clinical features associated with group B streptococcal infection, and manage appropriately
31. Streptococcus pneumoniae (pneumococcal infections)
    a. Understand the epidemiology of Streptococcus pneumoniae infection
    b. Recognize the clinical features associated with Streptococcus pneumoniae
    c. Plan appropriate management for a patient with Streptococcus pneumoniae infection

32. Streptococcus pyogenes (group A streptococcus)
    a. Understand the epidemiology of Streptococcus pyogenes
    b. Plan the appropriate diagnostic evaluation of suspected Streptococcus pyogenes infection
    c. Recognize the clinical features associated with Streptococcus pyogenes infection
    d. Recognize the complications associated with invasive and non-invasive Streptococcus pyogenes infection
    e. Plan appropriate management for a patient with Streptococcus pyogenes infection
33. Treponema pallidum (syphilis)
    a. Understand the epidemiology of Treponema pallidum
    b. Plan the appropriate diagnostic evaluation when Treponema pallidum infection is suspected
    c. Recognize the clinical features associated with congenital and acquired Treponema pallidum infection
    d. Plan appropriate management for a patient with Treponema pallidum infection
34. Yersinia enterocolitica
    a. Recognize the clinical features associated with Yersinia enterocolitica infection
    b. Plan appropriate management for a patient with Yersinia enterocolitica infection

E. Fungal pathogens
1. Candida species
    a. Identify the risk factors for candidiasis in patients of various ages
    b. Recognize the clinical features associated with Candida infection
    c. Plan appropriate management for a patient with Candida infection
2. Coccidioides
    a. Understand the epidemiology of Coccidioides
    b. Recognize the clinical features associated with Coccidioides infection
    c. Plan the diagnostic evaluation of a suspected Coccidioides infection, and manage appropriately
3. Aspergillus
    a. Understand the epidemiology of Aspergillus
    b. Recognize the clinical features associated with Aspergillus infection

F. Parasitic pathogens (protozoa, metazoan)
1. Giardia lamblia (giardiasis)
    a. Understand the epidemiology of Giardia lamblia
    b. Plan the appropriate diagnostic evaluation when Giardia lamblia infestation is suspected
    c. Recognize the clinical features associated with Giardia lamblia infestation, and manage appropriately
2. Toxoplasma gondii (toxoplasmosis)
    a. Understand the epidemiology of Toxoplasma gondii
    b. Identify the clinical features associated with congenital and acquired Toxoplasma gondii infestation, and manage appropriately
3. Trichomonas vaginalis (trichomoniasis)
    a. Understand the epidemiology of Trichomonas vaginalis
    b. Plan the appropriate diagnostic evaluation when Trichomonas vaginalis infestation is suspected
    c. Recognize the clinical features associated with Trichomonas vaginalis infestation, and manage appropriately, including management of sexual partners
4. Pneumocystis jiroveci
    a. Understand the epidemiology of Pneumocystis jiroveci
    b. Recognize the clinical features associated with Pneumocystis jiroveci infection, and manage appropriately
    c. Plan appropriate prophylaxis for Pneumocystis jiroveci infection in a child who is receiving chemotherapy
5. Enterobius vermicularis (pinworms)

a. Understand the epidemiology of Enterobius vermicularis
b. Recognize the clinical features associated with Enterobius vermicularis infestation, and manage appropriately

6. Plasmodium species (malaria)
   a. Understand the epidemiology of malaria
   b. Recognize the clinical features of malaria, and manage appropriately
7. Ascaris lumbricoides (ascariasis)
   a. Understand the epidemiology of ascariasis
   b. Recognize the clinical features associated with ascariasis, and manage appropriately
8. Entamoeba histolytica (amoebiasis)
   a. Understand the epidemiology of amoebiasis
   b. Recognize the clinical features associated with amoebiasis, and manage appropriately
9. Necator americanus (hookworm)
   a. Understand the epidemiology of Necator americanus
   b. Recognize the clinical features associated with Necator americanus infestation
10. Taenia solium, Taenia saginata, Taenia asiatic
    a. Understand the epidemiology of cysticercosis
    b. Recognize the clinical features associated with cysticercosis
11. Toxocara
    a. Understand the epidemiology of Toxocara
    b. Recognize the clinical features associated with Toxocara infestation
12. Cryptosporidium
    a. Understand the epidemiology of Cryptosporidium infection
    b. Recognize the clinical features associated with Cryptosporidium infection, including Cryptosporidium diarrhea in an immunocompromised host

10. **Metabolic Disorders**

A. Screening and genetic counseling, general
   1. Recognize when a screening evaluation is appropriate for metabolic disorders
   2. Plan the appropriate initial response to a positive neonatal screening test for metabolic diseases
   3. Recognize when genetic counseling is appropriate for the family of a child who has a metabolic disease

B. General signs and symptoms of metabolic disorders
   1. Plan the evaluation of a patient with suspected metabolic disease who is comatose
   2. Plan the evaluation of a patient with suspected metabolic disease who has hypoglycemia, and manage appropriately
   3. Plan the evaluation of a patient with suspected metabolic disease who is acidotic

C. Glycogen storage disease
   1. Recognize the clinical features associated with glycogen storage disease
   2. Plan the appropriate immediate and long-term management of glycogen storage disease, while considering the long-term prognosis

D. Galactosemia
   1. Recognize the clinical features associated with galactosemia
   2. Recognize the laboratory features associated with galactosemia
   3. Plan the appropriate immediate and long-term management of galactosemia, while considering the long-term prognosis

E. Mucopolysaccharidoses, including Hurler syndrome
   1. Recognize the clinical features associated with the mucopolysaccharidoses, including Hurler syndrome
   2. Recognize the laboratory features associated with mucopolysaccharidosis

F. Hyperinsulinism

1. Recognize the clinical features associated with hyperinsulinism
2. Plan the appropriate immediate and long-term management of hyperinsulinism, while considering the long-term prognosis

G. Lipoprotein and lipid storage disorders, including Gaucher disease
1. Recognize the clinical features associated with lipoprotein disorders
2. Plan the appropriate immediate and long-term management of lipoprotein disorders, while considering the long-term prognosis
3. Recognize the clinical features associated with Gaucher and other lipid storage diseases
4. Plan the appropriate immediate and long-term management of lipid storage disease, including Gaucher disease, while considering the long-term prognosis

H. Urea cycle defects
1. Recognize the clinical features associated with urea cycle defects
2. Plan the appropriate immediate and long-term management of urea cycle defects, while considering the long-term prognosis

I. Organic acidemias
1. Recognize the clinical features associated with organic acidemias
2. Plan the appropriate immediate and long-term management of organic acidemias, while considering the long-term prognosis

J. Disorders of fatty acid and carnitine metabolism, including Tay-Sachs disease
1. Recognize the clinical features associated with disorders of fatty acid and carnitine metabolism
2. Recognize the laboratory features associated with disorders of fatty acid and carnitine metabolism
3. Recognize the clinical features associated with Tay-Sachs disease
4. Plan the appropriate immediate and long-term management of Tay-Sachs disease, while considering the long-term prognosis

K. Disorders of amino acid metabolism, including phenylketonuria
1. Recognize the clinical features associated with a disorder of amino acid metabolism other than phenylketonuria
2. Recognize the clinical features associated with phenylketonuria
3. Understand the natural history of treated and untreated phenylketonuria
4. Understand the long-term prognosis for patients who have phenylketonuria, including the importance of dietary adherence

L. Mitochondrial disorders
1. Recognize the clinical features associated with mitochondrial disorders

M. Disorders of uric acid metabolism
1. Recognize the clinical features associated with a disorder of uric acid metabolism

11. **Endocrine Disorders**

A. Sex differentiation
1. Normal development
   a. Understand the normal process of sex differentiation of a fetus
2. Ambiguous genitalia
   a. Congenital adrenal hyperplasia
      1. Recognize the clinical features associated with congenital adrenal hyperplasia
      2. Plan the appropriate diagnostic evaluation of congenital adrenal hyperplasia, including during the perinatal period
      3. Plan the appropriate management of congenital adrenal hyperplasia, including that associated with an adrenal crisis
   b. Disorders of sex development
      1. Identify factors associated with virilization in female infants
      2. Recognize the clinical features associated with androgen insensitivity syndrome

B. Linear growth

1. Short stature
    a. General
        1. Identify the most common causes of short stature
        2. Plan the evaluation of a child with short stature or whose height percentiles have decreased
        3. Distinguish among constitutional short stature, genetic (familial) short stature, and growth hormone or thyroid deficiencies by growth chart evaluation
    b. Familial short stature
        1. Understand the natural history of genetic (familial) short stature
    c. Constitutional growth delay
        1. Understand the natural history of constitutional growth delay
        2. Evaluate constitutional growth delay by growth chart evaluation
        3. Plan an appropriate diagnostic evaluation to differentiate constitutional growth delay and other conditions causing growth delay
    d. Growth hormone deficiency
        1. Recognize the clinical features associated with acquired and congenital growth hormone deficiency
        2. Recognize the effects of growth hormone therapy on growth
2. Tall stature
    a. Differentiate among the causes of tall stature
    b. Plan the appropriate diagnostic evaluation of tall stature

C. Puberty
1. Normal puberty (see XXIV.A.)
2. Precocious puberty
    a. Formulate a differential diagnosis for precocious puberty
    b. Plan an appropriate diagnostic evaluation to differentiate the various causes of precocious puberty, including that associated with an adrenal etiology
    c. Recognize the clinical features associated with precocious puberty, including that caused by tumors
    d. Understand the significance of premature thelarche
    e. Recognize the psychosocial risks associated with precocious puberty
3. Delayed puberty
    a. General
        1. Recognize the clinical features associated with a delay in sexual maturation of various causes
        2. Identify the causes of delayed puberty
        3. Recognize the psychosocial risks associated with delayed puberty
        4. Understand the relationship between bone age and chronologic age
        5. Plan the appropriate evaluation of an adolescent boy or girl who has no signs of the onset of puberty
    b. Primary gonadal dysgenesis (Turner syndrome)
        1. Recognize the clinical features associated with primary gonadal dysgenesis (Turner syndrome) in patients of various ages
        2. Plan the appropriate clinical evaluation of a patient with primary gonadal dysgenesis (Turner syndrome)
        3. Plan the appropriate diagnostic evaluation of a patient with primary gonadal dysgenesis (Turner syndrome)
    c. Constitutional delay of puberty
        1. Plan the appropriate diagnostic evaluation of constitutional delay of puberty
        2. Plan the appropriate management of constitutional delay of puberty

D. Thyroid disorders
1. Hashimoto thyroiditis

a. Understand the natural history of Hashimoto thyroiditis
b. Recognize the clinical features associated with Hashimoto thyroiditis
c. Plan the appropriate diagnostic evaluation to distinguish among Hashimoto thyroiditis, other causes of thyroid enlargement, and hypothyroidism

2. Cyst, tumor, nodule
   a. Recognize the clinical features associated with a thyroid cyst/tumor
   b. Plan the appropriate evaluation and management of a thyroid mass/nodule
3. Hypothyroidism
   a. Recognize the clinical features associated with congenital and acquired hypothyroidism
   b. Identify the causes of congenital and acquired hypothyroidism
   c. Plan the appropriate diagnostic evaluation of hypothyroidism
   d. Plan the appropriate management of congenital and acquired hypothyroidism
   e. Understand the prognosis for a patient with congenital or acquired hypothyroidism, including neonates whose hypothyroidism is not treated
   f. Recognize the clinical and laboratory features associated with thyroid-binding globulin deficiency
4. Hyperthyroidism
   a. Identify the various etiologies of hyperthyroidism
   b. Recognize the clinical features associated with hyperthyroidism, including that occurring in neonates
   c. Plan the appropriate diagnostic evaluation of hyperthyroidism
   d. Plan the appropriate management of hyperthyroidism

E. Adrenal gland disorders
1. Addison disease and adrenal insufficiency
   a. Recognize the clinical features associated with Addison disease
   b. Plan the appropriate diagnostic evaluation for Addison disease
   c. Plan the appropriate management of Addison disease, including an adrenal crisis associated with the disorder
   d. Recognize the clinical features associated with adrenal insufficiency after exogenous corticosteroid therapy has been discontinued, and the complications associated with sudden withdrawal
   e. Recognize the clinical and laboratory manifestations of adrenal insufficiency
   f. Differentiate the clinical and laboratory findings associated with adrenal insufficiency from those of the inappropriate secretion of antidiuretic hormone
2. Cushing syndrome
   a. Identify the clinical features associated with Cushing syndrome, including that associated with exogenous corticosteroid therapy
   b. Plan appropriate diagnostic evaluation of Cushing syndrome

F. Pituitary gland disorders
1. Recognize the clinical and laboratory features associated with hypopituitarism
2. Recognize the clinical features associated with pituitary disorders caused by craniopharyngioma
3. Recognize the clinical and laboratory features associated with diabetes insipidus

G. Diabetes
1. Type 1 diabetes and associated conditions
   a. Understand the natural history of type 1 diabetes
   b. Recognize the clinical features associated with type 1 diabetes
   c. Plan the appropriate diagnostic evaluation for new-onset type 1 diabetes
   d. Plan the appropriate management of type 1 diabetes to effectively achieve good control and to avoid long-term complications
   e. Counsel patients regarding self-management of type 1 diabetes
   f. Recognize the association between type 1 diabetes and other autoimmune disorders

g. Plan the appropriate management of hypoglycemia in a patient with type 1 diabetes and other autoimmune disorders (eg, celiac disease, Hashimoto thyroiditis)
h. Recognize the clinical features associated with ketotic hypoglycemia in children of various ages

2. Diabetic ketoacidosis
a. Recognize the clinical and laboratory features associated with diabetic ketoacidosis
b. Recognize the complications associated with diabetic ketoacidosis
c. Plan the appropriate management of diabetic ketoacidosis
d. Recognize the risks associated with fluid and electrolyte therapy in a patient with diabetic ketoacidosis
e. Understand the causes of recurrent diabetic ketoacidosis

3. Type 2 diabetes
a. Understand the epidemiology of and risk factors associated with type 2 diabetes
b. Differentiate between type 1 and type 2 diabetes
c. Plan an appropriate screening evaluation for a patient in whom type 2 diabetes is suspected
d. Recognize the short- and long-term complications associated with type 2 diabetes
e. Plan the appropriate management of type 2 diabetes
f. Recognize the clinical features associated with insulin resistance

H. Metabolic syndrome
1. Recognize the clinical features associated with metabolic syndrome
2. Plan an appropriate screening evaluation for metabolic syndrome, considering risk factors that necessitate such screening
3. Plan appropriate initial management of a patient with metabolic syndrome

I. Disorders of PTH, calcium, and phosphate metabolism
1. Hypocalcemia
a. Recognize the clinical features associated with hypocalcemia in patients of various ages, including that associated with vitamin D deficiency

2. Hypercalcemia
a. Recognize the clinical features associated with hypercalcemia, including that occurring as a result of immobilization

3. Hypophosphatemia
a. Recognize the clinical and laboratory features associated with hypophosphatemia
b. Plan the appropriate management of familial hypophosphatemic rickets

4. Rickets (see also II.C)
5. Parathyroid disorders
a. Recognize the typical laboratory features associated with hypo- and hyperparathyroidism
b. Understand the association of hypoparathyroidism with other disorders

12. **Gastrointestinal Disorders**

A. Acute and chronic abdominal pain
1. General
a. Plan the appropriate evaluation of acute abdominal pain
b. Formulate an age-appropriate differential diagnosis of acute abdominal pain

2. Appendicitis
a. Recognize the clinical features associated with appendicitis
b. Plan the appropriate diagnostic evaluation when appendicitis is suspected

3. Cholecystitis, cholelithiasis, choledocholithiasis
a. Recognize the clinical features associated with cholecystitis
b. Identify the risk factors associated with the development of cholelithiasis
c. Recognize the clinical features associated with choledocholithiasis

4. Pancreatitis
a. Recognize the clinical and laboratory features associated with pancreatitis

b. Formulate a differential diagnosis for a patient who has chronic or recurrent pancreatitis

5. Intussusception, volvulus, malrotation
   a. Recognize the clinical features associated with intussusception, and manage appropriately
   b. Recognize the clinical features associated with malrotation, and manage appropriately
   c. Recognize the clinical features associated with volvulus, and manage appropriately
6. Trauma (see XXXII.D.1.)
7. Obstruction
   a. Plan appropriate management for a patient with intestinal obstruction
8. Functional abdominal pain
   a. Formulate an age-appropriate differential diagnosis of recurrent abdominal pain
   b. Recognize the clinical manifestations of chronic recurrent abdominal pain, and manage appropriately
   c. Plan appropriate evaluation of chronic recurrent abdominal pain
9. Irritable bowel syndrome
   a. Recognize the clinical features associated with irritable bowel syndrome, and manage appropriately
10. Acid-peptic disorder
   a. Recognize the clinical features associated with acid-peptic disorder in a patient with recurrent abdominal pain
11. Other causes of chronic abdominal pain
   a. Understand the role of lactose intolerance in the development of chronic abdominal pain
   b. Recognize the clinical features associated with abdominal migraine
   c. Recognize the significance of dyspepsia in a child with recurrent abdominal pain
12. Referred abdominal pain
   a. Understand sources of referred abdominal pain and their associated pain patterns

B. Abdominal mass
   1. Formulate an age-appropriate differential diagnosis of an abdominal mass

C. Vomiting
   1. General
      a. Formulate an age-appropriate differential diagnosis of vomiting
      b. Plan the appropriate management of bilious vomiting in a newborn infant
      c. Plan the evaluation of projectile vomiting in a newborn infant, and manage appropriately
      d. Understand the role of serotonin receptor antagonists in the prevention and treatment of vomiting
      e. Recognize the association of vomiting with a systemic illness
      f. Recognize the role of vomiting in the clinical presentation of acute gastroenteritis
   2. Structural causes of vomiting
      a. Recognize the clinical features associated with pyloric stenosis, and manage appropriately
      b. Recognize the clinical features associated with duodenal atresia, and manage appropriately
      c. Plan the evaluation of the acute onset of vomiting as a result of obstruction in children of various ages
   3. Chronic or recurrent vomiting
      a. Plan the evaluation of recurrent cyclic vomiting

D. Esophageal disorders
   1. Motility
      a. Recognize the significance of regurgitation in infants
      b. Distinguish between rumination and regurgitation
      c. Recognize the structural anomalies that interfere with normal esophageal function
   2. Gastroesophageal reflux
      a. Recognize the complications associated with gastroesophageal reflux

b. Recognize the clinical features associated with gastroesophageal reflux, including symptoms associated with other organ systems (eg, respiratory)
c. Plan the appropriate evaluation of gastroesophageal reflux, and manage appropriately
d. Understand the prognosis for patients who have gastroesophageal reflux

3. Allergic and eosinophilic esophagitis
a. Recognize the clinical features associated with eosinophilic or allergic esophagitis

E. Diarrhea
1. Infectious causes of diarrhea (see also IX.D.)
a. Identify the pathogens commonly associated with infectious diarrhea in patients of various ages
b. Apply age-appropriate guidelines in the use of anti-diarrhea medicines

2. Noninfectious causes of diarrhea (see also II.E.1)
a. Recognize the ethnic differences in the development of lactase and sucrase maltase deficiency
b. Recognize the clinical and laboratory features associated with milk-protein intolerance, and manage appropriately
c. Identify possible causes of chronic nonspecific diarrhea
d. Recognize the clinical features associated with chronic nonspecific diarrhea, and the prognosis for affected patients

3. Protracted diarrhea
a. Identify factors predisposing to the development of protracted diarrhea
b. Plan the initial evaluation of an infant with protracted diarrhea
c. Provide appropriate management for a patient who has protracted diarrhea

F. Constipation
1. Formulate an age-appropriate differential diagnosis in a patient with constipation
2. Plan the appropriate management of a patient with constipation
3. Recognize the clinical features associated with Hirschsprung disease
4. Identify complications associated with Hirschsprung disease
5. Plan the appropriate diagnostic evaluation in a patient in whom Hirschsprung disease is suspected
6. Understand the action of laxatives, stool softeners, and lubricants in a patient with constipation

G. Jaundice
1. Bilirubin metabolism
a. Understand bilirubin transport, synthesis, and metabolism in patients of various ages
b. Plan the appropriate diagnostic evaluation of unconjugated hyperbilirubinemia
c. Plan the appropriate evaluation of a child with conjugated hyperbilirubinemia
d. Recognize the clinical features associated with Gilbert syndrome

2. Hepatitis
a. Plan the appropriate diagnostic evaluation of hepatitis
b. Identify the immediate and long-term complications of hepatitis
c. Recognize the age-related clinical features associated with chronic hepatitis
d. Recognize the clinical features associated with Wilson disease
e. Recognize the clinical features associated with alpha-1-antitrypsin deficiency

3. Biliary obstruction
a. Plan the initial management of obstructive jaundice
b. Recognize the clinical features associated with biliary atresia, and manage appropriately
c. Plan the appropriate diagnostic evaluation for a patient in whom biliary atresia is suspected
d. Recognize the clinical features associated with a choledochal cyst

H. Gastrointestinal bleeding
1. Upper versus lower gastrointestinal bleeding
a. Recognize the clinical features associated with upper gastrointestinal bleeding
b. Plan the appropriate evaluation of upper gastrointestinal bleeding
c. Formulate an age-appropriate differential diagnosis for vomiting bright red blood

d. Plan the appropriate evaluation of blood in vomitus or stool, including in a patient who has hemodynamically significant blood loss
e. Recognize the clinical features associated with alcohol-induced gastritis, and manage appropriately
f. Formulate an age-appropriate differential diagnosis for rectal bleeding
g. Distinguish among the etiologies of occult blood and bright red blood per rectum
h. Plan the appropriate evaluation of rectal bleeding
i. Formulate a differential diagnosis for coffee-ground material in vomitus
j. Formulate a differential diagnosis for vomitus that tests positive for occult blood

2. Polyps
   a. Recognize the significance of a solitary juvenile polyp
   b. Recognize the clinical features associated with inherited polyposis syndromes that are associated with a risk of colon cancer
   c. Recognize the clinical features associated with juvenile polyposis
3. Meckel diverticulum
   a. Recognize the clinical features associated with Meckel diverticulum, and manage appropriately

I. Ulcer disease not caused by Helicobacter pylori (see also IX.D.14.)
1. Plan the appropriate evaluation of suspected ulcer disease not caused by Helicobacter pylori
2. Identify the risk factors associated with ulcer disease (other than that caused by Helicobacter pylori) in childhood
3. Plan the appropriate management of ulcer disease not caused by Helicobacter pylori infection

J. Hepatomegaly
1. Understand the significance of hepatomegaly with or without splenomegaly in children of various ages, and evaluate appropriately
2. Identify the physical and laboratory features associated with portal hypertension

K. Malabsorption (see also XIII.F)
1. General
   a. Plan the appropriate diagnostic evaluation for malabsorption
   b. Formulate an age-related differential diagnosis for malabsorption
   c. Recognize clinical situations in which bacterial overgrowth may play a role in malabsorption
   d. Identify the clinical conditions other than cystic fibrosis that are associated with rectal prolapse
2. Mucosal disease (celiac disease)
   a. Plan the appropriate diagnostic evaluation for celiac disease
   b. Recognize the clinical features associated with celiac disease
   c. Differentiate the mechanism of absorption in patients with cystic fibrosis from that in patients with celiac disease
   d. Plan appropriate dietary management for a patient with celiac disease
3. Pancreatic insufficiency (cystic fibrosis, Shwachman syndrome)
   a. Plan the appropriate management of pancreatic exocrine insufficiency
   b. Recognize the clinical features associated with pancreatic insufficiency
   c. Understand the etiology of pancreatic insufficiency
4. Enzyme deficiency (lactase, sucrase-isomaltase) (see also X)
   a. Recognize the clinical features associated with a carbohydrate malabsorption disorder
5. Fat malabsorption and chronic liver disease
   a. Plan the appropriate management of fat malabsorption

L. Inflammatory bowel disease
1. Recognize the clinical features associated with inflammatory bowel disease (eg, Crohn disease, ulcerative colitis)
2. Distinguish the clinical features associated with Crohn disease from those of ulcerative colitis
3. Plan the initial evaluation of inflammatory bowel disease

4. Plan appropriate management of severe colitis
5. Formulate a differential diagnosis of acute colitis

M. Refeeding syndrome
1. Identify the clinical and laboratory features associated with refeeding syndrome

13. **Respiratory Disorders**

A. General signs and symptoms
1. Stridor
   a. Plan the appropriate clinical and diagnostic evaluation of stridor in patients of various ages
   b. Plan the appropriate management for stridor of various etiologies
   c. Plan the appropriate clinical and diagnostic evaluation of laryngeal and vocal cord disorders
2. Respiratory failure
   a. Recognize the clinical and laboratory manifestations associated with respiratory failure of various etiologies
   b. Plan appropriate management for respiratory failure of various etiologies
3. Cough
   a. Plan the appropriate clinical and diagnostic evaluation of cough of various etiologies
   b. Plan effective screening evaluation of chronic cough
   c. Plan appropriate management for cough of various etiologies
4. Exercise intolerance
   a. Formulate a differential diagnosis for exercise intolerance
5. Apnea
   a. Plan the appropriate clinical and diagnostic evaluation of apnea of various etiologies
   b. Plan appropriate management for apnea of various etiologies
6. Wheezing
   a. Plan the appropriate clinical and diagnostic evaluation of wheezing of various etiologies
   b. Plan appropriate management for wheezing of various etiologies
7. Tachypnea
   a. Recognize normal breathing patterns in patients of various ages
   b. Recognize the various factors that influence respiratory rate
   c. Plan the appropriate clinical and diagnostic evaluation of tachypnea of various etiologies
   d. Recognize the presence of tachypnea as a sensitive indicator of respiratory disease
8. Hemoptysis
   a. Plan the appropriate clinical and diagnostic evaluation of hemoptysis
   b. Plan the appropriate management of hemoptysis in patients of various ages
9. Cyanosis
   a. Identify the common extrapulmonary causes of cyanosis
   b. Plan the appropriate clinical and laboratory evaluation of cyanosis
10. Digital clubbing
   a. Recognize disorders commonly associated with digital clubbing

B. Upper airway
1. General
   a. Identify the age-specific upper airway factors that may lead to respiratory distress
2. Croup
   a. Plan the appropriate clinical and laboratory evaluation of croup of various etiologies
   b. Plan the appropriate management of croup
3. Epiglottitis
   a. Plan the appropriate clinical and laboratory evaluation of epiglottitis
   b. Plan the appropriate management of epiglottitis
4. Tracheomalacia and laryngomalacia
   a. Understand the various etiologies of tracheomalacia

b. Recognize the clinical findings associated with tracheomalacia and laryngomalacia

5. Tracheitis
   a. Recognize the clinical findings, including disease course, associated with tracheitis
   b. Plan the appropriate management of tracheitis
   c. Identify the pathogens most likely associated with tracheitis

C. Lower airway
1. Vascular anomalies
   a. Plan the appropriate clinical and laboratory evaluation of vascular anomalies that affect the airway
2. Congenital malformations
   a. Recognize the clinical findings associated with congenital malformations of the lower airway
3. Bronchiolitis
   a. Recognize the clinical findings associated with bronchiolitis
   b. Plan the appropriate management of bronchiolitis
4. Foreign body aspiration
   a. Recognize the historical, clinical, and laboratory findings associated with foreign body aspiration
   b. Plan the appropriate evaluation of suspected foreign body aspiration, and manage appropriately
   c. Recognize long-term complications associated with foreign body aspiration
   d. Understand the effect of a tracheostomy on aspiration
5. Bronchiectasis
   a. Formulate a differential diagnosis of bronchiectasis
   b. Plan the appropriate diagnostic evaluation of suspected bronchiectasis
6. Hemosiderosis
   a. Recognize clinical findings associated with hemosiderosis
   b. Identify the risk factors associated with hemosiderosis

D. Parenchyma
1. Pneumonia
   a. Plan appropriate management of the different types of pneumonia
   b. Identify the major acute and chronic complications of pneumonia
   c. Recognize the clinical features of pneumonias of various etiologies and the associated sequelae
   d. Plan the appropriate diagnostic evaluation for pneumonias of various etiologies
   e. Formulate a differential diagnosis of recurrent pneumonia
   f. Recognize the significance of pneumonia in a child with a neuromuscular disease, and manage appropriately
2. Diaphragmatic hernia
   a. Recognize the clinical features of a diaphragmatic hernia
   b. Plan the appropriate management of a child with diaphragmatic hernia.
3. Drowning, near drowning (see XXXI.C.)
4. Acute respiratory distress syndrome (see XXXI.C)
5. Bronchopulmonary dysplasia (chronic lung disease of infancy)
   a. Recognize situations that may lead to bronchopulmonary dysplasia
   b. Recognize the clinical features of bronchopulmonary dysplasia and its associated sequelae
   c. Plan appropriate inpatient and outpatient management of bronchopulmonary dysplasia

E. Asthma (see VIII.C)

F. Cystic fibrosis
1. Recognize the pathogens commonly associated with the pulmonary complications of cystic fibrosis
2. Recognize the pulmonary and extrapulmonary complications of cystic fibrosis in children of various ages
3. Understand the inheritance pattern associated with cystic fibrosis
4. Plan the appropriate diagnostic evaluation and management of cystic fibrosis
5. Identify the age-related gastrointestinal and hepatobiliary features in a patient with cystic fibrosis

6. Recognize the importance of planning for survival into adulthood for patients with cystic fibrosis

G. Primary ciliary dyskinesia (dysmotile cilia syndrome)
   1. Recognize disorders associated with primary ciliary dyskinesia
   2. Plan the appropriate diagnostic evaluation of primary ciliary dyskinesia

H. Extrapulmonary
   1. Pleural fluid
      a. Understand the etiology of pleural fluid accumulation
      b. Plan the appropriate diagnostic evaluation of pleural disease
      c. Recognize the normal and abnormal characteristics of pleural fluid
      d. Plan the appropriate management of an empyema
   2. Pneumothorax, pneumomediastinum
      a. Recognize the natural history of spontaneous pneumothorax/pneumomediastinum
      b. Recognize the clinical features of a pneumothorax/pneumomediastinum, and manage appropriately
      c. Recognize complications associated with pneumothorax/pneumomediastinum
   3. Thoracic deformities (see also XIX.B.6)
      a. Recognize the association of thoracic deformities with restrictive pulmonary disease

I. Pulmonary hypertension and cor pulmonale
   1. Recognize the natural history of pulmonary hypertension
   2. Recognize conditions associated with cor pulmonale and pulmonary hypertension

J. Sleep apnea
   1. Plan an appropriate evaluation for obstructive sleep apnea
   2. Plan appropriate management of obstructive sleep apnea
   3. Recognize complications associated with obstructive sleep apnea

K. Sudden infant death syndrome and ALTE
   1. Recognize the clinical findings of an apparent life-threatening event (ALTE), and manage appropriately
   2. Identify risk factors associated with sudden infant death syndrome
   3. Counsel parents regarding prevention of sudden infant death syndrome

L. Diagnostic testing
   1. Pulmonary function testing
      a. Understand the basic terminology and purpose of various pulmonary function tests
   2. Oximetry
      a. Understand the correlation between PaO2 and oxyhemoglobin concentration
      b. Understand the value and limitations of pulse oximetry
   3. Blood gas analysis
      a. Understand the limitations of capillary blood gas analysis
      b. Recognize the arterial blood gas values associated with various conditions
   4. Imaging studies
      a. Understand the usefulness of various imaging studies in identifying pulmonary diseases

M. Environmental tobacco smoke exposure (see III.C.3.)

14. **Cardiovascular Disorders**

A. General aspects
   1. Blood pressure (see III.B.1. and XVI.H.)
   2. Chest pain
      a. Recognize the cardiovascular and non-cardiovascular causes of chest pain in children of various ages
   3. Syncope
      a. Plan the appropriate evaluation of a syncopal or pre-syncopal episode, including episodes associated with exercise

b. Recognize the cardiac causes of syncope
4. Murmur
a. Plan the appropriate evaluation of an innocent murmur, and manage appropriately

B. Congestive heart failure
1. Identify the causes of congestive heart failure in children of various ages
2. Recognize the clinical findings associated with congestive heart failure in children of various ages
3. Plan the appropriate initial diagnostic evaluation of congestive heart failure in children of various ages
4. Plan the appropriate initial management of congestive heart failure in children of various ages

C. Congenital heart disease
1. Cardiogenic shock (see XXXI.A.2)
2. Cyanotic disease
a. Distinguish between central cyanosis and acrocyanosis
b. Understand the role of the ductus arteriosus in cyanotic congenital heart disease, and manage appropriately
c. Identify cardiac causes of cyanosis in children of various ages, including those who have tetralogy of Fallot
d. Understand the prognosis for patients who have various types of cyanotic congenital heart disease
e. Recognize the clinical findings of transposition of the great arteries
f. Recognize complications associated with cyanotic congenital heart disease
g. Plan immediate management of a hypoxic episode in a child who has cyanotic congenital disease
h. Recognize the major clinical findings associated with the various types of cyanotic congenital heart disease
3. Acyanotic disease
a. Understand the natural history of ventricular septal defect
b. Understand the natural history of a bicuspid aortic valve
c. Recognize the major clinical findings associated with the various types of acyanotic congenital heart disease
d. Plan appropriate initial management of patent ductus arteriosus in an infant born prematurely
e. Plan the initial management of hypertension in a patient with coarctation of the aorta
f. Plan appropriate initial management of severe pulmonary valve stenosis
g. Identify risks associated with an untreated large left-to-right shunt and pulmonary hypertension

D. Infectious and noninfectious cardiovascular diseases
1. Infective endocarditis
a. Understand the natural history of infective endocarditis
b. Recognize pathogens commonly associated with infective endocarditis
c. Recognize the clinical findings associated with infective endocarditis and provide appropriate initial management
d. Plan an appropriate diagnostic evaluation of infective endocarditis
e. Plan appropriate prophylaxis for infective endocarditis
2. Rheumatic fever
a. Understand the natural history of rheumatic fever
b. Recognize the clinical findings associated with rheumatic fever, including major and minor criteria
c. Plan appropriate diagnostic evaluation of rheumatic fever
d. Plan the appropriate initial management of rheumatic fever
3. Myocarditis
a. Recognize the clinical findings associated with myocarditis
b. Recognize pathogens commonly associated with myocarditis
c. Plan an appropriate diagnostic evaluation of myocarditis

4. Pericarditis
    a. Understand the natural history of pericarditis
    b. Recognize the clinical findings associated with pericarditis and plan appropriate initial management
    c. Recognize pathogens commonly associated with pericarditis
    d. Plan the appropriate diagnostic evaluation of pericarditis
5. Kawasaki disease (see also XXI.B.2.)
    a. Identify cardiac complications associated with Kawasaki disease and how to prevent their occurrence

E. Rate and rhythm disorders, ischemia
1. Recognize the clinical findings associated with various cardiac dysrhythmias
2. Understand the clinical significance of a prolonged corrected QT interval
3. Recognize the electrocardiographic characteristics of various cardiac dysrhythmias
4. Plan the appropriate management of various cardiac dysrhythmias
5. Recognize the role of hyperthyroidism in persistent sinus tachycardia

F. Systemic diseases affecting the heart
1. Recognize cardiac conditions associated with Turner syndrome
2. Recognize the clinical findings associated with superior vena cava syndrome
3. Recognize cardiac conditions associated with tuberous sclerosis

15. **Blood and Neoplastic Disorders**

A. General aspects
1. Recognition by history
    a. Recognize aspects of a patient's medical history that may suggest hemolytic anemia
    b. Recognize aspects of a patient's medical history that may suggest quantitative or qualitative leukocyte disorders
    c. Recognize the risk factors for hematologic or oncologic disorders that may require screening or evaluation
2. Recognition by physical examination
    a. Distinguish clinical findings associated with thrombocytopenia from those caused by normal bruising
    b. Identify the etiology of bruising in a child with a normal or slightly increased platelet count
    c. Formulate a differential diagnosis of a purpuric rash that is not associated with sepsis
3. Interpretation of laboratory results
    a. Recognize the laboratory findings associated with physiologic anemia of infancy
    b. Recognize the laboratory findings associated with microcytic anemia
    c. Distinguish between a disorder of erythrocyte production and a disorder of erythrocyte destruction based on laboratory results
    d. Understand the appropriate use of a bleeding time
    e. Recognize the normal variations in hemoglobin concentration and mean corpuscular volume during childhood
4. Blood product transfusion
    a. Recognize complications associated with transfusion of blood products

B. Erythrocyte disorders
1. Nutritional anemias
    a. Iron deficiency
        1. Identify non-hematologic effects of iron deficiency
        2. Understand the etiology of iron deficiency
        3. Recognize the clinical findings associated with iron deficiency in patients of various ages
        4. Plan the appropriate diagnostic evaluation of iron deficiency
        5. Plan the appropriate management of iron deficiency

b. Vitamin B12, folic acid deficiency (see also II.C.1)
    1. Recognize the causes of macrocytic anemia
2. Hemolytic anemias
    a. Hereditary spherocytosis, other erythrocyte membrane disorders
        1. Recognize the clinical findings associated with hereditary spherocytosis, and manage appropriately
        2. Identify pathogens commonly associated with hereditary spherocytosis
        3. Plan appropriate pre- and postoperative prophylaxis for a patient who has hereditary spherocytosis or another erythrocyte membrane disorder
    b. G6PD deficiency
        1. Recognize the inheritance pattern associated with G6PD deficiency
        2. Recognize the clinical findings associated with G6PD deficiency
        3. Plan appropriate management of hemolysis in a patient with G6PD deficiency
    c. Sickle cell disease
        1. Understand that sickle cell disease can be diagnosed at birth
        2. Recognize the clinical findings associated with sickle cell disease in children of various ages
        3. Recognize complications that increase the risk of death in patients who have sickle cell disease, and manage appropriately
        4. Plan appropriate prophylaxis in children of various ages who have sickle cell disease
        5. Plan the appropriate management of a sequestration crisis in a patient who has sickle cell disease
        6. Recognize the clinical and laboratory findings of an aplastic crisis in a patient who has sickle cell disease
    d. Thalassemia
        1. Recognize the clinical and laboratory findings associated with thalassemia major
        2. Plan the appropriate diagnostic evaluation of suspected thalassemia
    e. Autoimmune hemolytic anemia, other severe anemias
        1. Recognize the clinical findings associated with autoimmune hemolytic anemia
        2. Plan the appropriate diagnostic evaluation of acute-onset anemia
        3. Recognize the association of ABO or Rh incompatibility with progressive or severe anemia in infants of various ages
3. Aplastic and hypoplastic erythrocyte disorders
    a. Diamond-Blackfan syndrome
        1. Distinguish between the clinical findings of Diamond-Blackfan syndrome and transient erythroblastopenia of childhood
    b. Transient erythroblastopenia of childhood
        1. Recognize the clinical and laboratory findings associated with transient erythroblastopenia of childhood
        2. Plan the appropriate management of transient erythroblastopenia of childhood
4. General therapeutic approaches for severe anemia
    a. Plan the appropriate management of severe anemia of various etiologies, while considering the risks associated with various therapies

C. Leukocyte disorders
1. Quantitative leukocyte disorders
    a. Congenital and immune-mediated neutropenia
        1. Recognize the variable presentation of congenital neutropenia, and manage appropriately
        2. Plan the appropriate laboratory evaluation of neutropenia, and interpret the results
        3. Recognize clinical findings associated with neutropenia
    b. Acquired, nonimmune neutropenia
        1. Understand the infection risks associated with neutropenia

2. Understand the association of drug therapy with neutropenia
3. Recognize the association of common viral infections with transient neutropenia

2. Qualitative leukocyte disorders
   a. Recognize the clinical and laboratory findings associated with abnormal leukocyte function
3. General therapeutic approaches for leukocyte disorders
   a. Plan appropriate management of a patient with a leukocyte disorder
4. Chronic granulomatous disease
   a. Recognize the clinical presentation of chronic granulomatous disease
   b. Plan and interpret the results of laboratory evaluation in a patient with chronic granulomatous disease

D. Platelet disorders
1. Quantitative platelet disorders
   a. Recognize the significance of thrombocytopenia in neonates and older children and manage appropriately
   b. Understand the significance of neonatal thrombocytopenia in multiple siblings
   c. Understand the role of medications in the development of thrombocytopenia
   d. Recognize the laboratory findings associated with thrombocytopenia
   e. Recognize the clinical findings associated with Wiskott-Aldrich syndrome
   f. Understand the hematologic significance of a rapidly enlarging hematoma
   g. Plan appropriate management of thrombocytopenia associated with TAR syndrome
   h. Understand the natural history of ITP
   i. Recognize the clinical and laboratory findings associated with ITP, and manage appropriately
   j. Recognize complications associated with ITP
2. Qualitative platelet disorders
   a. Recognize clinical findings associated with qualitative platelet disorders

E. Pancytopenia
1. Decreased production
   a. Recognize clinical and laboratory findings associated with Fanconi anemia
   b. Distinguish acquired aplastic anemia from childhood leukemia
2. Increased destruction
   a. Understand the etiology of pancytopenia, and manage appropriately
   b. Plan the appropriate diagnostic evaluation of multiple pancytopenias

F. Coagulation disorders
1. Congenital bleeding and thrombotic disorders
   a. Recognize clinical findings associated with congenital coagulation factor deficiency
   b. Recognize clinical findings associated with intracranial bleeding, and manage appropriately
   c. Plan the appropriate diagnostic evaluation for increased bruising
   d. Plan an appropriate screening evaluation for a coagulation disorder
   e. Understand the genetic risks when a congenital bleeding or thrombotic disorder is suspected
   f. Recognize the clinical manifestations and complications associated with hemophilia, and manage appropriately
   g. Recognize laboratory findings associated with hemophilia
   h. Recognize the clinical findings associated with von Willebrand disease
   i. Plan the appropriate management of von Willebrand disease
2. Acquired bleeding and thrombotic disorders
   a. Understand the significance of purpura in a febrile child
   b. Plan the appropriate evaluation and management of an acquired bleeding or thrombotic disorder
3. General therapeutic approaches to coagulation disorders
   a. Plan the general therapeutic approach for a patient with a bleeding diatheses

G. Neoplastic disorders

1. Hematologic malignancies
    a. Leukemia
        1. Recognize clinical findings associated with leukemia, including sites of relapse
        2. Understand the outcome associated with treated acute lymphoblastic leukemia
        3. Identify disorders associated with an increased risk of leukemia
        4. Understand that management of leukemia is dependent on its type
    b. Lymphoma
        1. Recognize clinical findings associated with lymphoma
        2. Plan the appropriate diagnostic evaluation of unexplained lymphadenopathy
        3. Recognize complications associated with Hodgkin disease in patients who have undergone splenectomy, and manage appropriately
        4. Plan an appropriate diagnostic evaluation to exclude tumor lysis syndrome in patients suspected of having leukemia
2. Solid tumors
    a. Neuroblastoma
        1. Recognize clinical findings associated with neuroblastoma
        2. Plan the appropriate diagnostic evaluation of neuroblastoma
    b. Wilms tumor
        1. Recognize the clinical findings associated with Wilms tumor
        2. Understand the prognosis for a patient who has Wilms tumor
    c. Brain tumors
        1. Recognize the clinical findings associated with a brain tumor, including craniopharyngioma
    d. Bone and soft tissue tumors
        1. Recognize the clinical findings associated with osteosarcoma
        2. Recognize the clinical and laboratory findings associated with osteoid osteoma
        3. Understand site(s) of metastasis of malignant bone tumors in children of various ages
        4. Plan the appropriate diagnostic referral for a patient who has a malignant bone tumor
    e. Histiocytosis syndromes of childhood
        1. Recognize the clinical findings associated with histiocytosis syndromes of childhood
    f. Other tumors (eg, germ cell, liver, retinoblastoma)
        1. Recognize the laboratory findings associated with a germ cell tumor
        2. Recognize the clinical and laboratory findings associated with retinoblastoma
        3. Recognize the inheritance pattern associated with retinoblastoma and the significance of the family history in planning management
        4. Differentiate the historical and clinical findings associated with hereditary retinoblastoma from those of sporadic retinoblastoma
        5. Recognize the laboratory findings associated with hepatoblastoma
        6. Recognize clinical findings associated with embryonal tumors
3. Oncologic emergencies
    a. Spinal cord compression
        1. Recognize the clinical findings associated with spinal cord compression (eg, from a tumor, from myelopathy), and the need for prompt evaluation
    b. Chest mass
        1. Recognize the clinical findings associated with a chest mass
        2. Recognize the need for immediate evaluation of a child with a chest mass who is at risk of acute respiratory failure

16. **Renal and Urologic Disorders**

A. General renal disorders

1. Age-related changes in normal renal function

a. Recognize age-related changes in glomerular filtration rate and their impact on the serum creatinine concentration
b. Recognize age-related changes in renal tubular function

2. Proteinuria
   a. Identify the possible causes of proteinuria
   b. Plan the appropriate clinical and laboratory evaluation of proteinuria
3. Hematuria
   a. Formulate a differential diagnosis of gross hematuria
   b. Plan the appropriate clinical evaluation of gross hematuria
   c. Recognize the disorders associated with hematuria
   d. Plan the appropriate clinical evaluation of red urine of non-hematogenous origin
   e. Formulate a differential diagnosis of persistent microscopic hematuria with and without persistent proteinuria
   f. Plan the appropriate clinical and laboratory evaluation of microscopic hematuria
4. Dysuria
   a. Recognize the etiology of dysuria in patients of various ages
   b. Plan the appropriate diagnostic evaluation of dysuria in patients of various ages
5. Incontinence and enuresis
   a. Recognize the clinical and laboratory findings associated with daytime and nocturnal urinary incontinence in male and female patients
   b. Identify the possible renal causes of nocturnal incontinence
   c. Plan the appropriate diagnostic evaluation and management of incontinence
   d. Recognize the clinical and laboratory findings associated with voiding dysfunction
   e. Plan the appropriate evaluation of enuresis of various types, including that occurring after continence has been achieved
   f. Plan the appropriate management of enuresis of various types
6. Renal trauma (see XXXII.D.1)
7. Renal toxicity
   a. Recognize the drug classes that can cause renal toxicity
8. Urinary tract stones
   a. Recognize the signs and symptoms of urinary tract stones in patients of various ages
   b. Plan the evaluation of urinary tract stones in patients of various ages
   c. Recognize factors contributing to the development of urinary tract stones
   d. Plan the appropriate management of urinary tract stones
9. Renal tubular acidosis
   a. Understand the clinical and laboratory findings associated with renal tubular acidosis
   b. Formulate a differential diagnosis of renal tubular acidosis
10. Hereditary conditions with renal manifestations (eg, nephrogenic DI)
    a. Recognize the signs and symptoms of diabetes insipidus in patients of various ages
    b. Interpret the laboratory findings associated with diabetes insipidus
    c. Recognize the association between cranial injury/surgery and diabetes insipidus
11. Renal dysplasia
    a. Recognize the clinical findings associated with multicystic dysplastic kidney in patients of various ages
    b. Recognize the clinical findings associated with autosomal-dominant polycystic kidney disease in patients of various ages
    c. Plan the appropriate diagnostic evaluation for a patient in whom autosomal-dominant polycystic kidney disease is suspected
    d. Recognize the clinical findings associated with autosomal-recessive polycystic kidney disease in patients of various ages

e. Recognize the renal findings associated with Potter syndrome (pulmonary hypoplasia)

B. Abnormalities of the collecting system, kidneys, bladder, and urethra
1. Formulate a differential diagnosis of urinary tract obstruction
2. Understand the natural history of vesicoureteral reflux
3. Recognize the clinical findings associated with hydronephrosis in patients of various ages
4. Recognize the clinical findings associated with prune belly (Eagle-Barrett) syndrome
5. Understand the various causes of urinary tract obstruction
6. Recognize the clinical findings associated with vesicoureteral reflux
7. Recognize the clinical findings associated with posterior urethral valves in children of various ages
8. Plan the appropriate long-term management of posterior urethral valves
9. Recognize the clinical findings associated with urethral trauma
10. Plan the appropriate management of a narrow urethra
11. Recognize the renal findings associated with Alport syndrome
12. Recognize the clinical findings associated with various anomalies of the kidneys, urinary collecting system, and urinary excretion system
13. Plan the diagnostic evaluation of abnormalities of the kidneys, urinary collecting system, bladder, and urethra

C. Infections of the urinary tract
1. Pyelonephritis
   a. Understand the natural history of urinary tract infection
   b. Recognize pathogens commonly associated with urinary tract infection in children of various ages
   c. Recognize the clinical findings associated with urinary tract infection in children of various ages
   d. Plan the appropriate diagnostic evaluation of a urinary tract infection in children who are and are not toilet-trained
   e. Plan the appropriate prophylaxis for urinary tract infection
   f. Recognize the clinical findings associated with reflux nephropathy
   g. Plan the appropriate initial management of acute pyelonephritis while awaiting results of diagnostic testing
2. Cystitis
   a. Recognize the clinical and laboratory findings associated with cystitis
   b. Plan the appropriate clinical evaluation of cystitis
   c. Plan the appropriate initial and long-term management of cystitis

D. Acute glomerulonephritis
1. Understand the natural history of acute post-streptococcal glomerulonephritis
2. Differentiate acute post-streptococcal glomerulonephritis from other forms of glomerulonephritis
3. Recognize complications associated with post-streptococcal glomerulonephritis
4. Plan the appropriate diagnostic evaluation of acute post-streptococcal glomerulonephritis, with attention to the timing of resolution of abnormal findings
5. Plan the appropriate initial management of post-streptococcal glomerulonephritis

E. Nephrotic syndrome
1. Understand the natural history of minimal-change nephrotic syndrome
2. Recognize the clinical and laboratory findings associated with minimal-change nephrotic syndrome
3. Plan the appropriate initial management of the first episode of minimal-change nephrotic syndrome
4. Formulate a differential diagnosis of nephrotic syndrome with and without hematuria
5. Identify the etiology of hyponatremia in nephrotic syndrome
6. Recognize complications associated with nephrotic syndrome, including those resulting from diuretic therapy
7. Understand the various factors that affect the prognosis of nephrotic syndrome

F. Other acquired renal disorders
1. Hemolytic-uremic syndrome (see IX.D.11)

2. Henoch-Schönlein purpura (see also XXI.B.1)
    a. Recognize the renal findings associated with Henoch-Schönlein purpura
    b. Understand the prognostic implications when Henoch-Schönlein purpura is associated with nephrotic syndrome
3. IgA nephropathy
    a. Recognize the clinical findings associated with IgA nephropathy

G. Renal failure (acute, intrinsic, chronic, end-stage)
1. Identify the etiology of acute renal failure in patients of various ages
2. Plan the appropriate diagnostic evaluation of oliguria
3. Plan the appropriate initial management of acute renal failure, while considering the effects of various therapies on associated physiologic abnormalities
4. Recognize complications associated with acute renal failure
5. Recognize complications associated with chronic kidney disease
6. Recognize complications associated with hydronephrosis
7. Recognize laboratory abnormalities associated with chronic kidney disease
8. Understand the prognosis for a patient who has undergone renal transplantation
9. Plan an appropriate immunization regimen for a patient who is about to undergo renal transplantation
10. Plan the appropriate initial management of end-stage kidney disease

H. Hypertension
1. General
    a. Recognize the clinical findings associated with hypertension
    b. Formulate a differential diagnosis of hypertension in patients of various ages
    c. Plan the initial clinical and diagnostic evaluation of hypertension
    d. Plan the appropriate management of hypertension in children of various ages
    e. Recognize the variations in blood pressure during adolescence, and manage appropriately
2. Renal
    a. Recognize the causes of renal hypertension
    b. Recognize the signs and symptoms of a renal hypertensive emergency, and manage appropriately
3. Vascular
    a. Recognize the cardiovascular causes of hypertension
    b. Recognize the genetic syndromes associated with hypertension
4. Adrenal
    a. Recognize the clinical findings associated with pheochromocytoma
    b. Recognize disorders commonly associated with pheochromocytoma
5. Miscellaneous causes
    a. Essential hypertension
        1. Formulate a differential diagnosis of essential hypertension
        2. Plan the appropriate management of essential hypertension
    b. Drug administration
        1. Understand the effects of certain drugs on the development of hypertension in children of various ages

17. **Genital System Disorders**

A. Congenital and acquired abnormalities of the male genital system
1. Hypospadias
    a. Recognize disorders associated with hypospadias
    b. Plan the appropriate management of hypospadias
2. Micropenis
    a. Understand the clinical diagnosis of micropenis
3. Phimosis
    a. Recognize the significance of smegma accumulation beneath an infant’s prepuce

b. Recognize the clinical findings associated with phimosis and paraphimosis and the appropriate management of patients with these conditions

4. Circumcision
   a. Plan the appropriate use of analgesia when performing circumcision
   b. Recognize the conditions in which circumcision is contraindicated
5. Hydrocele, hernia
   a. Understand the causes of an inguinal mass in patients of various ages
   b. Plan the appropriate diagnostic evaluation of an inguinal mass in patients of various ages
6. Cryptorchidism
   a. Understand the natural history of cryptorchidism
   b. Differentiate the findings associated with undescended testes from those of retractile testes
   c. Recognize complications associated with undescended testes
   d. Plan the appropriate management of undescended testes
7. Testicular torsion
   a. Recognize the clinical findings associated with testicular torsion, and manage appropriately
   b. Plan the appropriate diagnostic evaluation of testicular torsion
8. Varicocele
   a. Recognize the clinical findings associated with a varicocele, and manage appropriately
9. Testicular masses
   a. Plan the appropriate evaluation of a testicular mass
   b. Recognize risk factors associated with testicular cancer
10. Trauma
    a. Plan the initial evaluation and management of a patient with genital trauma
11. Orchitis and epididymitis
    a. Recognize the clinical findings associated with orchitis
    b. Identify common causes of orchitis
    c. Recognize the clinical findings associated with epididymitis
    d. Identify common causes of epididymitis in patients of various ages

B. Congenital and acquired abnormalities of the female genital system
1. Imperforate hymen
   a. Recognize the clinical findings associated with imperforate hymen
2. Labial adhesions
   a. Recognize the clinical findings associated with labial adhesions, and manage appropriately
3. Ovarian torsion
   a. Recognize the clinical findings associated with ovarian torsion
4. Ovarian cyst
   a. Plan the appropriate diagnostic evaluation and management of ovarian cyst
   b. Recognize the association of small ovarian cysts with normal development
5. Vulvovaginitis, vaginal discharge
   a. Recognize the etiology of a vaginal discharge in patients of various ages and manage appropriately

18. **Neurologic Disorders**

A. Signs and symptoms of neurologic disorders
1. Headache
   a. Recognize elements of history associated with headaches of various etiologies
   b. Recognize the clinical findings associated with headaches of various etiologies
   c. Understand the appropriate use of neuroimaging in the evaluation of headache
   d. Plan appropriate abortive therapy for acute migraine
   e. Plan appropriate prophylaxis for recurrent migraine
   f. Plan the appropriate management of headache of various origins

2. Altered level of consciousness
    a. Identify the various etiologies of an altered level of consciousness
    b. Plan the appropriate initial evaluation of an altered level of consciousness
3. Ataxia
    a. Plan the appropriate evaluation of ataxia
    b. Recognize the presentation of acute ataxia
4. Increased intracranial pressure
    a. Recognize the clinical findings associated with increased intracranial pressure in patients of various ages
    b. Plan the appropriate diagnostic evaluation of increased intracranial pressure, and manage appropriately
    c. Understand the indications and contraindications for examination of the cerebrospinal fluid in a patient who has increased intracranial pressure
    d. Identify the risk factors for pseudotumor cerebri
5. Weakness
    a. Differentiate the causes of acute, subacute, and chronic weakness
    b. Understand the benefits and limitations of neurodiagnostic tests in the evaluation of weakness
6. Hypotonia
    a. Differentiate the findings associated with central nervous system causes of hypotonia from those of peripheral nervous system causes
    b. Plan the appropriate evaluation of hypotonia in patients of various ages
7. Movement disorders (involuntary, paroxysmal)
    a. Identify the risk factors for various movement disorders
    b. Distinguish among the findings associated with various movement disorders, and manage appropriately
    c. Recognize clinical findings associated with Tourette syndrome, and manage appropriately
    d. Understand the etiology of chorea and recognize its clinical manifestations
8. Narcolepsy
    a. Recognize the clinical features of narcolepsy and manage appropriately

B. Infectious causes of neurologic disorders
1. Meningitis (see also IX.D.18)
    a. Recognize the acute and long-term complications associated with meningitis
    b. Understand the etiology of meningitis in patients of various ages
    c. Recognize the clinical findings associated with meningitis and manage appropriately
    d. Plan the appropriate diagnostic evaluation of meningitis of various etiologies
2. Encephalitis
    a. Recognize the clinical findings associated with encephalitis of various causes
    b. Plan the appropriate diagnostic evaluation of encephalitis
    c. Plan the appropriate management of encephalitis
3. Brain abscess
    a. Recognize the clinical findings associated with brain abscess
    b. Plan the appropriate diagnostic evaluation of a brain abscess
    c. Plan the appropriate management of a brain abscess
    d. Understand the risk factors associated with a brain abscess
4. Transverse myelitis
    a. Recognize the clinical manifestations of transverse myelitis
    b. Plan the appropriate diagnostic evaluation of suspected transverse myelitis

C. Neurodegenerative disorders
1. Recognize the clinical findings associated with a degenerative disorder of the central nervous system

D. Spinal dysraphism

1. Recognize other abnormalities commonly associated with myelomeningocele
2. Recognize the clinical manifestations of and complications associated with spinal dysraphism, and manage appropriately

E. Hydrocephalus
1. Understand the risk factors for hydrocephalus
2. Recognize the clinical findings associated with hydrocephalus
3. Recognize the clinical findings associated with shunt malfunction or infection in a patient with hydrocephalus and manage appropriately

F. Cerebral palsy
1. Recognize the clinical features associated with cerebral palsy
2. Understand the prenatal risk factors associated with cerebral palsy

G. Seizures (see also XXXIII.B.15)
1. General
   a. Differentiate the features of epileptic seizures from those of paroxysmal non-epileptic events
   b. Recognize factors associated with an increased risk of a seizure disorder
   c. Plan the appropriate management of a first seizure
2. Neonatal seizures
   a. Understand the various etiologies of neonatal seizures and plan appropriate diagnostic evaluation
   b. Recognize the clinical findings associated with neonatal seizures and manage appropriately
3. Febrile seizures
   a. Understand the risk factors associated with febrile seizures
   b. Understand the difference between simple and complex febrile seizures
   c. Plan the appropriate evaluation and management of a febrile seizure
4. Infantile spasms
   a. Recognize the clinical findings associated with infantile spasms
   b. Understand the prognosis of infantile spasms
5. Absence seizures
   a. Recognize the clinical findings associated with absence seizures, and manage appropriately
6. Complex partial seizures
   a. Recognize the clinical findings associated with complex partial seizures, and manage appropriately
7. Status epilepticus
   a. Plan the appropriate initial evaluation of status epilepticus, and manage appropriately
8. Epilepsy syndromes
   a. Recognize the clinical findings associated with rolandic epilepsy, and manage appropriately
   b. Recognize the clinical findings associated with juvenile myoclonic epilepsy, and manage appropriately

H. Cerebrovascular disease
1. Stroke
   a. Understand the pathophysiology of childhood stroke
   b. Recognize the clinical findings associated with childhood stroke
2. Vascular anomalies
   a. Recognize the clinical features associated with arteriovenous malformations in patients of various ages

I. Spinal cord disease
1. Understand the various etiologies of spinal cord disease
2. Understand the association between atlantoaxial instability and potential neurologic complications
3. Recognize the significance of bladder and bowel dysfunction in spinal cord disease
4. Plan the initial neurodiagnostic evaluation of acute spinal cord dysfunction

J. Peripheral nerve and neuromuscular junction disorders

1. Guillain-Barre syndrome
    a. Recognize the clinical findings associated with Guillain-Barre syndrome and the progression of disease
    b. Recognize risk factors associated with Guillain-Barre syndrome
    c. Plan the appropriate diagnostic evaluation of Guillain-Barre syndrome, and manage appropriately
2. Neuropathy
    a. Recognize the clinical findings associated with peripheral neuropathy in patients of various ages
    b. Identify the etiology of peripheral neuropathy in patients of various ages
    c. Recognize the clinical findings associated with Bell palsy, and manage appropriately
3. Neuromuscular junction disorders
    a. Recognize the clinical findings associated with tick paralysis
    b. Recognize the clinical findings associated with myasthenia gravis, and manage appropriately
    c. Plan the appropriate diagnostic evaluation of myasthenia gravis
4. Spinal muscular atrophy
    a. Recognize the clinical findings associated with different forms of spinal muscular atrophy

K. Muscle diseases
1. Recognize the clinical findings associated with dystrophinopathy (eg, Duchenne/Becker muscular dystrophy)
2. Recognize the clinical findings associated with proximal muscle weakness
3. Formulate a differential diagnosis of a muscle disorder of various etiologies

L. Central nervous system trauma (see also XXXII.D.2)
1. Understand the long-term neurologic and behavior consequences of head trauma

19. **Musculoskeletal Disorders**

A. Congenital musculoskeletal disorders
1. General
    a. Recognize the clinical findings associated with osteogenesis imperfecta
    b. Recognize the clinical findings associated with achondroplasia, including complications
    c. Recognize the clinical features associated with arthrogryposis
2. Head and neck
    a. Identify the etiology of torticollis
    b. Formulate a differential diagnosis of torticollis
    c. Plan the appropriate management of torticollis
    d. Differentiate the clinical findings associated with congenital torticollis from those of paroxysmal torticollis
    e. Recognize the clinical and radiologic findings associated with Klippel-Feil syndrome
3. Trunk and spine
    a. Recognize conditions commonly associated with congenital scoliosis
4. Lower extremities
    a. Recognize the clinical findings associated with clubfoot and the need for prompt referral
    b. Recognize the clinical findings associated with various valgus and varus deformities, and understand when referral is appropriate
    c. Understand the natural history of femoral anteversion
    d. Plan the appropriate clinical and diagnostic evaluation of femoral anteversion
    e. Understand the significance of toe-walking in patients of various ages
    f. Recognize the clinical findings associated with tibial torsion
    g. Plan the appropriate management of polydactyly and understand when referral is appropriate
    h. Recognize the potential causes of leg length discrepancy

B. Acquired musculoskeletal disorders
1. Osteomyelitis
    a. Identify the etiology of osteomyelitis in patients of various ages

b. Recognize the clinical findings associated with osteomyelitis in various anatomic locations
c. Plan the appropriate diagnostic evaluation of osteomyelitis, with attention to the sequence with which positive findings become evident on imaging studies
d. Plan the appropriate management of osteomyelitis in patients of various ages

2. Pyogenic arthritis
   a. Understand the natural history of pyogenic arthritis
   b. Identify the etiology of pyogenic and acute arthritis
   c. Differentiate the clinical findings of pyogenic arthritis from those of toxic synovitis and arthralgia
   d. Recognize the clinical findings of pyogenic arthritis or arthritis associated with rheumatic fever in patients of various ages
   e. Plan the appropriate diagnostic evaluation of pyogenic arthritis in patients of various ages
   f. Plan the appropriate antimicrobial management of pyogenic arthritis
3. Synovitis
   a. Formulate a differential diagnosis of a painful hip
   b. Plan the appropriate diagnostic evaluation of synovitis
4. Dislocations, strains (see XXV.B.2.e. and XXXII.D.4.)
5. Bone injuries and cysts
   a. Recognize the clinical findings associated with compartment syndrome
   b. Recognize the clinical findings associated with occult fractures that may or may not affect gait in patients of various ages
   c. Recognize the clinical findings associated with growth plate fractures and injuries
   d. Understand the natural history of a bone cyst
   e. Formulate a differential diagnosis of a bone cyst
6. Scoliosis
   a. Understand the natural history and etiology of scoliosis
   b. Plan the appropriate clinical evaluation of scoliosis, and manage appropriately
   c. Recognize the various complications associated with scoliosis
7. Kyphosis
   a. Recognize the clinical findings associated with kyphosis
   b. Plan the appropriate management of kyphosis
8. Avascular necrosis (Legg-Calve-Perthes disease)
   a. Understand the natural history of avascular necrosis (Legg-Calve-Perthes disease)
   b. Formulate a differential diagnosis of avascular necrosis (Legg-Calve-Perthes disease) in a patient with a limp
9. Apophysitis
   a. Identify the etiology of Osgood-Schlatter disease
   b. Recognize the clinical findings associated with Osgood-Schlatter disease, and manage appropriately
   c. Recognize the clinical findings and etiologic characteristics of Sever disease, and manage appropriately
10. Slipped capital femoral epiphysis
    a. Recognize the clinical findings associated with slipped capital femoral epiphysis, and plan appropriate management
11. Myositis
    a. Identify the etiology of myositis
    b. Plan the appropriate evaluation and management of myositis
12. Back pain
    a. Formulate a differential diagnosis of back pain in children of various ages
    b. Plan the appropriate evaluation of back pain
    c. Plan the appropriate management of back pain

13. Developmental dysplasia, subluxation of the hip
    a. Recognize the clinical findings associated with developmental dysplasia/subluxation of the hip
    b. Plan the appropriate diagnostic evaluation of developmental dysplasia/subluxation of the hip in patients of various ages

20. **Skin Disorders**

A. Skin disorders in newborn infants
   1. Port wine stain
      a. Recognize the importance of the distribution of a port wine stain
      b. Recognize the clinical findings associated with Sturge-Weber syndrome
      c. Plan the appropriate management of a port wine stain
   2. Erythema toxicum
      a. Recognize the clinical and cytologic findings associated with erythema toxicum
   3. Transient neonatal pustular melanosis
      a. Recognize the clinical findings associated with transient neonatal pustular melanosis
      b. Differentiate the laboratory findings associated with transient neonatal pustular melanosis from those of staphylococcal pustules
   4. Neonatal impetigo
      a. Recognize the clinical findings associated with neonatal impetigo
   5. Dermal melanocytosis (Mongolian spots)
      a. Recognize the clinical characteristics of dermal melanocytosis (Mongolian spots)

B. Atopic dermatitis
   1. Recognize the clinical findings associated with atopic dermatitis
   2. Plan the appropriate management of atopic dermatitis
   3. Recognize complications associated with atopic dermatitis

C. Infectious rashes and infestations
   1. Impetigo
      a. Recognize the common pathogens associated with impetigo
      b. Recognize the clinical manifestations of impetigo and manage appropriately
   2. Staphylococcal scalded skin syndrome (see IX.D.28)
   3. Papular urticaria
      a. Know the cause of papular urticaria
      b. Recognize the clinical manifestations of papular urticaria
   4. Scabies
      a. Recognize the clinical manifestations of scabies
      b. Plan the appropriate management of scabies
   5. Fungal infections
      a. Differentiate the clinical findings of tinea corporis from those of granuloma annulare, and manage appropriately
      b. Differentiate the clinical findings of tinea pedis from those of atopic dermatitis, and manage appropriately
      c. Recognize the clinical findings associated with pityriasis (tinea) versicolor
      d. Understand the etiology and complications of kerions
      e. Recognize the clinical findings associated with tinea capitis, and manage appropriately
   6. Molluscum contagiosum
      a. Recognize the clinical findings associated with molluscum contagiosum, and manage appropriately
   7. Warts
      a. Verruca vulgaris
         1. Recognize the clinical findings associated with common warts, and manage appropriately
      b. Condylomata acuminata

1. Recognize the clinical findings associated with condylomata acuminata
2. Understand the significance of condylomata acuminata in patients of various ages, including their association with sexual abuse
3. Plan the appropriate management of condylomata acuminata

8. Pediculosis
   a. Understand the life cycle of human lice
   b. Plan the appropriate management for a patient with pediculosis capitis (head lice)
   c. Plan the appropriate management for a patient with pediculosis pubis
   d. Recognize the clinical findings associated with pediculosis capitis or pediculosis pubis
9. Cellulitis (see also XXII.A.3.)
   a. Plan the appropriate management of cellulitis of the skin of various etiologies
10. Necrotizing fasciitis
   a. Recognize the clinical findings associated with necrotizing fasciitis
11. Wound infections
   a. Recognize the common pathogens involved in wound infections, and manage appropriately
   b. Plan the appropriate management of a skin infection resulting from a wound

D. Hair loss
1. Alopecia areata
   a. Recognize the clinical findings associated with alopecia areata and manage appropriately
2. Trichotillomania
   a. Recognize the clinical findings associated with trichotillomania, and manage appropriately
3. Telogen effluvium
   a. Recognize the clinical findings associated with telogen effluvium, and manage appropriately
4. Tinea capitis (see XX.C.5)

E. Dermatologic manifestations of neurocutaneous syndromes
1. Neurofibromatosis
   a. Recognize the clinical findings associated with neurofibromatosis in patients of various ages
2. Tuberous sclerosis
   a. Recognize the clinical findings associated with tuberous sclerosis, and manage appropriately
3. Sturge-Weber syndrome (see XX.A.1.)

F. Pigmented lesions
1. Hyperpigmentation
   a. Recognize the clinical findings associated with incontinentia pigmenti
   b. Recognize the clinical findings associated with melanoma
   c. Recognize the clinical findings associated with urticaria pigmentosa
2. Hypopigmentation
   a. Recognize the clinical manifestations of vitiligo
   b. Recognize the clinical features of pityriasis alba

G. Acne
1. Recognize the clinical findings associated with acne
2. Plan the appropriate management of acne

H. Other dermatologic disorders
1. Hemangiomas
   a. Understand the natural history of infantile hemangiomas
   b. Recognize hemangioma and manage appropriately
2. Erythema multiforme, Stevens-Johnson syndrome
   a. Recognize the clinical spectrum of erythema multiforme
   b. Recognize the clinical features of Stevens-Johnson syndrome and manage appropriately
3. Contact dermatitis
   a. Understand the pathophysiology of rhus dermatitis

b. Recognize the clinical findings associated with contact dermatitis
4. Diaper dermatitis
   a. Recognize the etiology of diaper dermatitis, and manage appropriately
5. Short- and long-term effects of sun exposure
   a. Understand the clinical findings and risks associated with sun damage to the skin
6. Ectodermal dysplasia
   a. Recognize the clinical findings associated with ectodermal dysplasia
7. Sebaceous nevus
   a. Recognize the clinical findings associated with sebaceous nevus
8. Dermoids
   a. Recognize the clinical findings associated with a dermoid
9. Ichthyosis
   a. Recognize the clinical findings associated with ichthyosis
10. Psoriasis
   a. Recognize the clinical findings associated with psoriasis
11. Pityriasis rosea
   a. Recognize the clinical findings associated with pityriasis rosea, and manage appropriately
12. Dermatitis
   a. Recognize the clinical findings associated with seborrheic dermatitis, and manage appropriately
   b. Recognize the clinical features associated with factitious dermatitis
13. Mastocytosis
   a. Recognize the clinical features of the various forms of mastocytosis and manage appropriately
14. Epidermolysis bullosa
   a. Recognize the clinical findings associated with epidermolysis bullosa
15. Lichen sclerosis
   a. Recognize the clinical findings associated with lichen sclerosis, and manage appropriately

21. **Collagen Vascular and Other Multisystem Disorders**

A. Systemic lupus erythematosus
1. Recognize the typical and atypical clinical findings associated with systemic lupus erythematosus in patients of various ages
2. Differentiate the clinical findings of systemic lupus erythematosus from those of rheumatic fever
3. Recognize complications associated with systemic lupus erythematosus
4. Plan the appropriate diagnostic evaluation of systemic lupus erythematosus, and interpret the results appropriately
5. Plan the appropriate management of systemic lupus erythematosus, including recognition of drug-related complications

B. Vasculitis syndromes
1. Henoch-Schönlein purpura (see also XVI.F.2)
   a. Understand the natural history of Henoch-Schönlein purpura
   b. Recognize the typical and atypical clinical findings associated with Henoch-Schönlein purpura, and manage appropriately
   c. Recognize the laboratory findings associated with Henoch-Schönlein purpura
   d. Plan the appropriate diagnostic evaluation and treatment for a patient with Henoch-Schönlein purpura
2. Kawasaki disease (see also XIV.D.5.)
   a. Recognize the clinical findings associated with Kawasaki disease
   b. Formulate a differential diagnosis of Kawasaki disease
   c. Plan the appropriate diagnostic evaluation of Kawasaki disease, and interpret the results
   d. Plan the appropriate management of Kawasaki disease

C. Juvenile rheumatoid (idiopathic) arthritis

1. Recognize the clinical findings associated with the various types of juvenile rheumatoid (idiopathic) arthritis
2. Recognize the laboratory findings associated with juvenile rheumatoid (idiopathic) arthritis and its complications
3. Recognize the long-term complications associated with juvenile rheumatoid (idiopathic) arthritis
4. Formulate a differential diagnosis for juvenile rheumatoid (idiopathic) arthritis
5. Plan the appropriate management of juvenile rheumatoid (idiopathic) arthritis, while recognizing side effects of some therapies

D. Other rheumatic disorders
1. Dermatomyositis
   a. Recognize the clinical findings associated with dermatomyositis
   b. Plan the appropriate laboratory evaluation for dermatomyositis
2. Scleroderma
   a. Understand the prognosis of patients with scleroderma as opposed to those with systemic sclerosis
   b. Recognize the clinical findings associated with localized scleroderma
3. Sarcoidosis
   a. Recognize the clinical findings associated with sarcoidosis

E. Other arthritis and arthralgia syndromes
1. Ankylosing spondylitis
   a. Recognize the clinical and laboratory findings associated with ankylosing spondylitis
2. Arthritis of inflammatory bowel disease
   a. Recognize the association of arthritis with inflammatory bowel disease
3. Postinfectious arthritis
   a. Recognize the clinical findings associated with postinfectious arthritis
   b. Plan the appropriate management of postinfectious arthritis
   c. Identify illnesses commonly associated with postinfectious arthritis
4. Reactive arthritis
   a. Recognize the clinical findings associated with reactive arthritis and manage appropriately
5. Hypermobility syndrome
   a. Recognize the clinical findings associated with hypermobility syndrome and manage appropriately
   b. Recognize the clinical findings associated with Ehlers-Danlos syndrome
6. Functional joint complaints
   a. Recognize the typical presentation of a patient with functional joint complaints
   b. Plan the appropriate management of functional joint complaints

F. Inherited disorders of connective tissues
1. Recognize the clinical and laboratory findings associated with Marfan syndrome

22. **Disorders of the Eye**

A. Alignment and movement disorders
1. Differentiate the clinical findings associated with strabismus from those of pseudostrabismus
2. Plan the appropriate evaluation of strabismus, including timing of evaluation to prevent complications
3. Recognize the clinical findings associated with nystagmus and the significance of those findings

B. External disorders of the eye
1. Conjunctivitis
   a. Recognize the clinical findings associated with conjunctivitis in patients of various ages
   b. Recognize the association between conjunctivitis and systemic disease
   c. Differentiate the clinical findings associated with infectious conjunctivitis from those of allergic conjunctivitis
   d. Plan the appropriate management of conjunctivitis, including prevention of spread to others
2. Orbital and periorbital (preseptal) cellulitis

a. Understand the natural history of orbital and periorbital (preseptal) cellulitis
b. Recognize and differentiate the clinical and radiologic findings associated with orbital cellulitis and periorbital (preseptal) cellulitis
c. Recognize pathogens commonly associated with orbital cellulitis
d. Plan the appropriate diagnostic evaluation of orbital cellulitis
e. Plan the appropriate management of orbital cellulitis, including associated complications
f. Recognize pathogens commonly associated with periorbital (preseptal) cellulitis
g. Plan the appropriate diagnostic evaluation of periorbital (preseptal) cellulitis
h. Plan the appropriate management of periorbital (preseptal) cellulitis

3. Stye, chalazion
   a. Differentiate the clinical findings associated with a stye from those of a chalazion
   b. Plan the appropriate management of a stye
   c. Plan the appropriate management of a chalazion
4. Obstruction of the nasolacrimal duct
   a. Recognize the clinical findings associated with obstruction of the nasolacrimal duct
   b. Plan the appropriate management of obstruction of the nasolacrimal duct
5. Ptosis
   a. Differentiate the clinical findings associated with congenital ptosis from those of acquired ptosis

C. Internal disorders of the eye
1. Congenital glaucoma
   a. Recognize the clinical findings associated with congenital glaucoma
2. Cataracts
   a. Recognize the various disorders that may be associated with congenital cataracts
   b. Recognize the clinical findings associated with congenital cataracts
   c. Identify risk factors associated with the development of cataracts in patients of various ages
3. Retinoblastoma (see XV.G.2.f.)
4. Papilledema
   a. Recognize the clinical findings associated with papilledema
5. Retinopathy of prematurity
   a. Plan the appropriate screening and clinical evaluation of retinopathy of prematurity

D. Miscellaneous disorders of the eye
1. Painful erythematous eye
   a. Plan the appropriate clinical evaluation of a painful erythematous eye
2. Amblyopia
   a. Identify conditions that may lead to the development of amblyopia
3. Foreign body, corneal abrasion
   a. Recognize the clinical findings associated with corneal abrasion in patients of various ages
   b. Plan the appropriate initial and follow-up management of a corneal abrasion
   c. Plan the appropriate clinical evaluation of a suspected foreign body in the eye
4. Trauma to the eye
   a. Plan the appropriate clinical evaluation of trauma to the eye, including hyphema
   b. Recognize the clinical findings associated with blow-out fracture of the orbit
5. Tumor or hemangioma affecting vision
   a. Recognize the visual consequences of a tumor or hemangioma in the periorbital area
6. Tropias and phorias
   a. Evaluate a patient for ocular tropias and phorias

23. **Ear, Nose, and Throat Disorders**

A. Ears
1. Congenital malformations
   a. Recognize disorders commonly associated with malformed external and middle ears

b. Know the significance of preauricular sinuses and pits

2. External ear
   a. Understand the natural history of otitis externa
   b. Formulate a differential diagnosis of otitis externa
   c. Plan the appropriate initial and prophylactic management of otitis externa
   d. Recognize pathogens commonly associated with otitis externa
   e. Recognize the clinical findings associated with foreign body in the external ear canal
   f. Plan the appropriate diagnostic evaluation and treatment of a hematoma of the external ear, and understand the likely sequelae if not treated
3. Middle ear
   a. Acute otitis media
      1. Understand the natural history of acute otitis media in patients of various ages
      2. Recognize pathogens commonly associated with acute otitis media in patients of various ages
      3. Recognize the clinical findings associated with acute otitis media
      4. Plan the appropriate diagnostic evaluation of acute otitis media
      5. Plan the appropriate initial and follow-up management of acute otitis media in patients of various ages, including when complications occur and when initial therapy is ineffective
   b. Otitis media with effusion (secretory otitis media)
      1. Understand the natural history of otitis media with effusion in patients of various ages
      2. Recognize conditions (including allergic rhinitis, adenoidal hypertrophy, eustachian tube abnormalities) associated with otitis media with effusion
      3. Plan the appropriate initial and follow-up management of otitis media with effusion in patients of various ages, including when complications occur
      4. Recognize potential physical, behavioral, and developmental complications associated with otitis media with effusion
   c. Chronic suppurative otitis media
      1. Distinguish the pathogens associated with chronic suppurative otitis media from those of acute otitis media
      2. Plan the appropriate management of chronic suppurative otitis media in patients of various ages
   d. Recurrent otitis media
      1. Recognize conditions associated with recurrent otitis media
      2. Plan the appropriate management of recurrent otitis media, including follow-up evaluation and when an exacerbation has occurred
   e. Other disorders of the middle ear (not otitis media)
      1. Understand risk factors associated with the development of recurrent or chronic middle ear disease
      2. Recognize the various etiologies of diminished tympanic membrane mobility
      3. Recognize the clinical findings and complications associated with middle ear disease other than otitis media
   f. Otorrhea
      1. Understand the significance of otorrhea
      2. Identify the various causes of purulent otorrhea
      3. Identify the various causes of bloody otorrhea
   g. Cholesteatoma
      1. Recognize the clinical findings associated with a cholesteatoma and the consequences if left untreated
   h. Myringotomy and tympanostomy tube insertion
      1. Understand the indications for tympanostomy tube insertion

2. Recognize potential complications associated with tympanocentesis, tympanostomy tubes, and myringotomy

4. Inner ear
   a. Recognize the clinical findings associated with benign paroxysmal vertigo
   b. Formulate a differential diagnosis of balance disturbance in patients of various ages
   c. Recognize the etiology of inner ear infections
5. Hearing impairment or loss
   a. Identification and evaluation
      1. Understand the importance of a screening examination for hearing
      2. Understand the indications for audiometric testing
      3. Understand how hearing loss is categorized by audiometric testing
      4. Understand the etiologies (eg, infectious, genetic, traumatic) of sensorineural hearing loss
      5. Understand the natural history and etiologies of conductive hearing loss
      6. Recognize conditions that contribute to hearing loss/impairment in patients of various ages, and the effects of that hearing loss on language development and learning
      7. Recognize age-related clinical findings associated with hearing loss of various etiologies
      8. Understand the indications for and limitations of standard audiology tests (including acoustic emissions, tympanometry, auditory brainstem response, and behavioral audiometry) and be able to interpret their results
      9. Plan the age-appropriate initial and follow-up evaluation of hearing loss of various etiologies
   b. Treatment
      1. Understand the commonly used treatment for sensorineural hearing loss in children
      2. Understand the indications for the use of cochlear implants in children
6. Mastoiditis
   a. Identify the etiology of mastoiditis
   b. Recognize the clinical findings associated with mastoiditis
   c. Plan the appropriate diagnostic evaluation of mastoiditis
   d. Plan the appropriate management of mastoiditis
7. Ear pain
   a. Understand the possible etiologies of ear pain, including referred pain from other anatomic sites

B. Nose
1. Choanal atresia
   a. Recognize the clinical findings associated with both unilateral and bilateral choanal atresia
   b. Plan the appropriate evaluation of choanal atresia
   c. Understand the association of choanal atresia with other congenital anomalies
2. Epistaxis
   a. Plan the appropriate evaluation of the various manifestations of epistaxis
   b. Formulate a differential diagnosis of epistaxis and manage appropriately
3. Rhinitis
   a. Chronic rhinitis
      1. Formulate a differential diagnosis of chronic rhinitis
   b. Allergic rhinitis (see VIII.B.)
   c. Infectious rhinitis (see IX.D.32)
4. Polyps
   a. Recognize the clinical findings associated with nasal polyps in patients of various ages
   b. Identify conditions associated with nasal polyps in patients of various ages
   c. Plan the appropriate diagnostic evaluation of nasal polyps
5. Upper respiratory tract infection
   a. Understand the natural history of an upper respiratory tract infection
   b. Identify the etiology of an upper respiratory tract infection

6. Nasal trauma
    a. Recognize the physical findings associated with a hematoma of the nasal septum, and manage appropriately
    b. Understand the importance of early referral for surgical correction of displacement of the nasal bones
7. Nasal foreign body
    a. Recognize the clinical findings associated with a nasal foreign body, and manage appropriately
8. Adenoids (see XXIII.D.5)

C. Sinuses
1. Acute sinusitis
    a. Understand the natural history of acute sinusitis
    b. Formulate a differential diagnosis of acute sinusitis
    c. Recognize the clinical findings associated with acute sinusitis in patients of various ages
    d. Plan the appropriate management of acute sinusitis
    e. Plan the appropriate diagnostic evaluation of acute sinusitis while recognizing the limitations of some modalities
    f. Recognize complications associated with acute sinusitis
2. Chronic sinusitis
    a. Recognize factors predisposing to chronic sinusitis in patients of various ages
3. Sinus trauma
    a. Plan the appropriate management of trauma to any of the paranasal sinuses

D. Throat
1. Viral infections (see also IX.C.)
    a. Understand the natural history of viral infections of the throat
2. Peritonsillar abscess
    a. Recognize the clinical findings associated with peritonsillar abscess
    b. Plan the appropriate diagnostic evaluation of a peritonsillar abscess, considering commonly associated pathogens
    c. Plan the appropriate management of a peritonsillar abscess
3. Tonsillitis, pharyngitis
    a. Plan the appropriate diagnostic evaluation of tonsillitis/pharyngitis
    b. Plan the appropriate management of tonsillitis/pharyngitis, including when culture results remain positive following initial therapy
    c. Formulate a differential diagnosis of exudative tonsillitis/pharyngitis
4. Retropharyngeal and parapharyngeal abscess
    a. Recognize the clinical findings associated with retropharyngeal abscess
    b. Identify the pathogens commonly associated with retropharyngeal abscess
    c. Plan the appropriate diagnostic evaluation of retropharyngeal abscess
    d. Plan the appropriate management of retropharyngeal abscess
5. Tonsillar and adenoidal hypertrophy
    a. Understand the indications for a tonsillectomy
    b. Understand the indications for an adenoidectomy and the resulting effects on nasal function, sleep physiology, and eustachian tube function
    c. Recognize complications associated with tonsillectomy and/or adenoidectomy, including those associated with velopharyngeal insufficiency
    d. Recognize conditions associated with tonsillar and/or adenoidal hypertrophy

E. Mouth and oropharynx
1. Tongue, oral cavity, uvula, salivary glands
    a. Differentiate clinically among hand-foot-mouth disease, herpangina, acute herpetic gingivostomatitis, aphthous ulcerations, and benign lesions of the oral cavity

b. Plan the most appropriate management of a short lingual frenulum
c. Differentiate among the various causes of parotitis
d. Formulate a differential diagnosis of preauricular swelling
e. Recognize the clinical findings associated with cold panniculitis
f. Identify conditions associated with a bifid uvula

2. Cleft lip, cleft palate, velopharyngeal insufficiency, and mandibular abnormalities (see also VII.D.4.)
a. Plan the appropriate management of a cleft palate in patients of various ages
b. Recognize the clinical findings associated with cleft palate, including submucous cleft and ear sequelae of poor eustachian tube function
c. Recognize the clinical findings associated with mandibular abnormalities, and manage appropriately
d. Recognize conditions commonly associated with cleft palate
e. Understand the general concept of velopharyngeal insufficiency

3. Teeth (see also III.C.4)
a. Recognize the causes of delayed dental eruption
b. Plan the appropriate management of an avulsed tooth
c. Recognize the clinical findings associated with caries in patients of various ages
d. Recognize the various clinical findings associated with dental and periodontal disease
e. Understand the association between an anaerobic infection and dental and periodontal disease

F. Neck

1. Cervical adenitis
a. Plan the appropriate clinical evaluation of acute cervical lymphadenopathy
b. Plan the appropriate management of acute cervical lymphadenopathy
c. Identify the age-related etiology of chronic cervical lymphadenopathy
d. Plan the appropriate management of chronic cervical lymphadenopathy
e. Formulate a differential diagnosis of cervical lymphadenopathy

2. Laryngitis, hoarseness
a. Recognizes the various causes of hoarseness
b. Formulate a differential diagnosis of hoarseness
c. Plan the appropriate evaluation of hoarseness

3. Neck mass (see also XI.D.2)
a. Formulate a differential diagnosis of a neck mass
b. Recognize the clinical features associated with a thyroglossal duct cyst
c. Recognize the clinical features associated with branchial cleft anomalies, and plan appropriate evaluation and management
d. Recognize the clinical features associated with thyroid carcinoma

24. **Adolescent Medicine and Gynecology**

A. Pubertal development

1. General pubertal staging (sexual maturity rating)
a. Recognize the stages of sexual development and the range of age of onset of each
b. Understand factors that influence the timing of puberty
c. Recognize laboratory values that change in girls and boys during puberty
d. Understand the relationship between the timing of onset of puberty and final adult height

2. Male pubertal development
a. Understand the sequence of development of secondary sexual characteristics in boys
b. Distinguish normal from abnormal sexual development in males

3. Female pubertal development
a. Understand the timing of menarche in female adolescents
b. Understand the sequence of development of secondary sexual characteristics in girls
c. Recognize the physiologic changes that commonly precede menarche

d. Understand the significance of a breast mass in an adolescent girl as it relates to puberty

4. Height and weight increases during the growth spurt
   a. Understand the timing, duration, and normal range of peak height velocity in male and female adolescents
   b. Plan the appropriate evaluation of premature arrest of previously normal growth rate in an adolescent

B. Psychologic growth and development
   1. Self-identity and self-image
      a. Recognize the risks associated with adolescents who do not identify with any peers ("loners")
      b. Understand the effect of rapid body changes on an adolescent's sense of self
      c. Understand features associated with an adolescent's search for identity
      d. Identify outcomes and plan the management of a poor self-image in adolescence
   2. Psychologic separation from the family
      a. Understand the importance of accepting an adolescent's separation from the family, and the role re-adjustments that may be required
      b. Recognize the importance of a peer group in a young adolescent's separation from the family
      c. Identify typical characteristics of a young adolescent's peer group while understanding the influence of that group on behaviors
   3. Family influence on adolescent behavior
      a. Understand the importance of evaluating family dynamics in adolescent patients, including stressors and methods of coping with stress
      b. Recognize the importance of the family in modeling adolescent behaviors
   4. Sexuality
      a. Recognize the common patterns of sexual behavior and experimentation in adolescents of various ages
      b. Plan appropriate parental counseling regarding adolescent sexuality
      c. Identify common sources of information sought by adolescents regarding sexuality
      d. Provide appropriate counseling with regard to contraception and prevention of sexually transmitted infection for an adolescent engaging in vaginal and/or anal intercourse
   5. Cognitive and socioemotional development
      a. Understand the timing of and factors influencing the development of concrete thinking and abstract reasoning in adolescents, and provide health advice accordingly
      b. Recognize how thought processes in early, middle, and late adolescence influence problem solving and risk taking
      c. Recognize the tasks and features of early, mid, and late adolescent socioemotional development
      d. Recognize the sequence of emotional and cognitive development and physical maturation

C. Health issues of adolescents
   1. Behavioral health care
      a. General
         1. Understand the importance of routinely reviewing behavioral risk factors (eg, school, extracurricular activities, diet, exercise, substance use, sexuality, stress, personal safety, driving, sleep) in adolescents
      b. Delinquency (see XXVIII.B.3)
      c. Adherence
         1. Understand factors that can affect adherence to health maintenance activities by adolescents
         2. Understand how to improve adherence to medical regimens by adolescent patients, including those with chronic illness, and the barriers to such adherence
      d. Risk-taking
         1. Recognize factors associated with risk-taking in adolescents
      e. Violence

1. Recognize the medical and emotional needs of an adolescent victim of sexual assault, and manage appropriately
2. Understand age-appropriate non-violent strategies for conflict resolution in adolescence
3. Identify the various roles of adolescents with regard to school violence

f. Stress
1. Recognize the clinical findings associated with stress among adolescents

g. Eating disorders
1. Recognize the clinical findings associated with anorexia nervosa and the criteria for diagnosis
2. Recognize the clinical findings associated with bulimia and the criteria for diagnosis
3. Plan the appropriate management of anorexia nervosa
4. Plan the appropriate management of bulimia

2. Transition to adult health care
a. Provide appropriate guidance to transition adolescents from pediatric to adult health care

3. Gynecologic health care
a. General
1. Recognize the gynecologic etiologies of acute and chronic abdominal pain
2. Recognize normal variations in the menstrual cycle in adolescent girls
3. Understand the indications for a pelvic examination in an adolescent girl

b. Vaginal discharge (see XVII.B.5)

c. Dysfunctional uterine bleeding
1. Formulate a differential diagnosis of dysfunctional uterine bleeding
2. Plan the appropriate evaluation of dysfunctional uterine bleeding
3. Plan the appropriate management of dysfunctional uterine bleeding
4. Recognize the various etiologies of menometrorrhagia

d. Amenorrhea
1. Recognize the clinical findings associated with primary amenorrhea of various etiologies, and manage appropriately
2. Recognize the clinical findings associated with secondary amenorrhea of various etiologies, and manage appropriately
3. Identify the clinical findings associated with polycystic ovary syndrome

e. Dysmenorrhea
1. Understand the pathophysiology of primary dysmenorrhea
2. Formulate a differential diagnosis of dysmenorrhea
3. Plan the appropriate management of primary dysmenorrhea

4. Pregnancy
a. General
1. Plan ways to improve the health and outcome of pregnant adolescents
2. Recognize the age-related risks of pregnancy complications, including associated mortality, in adolescents
3. Understand the socioeconomic and educational problems associated with pregnancy during adolescence

b. Prevention
1. Understand the forms of contraception available to adolescents and their associated effectiveness and complications
2. Understand the non-contraceptive benefits of oral contraceptives
3. Identify relative and absolute contraindications to the use of oral contraceptives
4. Understand factors associated with contraceptive use or lack of use in adolescents
5. Understand the influence of abstinence-only programs on sexual activity in adolescents

5. Sexually transmitted infections (see IX for specific organisms)
a. Screening and prophylaxis

1. Understand the indications for a Papanicolaou test in female adolescents
2. Plan an appropriate screening evaluation for sexually transmitted infections in various adolescent populations
3. Plan appropriate prophylaxis following possible exposure to sexually transmitted infection

b. Pelvic inflammatory disease
1. Understand the complications associated with pelvic inflammatory disease
2. Plan the appropriate management of pelvic inflammatory disease
3. Recognize the clinical and laboratory findings associated with pelvic inflammatory disease, and manage appropriately

c. Bacterial vaginosis
1. Recognize the clinical findings associated with bacterial vaginosis

d. Urethritis
1. Formulate a differential diagnosis of urethritis in male adolescents
2. Recognize the clinical findings associated with urethritis in male adolescents
3. Plan the appropriate evaluation and management of urethritis in male adolescents

D. General management issues (see also XXXV.A.3.c)
1. Recognize the circumstances that constitute an emancipated minor with regard to ability to accept or reject medical treatment
2. Understand when a parent must be notified about an adolescent's medical condition
3. Understand the state and federal statutes that govern the care of intellectually challenged adolescents
4. Recognize factors that determine when parents may/should accompany their adolescent during medical visits

25. **Sports Medicine and Physical Fitness**

A. Evaluation for sports participation
1. Identify which sports are appropriate for athletes with various conditions that may limit sports participation
2. Recognize the effects of a febrile illness on sports participation
3. Recognize the cardiac risks associated with sports participation and when cardiac evaluation is required
4. Understand the importance of assessing neurocognitive function in qualifying a patient for initial sports participation
5. Understand the guidelines for sports participation for patients who have Down syndrome
6. Understand the guidelines for sports participation for patients who have a seizure disorder
7. Understand the guidelines for sports participation for patients who have type 1 diabetes
8. Recognize the implications for sports participation in a patient with Marfan syndrome

B. Sports injury prevention and treatment
1. Prevention
a. Recognize the preventable causes of trauma in juvenile athletes and the physiology associated with increased trauma risk
b. Understand the role of conditioning in preventing injuries in athletes of various ages
c. Recognize the importance of adequate rehabilitation of current injury in the prevention of future injury among athletes

2. General
a. Bruises, hematomas
1. Identify complications associated with a deep hematoma of the thigh
2. Plan the appropriate management of bruises and hematomas

b. Heat illness
1. Recognize the clinical findings associated with heat illness, including complications
2. Plan the appropriate evaluation of heat illness, and manage appropriately
3. Understand the mechanisms of heat-related illness, including age-related factors

c. Return to play criteria
    1. Understand the criteria for return to play in sports after a head injury
    2. Understand the criteria for return to play in sports after an eye injury
    3. Understand the criteria for return to play in sports after various orthopedic injuries
    4. Understand the criteria for return to play in sports after a neck injury
d. Overuse syndromes
    1. Plan the appropriate management of an athlete with an overuse injury
    2. Identify the common overuse injuries in athletes
e. Sprains, strains
    1. Recognize the clinical findings associated with various sprains
    2. Plan the appropriate management of various sprains

3. Head
    a. Identify the sports in which a head injury most commonly occurs
4. Eyes and ears (see also XXII.D.4.)
    a. Recognize the indications for the use of protective eyewear during sports activities
    b. Plan the appropriate management of a sports-related ear injury
5. Mouth
    a. Recognize the indications for the use of a mouth guard during sports activities
6. Neck
    a. Plan the appropriate management of an acute sports-related neck injury
    b. Identify the sports in which cervical injury most commonly occurs
7. Shoulder
    a. Understand the natural history of shoulder dislocation
    b. Plan the appropriate initial management of a sports-related shoulder injury
8. Elbow
    a. Recognize the clinical findings associated with sports-related dislocation of the elbow, including associated complications, and manage appropriately
    b. Recognize the clinical findings associated with sports-related elbow pain, and manage appropriately
9. Wrist and finger
    a. Recognize the wrist and finger injuries commonly associated with various sports
    b. Understand the prognosis associated with a sports-related scaphoid injury
10. Knee
    a. Recognize the clinical findings associated with sports-related patellofemoral dysfunction, and manage appropriately
    b. Identify risk factors associated with sports-related patellofemoral dysfunction
    c. Recognize the clinical findings associated with sports-related internal derangement of the knee
    d. Recognize the clinical findings associated with sports-related prepatellar bursitis, and manage appropriately
    e. Understand when orthopedic consultation is required for a sports-related knee injury
    f. Recognize the historical and clinical findings associated with subluxation of the patella
11. Ankle
    a. Plan the appropriate management of an uncomplicated sports-related ankle injury
    b. Recognize possible complications associated with an ankle sprain in a young athlete whose growth plates have not closed
    c. Formulate a differential diagnosis of ankle sprain in patients of various ages

C. Nutritional requirements
1. Hydration and rehydration
    a. Plan optimal age-appropriate replacement for fluid losses associated with athletic activity
2. Weight gain and loss

a. Understand the role of fluids in weight control for athletes
b. Recognize inappropriate weight-loss regimens for athletes who participate in sports with weight categories

D. Performance-enhancing drugs and nutritional supplements
1. Recognize the clinical findings associated with the use of performance-enhancing drugs or nutritional supplements
2. Plan the appropriate evaluation when use of performance-enhancing drugs or nutritional supplements is suspected

E. Physical fitness
1. Identify factors that influence participation in contact sports by healthy children and adolescents
2. Understand the importance of regular exercise to promote good general health
3. Understand the importance of skeletal maturity in determining the appropriate type of physical training

26. **Substance Abuse**

A. Epidemiology
1. Understand patterns of use/abuse of drugs with regard to multiple or single drugs
2. Recognize general trends in substance use/abuse among children and adolescents
3. Identify the approximate initial age for experimentation with drugs of use/abuse
4. Understand the stages of drug/alcohol use

B. Risk factors
1. Understand the risk factors associated with drug dependence
2. Understand genetic factors contributing to substance use/abuse
3. Understand environmental/familial factors contributing to substance use/abuse
4. Recognize the influence of peer groups on substance use/abuse
5. Recognize the association between early academic failure and substance use/abuse
6. Identify factors protective against substance use/abuse

C. Laboratory evaluation
1. Plan appropriate laboratory evaluation of substance use/abuse, including appropriate collection of test specimens and interpretation of results
2. Understand the limitations of drug-screening tests

D. Role of primary care practitioners
1. Anticipatory guidance
a. Provide appropriate anticipatory guidance to patients and families with regard to substance use/abuse
2. Evaluation by interview
a. Understand the importance of a screening interview for substance use/abuse in adolescents
b. Understand the clinical circumstances in which further evaluation for substance use/abuse is indicated
c. Recognize the important history to obtain when evaluating a patient for possible substance use/abuse
3. Counseling and referral
a. Understand the primary care physician's role in preparing an adolescent and his/her family for referral for substance use/abuse treatment
b. Understand the importance of periodically reassessing the progress of a patient who has been referred for substance use/abuse treatment, including reassessment for relapse
4. Coordination of care
a. Understand the importance of the primary care physician's involvement in school- and community-based educational initiatives with regard to substance use/abuse and the value of such initiatives

E. Specific substances of use/abuse

1. Tobacco
    a. Identify the major physiologic consequences associated with smoking or chewing tobacco
    b. Recognize the major behavioral consequences of tobacco use/abuse
    c. Plan the appropriate management to attain tobacco cessation
2. Alcohol
    a. Identify the major physiologic consequences associated with alcohol use/abuse
    b. Recognize the major behavioral consequences of alcohol use/abuse
3. Marijuana
    a. Identify the major physiologic consequences associated with marijuana use/abuse
    b. Recognize the major behavioral consequences of marijuana use/abuse
4. Opioids
    a. Identify the major physiologic consequences associated with opioid use/abuse, including those associated with the various means of administration
    b. Recognize the major behavioral consequences of opioid use/abuse
    c. Recognize the clinical findings associated with an acute opioid overdose, and manage appropriately
5. Amphetamines
    a. Identify the major physiologic consequences associated with amphetamine use/abuse, including those associated with the various means of administration
    b. Recognize the major behavioral consequences of amphetamine use/abuse
    c. Recognize the clinical findings associated with an acute amphetamine intoxication, and manage appropriately
6. Hallucinogens
    a. Identify the major physiologic consequences associated with hallucinogen use/abuse, including those associated with the various means of administration
    b. Recognize the major behavioral consequences of hallucinogen use/abuse
    c. Recognize the clinical findings associated with an acute hallucinogen intoxication, and manage appropriately
7. Cocaine
    a. Identify the major physiologic consequences associated with cocaine use/abuse, including those associated with the various means of administration
    b. Recognize the major behavioral consequences of cocaine use/abuse
    c. Recognize the clinical findings associated with acute cocaine intoxication, and manage appropriately
8. Inhalants
    a. Identify the major physiologic consequences associated with inhalant use/abuse
    b. Understand the variety of substances used as inhalants
    c. Recognize the clinical findings and risks associated with an acute inhalant overdose, and manage appropriately
9. Anabolic steroids and other performance-enhancing drugs (see XXV.D.)
10. Over-the-counter and prescription medicines
    a. Recognize the risk of abuse of over-the-counter cough and cold preparations
    b. Recognize the risk of abuse of prescription medications

27. **Disorders of Cognition, Language, and Learning**

A. Intellectual disabilities (see also VII)

1. Understand the correlation between language development and cognitive function
2. Recognize the age-related clinical findings associated with intellectual disabilities of various etiologies
3. Distinguish between mild and moderate intellectual disabilities with regard to the potential for educational and independence/vocational achievement

4. Recognize the range of intellectual disabilities associated with common genetic syndromes
5. Identify the prenatal and perinatal causes of intellectual disabilities, including factors associated with family history
6. Identify common metabolic causes of intellectual disabilities
7. Identify common chromosomal causes of intellectual disabilities
8. Identify common inheritance patterns of intellectual disabilities
9. Identify common infectious causes of intellectual disabilities
10. Identify common teratogenic causes of intellectual disabilities
11. Plan appropriate laboratory evaluation of various intellectual disabilities
12. Plan appropriate management for children with various intellectual disabilities

B. Autism spectrum disorders
1. Identify the clinical findings, including developmental parameters, associated with autism spectrum disorders
2. Distinguish findings associated with autism spectrum disorder from those of isolated speech and language delay
3. Distinguish findings associated with autism spectrum disorder from those of an intellectual disability
4. Distinguish findings associated with autism spectrum disorder from those of profound hearing loss
5. Understand the biologic basis of autistic behavior
6. Understand the diagnostic criteria for autism spectrum disorders
7. Plan age-appropriate screening evaluation for autism spectrum disorders
8. Plan appropriate management for autism spectrum disorders

C. Speech and language disorders
1. Recognize age-related normal and abnormal variations in speech and language
2. Understand factors that influence language development
3. Identify the various etiologies of delayed language development
4. Plan the appropriate evaluation of language disorders in patients of various ages
5. Plan the appropriate initial management of speech and language disorders

D. Learning disabilities
1. Distinguish the findings associated with learning disabilities from those of intellectual disabilities
2. Recognize the long-term effects of learning disabilities, and the range of disabilities that can occur
3. Recognize the clinical findings associated with learning disabilities

E. Poor school performance
1. Understand the various etiologies of school-related difficulties
2. Plan the appropriate diagnostic evaluation of poor school performance
3. Recognize that factors such as temperament, family environment, illness, medications, and mental disorders contribute to academic underachievement

F. Special sensory deficits (see III.B.5 and XXIII.A.5)

G. Diagnostic evaluation
1. Plan the appropriate diagnostic evaluation of achievement and intelligence
2. Interpret the results of intelligence quotient tests, with emphasis on understanding the normal ranges
3. Identify factors that can influence the results of intelligence quotient tests
4. Interpret the results of specialized and standardized achievement tests, with emphasis on understanding the significance of discrepancies between categories
5. Understand the utility of an adaptive behavioral assessment

H. Management
1. Educational interventions
    a. Understand the educational criteria required for placement in special classrooms and the factors affecting those decisions
    b. Understand the major approaches to education for visually impaired children
    c. Understand the major approaches to education for hearing impaired children

d. Understand the provisions of current legislation for patients of various ages who have educational or physical disabilities
e. Recognize the value and limitations of language, occupational, and physical therapy
f. Recognize appropriate educational settings for patients with learning disabilities, and the various strategies utilized in those settings to circumvent weaknesses
g. Understand the general goals of early intervention programs for children of various ages who have learning disabilities
h. Understand the advantages and disadvantages of educational inclusion for patients of various ages who have learning or physical disabilities
i. Understand the advantages and disadvantages of grade retention

2. Behavioral interventions
   a. Understand strategies to improve the self-esteem of children who have learning disabilities
   b. Identify the types of community services available to families of children who have learning and behavioral problems
   c. Evaluate available data regarding dietary or controversial perceptual/therapeutic interventions for children with learning and behavioral problems, and provide appropriate guidance while understanding a family's motivation for seeking such treatment

28. **Behavioral and Mental Health Issues**

A. Common behavioral issues from birth to 12 years of age

1. Identify resources for maternal/familial support during the prenatal and perinatal periods and early infancy
2. Understand the various factors that influence parent-infant attachment
3. Understand the concept of resilience and counsel parents on how to raise resilient children
4. Understand the variations in temperament in infants, and counsel parents appropriately
5. Recognize the frequency of crying in infants of various ages
6. Plan the appropriate evaluation of colic
7. Plan the appropriate management of colic, while recognizing inappropriate therapy
8. Understand the natural history of thumb sucking, and manage appropriately
9. Differentiate normal variations in feeding patterns from those that reflect poor parenting
10. Differentiate between normal and abnormal repetitive movements during infancy
11. Understand the factors that contribute to readiness for toilet training
12. Recognize the normal age ranges in boys and girls during which bowel and bladder control occurs
13. Plan the appropriate management of delayed toilet training
14. Recognize factors related to biting at various developmental stages
15. Understand the natural history of self-exploration and masturbation
16. Advise parents regarding appropriate discipline and limit-setting for children of various ages
17. Recognize the clinical features of breath-holding and counsel parents appropriately
18. Plan the appropriate management of breath-holding in toddlers and preschool-age children
19. Plan the appropriate management of temper tantrums in toddlers and preschool-age children
20. Plan the appropriate management of head banging in toddlers and preschool-age children
21. Provide appropriate anticipatory guidance and counseling with regard to sibling rivalry
22. Plan the appropriate management of lying behavior in school-age children
23. Plan the appropriate management of stealing behavior in school-age children
24. Understand the relationship between separation anxiety with school phobia/refusal in patients of various ages
25. Recognize the family dynamics associated with separation anxiety
26. Distinguish between separation anxiety and truancy as a cause of school absence
27. Plan the appropriate management of separation anxiety of various etiologies
28. Understand the normal developmental progression of sleep patterns
29. Recognize symptoms that reflect poor sleep quality and plan appropriate evaluation

30. Plan the appropriate management of bedtime refusal/frequent awakening
31. Distinguish between nightmares and night terrors, and manage appropriately
32. Understand the effects of various medications on sleep
33. Counsel parents regarding appropriate bedtime routines for their children

B. Externalizing behaviors and disorders
   1. Aggressive behaviors
      a. Differentiate the findings associated with aggressive behavior from those of normal variants
      b. Recognize the various environmental and biological contributors to the development and maintenance of aggressive behaviors
      c. Plan the appropriate management of aggressive or intimidating (bullying) behavior in patients of various ages, including those who are victims of such behavior
   2. Disruptive behaviors (eg, oppositional defiant disorder, conduct disorder)
      a. Differentiate the findings associated with oppositional defiant or conduct disorder from those of temperamental variations
      b. Plan the appropriate evaluation of oppositional defiant or conduct disorder
      c. Plan the appropriate management of oppositional defiant or conduct disorder
   3. Antisocial behaviors, delinquency
      a. Plan the appropriate evaluation of antisocial behavior/delinquency
      b. Plan the appropriate management of antisocial behavior/delinquency

C. Internalizing behaviors and disorders
   1. Phobias and anxiety disorders, including obsessive-compulsive disorder and post-traumatic stress disorder
      a. Recognize the clinical findings associated with anxiety disorders in patients of various ages, and manage appropriately
      b. Recognize co-morbidities commonly associated with phobias and anxiety disorders
      c. Recognize the various environmental and biological contributors to the development of phobias and anxiety disorders
      d. Recognize the clinical findings associated with phobias in patients of various ages, and manage appropriately
      e. Recognize the clinical findings associated with post-traumatic stress disorder in patients of various ages, and manage appropriately
      f. Recognize the clinical findings associated with obsessive-compulsive disorder in patients of various ages, and manage appropriately
      g. Recognize the various environmental and biological contributors to the development of obsessive-compulsive disorder
   2. Mood and affect disorders
      a. Recognize the clinical findings associated with depressive disorders in children and adolescents, and manage appropriately
      b. Distinguish the findings associated with normal mood swings in an adolescent from those of a depressive disorder
      c. Recognize co-morbidities commonly associated with depressive disorders in children and adolescents
      d. Recognize the various environmental and biological contributors to the development of depressive disorders in children and adolescents
      e. Recognize the clinical findings associated with bipolar disorder in children and adolescents
      f. Recognize the various environmental and biological contributors to the development of bipolar disorder in children and adolescents
   3. Psychosomatic disorders
      a. Recognize the various features associated with conversion disorders
      b. Formulate an appropriate differential diagnosis of conversion symptoms

c. Identify the various features associated with psychosomatic disorders
d. Plan an appropriate evaluation of psychosomatic disorders

D. Suicidal behavior, psychotic behavior, thought disorders
1. Recognize behaviors/warning signs that indicate suicidal attempt/ideation in patients of various ages
2. Understand risk factors associated with suicidal behavior/completed suicide
3. Plan the appropriate assessment and management of suicidal ideation in patients of various ages
4. Identify factors that are protective against suicidal behavior
5. Recognize the impact of suicide on peers and family
6. Recognize behaviors suggestive of psychotic behavior/thought disorders, and manage appropriately

E. Disorders of attention and impulse control
1. Understand the gender- and age-related differences in the prevalence of ADHD
2. Understand the neurochemical basis of ADHD
3. Recognize the age-related clinical findings associated with ADHD and its subtypes
4. Understand the expected long-term outcome of ADHD diagnosed during childhood
5. Recognize co-morbidities commonly associated with ADHD in patients of various ages
6. Plan the appropriate diagnostic evaluation of ADHD
7. Plan the appropriate management of ADHD

29. **Psychosocial Issues**

A. Family and environmental issues
1. Divorce
a. Understand the response to divorce and/or blended families in patients of various ages
b. Understand the custodial issues associated with divorce and the effect of those issues on patients of various ages
c. Understand the effects of divorce on a patient's subsequent intimate relationships
2. Death or terminal illness
a. Understand the response to death in patients of various ages, and manage appropriately
b. Recognize the stages of grief for a patient and family in response to the death of a loved one
c. Understand the various responses of family members to a life-threatening or terminal illness
d. Understand the pediatrician role after the death of a patient
3. Impact of mass media
a. Understand the potential effects of various media on child and adolescent behavior
b. Counsel patients regarding the proper use of the internet and social networking sites
4. Socioeconomic factors
a. Understand the effect of socioeconomic stressors on family dynamics
5. Adoption
a. Understand the psychosocial issues surrounding adoption
b. Understand the pediatrician's role in the adoption process
6. Foster care (see also XXXV.E.6)
a. Understand the psychosocial issues surrounding children in foster care .
b. Plan the appropriate evaluation of children of various ages who are in the foster care system, and manage appropriately
c. Understand the basic functions of the child welfare and foster care systems and the pediatrician's role in that system
d. Recognize the needs of youth aging out of the foster care system, and manage appropriately
7. Cultural issues in medical care
a. Understand the various cultural issues that could affect medical care

B. Specific problems and conditions
1. Enuresis (see XVI.A.5)
2. Encopresis
a. Recognize co-morbidities commonly associated with encopresis

b. Understand the physiologic effects of stool retention
c. Distinguish between encopresis and delayed bowel training
d. Plan the appropriate management of encopresis of various etiologies
e. Recognize stool withholding during toilet training, and manage appropriately
f. Recognize the clinical features associated with fecal overflow incontinence

3. Vulnerable child syndrome
   a. Understand factors predisposing to vulnerable child syndrome
   b. Provide anticipatory guidance to prevent vulnerable child syndrome
4. Rumination
   a. Recognize the clinical manifestations of rumination, and manage appropriately
5. Pain, including chronic pain syndromes
   a. Recognize the clinical features commonly associated with chronic pain syndromes
   b. Recognize the behavioral and psychosocial effects of chronic pain syndromes
   c. Understand the effects of a patient's developmental stage on tolerating and dealing with pain
   d. Plan the appropriate management of pain in patients of various ages
6. Gifted children
   a. Understand the effects of gifted children on family dynamics
   b. Provide anticipatory guidance with respect to management of a gifted child

C. Chronic illness and handicapping conditions, including transplantation
1. Identify psychosocial factors associated with chronic and handicapping conditions
2. Understand the effects of a child's chronic illness on the family and social relationships
3. Provide appropriate anticipatory and ongoing guidance to the parents of a child who has a chronic or handicapping condition
4. Recognize psychosocial and family issues associated with transplantation
5. Understand the importance of a medical home for children with chronic or handicapping conditions

D. Family and societal violence (see also XXIV.C.1.e and XXXV.E.4)
1. Recognize common characteristics that may indicate intimate partner violence, and the effects of such violence on children
2. Identify the important precipitants of intimate partner violence
3. Understand the effects of societal violence on children

30. **Child Abuse and Neglect**

A. General
1. Understand the physician's duty and ethical obligation to report suspected child abuse or neglect
2. Provide appropriate guidance and support to a family during an investigation of child abuse or neglect

B. Physical abuse
1. Understand the epidemiology of and the psychosocial and environmental risk factors for physical abuse
2. Understand the common trigger events (eg, incessant crying) for physical abuse
3. Recognize the historical, clinical, and radiologic findings associated with inflicted injuries (bruises, burns, fractures, intracranial injuries, and intra-abdominal injuries) and differentiate them from those caused by accidental trauma and other non-traumatic causes
4. Plan the appropriate evaluation and management of suspected child physical abuse
5. Understand the behavioral and emotional consequences of child physical abuse

C. Sexual abuse
1. Understand the epidemiology of and the psychosocial and environmental risk factors for sexual abuse
2. Recognize the history, signs, and symptoms of sexual abuse
3. Recognize which patients require emergent evaluation and physical examination for sexual abuse or assault
4. Understand the behavioral and emotional consequences of child sexual abuse
5. Understand the normal process for a child to disclose sexual abuse and the barriers to such disclosure

6. Understand and utilize effective strategies and approaches to interviewing suspected victims of sexual abuse or assault
7. Recognize that most children examined for sexual abuse will have normal examination findings
8. Recognize abnormal anogenital findings and injuries associated with sexual abuse and differentiate them from those associated with accidental trauma and other conditions confused with trauma
9. Plan appropriate collection of forensic evidence and laboratory evaluation during a sexual abuse investigation

D. Psychological abuse
1. Understand the behavioral and emotional consequences of psychological abuse
2. Recognize the history, signs, and symptoms indicative of psychological abuse

E. Neglect
1. Understand the epidemiology of and the psychosocial and environmental risk factors for neglect
2. Know the different subtypes of neglect: medical, supervisional, physical and educational
3. Recognize the historical and clinical findings associated with child neglect, including findings associated with physical neglect or neglect of medical care
4. Plan the appropriate evaluation and management of suspected neglect
5. Understand the emotional and behavioral consequences of neglect

F. Caregiver-fabricated illness (formerly Münchausen syndrome by proxy)
1. Understand the epidemiology of and the psychosocial and environmental risk factors for caregiver-fabricated illness
2. Recognize the clinical circumstances associated with caregiver-fabricated illness (eg, caregiver seeking unnecessary, duplicative, and/or harmful medical interventions; caregiver exaggerating, fabricating, or inducing a child's illness or symptoms)
3. Plan the appropriate evaluation and management of suspected caregiver-fabricated illness

31. **Critical Care**

A. Recognition of impending systemic failure
1. Changes in vital signs
   a. Recognize that the blood pressure may not be adversely affected by shock
   b. Understand the factors that affect capillary refilling time
   c. Recognize the clinical findings that indicate impending systemic failure or coma
   d. Identify the conditions associated with malignant hyperthermia
2. Cardiogenic shock
   a. Recognize findings associated with cardiogenic shock in children of various ages
   b. Plan an appropriate diagnostic evaluation of cardiogenic shock
   c. Plan appropriate management of cardiogenic shock in children of various ages
3. Hepatic failure
   a. Recognize the signs and symptoms of impending hepatic failure
4. Brain death
   a. Understand the criteria for brain death and the role of neurodiagnostic studies in making that determination

B. Emergency life support
1. Plan appropriate ventilatory management in patients of various ages, especially with regard to selecting the appropriate tube size
2. Plan the appropriate ventilatory support for patients with various conditions
3. Understand the potential complications associated with endotracheal intubation
4. Understand the correct method for cardiopulmonary resuscitation in patients of various ages
5. Differentiate the findings associated with hypovolemic shock from those of septic shock, and manage appropriately
6. Plan the appropriate use of intraosseous therapy

C. Common conditions requiring emergency life support

1. Plan the appropriate management of near-drowning
2. Understand the prognostic factors associated with near-drowning
3. Recognize the clinical findings associated with cerebral edema in an asphyxiated patient
4. Recognize the clinical findings associated with a hemothorax or flail chest
5. Recognize the clinical features of acute respiratory distress syndrome, including associated sequelae
6. Recognize complications of acute respiratory distress syndrome that can lead to death
7. Identify the etiologies of acute respiratory distress syndrome
8. Recognize the clinical findings associated with pericardial tamponade

32. **Emergency Care**

A. Fever
1. Formulate a differential diagnosis of fever without localizing signs in patients of various ages
2. Plan the appropriate evaluation and management of fever without source in patients of various ages
3. Understand the correct methods to measure body temperature
4. Understand the normal range of body temperature
5. Recognize the significance of a body temperature greater than 41 C
6. Plan the appropriate management of fever in patients of various ages

B. Seizures (see XVIII.G)

C. Wounds
1. General
   a. Understand the complications associated with various lacerations, including one through the vermilion border of the lip, and manage appropriately
   b. Understand the principles of wound cleansing
   c. Plan the appropriate evaluation of various puncture wounds, including a puncture wound through a sneaker, and manage appropriately
   d. Identify the sequelae of puncture wounds of various etiologies
   e. Plan the appropriate use of tetanus immune globulin
2. Bites and stings (see also III.D.4.)
   a. Plan appropriate post-exposure rabies prophylaxis
   b. Understand the appropriate steps to take with regard to an animal that has bitten a patient
   c. Plan the appropriate antimicrobial management of a dog or cat bite
   d. Plan the appropriate management of a snake bite
   e. Plan the appropriate management of a spider bite
   f. Plan the appropriate management of a human bite
   g. Plan the appropriate management of a scorpion sting
   h. Plan the appropriate management of a jellyfish sting
   i. Recognize the clinical findings associated with life-threatening reactions to Hymenoptera stings, and manage appropriately
   j. Recognize the reactions to insect stings that require no further management in patients younger than 16 years of age

D. Trauma
1. Abdominal, chest, and multisystem trauma
   a. Plan the appropriate evaluation of abdominal trauma, with and without hematuria
   b. Plan the appropriate evaluation of multisystem trauma
   c. Plan the appropriate initial evaluation in a patient with a suspected ruptured spleen
   d. Recognize the contraindications to bladder catheterization following acute renal trauma
   e. Recognize the clinical features associated with esophageal trauma
   f. Plan the appropriate evaluation of a child who has experienced chest wall trauma
   g. Plan the appropriate stabilization procedures for a child who has experienced chest wall trauma
2. Head and central nervous system injuries

a. Recognize the signs and symptoms associated with closed-head trauma (eg, hemotympanum, ecchymoses, postauricular bruise, etc)
b. Recognize the immediate life-threatening complications of closed-head trauma
c. Plan the appropriate diagnostic evaluation of closed-head injury and brief loss of consciousness
d. Plan the appropriate physical and laboratory evaluation of head injury, including serial evaluations of the patient's status
e. Plan the appropriate initial evaluation and management of acute central nervous system trauma
f. Recognize the significance of a linear skull fracture in infants
g. Recognize the clinical findings associated with spinal trauma
h. Recognize the clinical findings associated with epidural hematoma, and manage appropriately
i. Recognize the clinical findings associated with subdural hematoma with and without skull fracture, and manage appropriately

3. Burns
   a. Plan the appropriate outpatient management of minor burns
   b. Understand the sequelae associated with electrical burns
   c. Differentiate the findings associated with superficial burns from those of more serious burns
   d. Plan the appropriate initial management of a burn covering a substantial portion of the body surface area
   e. Recognize the clinical findings associated with airway injury in a patient with an acute burn
4. Fractures, dislocations
   a. Recognize the bone and joint injuries that commonly affect the vasculature
   b. Recognize the clinical and radiographic findings associated with a greenstick fracture
   c. Recognize the clinical findings associated with subluxation of the radial head, and manage appropriately
   d. Recognize the clinical and radiographic findings associated with a fracture of the clavicle, and manage appropriately
   e. Recognize the clinical and radiographic findings associated with acromioclavicular separation

33. **Pharmacology and Pain Management**

A. Pharmacodynamics

1. Absorption
   a. Understand which drugs should be taken with food and which should be taken on an empty stomach
   b. Understand factors that influence bioequivalence of drugs
2. Hepatic drug metabolism
   a. Understand which drugs stimulate or inhibit hepatic metabolism
3. Renal excretion
   a. Understand the circumstances that require adjustment of renally excreted antibiotic doses in patients of various ages
4. Half-life
   a. Recognize the association between half-life, therapeutic range, and drug toxicity
   b. Understand the number of half-lives required to reach steady-state serum drug concentrations
5. Serum drug concentrations
   a. Plan the appropriate timing for measurement of serum drug concentrations
6. Adverse drug reactions
   a. Differentiate the findings associated with dose-related adverse drug reactions from those of idiosyncratic reactions
   b. Understand the circumstances for and process of reporting adverse drug reactions to the Food and Drug Administration
7. Drug interactions

a. Understand that concomitant administration of certain drugs can alter the serum concentrations of other drugs
b. Recognize potential interactions between drugs and complementary therapies

B. Specific drugs
1. Antibiotics
a. Recognize the adverse effects associated with the use of various antibiotic drugs
b. Know the mechanism of action of penicillin and other beta-lactam antibiotics
c. Recognize the association of pseudomembranous colitis with antibiotic therapy, and manage appropriately
2. Antivirals
a. Recognize the adverse effects associated with the use of various antiviral drugs
3. Antiparasitics
a. Recognize the adverse effects associated with the use of various antiparasitic drugs
4. Antifungals
a. Recognize the adverse effects associated with the use of various antifungal drugs
5. Diuretics
a. Recognize the adverse effects associated with diuretic therapy
b. Differentiate the effects of various diuretic drugs on calcium excretion
6. Corticosteroids
a. Recognize the adverse effects associated with long-term corticosteroid therapy, including inhaled corticosteroid therapy in patients with asthma, and manage appropriately
7. Immunosuppressants
a. Recognize the long-term risks associated with immunosuppressive drug therapy
8. Over-the-counter medications (see also IV.B)
a. Know the components and the common adverse effects and toxicities of common over-the-counter preparations , and advise regarding their appropriate use
9. Beta-blocking drugs
a. Recognize the adverse effects associated with beta-blocking drugs
10. Antihypertensive drugs
a. Understand the mechanism of action of the different classes of antihypertensive drugs
11. Nonsteroidal anti-inflammatory drugs
a. Recognize the risks associated with the use of aspirin
b. Recognize the risks associated with the use of nonsteroidal anti-inflammatory drugs
12. H2-blocking drugs
a. Recognize the risks associated with the use of H2-blocking drugs
13. Beta-agonists
a. Understand the pharmacokinetics of short- and long-acting inhaled beta-adrenergic agonists and the risks associated with their excessive use
14. Antidepressant and stimulant drugs
a. Understand the risks associated with the use of various antidepressant drugs
b. Understand the common side effects of medications used to treat attention deficit hyperactivity disorder
15. Anticonvulsants
a. Recognize side effects and toxicities associated with anticonvulsant drugs
b. Plan the appropriate evaluation of serum anticonvulsant drug concentrations, including limitations and timing
c. Recognize laboratory abnormalities associated with anticonvulsant drug therapy
16. Chemotherapeutic drugs
a. Understand the risks, side effects, and late sequelae associated with various chemotherapeutic drugs

C. Sedation
   1. Minimal sedation (anxiolytic)
      a. Understand the appropriate use of minimal sedation (anxiolytic)
   2. Moderate sedation
      a. Understand the differences in procedural sedation, deep sedation, and general anesthesia
      b. Plan the appropriate observation and monitoring protocol for a patient who is undergoing procedural sedation
      c. Recognize the side effects associated with an overdose of commonly prescribed sedatives, and manage appropriately
      d. Understand the indications and contraindications for moderate sedation
      e. Plan the appropriate pre-sedation protocol for a patient who is about to undergo moderate sedation
   3. Sedative analgesia (eg, opioids, nitrous oxide, ketamine)
      a. Understand the appropriate use of sedative analgesia

D. Pain management
   1. Understand the appropriate use of pharmacologic pain management modalities
   2. Understand the appropriate use of nonpharmacologic pain management modalities
   3. Understand the risks associated with the use of narcotics for pain management

34. **Research and Statistics**

A. Study design
   1. Understand the validity hierarchy for study design and study type
   2. Understand the uses and limitations of randomized clinical trials
   3. Understand the uses and limitations of controlled clinical trials
   4. Understand the uses and limitations of cohort studies
   5. Understand the uses and limitations of case-control studies
   6. Understand the uses and limitations of cross-sectional and longitudinal studies
   7. Understand the uses and limitations of systematic review and meta-analysis
   8. Understand the uses and limitations of descriptive epidemiologic studies
   9. Understand the uses and limitations of case reports/series and anecdotal evidence
   10. Understand how sample size affects the power of a study
   11. Understand how sample size may limit the ability to detect adverse events
   12. Identify the study design most likely to yield valid information about the accuracy of a diagnostic test
   13. Identify the study design most likely to yield valid information about the benefits and/or harms of an intervention
   14. Identify the study design most likely to yield valid information about the prognosis of a condition

B. Data analysis
   1. Understand validity and how it might be compromised
   2. Understand reliability and how it might be compromised
   3. Understand bias and how it might distort the estimate of the association between exposure and outcome
   4. Understand confounding and how to control for it in a study
   5. Understand generalizability and how it relates to validity
   6. Understand the concept of intention-to-treat analysis to maintain the power of a study
   7. Understand the concept of number-needed-to-treat when utilized to describe therapeutic interventions
   8. Distinguish between type I and type II statistical errors
   9. Assess how the data source (eg, diaries, billing data, discharge diagnostic code) may affect study results

C. Reading and interpreting results
   1. Understand prevalence and incidence
   2. Understand pre-test and post-test probability
   3. Understand positive and negative predictive values

4. Understand sensitivity and specificity and how to apply them to test results
5. Understand standard deviation in the interpretation of results
6. Understand standard error in the interpretation of results
7. Understand confidence interval in the interpretation of results
8. Understand likelihood ratio and when it might be useful to reach a diagnosis
9. Understand relative risk analysis and odds ratio
10. Distinguish statistical significance from clinical importance
11. Given the need for specific clinical information, identify a clear, structured, searchable clinical question

35. **Ethics for Primary Pediatricians**

A. Autonomy, beneficence, and rights

1. Critical care, end of life, and limitations on medical intervention
   a. Recognize and apply ethical decision-making when caring for critically ill patients
   b. Recognize and apply ethical principles when involved in end-of-life care
   c. Recognize and apply ethical principles with regard to limitations on medical intervention
   d. Recognize and apply ethical principles when involved in decisions to withdraw/withhold artificial hydration/nutrition
   e. Recognize and apply ethical principles involving cardiopulmonary resuscitation and "do not resuscitate" (DNR) orders
   f. Recognize and apply ethical principles regarding the issue of medical futility
   g. Recognize and apply ethical principles when caring for a patient who is in a persistent vegetative state
   h. Recognize and apply ethical principles involving palliative care and pain management
   i. Recognize and apply ethical principles involving euthanasia
2. Patient-parent-pediatrician relationship
   a. Obligations: veracity, fidelity, and confidentiality
      1. Recognize and apply ethical principles involved in the patient-parent-pediatrician relationship regarding issues of veracity
      2. Recognize and apply ethical principles involved in the patient-parent-pediatrician relationship regarding issues of fidelity
      3. Recognize and apply ethical principles involved in the patient-parent-pediatrician relationship regarding issues of confidentiality
   b. Informed consent/dissent/assent
      1. Recognize and apply ethical principles involved in the patient-parent-pediatrician relationship regarding issues of informed consent/dissent/assent
      2. Understand the difference between informed consent and assent
   c. Minors as decision-makers
      1. Recognize and apply ethical principles involved in the patient-parent-pediatrician relationship regarding minors as decision-makers
      2. Understand when it is appropriate to have a minor involved in making decisions about his or her medical care
   d. Advance care planning/directives
      1. Recognize and apply ethical principles involved in the patient-parent-pediatrician relationship regarding advance care planning
      2. Understand the use of advance directives in pediatrics
   e. Religious (philosophical) exemptions
      1. Recognize and apply ethical principles involved in the patient-parent-pediatrician relationship regarding religious (philosophical) exemptions for medical treatment/immunizations

B. Ethics and the use of technology

1. New technology

a. Recognize and apply ethical principles involved in use of technology for genetic studies in genetics counseling
b. Recognize and apply ethical principles involved in the use of cochlear implants
c. Recognize and apply ethical principles involved in using new technologies for sex/gender assignment

2. Imperiled newborn infants
   a. Recognize and apply ethical principles regarding imperiled newborn infants and delivery room resuscitation issues
   b. Recognize and apply ethical principles involved in decision making for imperiled newborn infants in the neonatal intensive care unit
3. Organ transplantation and donation
   a. Recognize and apply ethical principles involved in decisions regarding organ transplantation and donation
4. Enhancement therapies
   a. Recognize and apply ethical principles involved in deciding when to use enhancement therapies
   b. Recognize and apply ethical principles involved in determining when the use of growth hormone therapy is appropriate (eg, in consultation with a pediatric endocrinologist)
   c. Recognize and apply ethical principles involved in use of technology for performance enhancement therapies

C. Allocation of health care resources
1. Recognize and apply ethical principles regarding the just allocation of health care resources
2. Recognize and apply ethical principles involved in managed care issues

D. Professionalism and institutional ethics
1. Cross-cultural issues
   a. Recognize and apply ethical principles involved in professionalism and institutional ethics relative to cross-cultural issues
2. Institutional ethics committees
   a. Recognize and apply ethical principles regarding institutional ethics committees
3. Professionalism (see also XXXVI.D)
   a. Understand the ethical principles that uphold professionalism and institutional ethics
   b. Recognize and apply ethical principles regarding professionalism and institutional ethics in the giving and receiving of gifts
   c. Recognize and apply ethical principles regarding medical errors
   d. Recognize and apply ethical principles regarding malpractice
   e. Recognize and apply ethical principles regarding conflicts of interest
   f. Recognize and apply ethical principles regarding medical testimony and being an expert witness
   g. Recognize and apply ethical principles regarding physicians who may present a risk to patients
4. Research in children
   a. Recognize and apply ethical principles regarding research involving children

E. Special medical circumstances
1. Brain death
   a. Recognize and apply ethical principles surrounding the issue of brain death
2. Care of patients with disabilities
   a. Recognize and apply ethical principles regarding the care of children and adolescents with disabilities
3. Children with AIDS/HIV infection
   a. Recognize and apply ethical principles regarding the care of children and adolescents with AIDS/HIV infection
4. Violence and child abuse
   a. Recognize and apply ethical principles regarding the issue of intimate-partner violence

b. Recognize and apply ethical principles regarding the issues of physical and mental abuse
c. Recognize and apply ethical principles regarding violence in society

5. Complementary and alternative medicine
   a. Recognize and apply ethical principles regarding the use of complementary and alternative medicine
6. Children in foster care
   a. Recognize and apply ethical principles regarding children in foster care

36. **Patient Safety and Quality Improvement**

A. Definitions used in discussions of patient safety
1. Understand and apply the definition of a medical error
2. Understand and apply the definition of a near-miss event
3. Understand and apply the definition of a sentinel event
4. Understand and apply the definition of a preventable adverse event
5. Understand and apply the definition of a non-preventable adverse event

B. Epidemiology of medical error and harm
1. Understand the contribution of adverse events to the morbidity and mortality of pediatric patients
2. Understand the contribution of adverse events to the cost of medical care
3. Recognize the common causes of adverse events in pediatric patients
4. Identify situations presenting high risk for adverse events in the management of pediatric patients

C. Detecting and reporting adverse events
1. Understand the relationship between the detection of a medical error and the ability to discover and effect improvements
2. Identify barriers to reporting adverse events
3. Apply effective strategies to improve reporting of adverse events
4. Apply voluntary systems for reporting of adverse medical events
5. Recognize the use of National Patient Safety Goals to improve patient safety

D. Disclosure of medical errors
1. Use appropriate means to disclose medical errors to patients
2. Apply appropriate methods of support for patients and their families after an error producing medical harm occurs
3. Use appropriate methods of support for physicians and other health-care providers after an error producing medical harm occurs

E. Methods to reduce medical adverse events
1. Recognize the relative role of systems and individuals in producing medical error and harm
2. Understand and apply root cause analysis to determine the factors contributing to an error
3. Understand and apply evidence-based interventions to reduce medical adverse events
4. Use best-practice guidelines to reduce medical adverse events
5. Use effective methods of communication to reduce errors in the health-care setting
6. Recognize what interventions can reduce error in situations (eg, stress, fatigue, distraction) at high risk for medical error
7. Understand and apply methodologies to prevent medication errors
8. Understand the role of ancillary services such as the pharmacy in the prevention of medication errors
9. Understand the role of computerized order entry and dose-range checking in reducing medication errors
10. Understand the impact of product naming and packaging on medication safety
11. Understand the role of medical device design in prevention of medical error
12. Understand the contribution of patient factors to adverse events
13. Understand the role of patients and their families in reducing adverse events

F. Principles of quality improvement applied to improving patient safety
1. Key principles of patient safety

a. Understand the importance of leadership in creating a culture of safety in the health-care system
b. Apply knowledge of human factors in the design of systems and processes promoting patient safety
c. Promote effective team functioning in the prevention of medical error
d. Understand the importance of assessment and redesign of health-care processes before error occurs
e. Understand the importance of creating and maintaining a learning environment (eg, morning report, meetings with partners) in improving patient safety

2. Core principles of quality improvement
   a. Understand what a system is (eg, people, procedures, equipment) and how each component of that system affects outcome
   b. Recognize that analysis of variation in data is critical in quality improvement to understand whether the variation is actually improvement
   c. Understand that quality improvement is based on applying a scientific method to improving human systems
   d. Apply the psychology of change (eg, motivating people to improve) to improve health-care systems
   e. Recognize that quality improvement requires looking at data or processes (ie, trends) over time
   f. Identify the components of the Langley Model for Improvement