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) review on G and D
   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 2016:37:25-27
   b. Evaluate the cognitive and behavioral developmental progress/status of an infant at 12 months of age 2016:37:25-27

7. Fifteen months
   b. Evaluate the cognitive and behavioral developmental progress/status of a child at 15 months of age 2016:37:25-27 2017:143

8. Eighteen months
   a. Evaluate the motor developmental progress/status of a child at 18 months of age, including recognition of abnormalities 2016:37:25-27
   b. Evaluate the cognitive and behavioral developmental progress/status of a child at 18 months of age 2016:37:25-27

9. Twenty-four months
   a. Evaluate the motor developmental progress/status of a child at 24 months of age 2016:37:25-27
   b. Evaluate the cognitive and behavioral developmental progress/status of a child at 24 months of age, including recognition of abnormalities 2016:37:25-27 2012:46

10. Thirty-six months
    b. Evaluate the cognitive and behavioral developmental progress/status of a child at 36 months of age, including recognition of abnormalities 2016:37:25-27 2017:218

11. Four years
    a. Evaluate the motor developmental progress/status of a child at 4 years of age 2016:37:25-27
    b. Evaluate the cognitive and behavioral developmental progress/status of a child at 4 years of age 2016:37:25-27

12. Five years
    a. Evaluate the motor developmental progress/status of a child at 5 years of age 2016:37:25-27 2013:158
    b. Evaluate the cognitive and behavioral developmental progress/status of a child at 5 years of age 2016:37:25-27
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 2015: 7
      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 2016:81
      3. Vitamins
         a. Understand the absorption, storage, and metabolism of fat- and water-soluble vitamins in patients of various ages, including those born prematurely 2017:236
      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 2016:127
      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 2016:87
      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 2017:181
   B. Infant feeding
      1. Breast-feeding
         a. Understand the qualitative and quantitative differences between human milk and various infant formulas 2016:141
         b. Recognize the presence and importance of various antibodies (including secretory IgA) in human milk and colostrum 2016:141
         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 2013:216

2. Mineral deficiency states
   a. Identify the conditions that are associated with a deficiency of various trace minerals (eg, zinc, copper, magnesium, chromium) 2015:36:414-416

3. Protein, calorie deficiency states
   a. Recognize the clinical features associated with protein or calorie deficiency, including edema and malnutrition 2017:59
   b. Plan the diagnostic evaluation of a patient with suspected protein-losing enteropathy, while considering its causes 2017:59

4. 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 2016:161

2. Tube feeding, enteral nutrition
   a. Recognize the complications associated with tube feeding 2013:179
   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 2015:26
   b. Monitor a patient receiving parenteral nutrition while considering the associated complications 2016:7

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

2015:36:249-259
2016:37:220-221
2017:233

c. Understand the effects on immunity when MMR vaccine is administered to children younger than 12 months of age

2015:36:249-259
2016:37:220-221
2017:233

d. Advise a pregnant woman regarding receipt of MMR vaccine

2015:36:249-259
2016:37:220-221

10. Poliovirus vaccine

a. Know the indications, contraindications, and schedules for the poliovirus vaccine, including under special circumstances (eg, unimmunized adult contacts)

2015:36:249-259

b. Understand the efficacy and safety of the poliovirus vaccine

2015:36:249-259

11. Haemophilus influenzae type b vaccine

a. Know the indications and schedule for the Haemophilus influenzae type vaccine

2015:36:249-259

12. Varicella-zoster virus vaccine

a. Know the indications, contraindications, limitations, and schedule for varicella-zoster vaccine, including after exposure

2015:36:249-259
2016:37:498-500

13. Rotavirus vaccine

a. Know the recommendations, contraindications, and schedule for the rotavirus vaccine

2015:36:249-259

14. Human papillomavirus vaccine

a. Know the recommendations, limitations, and schedule for the human papillomavirus vaccine

2015:36:249-259
2016:169
2015:21

15. Catch-up immunizations

a. Plan an immunization schedule for an infant born prematurely

2015:36:249-259

b. Plan an immunization schedule for a child or adolescent who begins receiving immunizations late or whose immunizations are delayed

2015:36:249-259
2017:41:00

16. Immunizations for travel

a. Know how to obtain information about immunizations for patients and families traveling to foreign countries

2015:36:249-259

B. Screening

1. Blood pressure

a. Understand when to screen for an increased blood pressure and how to interpret the results

2015:31

b. Understand the appropriate technique, including appropriate cuff size, for measuring blood pressure

2015:31
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
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 XXXI.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 2013:34:247-257 2016:221

5. Water safety
   a. Understand the epidemiology associated with drowning deaths 2016:64
   b. Counsel parents regarding safety measures for a home pool 2016:64
   c. Counsel parents and children regarding safe boat use (eg, flotation devices, supervision) 2017:262 2013:129

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 2015:36:43-51

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 2016:261 2014:81 2014:113

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 2015:36:82-85
   2. Poison control centers, online resources
      a. Understand the data available from poison control centers 2015:36:82-85 2015:36:83 2015:16

   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 2015:36:82-85 2015:16 2014:15
         b. Understand the importance of asking about intake of complementary/alternative medicines in the investigation of poisoning 2015:36:82-85 2014:35:114 2013:90
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
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 2012:33:04

e. Cord care
f. Physiologic evaluation (eg, stool, urine, vital signs)
1. Recognize disorders associated with delayed or absent passage of meconium 2013:34:322
2012:33:04 2016:209
2. Plan the appropriate evaluation of delayed urination in a newborn infant 2012:33:04 2016:157
3. Understand the normal variations in blood pressure that are associated with gestational age 2012:33:04

2014:10

g. Discharge plans
1. Plan the early discharge of a newborn infant, including follow-up evaluation 2012:33:04 2017:13

h. Home birth
1. Plan appropriate evaluation and management of an infant who was born at home 2012:33:04 2015:17

i. Physiologic jaundice
1. Plan the appropriate diagnostic evaluation of jaundice in a full-term infant 2012:33:04
2. Understand the differences between physiologic jaundice in pre-term and full-term infants 2012:33:04
2013:235
3. Recognize the association between breast-feeding and physiologic jaundice in the neonatal period 2012:33:04

j. Breast-milk jaundice
1. Understand the mechanism of breast-milk jaundice and manage appropriately 2012:33:04

C. Abnormal newborn infants

1. Resuscitation (ventilation, perfusion, suctioning)

a. Recognize the indications for immediate positive-pressure ventilation in a neonate 2015:36

b. Recognize the indication for nasopharyngeal suctioning during resuscitation of a newborn infant 2012:33:04
c. Recognize the indications for external cardiac massage during resuscitation of a newborn infant, and institute appropriately  
   2016:117  
   2013:14

d. Understand the metabolic consequences of continued poor perfusion in a newborn infant  
   2015:55

2. Very-low-birth-weight infants
   a. Identify the effects of neurologic immaturity on the Apgar score in a very-low-birth-weight infant  
      2014:100
   b. Plan appropriate initial care for a very-low-birth-weight infant  
      2016:137  
      2014:188
   c. Understand the prognostic factors for very-low-birth-weight infants  
      2014:28

3. Conditions, diseases
   a. Lethargy, coma
      1. Formulate a differential diagnosis of lethargy and coma in a neonate  
         2016:264
   b. Hypoxia, ischemia
      1. Formulate a differential diagnosis of neonatal seizures  
         2012:33:387  
         2017:224
   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  
         2015:74  
         2013:133
   d. Nonphysiologic jaundice (see also XII.G)
      1. Recognize the clinical features and sequelae of acute bilirubin encephalopathy in newborn infants, and manage appropriately  
         2015:93  
         2014:251
      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  
         2014:251
      5. Plan the appropriate diagnostic evaluation of conjugated hyperbilirubinemia in a neonate  
         2015:64
   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

5. Distinguish between persistent pulmonary hypertension with meconium aspiration and cyanotic congenital heart disease in a neonate

6. Recognize the clinical features associated with a neonate who has persistent pulmonary hypertension following meconium aspiration

h. Bronchopulmonary dysplasia (see XIII.D.5)
i. Sepsis
   1. Plan appropriate antimicrobial therapy for suspected sepsis in the immediate newborn period
   
   j. TORCH infections (see IX.C.1)

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

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

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

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

   o. 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

p. Multiple congenital anomalies (see VII)
q. Oligohydramnios
1. Identify the features associated with the oligohydramnios tetrad (Potter syndrome), and
manage appropriately
r. 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
s. 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  
2015:36:141-152

b. Understand how equilibrium is maintained between extracellular and intracellular fluid  
2015:36:141-152

c. Estimate plasma osmolality by assessing appropriate serum concentrations  
2015:36:141-152

2. Sodium and potassium

a. Identify the physiologic requirements for sodium and potassium in patients of various ages  
2015:36:141-152

b. Understand that serum potassium concentration does not reflect total body content of potassium  
2015:36:141-152

3. Protein

a. Recognize the clinical features associated with hypoproteinemia  
2015:36:141-152  2015:6

B. Acid-base physiology

1. Normal mechanisms and regulation

a. Understand the pulmonary mechanism for regulating acid-base physiology  
2016:37:361-369

b. Calculate an anion gap  
2016:37:361-369

2. Acidosis, alkalosis

a. Identify the arterial blood gas abnormalities associated with an acid-base imbalance  
2016:37:361-369

b. Recognize the clinical and laboratory features associated with metabolic acidosis, and manage appropriately  
2016:37:361-369

c. Formulate a differential diagnosis of acidosis associated with various anion gap values  
2016:37:361-369

d. Identify factors contributing to metabolic alkalosis  
2016:37:361-369

e. Identify factors contributing to metabolic acidosis  
2016:37:361-369

f. Identify the renal compensatory changes associated with primary respiratory alkalosis  
2016:37:361-369

g. Identify the renal compensatory changes associated with primary respiratory acidosis  
2016:37:361-369  2015:165

h. Recognize the association of chloride and acidosis in the differential diagnosis of metabolic acidosis  
2016:37:361-369

C. Electrolyte abnormalities
1. Sodium
   a. Hypernatremia
      1. Identify symptoms associated with hypernatremia, including those associated with rapid rehydration 2015:36:274 2015:36:141 2017:148
   b. Hyponatremia
      1. Identify the various etiologies of hyponatremia 2015:36:274 2015:36:141
      2. Plan the laboratory evaluation of hyponatremia while considering the differential diagnoses associated with the disorder 2013:34:417 2012:33:377 2017:271
      4. Recognize the clinical findings associated with water intoxication in patients of various ages 2012:33:377 2017:26:00

2. Potassium
   a. Hyperkalemia
      1. Recognize the clinical and laboratory features associated with hyperkalemia, and manage appropriately, including during an emergency situation 2017:168
   b. Hypokalemia
      1. Recognize the clinical and laboratory features associated with hypokalemia, and manage appropriately, including during an emergency situation 2013:34:185 2013:89 2017:128

3. Chloride
   a. Recognize the various etiologies of hypochloremia 2017:109

D. Disease states, specific therapy
1. Pyloric stenosis
   a. Recognize the acid-base changes associated with pyloric stenosis, and manage appropriately 2015:102

2. Gastroenteritis
1. Plan fluid therapy for a patient with acute gastroenteritis unresponsive to oral rehydration

2. 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

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

4. 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

5. 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

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

2016:37:269-278
2015:36:506-507

5. Imprinting
a. Understand the role of imprinting in genetic disorders

2016:37:269-278
2015:36:506-507

2017:156

6. Associations
a. Recognize the clinical features associated with genetic associations (e.g., CHARGE, VACTERL, VATER)

2016:37:269-278
2015:36:506-507
2012:33:327

2016:28

7. Contiguous gene syndromes
a. Recognize the inheritance pattern associated with contiguous gene syndromes

2016:37:269-278
2015:36:506-507
2013:181

2016:48

c. Recognize the association of contiguous gene syndromes with other syndromes that manifest multiple apparent unconnected defects (e.g., velocardiofacial syndrome)

2016:37:269-278
2015:36:506-507
2016:48

B. Diagnostic testing

1. Prenatal
a. Understand the role and limitations of prenatal genetic testing

2015:36:506-507

b. Understand which genetic disorders can be diagnosed prenatally

2015:36:506-507
2016:68

c. Understand the role of fetal ultrasonography in prenatal diagnosis

2015:36:506-507
2016:68

d. Understand the usefulness of maternal blood screening in prenatal diagnosis

2015:36:506-507
2017:14

2. Postnatal
a. Understand the role of fluorescence in situ hybridization studies in postnatal

2015:36:506-507
2013:181

b. Understand the role of microarray testing in postnatal diagnosis

2015:36:506-507

c. Understand the role of karyotyping in postnatal diagnosis

2015:36:506-507

d. Understand the role of single-gene analysis in postnatal diagnosis

2015:36:506-507

e. Understand the role of trinucleotide repeat analysis in the diagnosis of genetic disorders

2015:36:506-507

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,XXY
      1. Recognize the clinical features associated with a 47,XXY 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 2015:79

2. Understand the association between allergic rhinitis and sinusitis and/or otitis media 2016:37:439-441 2016:29

3. Differentiate the historical and clinical findings of allergic rhinitis from those of nonallergic rhinitis 2016:37:439-441 2016:29

C. Asthma

1. Etiology, epidemiology, natural history
   b. Understand the natural history of asthma and the factors that affect it 2015:36:287-298 2014:35:287 2013:54
   c. Recognize the early and late effects of an IgE-mediated allergen in a patient with asthma 2015:36:287-298 2014:35:287
   d. Recognize the frequency of recurrent wheezing in infants who have bronchiolitis caused by respiratory syncytial virus or rhinovirus 2015:36:287-298 2014:35:287 2016:20 2016:49
   e. Understand the effects of upper respiratory tract infection in patients who have asthma 2015:36:287-298 2014:35:287

2. Diagnosis
   a. Know the diagnostic criteria for asthma 2014:35:287 2017:276

3. Treatment
   a. Acute exacerbation
      1. Recognize the signs of severe obstruction during an acute exacerbation of asthma 2014:35:287 2014:195
      2. Recognize the development of atelectasis during an acute exacerbation of asthma, and manage appropriately 2014:35:287 2017:276
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 (e.g., 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 diseases
   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
   2016:37:498-500
   2012:33:45
   2017:19

c. Understand the relationship between varicella and herpes zoster infection
   2016:37:498-500
   2012:33:45
   2017:19

d. Plan the appropriate management of an immunocompromised patient exposed to varicella
   2016:37:498-500
   2013:34:49

e. Plan appropriate antiviral therapy for normal and immunocompromised patients who have varicella-zoster virus infection
   2016:37:498-500
   2012:33:45
   2014:37

f. Plan appropriate control measures to prevent the spread of varicella and herpes zoster
   2016:37:498-500
   2013:34:49
   2017:19

5. Measles virus
   a. Plan appropriate control measures to prevent the spread of measles
      2016:37:220-221
   
   b. Plan appropriate use of intramuscular immune globulin in immunocompromised and unimmunized patients who have been exposed to measles
      2016:37:220-221

   c. Recognize the clinical features associated with measles, including complications
      2016:37:220-221

6. Mumps virus
   a. Recognize the clinical features and complications associated with mumps
      2013:87
   
   b. Plan the appropriate management of a patient with mumps
      2016:235

7. Rubella virus
   a. Understand the epidemiology of the rubella virus
      2017:65
   
   b. Recognize the clinical features associated with congenital and postnatally acquired rubella virus infection
      2017:65

8. Rabies virus (see XXXI.C.2.)

9. Parvovirus B19 (erythema infectiosum)
   a. Recognize the clinical features associated with erythema infectiosum
      2017:180
      2013:127
   
   b. Recognize the complications of parvovirus B19 infection
      2017:180

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 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  

15. Adenovirus  
   a. Understand the epidemiology of adenovirus
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**
   a. Understand the epidemiology of arbovirus, including West Nile virus
   b. Recognize the clinical features associated with arbovirus infection (e.g., 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 2016:37:426-438 2017:240 2013:144


f. Plan the management of a neonate or older child exposed to hepatitis B 2016:37:426-438

22. Hepatitis C virus

a. Identify the risk factors for the acquisition of hepatitis C virus infection 2016:37:426-438 2016:145

b. Plan appropriate diagnostic evaluation, including timing of testing, for hepatitis C virus infection 2016:37:426-438 2016:145

c. Understand the importance of follow-up screening evaluations for complications of hepatitis C virus infection 2016:37:426-438

d. Understand the possible long-term outcomes of patients who have hepatitis C virus infections 2016:37:426-438

23. Human papillomavirus

a. Understand the epidemiology of human papillomavirus infection

b. Recognize the clinical features associated with human papillomavirus infection 2014:35:371

24. Human metapneumovirus

a. Understand the epidemiology of human metapneumovirus infection 2013: 34:558 2017:5

b. Recognize the clinical features associated with human metapneumovirus infection 2013: 34:558 2017:5

25. Calicivirus (norovirus and sapovirus)

a. Understand the epidemiology of human calicivirus (norovirus and sapovirus) infection 2016:37:548-549

b. Recognize the clinical features associated with calicivirus (norovirus and sapovirus) infection 2016:37:548-549

D. Bacterial pathogens

1. Anaerobes (general characteristics)


2. Arcanobacterium haemolyticum

a. Recognize the clinical features associated with Arcanobacterium haemolyticum infection 2016:185

3. Brucella (brucellosis)

a. Understand the importance of considering brucellosis in the differential diagnosis of fever of unknown origin 2016:205
4. Campylobacter species
   a. Understand the epidemiology of Campylobacter infections 2013:111
   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 2014:35:42 2014:203
   b. Recognize the clinical features associated with cat-scratch disease 2014:35:42
   c. Plan appropriate management for a patient with cat-scratch disease 2014:35:42

6. Chlamydia and Chlamydophila (chlamydial infections)
   a. Understand the epidemiology of Chlamydia trachomatis 2014:35:145-154
   b. Recognize the clinical features associated with chlamydial infection in patients of various ages 2014:35:145-154

7. Clostridium botulinum (botulism)

8. Clostridium difficile
   a. Recognize the clinical features associated with Clostridium difficile infection 2016:225 2013:117
   b. Plan the appropriate diagnostic evaluation for Clostridium difficile infection 2013:117
   c. Plan appropriate management for a patient with Clostridium difficile infection 2016:225 2013:117 2016:225
   d. Institute appropriate infection control measures for Clostridium difficile infection 2013:117

9. Corynebacterium diphtheria (diphtheria) (see also III.A.)
a. Recognize the clinical features associated with diphtheria 2017:187

10. Enterococcus
    a. Recognize the clinical syndromes associated with enterococcal infections 2017:58
11. Escherichia coli
    b. Recognize the clinical and laboratory findings associated with Escherichia coli infection in children of various ages, including its association with hemolytic-uremic syndrome 2015:36:167-171
    e. Plan the appropriate initial management of hemolytic-uremic syndrome 2015:36:167-171 2015:83
12. Neisseria gonorrhoeae (gonococcal infections)
    a. Recognize the major clinical features associated with Neisseria gonorrhoeae infection 2013:34:228 2016:2
    b. Plan the appropriate diagnostic evaluation for Neisseria gonorrhoeae infection 2013:34:228 2016:2
    c. Plan appropriate management for a patient with Neisseria gonorrhoeae infection 2013:34:228
13. Haemophilus
    a. Understand the epidemiology of Haemophilus influenzae infection 2014:5
    b. Recognize the clinical features associated with typable and nontypable Haemophilus influenzae infection 2014:5
    c. Plan appropriate prophylaxis for individuals exposed to invasive Haemophilus influenzae type B 2014:25
    d. Plan the appropriate management of a typable and nontypable Haemophilus influenzae infection 2014:25
14. Helicobacter pylori (see also XII.I.)
    a. Identify risk factors for Helicobacter pylori infection 2017:127
    b. Recognize the major clinical features associated with Helicobacter pylori infection 2014:35:243 2017:127
    d. Plan appropriate management for a patient with Helicobacter pylori infection 2017:127
15. Kingella kingae
    a. Recognize the clinical features associated with Kingella kingae infection 2016:245
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
   b. Recognize the major clinical features associated with Neisseria meningitidis infection
   c. Plan appropriate prophylaxis for individuals exposed to Neisseria meningitidis
   d. Understand which patients are at increased risk of invasive and recurrent meningococcal disease
   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 pneumonia
   a. Understand the epidemiology of Mycoplasma pneumoniae 2016:37:22-24
   c. Plan the appropriate diagnostic evaluation of Mycoplasma pneumoniae infection 2016:37:22-24 2013:161
   d. Plan appropriate management for a patient with Mycoplasma pneumoniae infection 2016:37:22-24

22. Pasteurella multocida
   a. Understand the epidemiology of Pasteurella multocida 2014:1
   b. Recognize the common clinical features associated with Pasteurella multocida infection 2017:207 2014:1
   c. Plan appropriate management for a patient with Pasteurella multocida infection 2017:207

23. Bordetella pertussis (pertussis)
   d. Plan the appropriate management of pertussis in its various stages, including treatment for contacts of infected patients 2014:35:182 2012:33:412 2014:131

24. Pseudomonas species
   a. Recognize the risk factors for the development of pseudomonal infections 2013:34:173 2017:25
   b. Recognize the clinical manifestations of pseudomonal infections and manage appropriately 2017:25:00

25. Rickettsial diseases (Rocky Mountain spotted fever, ehrlichiosis)
   a. Understand the epidemiology of Rocky Mountain spotted fever 2014:91 2014:91
   b. Recognize the clinical features associated with Rocky Mountain spotted fever 2014:91 2013:246
   c. Plan the appropriate management of suspected or confirmed Rocky Mountain spotted fever 2013:34:137 2014:91
26. **Salmonella species**
   a. Understand the epidemiology of typhoidal and nontyphoidal Salmonella species
   2013:34:375  2017:38
   b. Recognize the clinical features associated with typhoidal and nontyphoidal Salmonella infection
   2013:34:375  2017:38
   c. Plan appropriate management for a patient with typhoidal or nontyphoidal Salmonella infection
   2013:34:375  2017:38
27. **Shigella species (shigellosis)**
   a. Understand the epidemiology of Shigella species
   2014:35:261  2014:250
   b. Recognize the clinical features associated with Shigella infection
   2014:35:261  2014:250
   c. Plan appropriate management for a patient with Shigella infection
   2014:35:261  2014:250
28. **Staphylococcus aureus**
   a. Understand the epidemiology of Staphylococcus aureus
   2014:35:49  2016:15
   b. Recognize the clinical features associated with Staphylococcus aureus infection
   2014:35:49  2017:45
   c. Plan the appropriate diagnostic evaluation of Staphylococcus infection
   2014:35:49  2017:45
   d. Plan the appropriate management of methicillin-sensitive and methicillin-resistant Staphylococcus aureus infection
   2014:35:49  2016:15
   e. Understand the pathophysiology of staphylococcal toxic shock syndrome and manage appropriately
   2014:35:49  2014:79
29. **Staphylococcus, coagulase-negative**
   a. Understand the association of coagulase-negative staphylococcal infections with the presence of central venous catheters or other foreign bodies
   2017:160
   b. Understand that a positive culture for coagulase-negative staphylococci may represent specimen contamination or infection
   2016:35  2013:42
30. **Streptococcus agalactiae (group B streptococcus)**
   a. Understand the epidemiology of Streptococcus agalactiae
   2012:33:219
   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 2012:33:219

31. Streptococcus pneumoniae (pneumococcal infections)
   a. Understand the epidemiology of Streptococcus pneumoniae infection 2014:35:299
   b. Recognize the clinical features associated with Streptococcus pneumoniae 2014:35:299
   c. Plan appropriate management for a patient with Streptococcus pneumoniae infection 2014:35:299

32. Streptococcus pyogenes (group A streptococcus)
   a. Understand the epidemiology of Streptococcus pyogenes 2016:37:19 2016:55
   b. Plan the appropriate diagnostic evaluation of suspected Streptococcus pyogenes infection 2016:37:19 2016:55
   c. Recognize the clinical features associated with Streptococcus pyogenes infection 2016:37:19 2015:100
   d. Recognize the complications associated with invasive and non-invasive Streptococcus pyogenes infection 2016:37:19 2017:88

33. Treponema pallidum (syphilis)
   a. Understand the epidemiology of Treponema pallidum 2015:36:43-46 2014:35:212
   b. Plan the appropriate diagnostic evaluation when Treponema pallidum infection is suspected 2015:36:43-46 2014:35:212

34. Yersinia enterocolitica
   a. Recognize the clinical features associated with Yersinia enterocolitica infection 2017:147 2013:185 2017:147
   b. Plan appropriate management for a patient with Yersinia enterocolitica infection 2013:185

E. Fungal pathogens
   1. Candida species
      a. Identify the risk factors for candidiasis in patients of various ages 2017:211
b. Recognize the clinical features associated with Candida infection
2014: 35:371  2017:211

c. Plan appropriate management for a patient with Candida infection
2014: 35:371  2017:211

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
2015:36:181-182

3. Aspergillus
a. Understand the epidemiology of Aspergillus
2017:219  2013:32
b. Recognize the clinical features associated with Aspergillus infection
2017:219  2013:32

c. Identify the clinical features associated with congenital and acquired Toxoplasma gondii infestation, and manage appropriately
2016:95  2015:242

F. Parasitic pathogens (protozoa, metazoan)

1. Giardia lamblia (giardiasis)
   a. Understand the epidemiology of Giardia lamblia
      2015:36:341-354  2013:252
   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
      2016:37:59-71  2016:95
   b. Identify the clinical features associated with congenital and acquired Toxoplasma gondii infestation, and manage appropriately
      2016:37:59-71  2016:95

3. Trichomonas vaginalis (trichomoniasis)
   a. Understand the epidemiology of Trichomonas vaginalis
      2015:36:341-354
   b. Plan the appropriate diagnostic evaluation when Trichomonas vaginalis infestation is suspected
      2015:36:341-354
   c. Recognize the clinical features associated with Trichomonas vaginalis infestation, and manage appropriately, including management of sexual partners
      2015:36:341-354

4. Pneumocystis jiroveci
a. Understand the epidemiology of Pneumocystis jiroveci
   2016:37:59-71
   2015:36:341-354
   2016:163
b. Recognize the clinical features associated with Pneumocystis jiroveci infection, and
   manage appropriately
   2016:37:59-71
   2015:36:341-354
   2016:163
c. Plan appropriate prophylaxis for Pneumocystis jiroveci infection in a child who is receiving chemotherapy
   2016:37:59-71
   2015:36:341-354
   2016:163

5. Enterobius vermicularis (pinworms)
   a. Understand the epidemiology of Enterobius vermicularis
      2016:37:59-71
      2015:36:341-354
      2013:61
b. Recognize the clinical features associated with Enterobius vermicularis infestation,
      2016:37:59-71
      2015:36:341-354
      2014:35:97

6. Plasmodium species (malaria)
   a. Understand the epidemiology of malaria
      2016:37:262-263
      2016:37:59-71
      2015:36:341-354
      2016:115
b. Recognize the clinical features of malaria, and manage appropriately
   2016:37:59-71
   2015:36:341-354
   2016:115

7. Ascaris lumbricoides (ascariasis)
   a. Understand the epidemiology of ascariasis
      2016:37:59-71
      2015:36:341-354
      2014:185
b. Recognize the clinical features associated with ascariasis, and manage appropriately
   2015:36:341-354
   2013:34:41

8. Entamoeba histolytica (amoebiasis)
   a. Understand the epidemiology of amoebiasis
      2016:37:59-71
      2015:36:341-354
      2015:205
   b. Recognize the clinical features associated with amoebiasis, and manage appropriately
      2016:37:59-71
      2015:36:341-354
      2015:205

9. Necator americanus (hookworm)
   a. Understand the epidemiology of Necator americanus
      2016:37:59-71
      2015:36:341-354
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
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
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
   b. Distinguish among constitutional short stature, genetic (familial) short stature, and growth hormone or thyroid deficiencies by growth chart evaluation
      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) 2013:34:420 2015:114
3. Plan the appropriate diagnostic evaluation of a patient with primary gonadal dysgenesis (Turner syndrome) 2013:34:420 2013:62
  c. Constitutional delay of puberty
1. Plan the appropriate diagnostic evaluation of constitutional delay of puberty 2017:95 2013:211
2. Plan the appropriate management of constitutional delay of puberty 2017:95 2013:211

D. Thyroid disorders
1. Hashimoto thyroiditis
   b. Recognize the clinical features associated with Hashimoto thyroiditis 2014:35:33 2017:194
   c. Plan the appropriate diagnostic evaluation to distinguish among Hashimoto thyroiditis, other causes of thyroid enlargement, and hypothyroidism 2014:35:33 2017:194
2. Cyst, tumor, nodule
   a. Recognize the clinical features associated with a thyroid cyst/tumor 2014:35:33 2015:133
      2012:33:75
   b. Plan the appropriate evaluation and management of a thyroid mass/nodule 2014:35:33 2015:133
      2012:33:75
3. Hypothyroidism
   a. Recognize the clinical features associated with congenital and acquired hypothyroidism 2014:35:336
   b. Identify the causes of congenital and acquired hypothyroidism 2014:35:336 2016:159
   c. Plan the appropriate diagnostic evaluation of hypothyroidism 2014:35:336
   d. Plan the appropriate management of congenital and acquired hypothyroidism 2014:35:336 2013:58
   e. Understand the prognosis for a patient with congenital or acquired hypothyroidism, including neonates whose hypothyroidism is not treated 2014:35:336 2016:159 2014:60
   f. Recognize the clinical and laboratory features associated with thyroid-binding globulin deficiency 2014:35:336
4. Hyperthyroidism
   a. Identify the various etiologies of hyperthyroidism 2015:36:239-248
b. Recognize the clinical features associated with hyperthyroidism, including that occurring in neonates  
   2015:36:239-248  2013:24

c. Plan the appropriate diagnostic evaluation of hyperthyroidism  
   2015:36:239-248

d. Plan the appropriate management of hyperthyroidism  
   2015:36:239-248

E. Adrenal gland disorders PIR adrenal disorders hypo and hyper

1. Addison disease and adrenal insufficiency

   a. Recognize the clinical features associated with Addison disease  
      2015:36:92-103  2015:152

   b. Plan the appropriate diagnostic evaluation for Addison disease  
      2015:36:92-103  2013:143

   c. Plan the appropriate management of Addison disease, including an adrenal crisis associated with the disorder  
      2015:36:92-103

   d. Recognize the clinical features associated with adrenal insufficiency after exogenous corticosteroid therapy has been discontinued, and the complications associated with sudden withdrawal  
      2015:36:92-103  2016:179

   e. Recognize the clinical and laboratory manifestations of adrenal insufficiency  
      2015:36:92-103  2015:152

   f. Differentiate the clinical and laboratory findings associated with adrenal insufficiency from those of the inappropriate secretion of antidiuretic hormone  
      2015:36:92-103

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  
   2016:37:370-376

2. Recognize the clinical features associated with pituitary disorders caused by craniopharyngioma  
   2012:33:175
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 (focus on cerebral edema)
c. Plan the appropriate management of diabetic ketoacidosis
2016:37:81
2013: 34:203

d. Recognize the risks associated with fluid and electrolyte therapy in a patient with diabetic ketoacidosis
2016:37:81
2013: 34:203

2014:220

e. Understand the causes of recurrent diabetic ketoacidosis
2016:37:81
2013: 34:203

3. Type 2 diabetes

a. Understand the epidemiology of and risk factors associated with type 2 diabetes
2016:37:81
2013:34:541

b. Differentiate between type 1 and type 2 diabetes
2016:37:81
2013:34:541
2017:12

c. Plan an appropriate screening evaluation for a patient in whom type 2 diabetes is suspected
2016:37:81
2013:34:541

2014:78

d. Recognize the short- and long-term complications associated with type 2 diabetes
2016:37:81
2013:34:541

2017:114

e. Plan the appropriate management of type 2 diabetes
2016:37:81
2013:34:541

2017:114

f. Recognize the clinical features associated with insulin resistance

H. Metabolic syndrome

1. Recognize the clinical features associated with metabolic syndrome
2016:37:193-202
2012:33:459

2. Plan an appropriate screening evaluation for metabolic syndrome, considering risk factors that necessitate such screening
2016:37:193-202
2012:33:459

3. Plan appropriate initial management of a patient with metabolic syndrome
2016:37:193-202
2012:33:459

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
2012:33:339
2014:134
2012:33:459

2014:34
2013:75

2. Hypercalcemia
a. Recognize the clinical features associated with hypercalcemia, including that occurring as a result of immobilization with parathyroid disorders 2016:37:523-535 2015:36:423-425 2016:259

3. Hypophosphatemia
   a. Recognize the clinical and laboratory features associated with hypophosphatemia 2014:166
   b. Plan the appropriate management of familial hypophosphatemic rickets

4. Rickets (see also II.C)

5. Parathyroid disorders
   b. Understand the association of hypoparathyroidism with other disorders 2016:37:523-535

12. Gastrointestinal Disorders
   A. Acute and chronic abdominal pain
      1. General
            2013:34:41
            2016:37:377-390
         b. Formulate an age-appropriate differential diagnosis of acute abdominal pain 2013:34:235 2015:83
            2013:34:41
      2. Appendicitis
         b. Plan the appropriate diagnostic evaluation when appendicitis is suspected 2016:37:52-58 2012:33:135
      3. Cholecystitis, cholelithiasis, choledocholithiasis
         b. Identify the risk factors associated with the development of cholelithiasis 2016:37:377-390 2014:21
      4. 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 XXXI.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. Plan the appropriate evaluation of gastroesophageal reflux, and manage appropriately
   c. 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  
   2015:36:392-402  2017:19

3. Recognize the clinical features associated with Hirschsprung disease  
   2015:36:392-402  2013:34:322

4. Identify complications associated with Hirschsprung disease  
   2015:36:392-402  2013:34:322

5. Plan the appropriate diagnostic evaluation in a patient in whom Hirschsprung disease is suspected  
   2015:36:392-402  2013:34:322

6. Understand the action of laxatives, stool softeners, and lubricants in a patient with constipation  
   2015:36:392-402  2017:19

G. Jaundice

1. Bilirubin metabolism
   a. Understand bilirubin transport, synthesis, and metabolism in patients of various ages  
      2013:235
   b. Plan the appropriate diagnostic evaluation of unconjugated hyperbilirubinemia  
      2013:235
   c. Plan the appropriate evaluation of a child with conjugated hyperbilirubinemia  
      2013:128
   d. Recognize the clinical features associated with Gilbert syndrome  
      2013:235

2. Hepatitis
   a. Plan the appropriate diagnostic evaluation of hepatitis  
      2013:235
   b. Identify the immediate and long-term complications of hepatitis  
      2013:128
   c. Recognize the age-related clinical features associated with chronic hepatitis  
      2014:217
   d. Recognize the clinical features associated with Wilson disease  
      2014:247
   e. Recognize the clinical features associated with alpha-1-antitrypsin deficiency  
      2014:247

3. Biliary obstruction
   a. Plan the initial management of obstructive jaundice  
      2017:141
   b. Recognize the clinical features associated with biliary atresia, and manage appropriately  
      2017:141
   c. Plan the appropriate diagnostic evaluation for a patient in whom biliary atresia is  
      suspected  
      2017:141
H. Gastrointestinal bleeding

1. Upper versus lower gastrointestinal bleeding
   a. Recognize the clinical features associated with upper gastrointestinal bleeding
      2014:35:243  2013:34:280
   b. Plan the appropriate evaluation of upper gastrointestinal bleeding
      2014:35:243  2013:34:280
   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
      2014:35:243
   f. Formulate an age-appropriate differential diagnosis for rectal bleeding
      2013:34:307  2016:207
   g. Distinguish among the etiologies of occult blood and bright red blood per rectum
      2013:34:307  2016:207
   h. Plan the appropriate evaluation of rectal bleeding
      2013:34:307  2016:207
   i. Formulate a differential diagnosis for coffee-ground material in vomitus
      2013:34:307  2013:77
   j. Formulate a differential diagnosis for vomitus that tests positive for occult blood
      2013:34:307  2014:57

2. Polyps
   a. Recognize the significance of a solitary juvenile polyp
      2014:35:243
   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
      2014:35:243

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
   2014:35:243
2. Identify the risk factors associated with ulcer disease (other than that caused by Helicobacter pylori) in
   childhood
   2014:35:243
3. Plan the appropriate management of ulcer disease not caused by Helicobacter pylori infection
   2014:35:243
J. Hepatomegaly

1. Understand the significance of hepatomegaly with or without splenomegaly in children of various ages, and evaluate appropriately 2015:36:459-461 2016:247
2. Identify the physical and laboratory features associated with portal hypertension 2015:36:459-461 2015:178

K. Malabsorption (see also XIII.F)

1. General
   a. Plan the appropriate diagnostic evaluation for malabsorption 2017:254
   b. Formulate an age-related differential diagnosis for malabsorption 2015:197
   c. Recognize clinical situations in which bacterial overgrowth may play a role in malabsorption 2015:197
   d. Identify the clinical conditions other than cystic fibrosis that are associated with rectal prolapse 2016:267
2. Mucosal disease (celiac disease)
   a. Plan the appropriate diagnostic evaluation for celiac disease 2014:35:409 2017:213
   b. Recognize the clinical features associated with celiac disease 2014:35:409 2017:213
3. Pancreatic insufficiency (cystic fibrosis, Shwachman syndrome)
      2012:33:525
      2012:33:525
      2012:33:525
4. Enzyme deficiency (lactase, sucrase-isomaltase) (see also X)
   a. Recognize the clinical features associated with a carbohydrate malabsorption disorder 2014:235
5. Fat malabsorption and chronic liver disease
   b. Recognize the clinical features associated with fat malabsorption 2015:36:198-206 2013:60

L. Inflammatory bowel disease

1. Recognize the clinical features associated with inflammatory bowel disease (eg, Crohn disease, ulcerative colitis) 2014:75
2. Distinguish the clinical features associated with Crohn disease from those of ulcerative colitis 2014:75
3. Plan the initial evaluation of inflammatory bowel disease 2013:230
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 2016:37:516-523 2015:216

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 2015:36:135-137
   b. Plan the appropriate management for stridor of various etiologies 2015:36:135-137
   c. Plan the appropriate clinical and diagnostic evaluation of laryngeal and vocal cord disorders 2015:36:135-137

2. Respiratory failure
   a. Recognize the clinical and laboratory manifestations associated with respiratory failure of various etiologies 2014:35:476 2017:193
   b. Plan appropriate management for respiratory failure of various etiologies 2014:35:476

3. Cough
   a. Plan the appropriate clinical and diagnostic evaluation of cough of various etiologies 2013:34:498-509

4. Exercise intolerance
   a. Formulate a differential diagnosis for exercise intolerance 2015:259

5. Apnea
   a. Plan the appropriate clinical and diagnostic evaluation of apnea of various etiologies 2015:156
   b. Plan appropriate management for apnea of various etiologies 2015:156

6. Wheezing
   a. Plan the appropriate clinical and diagnostic evaluation of wheezing of various etiologies 2013:34:13 2015:212
   b. Plan appropriate management for wheezing of various etiologies 2015:212
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 (focus on bacterial)
   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 XXX.C.)

4. Acute respiratory distress syndrome (see XXX.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 2014:35:194
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 2012:33:525 2013:60
6. Recognize the importance of planning for survival into adulthood for patients with cystic fibrosis 2017:191

G. Primary ciliary dyskinesia (dysmotile cilia syndrome)

1. Recognize disorders associated with primary ciliary dyskinesia 2013:190
2. Plan the appropriate diagnostic evaluation of primary ciliary dyskinesia 2013:190

H. Extrapulmonary

1. Pleural fluid
   a. Understand the etiology of pleural fluid accumulation 2012:33:45 2013:132
   b. Plan the appropriate diagnostic evaluation of pleural disease 2012:33:45 2016:140
   c. Recognize the normal and abnormal characteristics of pleural fluid 2012:33:45 2016:140
   d. Plan the appropriate management of an empyema 2012:33:45 2016:140
2. Pneumothorax, pneumomediastinum
   b. Recognize the clinical features of a pneumothorax/pneumomediastinum, and manage appropriately 2016:37:48 2016:160
3. Thoracic deformities (see also XIX.B.6)
   a. Recognize the association of thoracic deformities with restrictive pulmonary disease 2015:232 2015:175
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
      2017:165
         2015:183
         2013:123
   3. Syncope
      a. Plan the appropriate evaluation of a syncopal or pre-syncopal episode, including episodes associated with exercise
         2016:37:159
         2012:33:475
      b. Recognize the cardiac causes of syncope
         2016:37:159
         2012:33:475
   4. Murmur
      a. Plan the appropriate evaluation of an innocent murmur, and manage appropriately
         2016:252
         2012:39

B. Congestive heart failure
   1. Identify the causes of congestive heart failure in children of various ages
   2016:12
      2013:208
      2015:88
      2012:57
   2. Recognize the clinical findings associated with congestive heart failure in children of various ages
      2017:145
      2015:88
      2017:145
      2014:147
   3. Plan the appropriate initial diagnostic evaluation of congestive heart failure in children of various ages
      2017:145
      2015:88
      2017:145
      2014:147
   4. Plan the appropriate initial management of congestive heart failure in children of various ages
      2017:145
      2015:88
      2017:145
      2014:147

C. Congenital heart disease
   1. Cardiogenic shock (see XXX.A.2)
   2. Cyanotic disease
      a. Distinguish between central cyanosis and acrocyanosis
      2012:264
      2016:32
      2017:205
      2017:205
      2015:107
      2014:82
      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 2013:174

g. Plan immediate management of a hypoxic episode in a child who has cyanotic congenital disease 2017:106

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 2016:72
      2012:74

   b. Understand the natural history of a bicuspid aortic valve 2016:92

   c. Recognize the major clinical findings associated with the various types of acyanotic congenital heart disease 2015:126

   d. Plan appropriate initial management of patent ductus arteriosus in an infant born prematurely 2015:221

   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 2016:112

   g. Identify risks associated with an untreated large left-to-right shunt and pulmonary hypertension 2016:72

D. Infectious and noninfectious cardiovascular diseases

1. Infective endocarditis

   a. Understand the natural history of infective endocarditis 2014:35:162

   b. Recognize pathogens commonly associated with infective endocarditis 2014:35:162

   c. Recognize the clinical findings associated with infective endocarditis and provide appropriate initial management 2014:35:162

   d. Plan an appropriate diagnostic evaluation of infective endocarditis 2017:238

   e. Plan appropriate prophylaxis for infective endocarditis 2017:238

2. Rheumatic fever

   a. Understand the natural history of rheumatic fever 2015:13

   b. Recognize the clinical findings associated with rheumatic fever, including major and minor criteria 2015:13
      2014:08
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 2013:34:151 2016:212

E. **Rate and rhythm disorders, ischemia**


2. Understand the clinical significance of a prolonged corrected QT interval 2015:164


4. Plan the appropriate management of various cardiac dysrhythmias 2016:152

5. Recognize the role of hyperthyroidism in persistent sinus tachycardia

C. **Systemic diseases affecting the heart**


2. Recognize the clinical findings associated with superior vena cava syndrome 2017:11
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
   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  2012:33:525 2014:225
      2. Plan the appropriate laboratory evaluation of neutropenia, and interpret the results 2014:225
      3. Recognize clinical findings associated with neutropenia
   b. Acquired, nonimmune neutropenia
      1. Understand the infection risks associated with neutropenia 2013:34:173 2016: 210
      2. Understand the association of drug therapy with neutropenia 2013:34:173 2016: 210

2. Qualitative leukocyte disorders
   a. Recognize the clinical and laboratory findings associated with abnormal leukocyte function 2016:37:491 2016:30

3. General therapeutic approaches for leukocyte disorders
   a. Plan appropriate management of a patient with a leukocyte disorder 2016:37:491 2016:30

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 2017:62
   b. Understand the significance of neonatal thrombocytopenia in multiple siblings 2017:62
   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 2015:48
f. Understand the hematologic significance of a rapidly enlarging hematoma 2014:65
g. Plan appropriate management of thrombocytopenia associated with TAR syndrome 2014:65
h. Understand the natural history of ITP 2014:153
i. Recognize the clinical and laboratory findings associated with ITP, and manage appropriately 2013:80
j. Recognize complications associated with ITP 2013:80

2. Qualitative platelet disorders
   a. Recognize clinical findings associated with qualitative platelet disorders 2017:144

E. Pancytopenia
   1. Decreased production
      a. Recognize clinical and laboratory findings associated with Fanconi anemia 2016:37:101
      b. Distinguish acquired aplastic anemia from childhood leukemia 2016:37:101
   2. Increased destruction
      a. Understand the etiology of pancytopenia, and manage appropriately 2016:37:101
      b. Plan the appropriate diagnostic evaluation of multiple pancytopenias 2016:37:101

F. Coagulation disorders
   1. Congenital bleeding and thrombotic disorders
      a. Recognize clinical findings associated with congenital coagulation factor deficiency 2016:37:259
      b. Recognize clinical findings associated with intracranial bleeding, and manage appropriately 2016:37:259
      c. Plan the appropriate diagnostic evaluation for increased bruising 2016:37:259
      d. Plan an appropriate screening evaluation for a coagulation disorder 2016:37:259
      e. Understand the genetic risks when a congenital bleeding or thrombotic disorder is suspected 2016:37:259
      f. Recognize the clinical manifestations and complications associated with hemophilia, and manage appropriately 2016:37:259
g. Recognize laboratory findings associated with hemophilia
   2016:37:259
h. Recognize the clinical findings associated with von Willebrand disease
   2013:34:289  2015:105
i. Plan the appropriate management of von Willebrand disease
   2014:35:136  2015:105

2. Acquired bleeding and thrombotic disorders
   a. Understand the significance of purpura in a febrile child
      2016:37:259
   b. Plan the appropriate evaluation and management of an acquired bleeding or thrombotic
      2016:250

3. General therapeutic approaches to coagulation disorders
   a. Plan the general therapeutic approach for a patient with a bleeding diatheses
      2016:37:259

G. Neoplastic disorders

1. Hematologic malignancies
   a. Leukemia
      1. Recognize clinical findings associated with leukemia, including sites of relapse
         2015:124
      2. Understand the outcome associated with treated acute lymphoblastic leukemia
         2012:33:135  2013:110
      3. Identify disorders associated with an increased risk of leukemia
         2013:34:289
      4. Understand that management of leukemia is dependent on its type
      b. Lymphoma
         1. Recognize clinical findings associated with lymphoma
            2016:37:126
         2. Plan the appropriate diagnostic evaluation of unexplained lymphadenopathy
            2016:37:399  2013:34:289
         3. Recognize complications associated with Hodgkin disease in patients who have undergone
            splenectomy, and manage appropriately
            2013:34:216
         4. Plan an appropriate diagnostic evaluation to exclude tumor lysis syndrome in patients
            suspected of having leukemia
            2010:31:234  2015:143

2. Solid tumors
   a. Neuroblastoma
      1. Recognize clinical findings associated with neuroblastoma
         2012:33:327  2017:216
      2. Plan the appropriate diagnostic evaluation of neuroblastoma
         2012:33:327  2017:216
b. Wilms tumor
1. Recognize the clinical findings associated with Wilms tumor 2014:83
2. Understand the prognosis for a patient who has Wilms tumor 2014:83
c. Brain tumors
1. Recognize the clinical findings associated with a brain tumor, including craniopharyngioma 2013:34:63
2013:34:235 2017:122
d. Bone and soft tissue tumors
1. Recognize the clinical findings associated with osteosarcoma 2015:36:184 2015:162
2. Recognize the clinical and laboratory findings associated with osteoid osteoma 2015:36:184 2015:162
3. Understand site(s) of metastasis of malignant bone tumors in children of various ages 2015:36:184 2015:162
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 2016:37:e7 2014:171
2013:34:95
f. Other tumors (eg, germ cell, liver, retinoblastoma)
1. Recognize the laboratory findings associated with a germ cell tumor 2015:200
2. Recognize the clinical and laboratory findings associated with retinoblastoma 2013:12
3. Recognize the inheritance pattern associated with retinoblastoma and the significance of the family history in planning management 2015:198
4. Differentiate the historical and clinical findings associated with hereditary retinoblastoma from those of sporadic retinoblastoma 2013:45
5. Recognize the laboratory findings associated with hepatoblastoma 2015:181
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 2015:36:370 2015:162
b. Chest mass
1. Recognize the clinical findings associated with a chest mass 2015:73

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 2017:46
      2. Proteinuria
         a. Identify the possible causes of proteinuria 2015:25
            2014:84
         b. Plan the appropriate clinical and laboratory evaluation of proteinuria 2015:101
      3. Hematuria
         b. Plan the appropriate clinical evaluation of gross hematuria 2015:120
         c. Recognize the disorders associated with hematuria 2012:46
         d. Plan the appropriate clinical evaluation of red urine of non-hematogenous origin 2014:196
            2013:101
         e. Formulate a differential diagnosis of persistent microscopic hematuria with and without persistent proteinuria 2014:124
            2013:220
         f. Plan the appropriate clinical and laboratory evaluation of microscopic hematuria
      4. Dysuria
         a. Recognize the etiology of dysuria in patients of various ages 2013:34:235
            2015:44
            2012:143
         b. Plan the appropriate diagnostic evaluation of dysuria in patients of various ages 2015:44
            2012:143
      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 XXXI.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 stone
   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 2013:186
d. Recognize the clinical findings associated with autosomal-recessive polycystic kidney disease in patients of various ages 2013:186
e. Recognize the renal findings associated with Potter syndrome (pulmonary hypoplasia) 2012:234

B. Abnormalities of the collecting system, kidneys, bladder, and urethra

   2012:33:427 2013:33
2. Understand the natural history of vesicoureteral reflux 2014:214
3. Recognize the clinical findings associated with hydronephrosis in patients of various ages 2016:26
4. Recognize the clinical findings associated with prune belly (Eagle-Barrett) syndrome 2012:119
5. Understand the various causes of urinary tract obstruction 2017:6
6. Recognize the clinical findings associated with vesicoureteral reflux 2014:214
   2013:118
7. Recognize the clinical findings associated with posterior urethral valves in children of various ages 2013:34:408 2013:118
8. Plan the appropriate long-term management of posterior urethral valves 2013:118
9. Recognize the clinical findings associated with urethral trauma 2012:137
   2012:51
10. Plan the appropriate management of a narrow urethra 2014:36
11. Recognize the renal findings associated with Alport syndrome 2015:139
12. Recognize the clinical findings associated with various anomalies of the kidneys, urinary collecting system, and urinary excretion system 2016: 106
13. Plan the diagnostic evaluation of abnormalities of the kidneys, urinary collecting system, bladder, and urethra 2013:118

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

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
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 2016:98 2013:138

B. Infectious causes of neurologic disorders
   1. Meningitis (see also IX.D.18)

2. Encephalitis
   a. Recognize the clinical findings associated with encephalitis of various causes 2012:33:122
   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 2015:43
   b. Plan the appropriate diagnostic evaluation of a brain abscess 2015:43
   c. Plan the appropriate management of a brain abscess 2015:43
   d. Understand the risk factors associated with a brain abscess 2015:43

4. Transverse myelitis
   a. Recognize the clinical manifestations of transverse myelitis 2016:138
   b. Plan the appropriate diagnostic evaluation of suspected transverse myelitis 2016:138

C. Neurodegenerative disorders
   1. Recognize the clinical findings associated with a degenerative disorder of the central nervous system 2017:132 2013:17

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 XXXII.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 XXXI.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
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 2016:37:539 2015:62

d. Plan the appropriate management of osteomyelitis in patients of various ages 2013:34:408 2015:62

2. Pyogenic arthritis

a. Understand the natural history of pyogenic arthritis 2016:135

b. Identify the etiology of pyogenic and acute arthritis 2016:135

c. Differentiate the clinical findings of pyogenic arthritis from those of toxic synovitis and arthralgia 2012:33:475 2016:135

d. Recognize the clinical findings of pyogenic arthritis or arthritis associated with rheumatic fever in patients of various ages 2012:189

e. Plan the appropriate diagnostic evaluation of pyogenic arthritis in patients of various ages 2012:33:475


3. Synovitis


b. Plan the appropriate diagnostic evaluation of synovitis

4. Dislocations, strains (see XXV.B.2.e. and XXXI.D.4.)

5. Bone injuries and cysts

a. Recognize the clinical findings associated with compartment syndrome 2013:6

b. Recognize the clinical findings associated with occult fractures that may or may not affect gait in patients of various ages 2014:34

c. Recognize the clinical findings associated with growth plate fractures and injuries 2014:120


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  
            2015:36:e30  2013:136
         b. Recognize the clinical findings associated with Sturge-Weber syndrome  
            2015:36:e30  2013:136
         c. Plan the appropriate management of a port wine stain  
            2015:36:e30  2013:136
      2. Erythema toxicum
         a. Recognize the clinical and cytologic findings associated with erythema toxicum  
            2016:249  2012:108
      3. Transient neonatal pustular melanosis
         a. Recognize the clinical findings associated with transient neonatal pustular melanosis  
            2016:249  2012:194
         b. Differentiate the laboratory findings associated with transient neonatal pustular melanosis  
            2016:249
      4. Neonatal impetigo
         a. Recognize the clinical findings associated with neonatal impetigo  
            2015:15
      5. Dermal melanocytosis (Mongolian spots)
         a. Recognize the clinical characteristics of dermal melanocytosis (Mongolian spots)  
            2015:245
   B. Atopic dermatitis
      1. Recognize the clinical findings associated with atopic dermatitis  
         2015:174
      2. Plan the appropriate management of atopic dermatitis  
         2015:174
      3. Recognize complications associated with atopic dermatitis  
         2013:248
   C. Infectious rashes and infestations
      1. Impetigo
         a. Recognize the common pathogens associated with impetigo  
            2015:15
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

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 2016:155

9. Cellulitis (see also XXII.A.3.)
   a. Plan the appropriate management of cellulitis of the skin of various etiologies 2015:81

10. Necrotizing fasciitis
    a. Recognize the clinical findings associated with necrotizing fasciitis 2015:100

11. Wound infections
    a. Recognize the common pathogens involved in wound infections, and manage appropriately 2015:36:207 2015:233
    b. Plan the appropriate management of a skin infection resulting from a wound 2015:36:207 2015:233

D. Hair loss

1. Alopecia areata
   a. Recognize the clinical findings associated with alopecia areata and manage appropriately 2015:36:503

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 2015:134

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 2015:132 2014:68

2. Tuberous sclerosis
   a. Recognize the clinical findings associated with tuberous sclerosis, and manage appropriately 2014:172

3. Sturge-Weber syndrome (see XX.A.1.)

F. Pigmented lesions
1. Hyperpigmentation
   a. Recognize the clinical findings associated with incontinentia pigmenti
      2017:169
   b. Recognize the clinical findings associated with melanoma
      2015:153
   c. Recognize the clinical findings associated with urticaria pigmentosa
      2014:122

2. Recognize the clinical findings associated with urticaria pigmentosa
   2014:122

3. Hypopigmentation
   a. Recognize the clinical manifestations of vitiligo
      2015:172
   b. Recognize the clinical features of pityriasis alba
      2015:172

G. Acne
1. Recognize the clinical findings associated with acne
   2013:34:479
2. Plan the appropriate management of acne
   2013:34:479 2016:63

H. Other dermatologic disorders
1. Hemangiomas
   a. Understand the natural history of infantile hemangiomas
      2013:34:280 2015:191
   b. Recognize hemangioma and manage appropriately
      2015:191

2. Erythema multiforme, Stevens-Johnson syndrome
   a. Recognize the clinical spectrum of erythema multiforme
      2015:51
   b. Recognize the clinical features of Stevens-Johnson syndrome and manage appropriately
      2015:51

3. Contact dermatitis
   a. Understand the pathophysiology of rhus dermatitis
      2015:36:e39 2013:188
   b. Recognize the clinical findings associated with contact dermatitis
      2015:36:e39 2013:188

4. Diaper dermatitis
   a. Recognize the etiology of diaper dermatitis, and manage appropriately
      2016:269 2016:103

5. Short- and long-term effects of sun exposure
   a. Understand the clinical findings and risks associated with sun damage to the skin
      2012:3

6. Ectodermal dysplasia
   a. Recognize the clinical findings associated with ectodermal dysplasia
      2016:37:e38 2015:210

7. Sebaceous nevus
   a. Recognize the clinical findings associated with sebaceous nevus
      2015:247

8. Dermoids
   a. Recognize the clinical findings associated with a dermoid
      2015:9

9. 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. 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  
2016:37:78  
2014:35:447  
2015:70

c. Recognize the laboratory findings associated with Henoch-Schönlein purpura  
2016:37:78  
2014:35:447

d. Plan the appropriate diagnostic evaluation and treatment for a patient with Henoch-Schönlein purpura  
2016:37:78  
2014:35:447  
2014:44

2. Kawasaki disease (see also XIV.D.5.)  
a. Recognize the clinical findings associated with Kawasaki disease  
2013:34:151

b. Formulate a differential diagnosis of Kawasaki disease  
2013:34:151  
2016:133

c. Plan the appropriate diagnostic evaluation of Kawasaki disease, and interpret the results  
2014:132  
2012:198

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  
2015:36:184  
2012:33:303

2. Recognize the laboratory findings associated with juvenile rheumatoid (idiopathic) arthritis and its complications  
2015:26:184  
2012:33:303  
2015:89

3. Recognize the long-term complications associated with juvenile rheumatoid (idiopathic) arthritis  
2015:36:496  
2012:33:303  
2014:80

4. Formulate a differential diagnosis for juvenile rheumatoid (idiopathic) arthritis  
2015:36:496  
2013:34:137  
2016:153

5. Plan the appropriate management of juvenile rheumatoid (idiopathic) arthritis, while recognizing side effects of some therapies  
2012:33:303  
2016:153  
2014:204

D. Other rheumatic disorders

1. Dermatomyositis
   a. Recognize the clinical findings associated with dermatomyositis  
2015:36:496  
2016:73

   b. Plan the appropriate laboratory evaluation for dermatomyositis  
2015:36:496  
2016:73

2. Scleroderma
   a. Understand the prognosis of patients with scleroderma as opposed to those with systemic sclerosis  
2012:33:62  
2017:68

   b. Recognize the clinical findings associated with localized scleroderma  
2012:33:62  
2014:62
3. Sarcoidosis
   a. Recognize the clinical findings associated with sarcoidosis 2016:240

E. Other arthritis and arthralgia syndromes
   1. Ankylosing spondylitis
      a. Recognize the clinical and laboratory findings associated with ankylosing spondylitis 2016:253
   2. Arthritis of inflammatory bowel disease
      a. Recognize the clinical findings associated with reactive arthritis and manage appropriately 2017:68 2014:150
   3. Postinfectious arthritis
      b. Plan the appropriate management of postinfectious arthritis 2016:173
      c. Identify illnesses commonly associated with postinfectious arthritis 2016:173
   4. Reactive arthritis
      a. Recognize the clinical findings associated with reactive arthritis and manage appropriately 2013:34:137
   5. Hypermobility syndrome
      a. Recognize the clinical findings associated with hypermobility syndrome and manage appropriately 2014:191
      b. Recognize the clinical findings associated with Ehlers-Danlos syndrome 2016:193
   6. Functional joint complaints
      a. Recognize the typical presentation of a patient with functional joint complaints 2015:108
      b. Plan the appropriate management of functional joint complaints 2017:255

F. Inherited disorders of connective tissues
   22. Disorders of the Eye
      A. Alignment and movement disorders
         2. Plan the appropriate evaluation of strabismus, including timing of evaluation to prevent complications 2015:36:551 2015:189 2013:34:126
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.) SA2015

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
(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)
<table>
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<tr>
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<th>Understand the natural history of otitis media with effusion in patients of various ages</th>
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<td>Recognize conditions (including allergic rhinitis, adenoidal hypertrophy, eustachian tube abnormalities) associated with otitis media with effusion</td>
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<td>Plan the appropriate initial and follow-up management of otitis media with effusion in patients of various ages, including when complications occur</td>
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<td>Recognize potential physical, behavioral, and developmental complications associated with otitis media with effusion</td>
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<td>Chronic suppurative otitis media</td>
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<td>Recurrent otitis media</td>
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<td></td>
<td>Plan the appropriate management of recurrent otitis media, including follow-up evaluation and when an exacerbation has occurred</td>
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<td></td>
<td>Other disorders of the middle ear (not otitis media)</td>
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<tr>
<td></td>
<td>Understand risk factors associated with the development of recurrent or chronic middle ear disease</td>
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<td>Recognize the various etiologies of diminished tympanic membrane mobility</td>
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<td>Recognize the clinical findings and complications associated with middle ear disease other than otitis media</td>
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<td>Otorrhea</td>
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<tr>
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<td>Understand the significance of otorrhea</td>
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<td></td>
<td>Identify the various causes of purulent otorrhea</td>
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<td></td>
<td>Identify the various causes of bloody otorrhea</td>
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<tr>
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<td>Cholesteatoma</td>
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</table>
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

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. 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
b. Recognize the clinical findings associated with mastoiditis  
2015:123

c. Plan the appropriate diagnostic evaluation of mastoiditis  
2015:123

d. Plan the appropriate management of mastoiditis  
2015:123

7. Ear pain
a. Understand the possible etiologies of ear pain, including referred pain from other anatomic sites  
2015:142

B. Nose
1. Choanal atresia
a. Recognize the clinical findings associated with both unilateral and bilateral choanal atresia  
2015:169
b. Plan the appropriate evaluation of choanal atresia  
2015:169
c. Understand the association of choanal atresia with other congenital anomalies  
2015:169

2. Epistaxis
a. Plan the appropriate evaluation of the various manifestations of epistaxis  
2014:211
b. Formulate a differential diagnosis of epistaxis and manage appropriately  
2014:211

3. Rhinitis
a. Chronic rhinitis
1. Formulate a differential diagnosis of chronic rhinitis  
2015:79
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  
2015:249
b. Identify conditions associated with nasal polyps in patients of various ages  
2015:249

c. Plan the appropriate diagnostic evaluation of nasal polyps  
2012:191

5. Upper respiratory tract infection
a. Understand the natural history of an upper respiratory tract infection  
2016:195
b. Identify the etiology of an upper respiratory tract infection  
2016:195

6. Nasal trauma
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 2013 PIR
   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 2013 PIR
   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.) to be covered in upper respiratory in
   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 2014:88

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 2014:35:177
   b. Recognize the clinical findings associated with cleft palate, including submucous cleft and ear sequelae of poor eustachian tube function 2014:35:177
   c. Recognize the clinical findings associated with mandibular abnormalities, and manage 2014:35:177
   d. Recognize conditions commonly associated with cleft palate 2017:243
   e. Understand the general concept of velopharyngeal insufficiency 2017:243

3. Teeth (see also III.C.4)
   a. Recognize the causes of delayed dental eruption 2013:176
   b. Plan the appropriate management of an avulsed tooth 2014:35:177 2016:255
   c. Recognize the clinical findings associated with caries in patients of various ages 2014:35:177 2016:255
   d. Recognize the various clinical findings associated with dental and periodontal disease 2012:256
   e. Understand the association between an anaerobic infection and dental and periodontal 2012:256

F. Neck
1. Cervical adenitis
   a. Plan the appropriate clinical evaluation of acute cervical lymphadenopathy 2013:34:137 2017:248
   b. Plan the appropriate management of acute cervical lymphadenopathy 2013:34:137 2015:91
   c. Identify the age-related etiology of chronic cervical lymphadenopathy 2013:34:216 2015:91
   d. Plan the appropriate management of chronic cervical lymphadenopathy 2013:34:137
   e. Formulate a differential diagnosis of cervical lymphadenopathy 2013:34:137

2. Laryngitis, hoarseness
   a. Recognizes the various causes of hoarseness 2016:260
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

   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

2013:34:354 2015:30

b. Recognize how thought processes in early, middle, and late adolescence influence problem solving and risk taking

2013:34:354 2016:122

c. Recognize the tasks and features of early, mid, and late adolescent socioemotional development

2013:34:354 2016:122

d. Recognize the sequence of emotional and cognitive development and physical maturation

2013:34:354 2016:122

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

2016:142 2014:56

b. Delinquency (see XXVIII.B.3)

c. Adherence
   1. Understand factors that can affect adherence to health maintenance activities by adolescents

2015:78

2. Understand how to improve adherence to medical regimens by adolescent patients,

2015:78

d. Risk-taking
   1. Recognize factors associated with risk-taking in adolescents

2015:78

e. Violence
   1. Recognize the medical and emotional needs of an adolescent victim of sexual assault, and

2. Understand age-appropriate non-violent strategies for conflict resolution in adolescence

3. Identify the various roles of adolescents with regard to school violence

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

2015:49

f. Eating disorders
   1. Recognize the clinical findings associated with anorexia nervosa and the criteria for

2016:37:323

2. Recognize the clinical findings associated with bulimia and the criteria for diagnosis

2016:37:323
2. Transition to adult health care
   a. Provide appropriate guidance to transition adolescents from pediatric to adult health care
3. Gynecologic health care PIR 2014
   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
   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. Dysmenorrhe
      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 XXXIV.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 (PIR article on sport injuries 2016 1-10)
1. Prevention
   a. Recognize the preventable causes of trauma in juvenile athletes and the physiology associated with increased trauma risk  
      2017:60  
      2013:137
   b. Understand the role of conditioning in preventing injuries in athletes of various ages  
      2017:60
   c. Recognize the importance of adequate rehabilitation of current injury in the prevention of future injury among athletes  
      2017:60  
      2013:137

2. General
   a. Bruises, hematomas
      1. Identify complications associated with a deep hematoma of the thigh  
         2015:33
      2. Plan the appropriate management of bruises and hematomas  
         2015:33
   b. Heat illness
      1. Recognize the clinical findings associated with heat illness, including complications  
         2013:34:270  
         2015:52
      2. Plan the appropriate evaluation of heat illness, and manage appropriately  
         2013:34:270  
         2015:52
      3. Understand the mechanisms of heat-related illness, including age-related factors  
         2013:34:270  
         2015:52
   c. Return to play criteria
      1. Understand the criteria for return to play in sports after a head injury  
         2015:36:438  
         2012:33:398  
         2014:209  
         2013:14
      2. Understand the criteria for return to play in sports after an eye injury  
         2015:36:438
      3. Understand the criteria for return to play in sports after various orthopedic injuries  
         2015:36:438  
         2017:278
      4. Understand the criteria for return to play in sports after a neck injury  
         2015:36:438  
         2017:278  
         2013:23
   d. Overuse syndromes  
      2015:36:438
      1. Plan the appropriate management of an athlete with an overuse injury  
         2015:36:438  
         2016:134  
         2015:90  
         2014:120
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

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
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
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

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  
2017:252

c. Recognize the clinical findings associated with an acute hallucinogen intoxication, and manage appropriately  
2017:252

7. Cocaine

a. Identify the major physiologic consequences associated with cocaine use/abuse, including those associated with the various means of administration  
2016:56

b. Recognize the major behavioral consequences of cocaine use/abuse  
2016:56

c. Recognize the clinical findings associated with acute cocaine intoxication, and manage appropriately  
2016:56

8. Inhalants

a. Identify the major physiologic consequences associated with inhalant use/abuse  
2015:230

b. Understand the variety of substances used as inhalants  
2015:230

c. Recognize the clinical findings and risks associated with an acute inhalant overdose, and manage appropriately  
2013:142

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  
2015:36:286  2015:199

b. Recognize the risk of abuse of prescription medications  
2015:36:286  2015:199

27. Disorders of Cognition, Language, and Learning

A. Intellectual disabilities (see also VII)

1. Understand the correlation between language development and cognitive function  
2012:33:110

2. Recognize the age-related clinical findings associated with intellectual disabilities of various etiologies  
2012:33:110

3. Distinguish between mild and moderate intellectual disabilities with regard to the potential for educational and independence/vocational achievement  
2012:33:110  2017:36

4. Recognize the range of intellectual disabilities associated with common genetic syndromes  
2012:33:110

5. Identify the prenatal and perinatal causes of intellectual disabilities, including factors associated with family history  
2012:33:110

6. Identify common metabolic causes of intellectual disabilities  

7. Identify common chromosomal causes of intellectual disabilities  
2012:33:110
1. Identify common inheritance patterns of intellectual disabilities 2012:33:110
2. Identify common infectious causes of intellectual disabilities 2012:33:110
3. Identify common teratogenic causes of intellectual disabilities 2012:33:110
4. Plan appropriate laboratory evaluation of various intellectual disabilities 2012:33:110
5. Plan appropriate management for children with various intellectual disabilities 2012:33:110

**B. Autism spectrum disorders**

1. Identify the clinical findings, including developmental parameters, associated with autism spectrum disorders 2014:35:62
2. Distinguish findings associated autism spectrum disorder from those of isolated speech and language delay 2015:36:355 2014:35:62
3. Distinguish findings associated with autism spectrum disorder from those of an intellectual disability 2017:56 2013:22
4. Distinguish findings associated with autism spectrum disorder from those of profound hearing loss 2017:56
5. Understand the biologic basis of autistic behavior 2014:35:62

**C. Speech and language disorders**

1. Recognize age-related normal and abnormal variations in speech and language 2017:77
2. Understand factors that influence language development 2017:77
3. Identify the various etiologies of delayed language development 2016:11
4. Plan the appropriate evaluation of language disorders in patients of various ages 2016:11
5. Plan the appropriate initial management of speech and language disorders 2016:11

**D. Learning disabilities**

1. Distinguish the findings associated with learning disabilities from those of intellectual disabilities 2017:158 2013:39
2. Recognize the long-term effects of learning disabilities, and the range of disabilities that can occur 2016:31
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  
   2015:35:e1 2017:198

i. Understand the advantages and disadvantages of grade retention  
   2012:33:110 2013:209

2. Behavioral interventions
   a. Understand the advantages and limitations of behavior modification approaches in the overall management of learning and behavioral problems  
      2017:231
   b. Understand strategies to improve the self-esteem of children who have learning disabilities  
      2016:91
   c. Identify the types of community services available to families of children who have learning and behavioral problems  
   d. 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  
      2017:270 2013:5

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  
   2015:36:41 2017:64

2. Understand the various factors that influence parent-infant attachment  
   2015:257

3. Understand the concept of resilience and counsel parents on how to raise resilient children  
   2013:175

4. Understand the variations in temperament in infants, and counsel parents appropriately  
   2012:33:332 2017:166

5. Recognize the frequency of crying in infants of various ages  
   2012:33:332 2017:166

6. Plan the appropriate evaluation of colic  
   2012:33:332 2017:166

7. Plan the appropriate management of colic, while recognizing inappropriate therapy  
   2012:33:332 2017:166

8. Understand the natural history of thumb sucking, and manage appropriately  
   2013:169

9. Differentiate normal variations in feeding patterns from those that reflect poor parenting  
   2017:87
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
   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  
2015:36:52  2014:169
b. Distinguish the findings associated with normal mood swings in an adolescent from those of a depressive disorder  
2015:36:52
c. Recognize co-morbidities commonly associated with depressive disorders in children and adolescents  
2015:36:52
d. Recognize the various environmental and biological contributors to the development of depressive disorders in children and adolescents  
2015:36:52
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  
2015:36:52  2014:63

3. Psychosomatic disorders

a. Recognize the various features associated with conversion disorders  
2016:191
b. Formulate an appropriate differential diagnosis of conversion symptoms  
2016:191
c. Identify the various features associated with psychosomatic disorders  
2016:191
d. Plan an appropriate evaluation of psychosomatic disorders  
2016:191

D. Suicidal behavior, psychotic behavior, thought disorders

1. Recognize behaviors/warning signs that indicate suicidal attempt/ideation in patients of various ages  
2015:36:299
2. Understand risk factors associated with suicidal behavior/completed suicide  
2015:36:299
3. Plan the appropriate assessment and management of suicidal ideation in patients of various ages  
2015:36:299  2012:131
4. Identify factors that are protective against suicidal behavior  
2015:36:299
5. Recognize the impact of suicide on peers and family  
2015:36:299
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  
      2013: 34:145
   b. Understand the pediatrician’s role in the adoption process  
      2013: 34:145

6. Foster care (see also XXXIV.E.6)
   a. Understand the psychosocial issues surrounding children in foster care  
      2016: 37:546  
      2012: 33:496
   c. Understand the basic functions of the child welfare and foster care systems and the pediatrician’s role in that system  
      2016: 37:546  
      2012: 33:496
   d. Recognize the needs of youth aging out of the foster care system, and manage appropriately  
      2016: 37:546  
      2012: 33:496

7. Cultural issues in medical care
   a. Understand the various cultural issues that could affect medical care  
      2015: 203

B. Specific problems and conditions
1. Enuresis (see XVI.A.5)
   a. Recognize co-morbidities commonly associated with encopresis  
      2014:35:430  
      2014:35:327
   b. Understand the physiologic effects of stool retention  
      2014:35:430  
      2014:35:327
   c. Distinguish between encopresis and delayed bowel training  
      2014:35:430  
      2014:35:327  
      2015:234
   d. Plan the appropriate management of encopresis of various etiologies  
      2014:35:430  
      2014:35:327
   e. Recognize stool withholding during toilet training, and manage appropriately  
      2014:35:430  
      2014:35:327  
      2015:234
   f. Recognize the clinical features associated with fecal overflow incontinence  
      2014:35:430  
      2014:35:327  
      2015:234

3. Vulnerable child syndrome
   a. Understand factors predisposing to vulnerable child syndrome  
      2014:218
   b. Provide anticipatory guidance to prevent vulnerable child syndrome  
      2014:218

4. Rumination
   a. Recognize the clinical manifestations of rumination, and manage appropriately  
      2013:34:307  
      2017:146

5. Pain, including chronic pain syndromes
a. Recognize the clinical features commonly associated with chronic pain syndromes
   2016:213
   2013:191

b. Recognize the behavioral and psychosocial effects of chronic pain syndromes
   2016:213
   2013:191

c. Understand the effects of a patient’s developmental stage on tolerating and dealing with pain
   2016:213
   2016:256

d. Plan the appropriate management of pain in patients of various ages
   2016:213
   2016:256

6. Gifted children
   a. Understand the effects of gifted children on family dynamics
    2015:201
   b. Provide anticipatory guidance with respect to management of a gifted child
    2015:201

C. Chronic illness and handicapping conditions, including transplantation
   1. Identify psychosocial factors associated with chronic and handicapping conditions
    2012:33:99
    2016:233
   2. Understand the effects of a child’s chronic illness on the family and social relationships
    2012:33:99
    2016:233
   3. Provide appropriate anticipatory and ongoing guidance to the parents of a child who has a chronic or handicapping condition
    2012:33:99
    2016:33
   4. Recognize psychosocial and family issues associated with transplantation
    2012:257
    2012:33:99
   5. Understand the importance of a medical home for children with chronic or handicapping conditions
    2012:33:99
    2016:202

D. Family and societal violence (see also XXIV.C.1.e and XXXIV.E.4)
   1. Recognize common characteristics that may indicate intimate partner violence, and the effects of such violence on children
    2012:33:374
   2. Identify the important precipitants of intimate partner violence
    2015:211
   3. Understand the effects of societal violence on children
    2015:220

30 Child Abuse and Neglect
   A. General
   1. Understand the physician’s duty and ethical obligation to report suspected child abuse or neglect
    2016:37:146
    2017:275
   2. Provide appropriate guidance and support to a family during an investigation of child abuse or neglect
    2016:37:146
    2017:275
B. Physical abuse

1. Understand the epidemiology of and the psychosocial and environmental risk factors for physical abuse

2. Understand the common trigger events (e.g., incessant crying) for abuse

3. Recognize the historical, clinical, and radiologic findings associated with inflicted injuries
   4. Plan the appropriate evaluation and management of suspected child 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 (e.g., 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

B. Emergency life support

1. Plan appropriate ventilatory management in patients of various ages, especially with regard to selecting the appropriate tube size  
   2012:184  
   2017:277  
   2013:234

2. Plan the appropriate ventilatory support for patients with various conditions  
   2015:99

3. Understand the potential complications associated with endotracheal intubation  
   2015:99

4. Understand the correct method for cardiopulmonary resuscitation in patients of various ages  
   2016:24

5. Differentiate the findings associated with hypovolemic shock from those of septic shock, and manage appropriately  
   2017:225  
   2015:4

6. Plan the appropriate use of intraosseous therapy  
   2015:130

C. Common conditions requiring emergency life support

1. Plan the appropriate management of near-drowning  
   2016:64

2. Understand the prognostic factors associated with near-drowning  
   2016:64

3. Recognize the clinical findings associated with cerebral edema in an asphyxiated patient  
   2014:23

4. Recognize the clinical findings associated with a hemothorax or flail chest  
   2017:94

5. Recognize the clinical features of acute respiratory distress syndrome, including associated sequelae  
   2015:118  
   2014:64

6. Recognize complications of acute respiratory distress syndrome that can lead to death  
   2016:44

7. Identify the etiologies of acute respiratory distress syndrome  
   2016:44

8. Recognize the clinical findings associated with pericardial tamponade  
   2017:86

32. Emergency Care

A. Fever

1. Formulate a differential diagnosis of fever without localizing signs in patients of various ages  
   2015:36:378  
   2013:34:137

2. Plan the appropriate evaluation and management of fever without source in patients of various ages  
   2015:36:378  
   2015:138
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 vermillion 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 (focus on dog 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 (focus on burns)
   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

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 2015:158

6. Corticosteroids

   a. Recognize the adverse effects associated with long-term corticosteroid therapy, including inhaled corticosteroid therapy in patients with asthma, and manage appropriately 2013:34:203 2015:193 2013:160

7. Immunosuppressants

   a. Recognize the long-term risks associated with immunosuppressive drug therapy 2014:29

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 2015:36:286 20

9. Beta-blocking drugs

   a. Recognize the adverse effects associated with beta-blocking drugs 2014:165

10. Antihypertensive drugs

   a. Understand the mechanism of action of the different classes of antihypertensive drugs


   a. Recognize the risks associated with the use of aspirin

   b. Recognize the risks associated with the use of nonsteroidal anti-inflammatory drugs 2013:34:368 2017:122 2013:9

12. H2-blocking drugs

   a. Recognize the risks associated with the use of H2-blocking drugs 2015:253

13. Beta-agonists

   a. Understand the pharmacokinetics of short- and long-acting inhaled beta-adrenergic agonists and the risks associated with their excessive use 2014:89 2013:139

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 2016:271

15. Anticonvulsants

   a. Recognize side effects and toxicities associated with anticonvulsant drugs 2015:151
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 (e.g., 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

b. 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 XXXV.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
   - 2016:37:448
   - 2015:36:403
   - 2015:253
4. Understand and apply the definition of a preventable adverse event
   - 2016:37:407
   - 2015:36:403
   - 2017:110
5. Understand and apply the definition of a non-preventable adverse event
   - 2015:36:403
   - 2017:110

**B. Epidemiology of medical error and harm**
1. Understand the contribution of adverse events to the morbidity and mortality of pediatric patients
   - 2015:36:448
2. Understand the contribution of adverse events to the cost of medical care
   - 2015:36:448
3. Recognize the common causes of adverse events in pediatric patients
   - 2015:36:448
4. Identify situations presenting high risk for adverse events in the management of pediatric patients
   - 2015:36:448

**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
   - 2015:36:448
2. Identify barriers to reporting adverse events
   - 2015:36:448
3. Apply effective strategies to improve reporting of adverse events
   - 2015:36:448
4. Apply voluntary systems for reporting of adverse medical events
   - 2015:36:448
5. Recognize the use of National Patient Safety Goals to improve patient safety
   - 2015:36:448

**D. Disclosure of medical errors**
1. Use appropriate means to disclose medical errors to patients
   - 2015:36:448
2. Apply appropriate methods of support for patients and their families after an error producing medical harm occurs
   - 2015:36:448
3. Use appropriate methods of support for physicians and other health-care providers after an error producing medical harm occurs
   - 2015:36:448

**E. Methods to reduce medical adverse events**
1. Recognize the relative role of systems and individuals in producing medical error and harm
   - 2015:36:448
2. Understand and apply root cause analysis to determine the factors contributing to an error
   - 2015:36:448
   - 2015:231
3. Understand and apply evidence-based interventions to reduce medical adverse events
   - 2015:36:448
4. Use best-practice guidelines to reduce medical adverse events
   - 2015:36:448
5. Use effective methods of communication to reduce errors in the health-care setting
   - 2015:36:448
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
      a. 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

2016:37:407

e. Recognize that quality improvement requires looking at data or processes (ie, trends) over time

2016:37:407

f. Identify the components of the Langley Model for Improvement

2016:37:407 2015:222