

Questions de pédiatrie

Apprendre la pédiatrie d'une autre façon

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Section I. Office Primary Care

Chapter I.1. Pediatric Primary Care

- 1. True/False: When caring for pediatric patients, it is always more appropriate to use pediatric subspecialists than specialists who may be primarily trained to work with adults.**
- 2. True/False: There is a standard for after hours accessibility that all pediatricians adhere to.**
- 3. True/False: There is variability in the use of pediatric subspecialty care that results from factors other than availability of specialists.**
- 4. If a pediatric subspecialist is not available, the pediatrician has the following choices:**
 - a. Evaluate and manage the patient without referral.**
 - b. Use a specialist who does not have pediatric subspecialty training.**
 - c. Send the patient to a pediatric subspecialist regardless of cost and inconvenience.**
 - d. All of the above.**
- 5. Pediatricians may be concerned about giving after hours telephone advice to parents who call. This concern may be dealt with by:**
 - a. Refusing to talk with parents after hours.**
 - b. Referring all parents who call to take their child to the ER.**
 - c. Only giving advice to parents who are familiar and reliable.**
 - d. Ignoring concerns and giving advice to any parent who calls.**
 - e. All of the above may be considered appropriate.**

Chapter I.2. Growth Monitoring

- 1. What is the formula for calculating BMI?**
- 2. At what age does the uterine environment play a role in the growth of a child versus the influence on growth by the genetic makeup?**
- 3. What are two ways failure to thrive are recognized in a growth chart?**
- 4. What percentile of BMI is considered the cutoff point for being overweight?**
- 5. What is the approximate weight gain in grams per day for a healthy term infant from birth to 3 months of age?**

6. At what age does rebound occur in BMI? If a child rebounds early, what is this predictive of?
7. What is a weakness of using BMI to identify obesity?
8. How do the growth curves for congenital pathologic short stature, constitutional growth delay, and familial short stature look like?
9. What is the formula used to estimate a child's adult height (Tanner's height prediction formula)?

Chapter I.3. Developmental Screening of Infants, Toddlers and Preschoolers

1. Developmental and behavioral conditions occur in approximately what percentage of children?
 - a. 0.15%
 - b. 15%
 - c. 15%
 - d. 50%
 - e. 80%

2. What is the best clinical situation to try to identify children with developmental disorders from developmentally normal children?
 - a. Primary care clinic
 - b. Emergency room
 - c. Hospital ward
 - d. Pediatric intensive care unit
 - e. All of the above are "best places"

3. Which of these following methods of identifying children with developmental or behavioral concerns has the worst sensitivity?
 - a. "Hands on" developmental screening tool (such as the Denver II).
 - b. Parent answered developmental questionnaire.
 - c. Physician clinical impression about development, without a screening tool.
 - d. Flagging all children in the Neonatal Intensive Care Unit (NICU) that have risk factors for disability.
 - e. All have about equal sensitivity.

4. Which of the following have been proven problems regarding the standardized parent developmental screening tools?
 - a. Concerns about the accuracy of parent reporting.
 - b. Concerns about the bias of parent reporting.
 - c. The tools are time consuming for the clinician to use.
 - d. Understanding of concepts by parents.
 - e. All of the above are not problems according to research.

5. Common problems in using developmental screening tests include all of the following EXCEPT:
 - a. Not administering the screen as it was intended.
 - b. An assumption that the screening test done at one point in time will discover all children with every type of developmental problem.
 - c. Screening tests can be time consuming for the clinician.
 - d. Children are not amenable to screening between birth and three years of age.
 - e. Training is necessary for the proper use of these tools.

6. When is the best age (out of the following suggestions) for a physician to administer a developmental screening tool?
 - a. In utero
 - b. 2 years
 - c. 6 years
 - d. 10 years
 - e. 17 years

Chapter I.4. Immunizations

1. Which of the following vaccines would be contraindicated in a 4 year old boy receiving immunosuppressive therapy for autoimmune hepatitis?
 - a. Hepatitis A vaccine
 - b. Hepatitis B vaccine
 - c. Acellular pertussis vaccine
 - d. Inactivated polio vaccine
 - e. Varicella vaccine

2. Which vaccine should not be given to an 8 year old girl who has not been immunized previously?
 - a. Hepatitis B vaccine
 - b. Tetanus vaccine
 - c. Acellular pertussis vaccine
 - d. Inactivated polio vaccine
 - e. Measles vaccine

3. Which parenteral vaccine should not be characterized as an attenuated live virus vaccine?
 - a. Influenza vaccine
 - b. Measles vaccine
 - c. Mumps vaccine
 - d. Rubella vaccine
 - e. Varicella vaccine

4. Which passive or active immunization is specifically recommended for women in the second or third trimester of pregnancy?
 - a. Respiratory syncytial virus immune globulin
 - b. Cytomegalovirus immune globulin
 - c. Rubella vaccine
 - d. Influenza vaccine
 - e. Varicella vaccine

5. Increased risk for intussusception was observed as a rare complication following immunization with which vaccine?
 - a. Inactivated polio vaccine
 - b. Oral polio vaccine
 - c. Rotavirus vaccine
 - d. Hepatitis A vaccine
 - e. Hepatitis B vaccine

6. Indicate whether the follow are examples of active or passive immunity:
 - a. palivizumab
 - b. Diphtheria-Tetanus toxoid
 - c. Diphtheria immune globulin
 - d. MMR
 - e. Influenza vaccine
 - f. Botulism antitoxin

Chapter I.5. Hearing Screening

1. True/False: In infants younger than 6 months of age, early intervention for hearing impaired infants is believed to improve the development of speech, language, and cognition, which in turn, decreases the need for special education.
2. Name some in utero infections which are known to cause hearing abnormalities.
3. True/False: Current screening methods including automated auditory brainstem response (AABR), transient evoked otoacoustic emissions (TEOAE), and distortion product otoacoustic emissions (DPOAE), are able to distinguish whether a child has sensorineural or conductive hearing loss.
4. What is the best test for assessing hearing deficits in infants older than 6 months of age?
5. After failing an objective hearing screen, tympanometry testing is conducted and the results are abnormal. What does this suggest?
6. True/False: OAE and AABR methods are most accurate when the child is resting quietly or

sleeping. Chapter I.6. Anticipatory Guidance

1. True/False: For most problems caused by parental child rearing knowledge deficits, there is good evidence from high quality studies that physicians can change parental behavior through simple counseling in the primary care setting
2. True/False: The anticipatory guidance issues for two year olds are very different for boys as compared to girls.
3. In "disciplining" a two year old child, one should
 - a. Punish
 - b. Explain verbally at length the reason for the "disciplining".
 - c. Teach or instruct.
 - d. Always use positive reinforcement.
 - e. Do to the child what the child does to others so they learn why not to do certain things.
4. True/False: Children can develop fluorosis by using fluoride toothpaste and fluoride supplements.
5. What is the most common cause of serious injury and death for children and teens?
 - a. Falls
 - b. Water-related injuries (submersions, drownings)
 - c. Burns
 - d. Choking
 - e. Motor vehicle crashes
6. True/False: Parents do not need to supervise their two year olds who have already completed swimming lessons.
7. Which is INCORRECT about a toddler around feeding issues?
 - a. Parents should encourage conversation at mealtimes.
 - b. Children at this age may receive two to three nutritious snacks per day.
 - c. Juice should be limited to 4-6 ounces per day.
 - d. Children can be offered a variety of nutritious foods and be allowed to choose what to eat and how much.
 - e. It is abnormal for children at this age to eat a lot for one meal, and not much the next.

Chapter I.7. Common Behavioral Problems in Toddlers and Young Children

1. Which statement about solving child behavioral problems is FALSE:
 - a. Toddlers and preschoolers often lack the self-control necessary to express anger and other unpleasant emotions peacefully.
 - b. Children learn a lot through their parents' modeling of behaviors.
 - c. Most children want to please their parents.
 - d. Discipline is analogous to punishment.
 - e. It takes many years for most children to be able to achieve self-control.

2. What is a TRUE statement about time outs?
 - a. A good time out is when the parent praises the child outside of the child's playgroup.
 - b. A terrific place to have a time out is the child's room.
 - c. This method should be considered with certain types of behaviors including impulsive, aggressive, hostile and emotional behaviors.
 - d. Time-out works to get a child to begin doing a behavior.
 - e. A good rule of thumb is to use five minutes of time out per year of age (for example 25 minutes for a five year old).

3. Which of the following has as an example, not eating all of your dinner and then not having any dessert?
 - a. Time-out.
 - b. Triggering.
 - c. Scolding.
 - d. Natural consequences.
 - e. Logical consequences.

4. Which of the following is an error in parent behavior when disciplining a child?
 - a. Failing to reward good behavior.
 - b. Accidentally punishing good behavior.
 - c. Accidentally rewarding bad behavior.
 - d. Failing to punish bad behavior.
 - e. All are errors to avoid.

5. Name three important child-rearing rules.

6. How does a parent successfully use time out? Name all the important steps?

7. What is the role of the pediatrician in helping parents with common behavioral problems?

8. When should a pediatrician refer a patient for more specialized evaluation of behavioral problems?

Chapter I.8. Disabilities and Physician Interactions with Schools

1. The school plan that includes educational programming that can take into account medical problems such as autism or mental retardation in an 8 year old child is called a/an:
 - a. Individualized Family Support Plan (IFSP)
 - b. Individualized Education Plan (IEP)
 - c. Individualized Health Plan (IHP)
 - d. Individualized Disability Plan (IDP)
 - e. Free Appropriate Public Education (FAPE)

2. A 2 year old child with developmental delays in gross and fine motor activities can get a free program called a/an:
 - a. Individualized Family Support Plan (IFSP)
 - b. Individualized Education Plan (IEP)
 - c. Individualized Health Plan (IHP)
 - d. Individualized Disability Plan (IDP)
 - e. Free Appropriate Public Education (FAPE)

3. Medical professionals have roles in helping children with disabilities EXCEPT:
 - a. Diagnosing children with disabilities as early as possible.
 - b. Participating in school planning for the child's educational program.
 - c. Collaborating as the medical home with other related services such as rehabilitative therapists.
 - d. Producing the Individualized Education Plan (IEP) for children with disabilities.
 - e. Advocating for families of children with disabilities so that federally mandated timelines are met in planning an Individualized Education Plan (IEP).

4. A child with a tracheostomy:
 - a. Should not go to school because school personnel are not trained to care for the tracheostomy.
 - b. Should not go to school because school personnel cannot handle any emergencies as a result of the tracheostomy.
 - c. Should go to school as the parents can supervise the care of the child while in school.
 - d. Should go to school with accommodations from a Section 504 plan.
 - e. Should go to school if not requiring a nurse during school hours.

5. True/False: Schools have medical consultants paid through the Individuals with Disabilities Education Act (IDEA).

Chapter I.9. Autism and Language Disorders

1. What are the three main areas affected in children with Autistic Spectrum Disorder? (Select all that apply)
 - a. Splinter skills
 - b. Socialization
 - c. Language
 - d. Motor abilities
 - e. Repetitive and restricted interests and activities

2. What differentiates Language Disorders from Autistic Spectrum Disorders? (Select all that apply)
 - a. Social skills are secondarily affected.
 - b. Interests are not usually restricted.
 - c. There is usually no repetitive behavior.
 - d. Autism doesn't affect language.
 - e. Most children with language disorders are not usually mentally retarded, while the majority of children with autism are.

3. Which medical disciplines generally see children with autism? (Select all that apply)
- Pediatricians
 - Child Psychologists
 - Child Psychiatrists
 - Neurologists
 - Family Practitioners
4. True/False: Medications can directly treat autism.
5. Which evaluations would be important in diagnosing children thought to possibly have autism or language disorders? (Select all that apply)
- Audiology
 - Intelligence/Cognitive Testing
 - Allergy testing
 - Behavioral assessment
 - Physical examination

Chapter I.10. Attention Deficit/Hyperactivity Disorder

1. True/False: A child psychiatrist is necessary to diagnose and manage children with ADHD
2. The different subtypes of ADHD in DSM-IV-TR relate to criteria around (select all that apply):
- Inattention
 - Particular learning disability
 - Impulsivity
 - Hyperactivity
 - Gender
3. Evidence is accumulating that shows ADHD to be connected to (select one):
- Serotonin
 - Mast cells
 - Cortical sleep centers
 - Dopamine
 - Mental retardation
4. Which is the LEAST important concern in managing children with ADHD? (select one):
- Parents of children with ADHD may have ADHD themselves.
 - Target symptoms need to be addressed.
 - The teen years.
 - Side effects from Pemoline use.
 - Growth problems from psychostimulant use.
5. Which should be used routinely in the evaluation of school aged children with ADHD? (select one):
- Lead screening.
 - Electroencephalograms (EEGs).
 - ADHD specific behavioral rating scales.
 - Fragile X chromosomal testing.
 - Parent depression inventory.
6. Which is a common comorbid condition with ADHD?
- Learning Disability
 - Autism
 - Obsessive Compulsive Disorder
 - Diarrhea
 - Seizure disorder

Chapter I.11. Medical Insurance Basics

1. True/False: The decision to deny speech therapy in the case at the beginning of the chapter should be appealed, since it is medically necessary.
2. True/False: A cosmetic procedure is denied because it is not a covered service. The patient elects to have the procedure anyway. The doctor is allowed to charge for the service.
3. True/False: A charge is adjusted downward because it exceeds the maximum allowed for that service. The doctor is allowed to charge the patient for the difference.
4. True/False: A mechanism to appeal managed care decisions is contained in Hawaii State Law.
5. True/False: Due to their large reserves, insurers have minimal budgetary constraints in spending.

Chapter I.12. Pediatric Dental Basics

1. True/False: Normally, there are 20 deciduous teeth and 32 succedaneous teeth.
2. Name some developmental disorders of the dentition.
3. True/False: Amelogenesis imperfecta (AI) is a hereditary dental disease that can occur with osteogenesis imperfecta.
4. Which microorganism initiates the development of dental caries?
5. What are some preventive measures against dental caries?
6. At the 2 year old well child check, a child is noted to have severe decay of his anterior upper teeth. His mother claims that he stopped drinking from the bottle at age 12 months. His other teeth appear be normally formed. What is your comment to his mother?
7. A 10 year old boy falls off his bicycle and is struck in the mouth as he falls. His mother calls you for advice. He lost his front tooth and she has put it in a cup of milk. He did not lose consciousness. He is awake and alert and he does not appear to have other facial injuries. You advise her to call their family dentist to see if he can reimplant the tooth. In the meantime, what should his mother do with the avulsed tooth?

Section II. Nutrition

Chapter II.1. Nutrition Overview

1. True/False: Technological advances in formula have eliminated the immunological difference between human milk and commercial infant formula (cow's milk and soy protein).
2. True/False: Vegetarian diets are acceptable in a 1 year old child.
3. True/False: During the second year of life, there is a decrease in appetite and low weight gain as children follow normal growth curves.
4. Should fluoride be supplemented? If so, when and under what circumstances.

5. Which of the following is NOT true about breast feeding?
 - a. Recommended food for infants both term and preterm
 - b. 50% of energy from proteins
 - c. Contains immunological benefits (i.e. IgA, active lymphocytes)
 - d. Promotes growth of lactobacillus in GI
 - e. Decreases incidence of allergic disorders

6. Is a 9 kg child who is consuming 8 ounces of formula 5 times a day, likely to grow? Calculate cc/kg/day, calories/kg/day. 1 ounce = 30cc. Formula contains 20 calories per ounce.

7. Calculate the total number of calories for a serving of chicken noodle soup: Serving size=4 ounces, total fat per serving=2 grams, total carbohydrate per serving 8 grams, total protein per serving 3 grams, total sodium per serving 890 mg. Calculate the total calories from carbohydrate, protein and fat separately.

8. A premature infant in the neonatal ICU weighing 850 grams is receiving total parenteral nutrition (TPN). He is getting intralipids 10% (10 grams per 100cc) at 1 cc/hr and a separate infusion at 5.5 cc/hr of crystalloid which contains D12.5% (12.5 grams of dextrose per 100cc) and 2 grams of amino acids per 100cc. How many calories from carbohydrate, protein and fat is the patient receiving per day? How many calories per kg is the patient getting per day? Is this enough to gain weight?

Chapter II.2. Breastfeeding

1. What is the prevalence of breastfeeding in the United States?
2. What are the Healthy People 2010 goals for breastfeeding?
3. What is the American Academy of Pediatrics' position on breastfeeding?
4. What are the advantages and disadvantages of breastfeeding?
5. What anatomic and physiologic changes occur in the process of lactogenesis?
6. What is the difference between human milk and infant formula?
7. What are the barriers that prevent women from successfully breastfeeding?
8. What are some clinical indications that suggest inadequate or sub optimal breastfeeding?
9. What can health care providers do to improve breastfeeding practices for their patients?

Chapter II.3. Infant Formulas

1. The American Academy of Pediatrics recommends what form of nutrition for infants?
2. What is an appropriate quantity of formula for an infant?
3. When is iron supplementation required for an infant?
4. When comparing breast milk vs. cow's milk based formulas, which has a higher: a) kcal/cc? b) Concentration of casein protein? c) Carbohydrate content? d) Fat content?
5. What is the clinical significance of the whey:casein ratio in cow milk?
6. What is the main form of carbohydrate in breast milk? Cow's milk based formula? Soy based formula?

Chapter II.4. Fluids and Electrolytes

1. Which of the following sets of signs and symptoms are most consistent with 5% dehydration?
 - a. oliguria, tears with crying, less active than usual, normal skin turgor, moist oral mucosa.
 - b. oliguria, no tears with crying, less active than usual, sticky oral mucosa, normal or slightly diminished skin turgor.
 - c. oliguria, no tears with crying, sunken eyes, soft doughy skin (diminished skin turgor) without tenting.
 - d. oliguria, sunken eyes, tenting, tachycardia, hypotension.
2. Which of the following sets of signs and symptoms are most consistent with 10% dehydration?
 - a. oliguria, tears with crying, less active than usual, normal skin turgor, moist oral mucosa.
 - b. oliguria, no tears with crying, less active than usual, sticky oral mucosa, normal or slightly diminished skin turgor.
 - c. oliguria, no tears with crying, sunken eyes, soft doughy skin (diminished skin turgor) without tenting.
 - d. oliguria, sunken eyes, tenting, tachycardia, hypotension.
3. Calculate the maintenance IV fluid and rate for a 4 kg infant and for a 25 kg 6 year old.
4. Estimate the concentration of sodium in NS, 1/2NS, 1/3NS and 1/4NS.
5. The resident writes an order for "isotonic" IV fluid to be bolused immediately for a patient with shock and severe dehydration. You look at all the IV fluid bags and notice that NS has an osmolarity of 310, LR has an osmolarity of 275, and D5-1/4NS has an osmolarity of 320. You grab a bag of D5-1/4NS. The resident tells you to get normal saline instead. Why is D5-1/4NS inappropriate even though it is "isotonic"?
6. You calculate the 24 hour maintenance volume for a 3 kg child with severe neurologic dysfunction. His maintenance volume is 300 cc/day. He is currently being fed infant formula via a nasogastric tube at 3 ounces every 3 hours. You do a calculation and notice that he is getting 720 cc/day which is more than twice his maintenance volume. Why isn't this child in congestive heart failure from fluid overload? Explain what maintenance means.
7. You are working as a volunteer physician in a refugee camp of a poor country. The clinic staff has a total of 5 IV sets and there are over 100 children presenting to your clinic with diarrhea and dehydration today. You are seeing a 10 month old infant who is thin and appears to be about 10% dehydrated. Should you use one of the IV sets, or should you implement oral rehydration? A company has donated 1000 liters of Pedialyte which are available for use. What is your rehydration plan for this patient?

8. Calculate an IV rehydration to be administered over 24 hours for a 16 kg child who is 7% dehydration from vomiting and diarrhea which has taken place over 4 days. Start by filling in the table below:

	24 hours	First 8 hours	Second 8 hours	Third 8 hours
Maintenance volume	_____cc	_____cc	_____cc	_____cc
Maintenance Na	_____mEq	_____mEq	_____mEq	_____mEq
Maintenance K	_____mEq	_____mEq	_____mEq	_____mEq
Deficit volume	_____cc	_____cc	_____cc	_____cc
Deficit Na	_____mEq	_____mEq	_____mEq	_____mEq
Deficit K	_____mEq	_____mEq	_____mEq	_____mEq
Maintenance+Deficit volume	_____cc	_____cc	_____cc	_____cc
Maint+Def Na	_____mEq	_____mEq	_____mEq	_____mEq
Maint+Def K	_____mEq	_____mEq	_____mEq	_____mEq
IV rate		_____cc/hr	_____cc/hr	_____cc/hr
Na concentration		_____mEq/L	_____mEq/L	_____mEq/L
K concentration		_____mEq/L	_____mEq/L	_____mEq/L
Type of IV fluid				

Chapter II.5. Failure to Thrive

1. True/False: "Organic" and "non-organic" FTT are clearly defined conditions which enable pediatricians to focus treatment on "organic" cases.
2. True/False: Hospitalization is indicated when a child is at risk of serious medical morbidity or abuse/neglect.
3. True/False: In addition, all children with FTT should be hospitalized to distinguish between "organic" and "non-organic" etiologies.
4. True/False: Blood pressure is useful in evaluating young children with FTT.
5. True/False: If both parents are of short stature, then the child must have genetic short stature.
6. True/False: History, growth chart review, and physical are key in the evaluation of FTT.
7. True/False: In evaluating a child with FTT, it may be important to elicit any history of excessive thirst, increased urination, and family members with renal disease.

Chapter II.6. Malnutrition and Vitamin Deficiencies

1. Name the classic syndrome:
 - A. Toddler with edema, hepatomegaly, protruding abdomen, alternating bands of light and dark hair, dry skin, and lethargy.
 - B. Cachectic infant with subcutaneous fat wasting, loose dry skin, brittle hair.
2. True/False: Serum albumin is usually decreased in kwashiorkor, or severe malnutrition affecting the visceral protein compartment.
3. True/False: Hemorrhagic disease of the newborn can be prevented with vitamin K prophylaxis (1 mg IM) at birth.

4. Vitamin K is an important cofactor in the activation of which of the following coagulation factors:

- a. factor VIII
- b. factor X
- c. protein S
- d. von Willebrand's protein
- e. factor IX

5. True/False: Vitamin D, in response to serum hypocalcemia, regulates the mobilization of serum calcium through three mechanisms: increased intestinal absorption of Ca and Phos, mobilization of Ca from bone, and increased reabsorption of Ca from the distal renal tubules.

6. The three D's of pellagra are:

- a. diarrhea
- b. dementia
- c. deafness
- d. dermatitis
- e. dissociation

7. Cheilosis and glossitis are features of:

- a. vitamin A deficiency
- b. riboflavin (B2) deficiency
- c. vitamin C deficiency
- d. pyridoxine (B6) deficiency
- e. vitamin E deficiency

8. True/False: Both folate and B12 deficiency produce a megaloblastic anemia. In addition, patients with B12 deficiency may exhibit posterior column defects, such as: paresthesias, sensory deficits, loss deep tendon reflexes, as well as confusion and memory deficits.

9. The features of scurvy, or vitamin C deficiency, include:

- a. bone disease in growing children
- b. hemorrhagic disease, including mucosal involvement, subperiosteal bleeds, and bleeding into joint spaces
- c. cheilosis, glossitis
- d. impaired wound healing
- e. anemia

Section III. Neonatology

Chapter III.1. Routine Newborn Care

1. List three disease prevention measures routinely administered to all newborns.
2. List three early disease detection measures routinely administered to all newborns.
3. True/False: Abnormal vital signs within the first 30-60 minutes of life are always pathologic and indicate an unhealthy newborn.
4. True/False: Breast milk is associated with a decrease in the incidence of several common infections.
5. True/False: Circumcision should be routinely recommended based on medical advantages.
6. True/False: Normal stools from breast fed infants appear to be loose, yellow and seedy.

Chapter III.2. Neonatal Hyperbilirubinemia

1. Which of the following factors leads to neonatal hyperbilirubinemia?
 - a. Shortened neonatal red cell life span.
 - b. Impaired excretion of unconjugated bilirubin.
 - c. Limited conjugation of bilirubin in the liver.
 - d. Increased enterohepatic circulation.
 - e. All of the above.
2. True/False: Hemoglobin degradation results in the formation of biliverdin and carbon monoxide.
3. A total serum bilirubin >17 mg% in a term neonate is:
 - a. physiologic
 - b. pathologic
4. In G6PD deficiency, there is hyperbilirubinemia on the basis of:
 - a. hemolysis
 - b. decreased conjugation
 - c. both
 - d. neither
5. True/False: In Asians, a variant in UDPGT is associated with neonatal hyperbilirubinemia.
6. True/False: Systemic sulfonamide medications are avoided in the newborn because they displace bilirubin from albumin and increase free bilirubin.
7. True/False: Breast milk jaundice is more common than breast feeding jaundice.
8. True/False: Supplementation of breast feeding with water or dextrose lowers the serum bilirubin.
9. True/False: Discontinuation of phototherapy in a healthy, term neonate is usually associated with rebound hyperbilirubinemia.
10. Which of the following factors should be strongly considered in determining whether an exchange transfusion is indicated in a term neonate with an indirect bilirubin of 21 mg%.
 - a. Age of the neonate (time since birth).
 - b. Whether the cause is hemolytic or non-hemolytic.
 - c. The presence of other clinical factors such as intraventricular hemorrhage or meningitis.
 - d. All of the above.
 - e. None of the above.

Chapter III.3. Newborn Resuscitation

1. What antepartum and intrapartum risk factors are seen in the case presented?
2. Name three major physiologic changes that must occur in the newborn shortly after birth in order to transition to extrauterine life.
3. What three elements of the newborn physical examination are reassessed every 30 seconds during resuscitation until the infant is stable?
4. Ideally, how many caregivers should be available for the resuscitation presented in the case vignette?
5. What is the most important step in cardiopulmonary resuscitation of the compromised newborn infant?
6. What are the indications for beginning assisted ventilation with a bag and mask? At what rate?

7. How can you assess whether or not assisted ventilation is adequate?
8. When should chest compressions be administered? At what rate?
9. What injuries are associated with chest compressions?
10. What is the recommended dose of epinephrine for neonates? By which routes can it be given?

Chapter III.4. High Risk Pregnancy

1. True/False: Preterm labor is defined as the onset of labor prior to 34 weeks gestation.
2. An effective and safe measure for treating preterm labor and delaying preterm delivery is:
 - a. Antibiotics
 - b. Cerclage
 - c. Detection of uterine contractions through the use of home uterine activity monitoring
 - d. Magnesium sulfate therapy
3. The most widely accepted explanation for the onset of preterm labor is
 - a. Adrenal cortical suppression
 - b. Decidual activation and inflammatory cytokines
 - c. Increased levels of serum oxytocin
 - d. Premature, idiopathic activation of the normal labor process
4. True/False: Preeclampsia is a complication of pregnancy associated with hypertension and proteinuria.
5. Which of the following is not a predisposing factor for preeclampsia
 - a. Age
 - b. Cigarette smoking
 - c. Diabetes
 - d. Twins
6. True/False: Naloxone is the treatment of choice for drug withdrawal in methadone addicted newborns.

Chapter III.5. Common Problems of the Premature Infant

1. True/False: Morbidity associated with prematurity is a significant contributor to the infant mortality rate.
2. Strategies to reduce thermal stress at birth should include (mark all correct answers):
 - a. Keeping the delivery room warm and performing the stabilization under a preheated radiant warmer.
 - b. Drying the infant and then wrapping them up with the same blanket.
 - c. In a stable premature infant allowing skin to skin bonding with the mother.
3. Premature infants are at higher risk for hypoglycemia because (choose one):
 - a. They are born with adequate glycogen stores but have immature homeostatic mechanisms to mobilize glucose.
 - b. They are born with inadequate glycogen stores but have mature homeostatic mechanisms to mobilize glucose.
 - c. They are born with inadequate glycogen stores and have immature homeostatic mechanisms to mobilize glucose.

4. Respiratory Problems in premature infants may be secondary to (choose one):
- Surfactant deficiency
 - Increased chest wall compliance
 - Incomplete alveolar development
 - All of the above.
5. Feeding difficulties in premature infants are usually secondary to (choose one):
- Immature development of the intestinal enzyme systems.
 - Immature neuromuscular development of the intestinal tract.
6. In contrast to term infants, the following statements are true regarding physiologic jaundice in the premature infant in the neonatal period (choose one):
- Has its onset later, reaches its peak later and has slower resolution.
 - Has its onset earlier, peaks earlier and has earlier resolution.
 - Has its onset earlier, peaks later and has slower resolution.
7. The following statements regarding the persistence of ductus arteriosus are true in the premature infant (choose one):
- Is one of the most common cardiovascular dysfunction.
 - May be asymptomatic and spontaneously resolve in many.
 - Can be treated with medications.
 - All of the above.
8. Hypoxic-Ischemic brain injury can lead to (choose one):
- Germinal matrix hemorrhage/intraventricular hemorrhage
 - Periventricular leukomalacia
 - Both
 - None
9. Apnea events in premature infants are usually (choose one):
- Central because of immaturity of the brain respiratory center.
 - Obstructive secondary to collapse of the upper airway structures and closure of the glottis.
 - Neither a or b.
 - Both a and b.
10. In premature infants, routine immunizations should be (choose one):
- Administered at a post-conceptual age of two months.
 - Administered at a post-natal age of two months.
11. True/False: The weight of the premature infant is an absolute criterion for discharge from the hospital.

Chapter III.6. Respiratory Distress in the Newborn

- What is the most common cause of respiratory distress in newborns?
- When is the onset of symptoms for transient tachypnea of the newborn and how might this help distinguish TTN from other disorders?
- Aspiration syndromes can be caused by what types of materials?
- The sudden onset of significant respiratory distress and hypotension should suggest what respiratory disorder?
- Respiratory distress syndrome of the premature infant is caused by what deficiency? What is the radiographic manifestation of this deficiency?

6. What organisms commonly cause newborn pneumonia?
7. What disorder would you consider in a cyanotic infant without respiratory distress?

Chapter III.7. Cyanosis in Newborns

1. What are the 2 most common congenital heart diseases leading to cyanosis in the newborn period?
2. What therapies are used as a bridge to definitive therapy in cyanotic congenital heart disease?
 - a. Prostaglandin E1 infusion
 - b. Mechanical ventilation
 - c. Inotropic agents
 - d. All of the above
3. True/False: The definitive treatment for pulmonary hypertension of the newborn is surgical?
4. A 12 day old infant, exclusively fed cow's milk formula, presents to the ER appearing greyish/cyanotic. With 5L/minute oxygen by mask, his radial artery paO₂ is 236 torr. His most likely diagnosis is:
 - a. Tetralogy of Fallot
 - b. Persistent Pulmonary Hypertension
 - c. Methemoglobinemia
 - d. Transposition of the Great Vessels
5. A 2 day old term infant previously thought to be well and about to be discharged from the nursery becomes acutely pale, slightly cyanotic, with weak femoral and brachial pulses. The congenital heart disease most likely to present in this manner is:
 - a. Tetralogy of Fallot
 - b. Hypoplastic Left Heart Syndrome
 - c. Tricuspid Atresia
 - d. Total Anomalous Pulmonary Venous Return
6. Name the four components of Tetralogy of Fallot. Of these four, which one most determines the severity of the cyanosis?
7. True/False: Because cardiac murmurs are uncommon in the newborn period, echocardiography should be performed on all newborns when a murmur is detected.
8. True/False: Cyanosis of the hands and feet of a newborn may be normal if the mucous membranes are pink.

Chapter III.8. Neonatal Hypoglycemia

1. True/False: The level of hypoglycemia resulting in serious sequelae is well defined by scientific studies.
2. The advantage of using formula over 5% dextrose water (oral) to feed a moderately hypoglycemic term infant is:
 - a. More sustained rise in blood sugar.
 - b. A much faster rise in blood sugar than with dextrose 5% oral.
 - c. Infants less than 3 hours old cannot take formula yet.
 - d. One ounce of standard formula is equivalent gm per gm to a 2 ml/kg intravenous bolus of 5% dextrose.

3. When evaluating a hypoglycemic infant, the first thing to assess is:
 - a. Ballard exam.
 - b. Presence or absence of symptoms.
 - c. Airway, breathing, circulation.
 - d. Presence or absence of a suck reflex.
4. What is the formula to calculate the glucose infusion rate and at what level should you start?
5. Which of the following infants are at risk for hypoglycemia and should have a screening blood sugar performed in the term nursery? (more than one answer)
 - a. Infant of diabetic mother.
 - b. A jittery infant.
 - c. Small for gestational age infant status post difficult delivery.
 - d. 37 week infant born to a GBS positive mother.

Chapter III.9. Neonatal Seizures

1. True/False: Neonatal seizures are always the tonic-clonic type.
2. Which of the following conditions is LEAST likely to be associated with neonatal seizures?
 - a. E. coli meningitis
 - b. syndrome of inappropriate diuretic hormone
 - c. transient tachypnea of the newborn
 - d. umbilical cord prolapse
3. True/False: Oral phenytoin is often used as a first line anticonvulsant. Why or why not?
4. Facial twitches are an example of what kind of seizures?
 - a. tonic-clonic
 - b. myoclonic
 - c. clonic
 - d. subtle
5. True/False: Neonates have an immature inhibitory neurotransmitter system.
6. Which of the following would be LEAST helpful in the immediate diagnostic evaluation of an infant with a neonatal seizure?
 - a. brain ultrasound
 - b. serum glucose level
 - c. cerebral spinal fluid gram stain
 - d. serum calcium level

Chapter III.10. Neonatal Sepsis

This is a 3200 g term newborn female delivered via normal spontaneous vaginal delivery to a 25 year old G1P0 syphilis non-reactive, group B strep (GBS) negative, rubella immune, hepatitis B surface antigen negative mother with early preeclampsia and thrombocytopenia (platelet count 80,000). Rupture of membranes occurred 11 hours prior to delivery with clear fluid. Intrapartum medications included 3 doses of butorphanol (narcotic opioid analgesic). The last dose was administered within 1 hr of delivery. There was no maternal fever. Apgars were 8 and 9.

In the newborn nursery, vital signs are: HR 140, T 37, BP 47/39, RR 54. Oxygen saturation is 98-100% in room air. The infant appears slightly pale and mottled. She is centrally pink with persistent grunting, shallow respirations, and lethargy. Her fontanelle is soft and flat. Heart exam is normal. Lungs show good aeration. Abdomen is soft and without masses. Pulses are 1+ throughout with 3-4 sec capillary refill. Neuro exam shows decreased tone and a weak, intermittent cry.

Labs: CBC with WBC 3,200, 6% segs, 14% bands, 76% lymphocytes, Hgb 15, Hct 43, platelets 168,000. Blood glucose 52. The chest x-ray is rotated with fluid in the right fissure, diffuse streakiness on the left, and a normal cardiac silhouette. CBG (capillary blood gas) pH 7.31, pCO₂ 43, pO₂ 44, BE-4. CSF: 2430 RBCs, 20 WBCs, 1% PMN, 17% lymphs, 82% monos, glucose 39, protein 133, gram stain shows no organisms.

1. You are asked to consult on this case. What other tests would you obtain'?
2. What would your clinical assessment of this infant be?
3. What would your recommendations for further evaluation and/or treatment be?
4. If you were to treat this infant, how long would you treat?
5. What tests have the highest positive predictive accuracy in neonatal sepsis?
6. What tests have the highest negative predictive accuracy in neonatal sepsis?
7. Is the volume of blood obtained for the blood culture important to the culture being positive or negative?
8. Is there good evidence that treatment of maternal chorioamnionitis prior to delivery significantly reduces the risk of neonatal infection?
9. Does prophylaxis for group B strep infection alter the time course of early onset group B streptococcal sepsis if prophylaxis is ineffective?
10. What is the incidence of neonatal sepsis and what is the mortality from neonatal sepsis?

Chapter III.11. Congenital and Perinatal Infections

- 1. Name some physical findings that can suggest that an infant has a congenital infection?**
- 2. How does a congenital infection differ from an infection that is acquired perinatally?**
- 3. What are the most common causes for congenital infection?**
- 4. True/False: A term infant with a normal physical exam and no risk factors for infection may have congenital infection.**
- 5. Periventricular calcifications in the brain are seen with which congenital infection? Diffuse calcifications?**
- 6. True/False: An infant born to a woman with recurrent herpes infection is at higher risk for developing herpes neonatorum than one born to a woman with primary herpes infection at the time of delivery?**
- 7. Administration of what agents can prevent 95% of perinatally acquired hepatitis B infections?**
- 8. True/False: Breastfeeding should be encouraged in all mothers who are HIV positive, but do not have AIDS.**

Chapter III.12. Necrotizing Enterocolitis

- 1. True/False: The majority of patients with NEC have visible blood in the stool.**
- 2. Which of the following has not been suspected as a risk factor for NEC?**
 - a. aggressive enteral feeding**
 - b. maternal infections during delivery**
 - c. dopamine administration**
 - d. umbilical vein catheters**
 - e. all of the above have been considered as risk factors**
- 3. True/False: Prophylactic antibiotics are a commonly used measure to prevent NEC.**
- 4. How is the reduced intestinal motility of premature infants thought to contribute to the development of NEC?**
- 5. A premature infant is suspected to have NEC. Name three initial treatment measures that should be employed.**

Section IV. Genetics

Chapter IV.1. Prenatal Genetic Screening and Testing

- 1. Pertinent family history includes all of the following except:**
 - a. Ethnic background
 - b. Family members with mental retardation
 - c. Family members with birth defects
 - d. Step parents

- 2. True/False: The risk of aneuploidy such as trisomy 21 only exists in women over 35 years old.**

- 3. Increased paternal age is associated with which of the following:**
 - a. Aneuploidy
 - b. Increased perinatal mortality and morbidity in otherwise normal fetuses
 - c. New dominant genetic mutations
 - d. Pregnancy medical complications

- 4. Midtrimester maternal serum screening utilized levels of these analytes (biochemical markers) except:**
 - a. human chorionic gonadotropin
 - b. alpha-fetoprotein
 - c. fetal cortisol
 - d. unconjugated estriol

- 5. Potential confounding factors in the analysis of maternal serum screening include all of the following except:**
 - a. Fetal demise
 - b. Wrong dates
 - c. Multiple gestation
 - d. Male fetus

- 6. Unexplained elevated maternal serum alpha-fetoprotein levels portends higher risk for the following perinatal outcomes except:**
 - a. Oligohydramnios
 - b. Stillbirth
 - c. Gestational diabetes
 - d. Preterm delivery

- 7. In addition to the detection of aneuploid fetuses, maternal serum screening aids in all of the following except:**
 - a. Detection of multiple gestations
 - b. Determining paternity
 - c. Detection of wrong estimation of gestational age
 - d. Identifying patients at risk for adverse perinatal outcome

- 8. Future maternal screening may involve the following analytes except:**
 - a. Progesterone
 - b. Inhibin
 - c. Pregnancy Associated Placental Protein A
 - d. Urinary human chorionic gonadotropin core

- 9. True/False: The nuchal translucency measurement in the 10-13 week gestation as a predictor of aneuploidy is independent of maternal age:**

10. Prenatal testing procedures currently include all of the following except:
- Amniocentesis.
 - Fetal cells in the maternal circulation.
 - Chorionic Villus Sampling.
 - Percutaneous Umbilical Blood Sampling.

Chapter IV.2. Congenital Anomalies and Teratogenesis

- Achondroplasia is an example of a:
 - Malformation
 - Deformation
 - Disruption
 - Dysplasia
- Amniotic Band Syndrome is an example of a:
 - Malformation
 - Deformation
 - Disruption
 - Dysplasia
- An "association" is a:
 - result of a single genetic abnormality.
 - nonrandom collection of birth defects.
- Anencephaly is an example of a:
 - Malformation
 - Deformation
 - Disruption
 - Dysplasia
- A significant fetal insult in the first trimester of pregnancy most commonly results in a:
 - severe birth defect
 - minor birth defect
 - no birth defect
 - miscarriage
- The most common organ systems involved with diabetic embryopathy include:
 - the cardiovascular system
 - the central nervous system
 - the spinal system
 - all of the above
 - none of the above
- The safe level of alcohol consumption in pregnancy is:
 - less than 2 drinks per day
 - less than 6 drinks per day
 - there is no safe level

Chapter IV.3. Common Chromosomal Disorders

1. What chromosomal disorder(s) can present with bilateral cleft palate, cleft lip and a ventricular septal defect?
2. This syndrome presents with a prominent occiput, clenched fists and "rocker bottom feet". What are 2 complications that can cause death in these children?
3. Name 4 disorders associated with a trinucleotide repeat?
4. Name 8 complications of Down syndrome.
5. What is the etiology of infertility in women with Turner syndrome?
6. What causes gynecomastia in males with Klinefelter syndrome?
7. Which terminology below (one or more) for trisomy 21 is (are) incorrect?
 - a. Down syndrome
 - b. Downs syndrome
 - c. Down's syndrome
 - d. Mongolism
 - e. Trisomy 21

Chapter IV.4. Inborn Errors of Metabolism

1. True/False: Infants with an inborn metabolic defect are always symptomatic within the first two weeks of life.
2. Many of the metabolic defects can present clinically like which of the following:
 - a. sepsis.
 - b. formula intolerance or gastroesophageal reflux.
 - c. necrotizing enterocolitis.
 - d. neonatal hepatitis with liver failure.
 - e. all of the above.
3. Newborn screening is designed with which of the following principles in mind:
 - a. To identify all infants with the metabolic diseases that are included in the screening panel.
 - b. To generate more paperwork for the physician.
 - c. To screen for diseases that have no cure, but that can be alleviated through early intervention.
 - d. To ensure early screening of future offspring for the family of affected infants.
 - e. To screen for all possible metabolic diseases.
 - f. To disseminate information regarding genetic/metabolic disease to the public and the physicians.
4. True/False: None of the metabolic diseases have a cure.
5. An infant with hyperammonemia, metabolic acidosis, and hypoglycemia most likely has what class of defect:
 - a. fatty acid oxidation disorder.
 - b. galactosemia.
 - c. organic acidemia.
 - d. urea cycle defect.
 - e. lipid storage disease.

Chapter IV.5. Inherited Connective Tissue Disorders

- 1. How is osteogenesis imperfecta differentiated from child abuse?**
- 2. How are future fractures prevented in children with OI?**
- 3. Name 3 major criteria for Marfan syndrome**
- 4. What is the most common cause of early death in children with Marfan syndrome?**
- 5. What are 3 of the cardinal features of Ehlers-Danlos?**
- 6. How is homocystinuria differentiated from Marfan syndrome clinically?**

Chapter IV.6. Genetic Testing and Gene Therapy

- 1. True/False: Current newborn screening can diagnose a handful of inborn errors of metabolism like Galactosemia?**
- 2. What are the limitations of DNA based genetic testing?**
- 3. Why is it not currently ethical to test a 7 year old girl for the BRCA1 (breast cancer 1 gene) mutations even if early breast cancer runs in her family?**
- 4. Currently, what is the most widely used form of gene therapy?**
- 5. What is the function of a gene therapy vector?**
- 6. Describe the various methods of introducing nucleic acids into a cell to alter disease states.**

Chapter IV.7. Basic Genetic Principles

- 1. A genetic condition which is lethal in infancy is most likely to be:**
 - a. An X-linked structural protein.**
 - b. An autosomal recessive enzyme deficiency.**
 - c. An autosomal dominant enzyme deficiency.**
 - d. An autosomal dominant structural protein abnormality.**
- 2. An enzyme deficiency condition can only be inherited in one of two ways:**
 - a. Autosomal dominant.**
 - b. Autosomal recessive.**
 - c. X-linked dominant.**
 - d. X-linked recessive.**
 - e. Spontaneous new mutation.**
- 3. The cytologic mechanism(s) by which trisomy 21 (Down Syndrome) can occur include:**
 - a. Nondisjunction**
 - b. Robertsonian translocation**
 - c. Mosaicism**
 - d. Two of the above**
 - e. All of the above**

4. If there is a family history of genetic disorders, knowing the gender of an unborn child can be important because:

- a. Male children are more likely to have autosomal defects show up in their phenotypes.
- b. Female children are more likely to have autosomal defects show up in their phenotypes
- c. Male children are more likely to have X-linked traits show up in their phenotype
- d. a and c

5. An exchange of fragments of chromatids between non-homologous chromosomes may occur during the first meiotic division. This chromosomal structural abnormality is called:

- a. Deletion
- b. Inversion
- c. Nondisjunction
- d. Segregation
- e. Translocation

Section V. Allergy and Immunology

Chapter V.1. Common Allergies and Management

1. The most prevalent of allergic disease in school-age children is:

- a. Atopic dermatitis
- b. Food allergy
- c. Asthma
- d. Allergic rhinitis
- e. Drug allergy

2. A 15 year-old has had persistent year-round nasal itching and stuffiness. What is the most likely allergen responsible for the symptoms?

- a. Dust mite
- b. Weed
- c. Tree
- d. Grass
- e. Mold

3. Which one is the most effective method for controlling dust mite exposure?

- a. Encasing mattresses, pillows and blankets
- b. Spraying an acaricide agent in the house
- c. Using HEPA air filter and vacuum
- d. Removing furniture and carpet in the house
- e. Washing washable materials in hot water

4. The most effective measure for allergen avoidance in furred animal allergy is:

- a. Washing the animal twice a week.
- b. Using HEPA air filter and vacuum in the house.
- c. Limit areas of the animal in the house.
- d. Removing furniture and carpet in the house.
- e. Removing the animal from the house.

5. Which one is the appropriate medical treatment of an 8 year old girl who develops nasal allergy in spring season?

- a. Diphenhydramine
- b. Cetirizine
- c. Fexofenadine with pseudoephedrine
- d. Nasal decongestant spray
- e. Beclomethasone nasal spray

6. The most effective and appropriate for a child with chronic allergic rhinitis and nasal stuffiness is:
 - a. Intranasal antihistamine
 - b. Intranasal corticosteroid
 - c. Intranasal decongestant
 - d. Oral antihistamine
 - e. Oral antihistamine and decongestant

7. Which one is the most common adverse effect of intranasal steroids?
 - a. Nasal irritation
 - b. Septal perforation
 - c. Nasal bleeding
 - d. Short stature
 - e. Adrenal suppression

8. Which one of the diseases benefits from allergen immunotherapy?
 - a. Food allergy
 - b. Atopic dermatitis
 - c. Allergic rhinoconjunctivitis
 - d. Latex allergy
 - e. Chronic urticaria

9. Which one of the following eye drops has both antihistamine and mast cell stabilizer properties?
 - a. Naphazoline
 - b. Levocabastine
 - c. Cromolyn
 - d. Olopatadine
 - e. Rimexolone

10. A mother of children with multiple allergic diseases asks you for allergy prevention advice for her next child. What would you recommend?
 - a. Smoking free environment
 - b. Breast feeding at least 4 months
 - c. Diet control during pregnancy
 - d. Using HEPA air filter and vacuum
 - e. Both a and b

Chapter V.2. Anaphylaxis and Other Acute Allergic Reactions

1. True/False: Anaphylaxis is well defined with its own clinical criteria.
2. What is the primary treatment of severe anaphylaxis and what is the appropriate dose?
3. What are some of the adjunctive therapies for anaphylaxis?
4. Two weeks following a viral illness, a teenage boy breaks out in an evolving rash that is remarkable for target lesions. What is the primary treatment?
 - a. Epinephrine
 - b. Glucagon
 - c. Corticosteroids
 - d. Antihistamines
 - e. Symptomatic or supportive therapy depending on severity.

5. A girl is brought to her pediatrician by her mother because of recurrent bouts of non-pitting, non pruritic facial swelling that have occurred three times prior. Her father also has an history of recurrent facial swelling. What is the probably diagnosis?
- Environmental allergen
 - Hereditary angioedema
 - Child abuse
 - Anaphylaxis
 - Urticaria

Chapter V.3. Food Allergies

- Which one is likely to be a food allergic reaction in a teenager?
 - Recurrent dizziness after eating Chinese foods.
 - Recurrent tingling sensation in the mouth after eating a piece of apple.
 - Recurrent palpitations after drinking a cup of coffee.
 - Recurrent diarrhea after drinking a glass of milk.
 - Recurrent facial redness (flushing) after drinking a glass of wine.
- Which one of the following is an IgE mediated food allergy?
 - Oral allergy syndrome
 - Eosinophilic gastroenteropathies
 - Dietary protein enterocolitis
 - Celiac disease
 - Dermatitis herpetiformis
- Which one is the common natural course of cow's milk allergy in children?
 - spontaneously resolves by age 4.
 - spontaneously resolves by age 10.
 - persists without changing severity.
 - increases severity through their lives.
 - is an unpredictable pattern.
- Which one is the least common food allergy in children?
 - Egg
 - Peanut
 - Soy
 - Wheat
 - Shrimp
- Which food/fruit potentially causes an allergic reaction in a latex allergy individual?
 - Banana
 - Kiwi
 - Tomato
 - Potato
 - All of the above
- Which of the following are considered safe for patients with peanut allergy?
 - Chinese and Southeast Asian foods
 - Ice cream
 - Dry pet food
 - Chili
 - Pastry
 - None of the above

7. Which of the following are considered safe for patients with milk protein allergy?
- Lactose
 - Non-dairy creamer
 - Canned tuna
 - Soy infant formula
 - Hot dogs
 - Casein

Chapter V.4. Corticosteroids

1. Which of the following is not a corticosteroid:
- cortisol
 - aldosterone
 - adrenal androgens
 - norepinephrine
2. Glucocorticoids that are intermediate-potency include
- prednisone
 - prednisolone
 - triamcinolone
 - dexamethasone
 - a, b, and c
3. Immune system cells that are increased in the peripheral circulation after corticosteroid administration are
- neutrophils
 - eosinophils
 - lymphocytes
 - monocytes
4. Safely tapering steroids in patient taking oral steroids for more than 10 days involves
- stopping steroid administration all at once
 - changing a long-acting glucocorticoid to a short-acting glucocorticoid
 - reducing previous weekly levels 10% with no clinical follow-up needed
 - reducing previous weekly levels 25% with clinical follow-up
5. Glucocorticoids induce a Th2 shift by
- decreasing IL-12 production by antigen presenting cells, which allows an increase in IL-4 effects and thus more humoral immunity
 - increasing IL-12 production by antigen presenting cells, which allows for a decrease in IL-4 and thus more humoral immunity
 - glucocorticoids induce a Th1 shift
 - none of the above
6. Glucocorticoids do NOT reduce inflammation by
- inhibiting phospholipase and production of arachidonic acid
 - inhibiting cyclooxygenase and production of prostaglandins and thromboxanes from arachidonic acid
 - decreasing the levels of neutrophils in the peripheral blood
 - inhibiting leukotriene action and thus neutrophil function
 - decreasing production of nitric oxide by inhibiting nitric oxide synthase

7. A physician orders 40 mg of IV methylprednisolone for a 20 kg patient (2 mg/kg) with status asthmaticus. The hospital pharmacy notifies the physician that IV methylprednisolone is not currently available and is on back order. Utilizing corticosteroid potencies, which of the following are approximate glucocorticoid equivalents?

- a. Dexamethasone 4 mg (0.2 mg/kg)
- b. Hydrocortisone 200 mg (10 mg/kg)
- c. Prednisone 40 mg (2 mg/kg)
- d. Dexamethasone 400 mg (20 mg/kg)

8. Explain how corticosteroids could be beneficial in croup and status asthmaticus due to a viral pneumonia. In both instances, a viral infection is causing the problem. Since corticosteroids are potentially immunosuppressive agents, is there a net beneficial or detrimental effect?

Chapter V.5. Immune Deficiency

1. The least likely recurrent infection caused by primary immune deficiency is:

- a. Recurrent otitis media
- b. Recurrent bacterial skin infection
- c. Recurrent bacterial pneumonia
- d. Recurrent osteomyelitis
- e. Recurrent urinary tract infection

2. Which one is considered as a characteristic of transient hypogammaglobulinemia of infancy (THI)?

- a. Normal IgG
- b. Normal IgM
- c. Normal IgA
- d. Normal IgD

3. Which one is the most likely diagnosis of an 18 year old female who presents with a history of recurrent sinopulmonary infection, low IgG and IgA and ITP?

- a. X-linked agammaglobulinemia
- b. Severe combined immunodeficiency
- c. Common variable immunodeficiency
- d. Ataxia-telangiectasia
- e. Cystic fibrosis

4. A 7 month old infant with a history of failure to thrive, recurrent oral candidiasis, and Pneumocystis carinii pneumonia is being evaluated. Which of the following is the least useful diagnostic test?

- a. Immunoglobulin levels and functional antibody
- b. Enumeration of T cells and lymphocyte proliferation assay
- c. Anti-HIV antibody
- d. Delayed type hypersensitivity skin test
- e. Nitroblue tetrazolium test and phagocytic tests

5. A mother brings her son, a 6 year old boy with severe eczema, recurrent bacteria skin infections and history of staphylococcal pneumonia for evaluation of immunodeficiency. Initial tests reveal normal CBC and platelets, 50,000 IU of IgE, normal IgG, IgM and IgA levels. Which one is the most likely diagnosis?

- a. Atopic dermatitis
- b. Wiskott-Aldrich Syndrome
- c. Hyper-IgE syndrome
- d. Chronic granulomatous disease
- e. Leukocyte adhesion defect

6. Which one is a true association of a primary immune deficiency and an abnormal hematologic finding?
 - a. Leukocyte adhesion defect and thrombocytopenia.
 - b. Hyper-IgM syndrome and neutropenia.
 - c. Wiskott-Aldrich syndrome and gigantic platelets.
 - d. Chronic granulomatous disease and large cytoplasmic granules in PMNs.
 - e. Hyper-IgE syndrome and mastocytosis.

7. Which one is the characteristic infection in patients with terminal complement (C5-C9) deficiency?
 - a. MRSA
 - b. *Pneumocystis carinii*
 - c. *Meningococcus*
 - d. Catalase-positive organisms
 - e. Herpes viruses

8. A contraindicated vaccine in an isolated IgA deficiency patient is:
 - a. OPV
 - b. Varicella
 - c. Influenza
 - d. MMR
 - e. None of the above

9. IVIG replacement is indicated in all of the following, except:
 - a. X-linked agammaglobulinemia (XLA)
 - b. X-linked hyper-IgM syndrome
 - c. Chronic granulomatous disease (CGD)
 - d. Wiskott-Aldrich syndrome (WAS)
 - e. Common variable immunodeficiency

10. PCP prophylaxis with trimethoprim-sulfamethoxazole is recommended in:
 - a. X-linked agammaglobulinemia (XLA)
 - b. X-linked hyper-IgM syndrome
 - c. Chronic granulomatous disease (CGD)
 - d. Wiskott-Aldrich syndrome (WAS)
 - e. Hyper-IgE syndrome

Chapter V.6. Hematopoietic Stem Cell Transplantation and Graft Versus Host Disease

1. Which of the following is a requirement for a graft-versus-host disease reaction to occur.
 - a. The graft must contain immunocompetent cells.
 - b. The host's T-lymphocytes must be able to mount an immune response against the graft.
 - c. The host must be immunocompromised
 - d. a and b
 - e. a and c

2. True/False: The best predictors for developing GVHD are the age and sex of both the donor and recipient.

3. During the conditioning period prior to stem cell transplantation, which of the following purposes does chemotherapy and/or radiation try to accomplish?
 - a. Prevent rejection of new stem cells
 - b. Create space for new cells
 - c. Eliminate malignancy
 - d. All of the above
 - e. None of the above

4. **True/False: A limitation of cord blood as a source for stem cells is the small number of cells collected.**
5. **During which period does graft-versus-host disease typically occur?**
 - a. **Conditioning**
 - b. **Engraftment**
 - c. **Postengraftment**
 - d. **All of the above**
 - e. **None of the above**

Section VI. Infectious Disease

Chapter VI.1. Virology

1. **Name the 3 naked and 3 enveloped DNA virus families.**
2. **In terms of the potential duration of infection, how do naked viruses differ from enveloped viruses?**
3. **Name 6 viruses within the picornavirus family.**
4. **How are members of the herpesvirus family similar?**
5. **Name 4 viruses which cause cold symptoms?**
6. **Name the +RNA viral families.**
7. **Name two naked (non-enveloped) viruses which cause chronic infection.**
8. **Name the -RNA viral families.**
9. **Naked viruses are mostly of what morphologic shape on light microscopy?**
10. **Name 4 virus families which cause central nervous system infections.**

Chapter VI.2. Basic Bacteriology

1. **A lab slip returns which says "coag negative staph". What does this mean and what is the likelihood that this organism is sensitive to methicillin and cephalosporins?**
2. **At laparotomy, a patient is found to have a ruptured appendix and peritonitis. A swab from the peritoneal fluid is expected to grow what types of organisms? Is there any special swab or sample that must be sent to properly culture this fluid?**
3. **Name two characteristics of anaerobic infections?**
4. **Name 5 disease conditions which result largely from toxin production?**
5. **Group A streptococcal pharyngitis is usually a self limited infection even without antibiotic treatment. What is the reason for treating "strep throat"?**
6. **A lab tech identifies beta hemolytic colonies on a sheep blood agar plate. What is the next step to identify the organism?**

7. Two days after a blood culture is drawn, the lab reports gram positive cocci. This patient is a 10 month old with fever and no other identifiable clinical infection. The child is now afebrile and looks good. What organism possibilities could be growing in this blood culture?
8. A lumbar puncture is done on a very ill 8 month old infant. The fluid is cloudy and the gram stain shows many WBCs and gram positive cocci. What organism is likely causing the meningitis? What organism would be likely if the gram stain showed gram negative cocci instead?
9. A new resident on the pediatric service orders a gram stain on a stool sample. What is the result likely to be?
10. If staph epi grows from a blood culture, how can one determine whether this is a contaminant or a staph epi bacteremia?

Chapter VI.3. Fever

1. True/False: Defining an elevated temperature is difficult and variable because the "normal" core temperature is not a fixed value, and the methods of measuring temperature have varying degrees of accuracy.
2. Which of the following is true?
 - a. Treating fever with antipyretics is clearly harmful and should be always discouraged.
 - b. Treating fever with antipyretics is clearly beneficial, without adverse effects and should always be recommended.
 - c. Treating fever with antipyretics is optional.
 - d. None of the above.
3. True/False: Temperatures above 40 degrees C (104 F) result in febrile seizures in most patients.
4. True/False: Ibuprofen has a superior antipyretic effect compared to acetaminophen.
5. Febrile children at risk for occult urinary tract infection include those with a temperature above 39 degrees C. What is the commonly used age ceiling for boys and for girls?
6. True/False: Teething is known to cause fever.
7. True/False: The diagnosis of acute otitis media is a reliable explanation for a high fever, thus eliminating the need to for other diagnostic considerations in a patient with an otherwise benign examination.
8. True/False: High fever may cause brain damage.

Chapter VI.4. Inhibitory and Bactericidal Principles (MIC & MBC)

1. How does a bacteriostatic antibiotic behave in a bactericidal fashion?
2. How does a bactericidal antibiotic behave in a bacteriostatic fashion?
3. Do all infections require MIC/MBC or Schlichter tests? Why or why not?
4. When should a Schlichter test be performed?
5. When is it NOT possible to perform MIC/MBC determination testing?
6. If the infection is in bone (osteomyelitis), in joint fluid (septic arthritis), in urine (UTI), or in any body space, how can we be sure that adequate antibiotic levels are obtained if we are only able to measure MIC/MBC in the blood?

Chapter VI.5. Antibiotics

1. How many generations of cephalosporins are there?
2. Can the generation of the cephalosporin (in itself) be the sole selection criteria for a particular clinical situation?
3. List some organisms which cause the following entities: osteomyelitis, bacterial meningitis.
4. What empiric antibiotic(s) could be used to cover the organisms in the above question?
5. Select an empiric antibiotic for a 10 year old female who has a small pneumonia on chest x-ray. She is afebrile and has a frequent non-productive cough.
6. Select an empiric antibiotic for an 18 month old female with fever and pyuria on UA (i.e., suspected UTI)?
7. You decide to prescribe an erythromycin to a patient. You could prescribe erythromycin ethylsuccinate (EES) which is \$10 for 40 tabs (1 tab q.i.d. for 10 days), or you could prescribe azithromycin (Zithromax) which is \$70 for 6 tabs (two tabs today, then one tab daily for 4 more days). What considerations should be made in making such a decision?

Chapter VI.6. Otitis Media and Otitis Externa

1. When is the peak age of otitis media?
2. What are some risk factors for otitis media?
3. What is the BEST tool for diagnosing otitis media (not gold standard)?
4. What is the difference between acute otitis media and otitis media with effusion?
5. What are the three most common organisms that cause otitis media?
6. What antibiotic is the drug of choice against otitis media?
7. What are the three second-line antibiotics recommended by the CDC if amoxicillin fails?
8. What are some reasons to treat chronic otitis media with effusion with either antibiotics or tympanostomy tubes?
9. What are some complications of otitis media?
10. What is the most common organism cultured in otitis externa?
11. What are four factors that can predispose a patient to develop otitis externa?
12. What can be instilled in the ear to prevent otitis externa in an otitis externa prone child?

Chapter VI.7. Sinusitis

1. What is the dose and drug of choice for uncomplicated sinusitis?
2. What percentage of viral URI's will progress to acute bacterial sinusitis?
3. Name some risk factors in the development of sinusitis.
4. What are some radiographic findings of sinusitis?
5. What is the most common complication of sinusitis?

Chapter VI.8. Mastoiditis

1. What are the three most common organisms in acute otitis media?
2. What are the three most common organisms in acute mastoiditis?
3. Name a few intracranial complications of acute mastoiditis.
4. Name a few extracranial complications of acute mastoiditis.
5. Classically what is the difference in ear position in acute mastoiditis between the older child and young infant?
6. True/False: A CT scan image demonstrating clouding of the mastoid air cells is diagnostic of mastoiditis (acute or chronic)?
7. True/False: Plain film radiographs of the mastoid air cells often show mastoid clouding in acute otitis media without true mastoiditis.

Chapter VI.9. Oral and Upper Respiratory Infections

1. A 12 year old male with 4 days of sore throat comes into the office. He has been afebrile, has rhinorrhea, cough and one day of diarrhea associated with his sore throat. The throat is mildly erythematous with otherwise normal appearing tonsils. The best course of action is (this may be a controversial question depending on your practice setting):
 - a. Swab his throat and give a 10 day course of antibiotics, you will call him if the culture is negative for group A strep so that he can stop antibiotic treatment.
 - b. Swab his throat, withhold antibiotics unless his culture is positive.
 - c. Advise him on symptomatic treatment.
 - d. Give him antibiotics without testing for group A strep.
2. A 14 year old boy who you know is homeless and possibly engaging in prostitution comes into clinic complaining of sore throat, rash and pronounced fatigue. One exam, he has an exudative pharyngitis. Tests to consider include (choose all that apply):
 - a. Throat swab for group A strep
 - b. HIV test for antibody
 - c. Throat swab for Neisseria gonorrhoeae
 - d. Monospot for EBV infection

3. A 3 year old is very fussy, febrile and has profuse rhinorrhea. On exam, shallow ulcers are noted on the soft palate and vesicles are noted on one palm and both soles of the feet. The etiology of this infection is likely:

- a. Group A streptococci
- b. Arcanobacterium haemolyticum
- c. Coronavirus
- d. Coxsackievirus

4. A 6 year old child recently adopted from somewhere in Russia complains of sore throat and is noted by the parents to have a lot of "grayish junk" in his mouth and nose. Exam shows an adherent grayish-white membrane over both tonsils and the soft palate that, when removed, leaves an edematous, bleeding area of tissue. After calling your state health department, you initiate therapy with:

- a. Intravenous erythromycin or penicillin G.
- b. The above antibiotics plus antitoxin.
- c. Antitoxin alone.
- d. IVIG.

5. In children, nonsuppurative sequelae of group A strep infection of the pharynx include (circle all that apply):

- a. Post streptococcal glomerulonephritis.
- b. Acute rheumatic fever.
- c. Periodic fever syndrome.
- d. PANDAS (maybe).

Chapter VI.10. Pertussis

1. In the case, the patient's presentation and clinical course were consistent with pertussis, yet the pertussis culture was negative. Why?

- a. A false negative can occur in those who have received amoxicillin.
- b. A false negative can occur in those who have received albuterol.
- c. A false negative can occur in those who have a history of asthma.
- d. Direct fluorescent antibody (DFA) testing of nasopharyngeal secretions is the gold standard and is a more sensitive and specific method of diagnosis than culture.
- e. Cultures usually become positive only during the latter convalescent phase.

2. What etiology of sudden onset of coughing in an active infant can be effectively ruled out with a CXR?

- a. Mycoplasma
- b. Parainfluenza
- c. Enterovirus
- d. Respiratory syncytial virus
- e. Foreign body aspiration
- f. None of the above

3. Match the clinical manifestation to the disease process

- | | |
|---|---------------|
| a. Fever, sore throat, and conjunctivitis | 1. Mycoplasma |
| b. Fever, headache, and rales | 2. Adenovirus |
| c. Purulent conjunctivitis and tachypnea | 3. Chlamydia |
| d. Choking, gasping, eyes watery and bulging. | 4. Pertussis |

4. An experienced ward nurse asks you to correct an admission order for pertussis. Which component is incorrect ?

- a. "Continuous cardiorespiratory monitoring".
- b. "Document episodes of cyanosis or post-tussive exhaustion".
- c. "Daily weights".
- d. "Deep suctioning q 3h".
- e. "Instruct parent regarding maximal size of feedings.

5. Case management dilemma scenario: You are the admitting intern on the wards. It is 3 PM on a Friday afternoon. A patient is transferred from a neighbor island with a diagnosis of pertussis, complete with positive direct fluorescent antibody (DFA). The summary of PE findings by the community PMD includes petechiae on the upper body, epistaxis, and umbilical hernia. Upon admission to the ward you repeat the physical exam and also note retinal hemorrhages, which are confirmed by an ophthalmologist who just happens to be around. The parents have returned to the neighbor island for the weekend to fulfill important obligations and have already made arrangements to return on Monday. Given the presence of retinal hemorrhages, do you make a referral to Child Protective Services?

Chapter VI!!! Pulmonary Infections

1. Which of the following is the most common cause of pneumonia outside of the neonatal period?
 - a. *S. pneumoniae*
 - b. *Mycoplasma*
 - c. Viruses
 - d. *Chlamydia*
2. *S. pneumoniae* resistance to penicillins is due to:
 - a. Production of beta-lactamase
 - b. Alteration of penicillin binding proteins
 - c. Increased efflux pumps
 - d. Low tissue bioavailability
3. True/False: Nasopharyngeal and throat cultures are useful in determining etiology of bacterial pneumonia.
4. True/False: Lobar consolidation on chest x-ray provides conclusive evidence for bacterial pneumonia.
5. Which factor does not appear to affect the etiology of pneumonia?
 - a. Age
 - b. Vaccination status
 - c. Current antibiotic use
 - d. Birth rank
6. The most common cause of bronchiolitis is:
 - a. Respiratory syncytial virus
 - b. Human Metapneumovirus
 - c. Parainfluenza
 - d. Adenovirus
7. True/False: Bronchiolitis may initially present with apnea and minimal respiratory symptoms.
8. Treatment of bronchiolitis should include all of the following except:
 - a. Supplemental oxygen for infants with hypoxia.
 - b. Intravenous fluids and close monitoring of nutritional status.
 - c. Good handwashing.
 - d. Antibiotics.
9. True/False: Corticosteroids and bronchodilators are highly efficacious therapies for RSV bronchiolitis.

Chapter VI.12. Croup and Epiglottitis

1. Which of the following viruses are most commonly associated with viral croup?
 - a. Adenovirus.
 - b. Human papilloma virus
 - c. Varicella virus
 - d. Parainfluenza viruses
 - e. RSV

2. True/False: An acutely ill child presents to the emergency department with the signs and symptoms of acute epiglottitis. The diagnosis should be confirmed with direct visualization of the epiglottis?

3. Which of the following is/are true?
 - a. There is good evidence from randomized controlled trials that mist therapy is effective for the treatment of croup.
 - b. Antibiotics are indicated in the treatment of croup.
 - c. Nebulized albuterol is effective in the treatment of croup.
 - d. Dexamethasone has been shown to be effective in the treatment of croup.

4. Which of the following is/are true?
 - a. Croup affects more girls than boys.
 - b. Croup shows no seasonal prevalence.
 - c. Most cases occur in teenagers.
 - d. It is a common respiratory infection in children.

5. True/False: Once a child with croup has been given corticosteroid treatment and racemic epinephrine, they may safely be discharged home after 20-30 minutes of monitoring.

Chapter VI.13. Cellulitis

1. A three-phase bone scan is being used to determine if osteomyelitis is coexisting in a cellulitis patient. Which finding would be consistent with the presence of osteomyelitis ?
 - a. Focal increased uptake in the initial phase, with subsequent decline in the bone phase.
 - b. Localized uptake in all three phases.

2. You are managing a serious pediatric burn victim who has developed cellulitis after repeated procedures for debridement of necrotic tissue. The patient has been on IV antibiotics and urinary catheterization since admission one month ago. Recent labs show hypogammaglobulinemia. The most likely pathogen is
 - a. Pseudomonas aeruginosa
 - b. Pasteurella multocida
 - c. E. coli
 - d. Herpesvirus
 - e. Cryptosporidium

3. You are investigating a case of cellulitis secondary to a bite wound. The study shows seven different bacterial species isolates. The bite was most likely from:
 - a. a human
 - b. a cat
 - c. a dog
 - d. rat
 - e. a pig

4. Which antibiotic class is NOT considered appropriate for outpatient treatment against cellulitis?
- Clindamycin
 - Penicillin
 - Cephalosporin
 - Aminoglycoside
5. You have obtained a CT scan on a toxic-appearing patient, and the radiologist calls you to report a finding of an extensive deep cellulitis. A re-examination of the area shows only slight erythema superficial to the area of extensive deep cellulitis as seen on CT. A CBC of the patient is likely to show:
- neutropenia
 - thrombocytopenia
 - absolute lymphocytosis
 - monocytosis
 - increase red cell distribution width

Chapter VI.14. Meningitis

1. A three year old male presents with a bad headache, nausea, photophobia and fever (temp 38 degrees). His immunizations are up to date. He is not toxic in appearance. He is alert and cooperative. He has mild photophobia and mild nuchal discomfort without rigidity. He can speak and ambulate normally. The remainder of his exam is unremarkable. If this patient has meningitis, does he/she have bacterial or viral meningitis? What factors suggest one or the other?
2. An LP is done on the patient in question #1. The results show the following: 3 RBCs, 200 WBCs, 70% segs, 10% lymphs, 20 % monos, total protein 45, glucose 50. Gram stain of the CSF shows many WBCs and no organisms seen. Is this CSF analysis consistent with bacterial or viral meningitis? Which factors suggest one or the other?
3. What are the three most common bacteria that cause meningitis and what antibiotic covers them with close to 100% certainty?
4. Match the CSF results with the diagnosis (normal CSF, viral meningitis, bacterial meningitis). Validate your answer. Assume that the patient is 6 months old.

CSF	CSF 1	CSF 2	CSF 3	CSF 4
White cells	1243	5	190	250
%Neutrophils	94%	1%	60%	86%
CSF Glucose	23	65	50	47
Blood Glucose	78	85	87	90
Protein	62	21	48	49

Chapter VI.15. Encephalitis

1. Encephalitis is usually the result of which of the following:
- viral
 - bacterial
 - protozoa
 - autoimmune
 - fungal
 - all of the above
2. What are the endemic forms of encephalitis in the United States?

3. Which viral infection involving the CNS is likely to present with focal neurological findings?
- HSV
 - Coxsackievirus
 - Enterovirus
 - Rabies virus
 - St. Louis virus
4. Match the following encephalitis (first column) with the appropriate clinical characteristic (second column):
- | | |
|------------------------------|--------------------------------------|
| Japanese encephalitis | SIADH |
| Eastern equine encephalitis | Decorticate or decerebrate posturing |
| Post-infectious encephalitis | Aedes triseriatus |
| St. Louis encephalitis | Multiple levels of CNS involved |
| La Cross encephalitis | Highest mortality |
5. Polymerase chain reaction (PCR) is the diagnostic method of choice for confirming the cause of encephalitis for all of the following except:
- Cytomegalovirus
 - Enteroviruses
 - HHV-6 and HHV-7
 - HSV 1 and 2
 - Rabies virus
6. True/False: Antiviral therapy has decreased the morbidity and mortality for HSV encephalitis.

Chapter VI.16. Sepsis

1. Which one of the following is not a parameter in the definition of SIRS?
- Hypotension
 - Tachycardia
 - Tachypnea
 - Leukocytosis
 - Hypothermia
2. Which is an early finding in septic shock?
- Decreased urine output
 - Increased cardiac output
 - Decreased blood pressure
 - Diffuse lung infiltrates
3. A number of different principles apply to the immediate management of a child in septic shock. In general, management should be prioritized in order of urgency. Which of the following is not an immediate priority in the resuscitation phase of a child in septic shock (2)?
- Ensure adequate airway support
 - Correct anemia
 - Administer volume resuscitation
 - Cardiovascular support
 - Empiric antibiotic treatment
4. Which microorganism is a common etiology in endotoxic shock?
- Staphylococcus aureus
 - Streptococcus pyogenes
 - Streptococcus pneumoniae
 - Escherichia coli

5. Which of the following skin examination findings is generally not associated with sepsis?
- Pyogenic granuloma
 - Ecthyma gangrenosum
 - Purpura fulminans
 - Petechiae

Chapter VI.17. Kawasaki Disease

- What are the diagnostic criteria for KD?
- What change in the treatment of KD has been primarily responsible for decreasing the incidence of coronary artery aneurysms in KD?
- Which children are at higher risk for coronary artery aneurysms?
- Name some common allergic reactions that may resemble KD?
- Name some common infections that may resemble KD?

Chapter VI.18. Staphylococcal and Streptococcal Toxic Shock Syndromes

- True/False: The prevalence of menstrual TSS has decreased markedly with the removal from the market of superabsorbent polyacrylate fiber tampons.
- True/False: Vomiting, diarrhea, and abdominal pain are nearly ALWAYS seen in staphylococcal TSS but are rare in streptococcal TSS.
- True/False: Oral mucosa hyperemia and hypertrophy of the tongue papillae are often seen in staphylococcal TSS but are seen in few patients with streptococcal TSS.
- True/False: Blood cultures are usually positive in streptococcal TSS, but are usually negative in staphylococcal TSS.
- True/False: Mortality for both staphylococcal and streptococcal TSS is about 50%.
- True/False: In both staphylococcal and streptococcal TSS, desquamation of the hands and feet begins at about day 5-7, and is complete by day 10-12.
- True/False: Multiorgan failure is usually present at the time of admission with streptococcal TSS, but appears later in the course with staphylococcal TSS.
- True/False: Even though GABHS are sensitive to penicillin, the efficacy of penicillin may be reduced during overwhelming streptococcal sepsis due to the Eagle effect.
- True/False: The prodrome of streptococcal TSS is very vague and may be associated with some seemingly unrelated minor trauma.
- True/False: The source of staphylococcal TSS may be a superficial skin or mucocutaneous lesion which appears insignificant.

Chapter VI.19. Tuberculosis

1. True/False: Tuberculosis is a disease of the past and no longer a major health care issue.
2. True/False: Testing with PPD is a useful screening test for patients suspected of having tuberculosis.
3. True/False: A history of BCG vaccination makes PPD testing contraindicated and the results unreliable.
4. True/False: Children with a positive PPD skin test and a positive chest film should be treated with INH alone for 9 months.
5. True/False: The risk of multiple-drug resistant TB is much higher in patients that did not complete initial TB therapy.
6. True/False: Immigrants are at greater risk of having TB than native-born Americans.
7. True/False: Patients with HIV/AIDS have a higher rate of acquiring pulmonary TB than the general population.
8. True/False: Health care workers are at a greater risk of acquiring TB than the general population.
9. True/False: Ethambutol cannot be used in pediatric patients since vision testing is often impossible.
10. True/False: Hawaii has a lower rate of TB than the rest of the US.

Chapter VI.20. Human Immunodeficiency Virus (HIV) Infections

1. Which one of the following is not a finding in HIV wasting syndrome?
 - a. <5th percentile on weight-for-height chart on 2 consecutive measurements.
 - b. Chronic diarrhea.
 - c. Temperature of 38.5 °C, intermittently during the last 2 months.
 - d. Persistent weight loss.
 - e. Thrombocytopenia.
2. Which one of the following is used as a screening test in HIV infection diagnosis?
 - a. Enzyme immunoassay
 - b. Polymerase chain reaction
 - c. Western-blot
 - d. Immune fluorescence assay
 - e. Viral culture
3. Which of the following vaccines is not routinely recommended in HIV infected asymptomatic children?
 - a. IPV
 - b. MMR
 - c. Hib
 - d. Pneumococcal
 - e. Varicella
4. Which of the following is a definite indication to start antiretroviral treatment in HIV infected children?
 - a. CD4 cell counts >1500 in a 4 year old asymptomatic child.
 - b. Pneumocystis carinii pneumonia.
 - c. Recurrent otitis media but no other symptoms.
 - d. Bilateral anterior cervical lymphadenopathy.

5. Which one of the following is/are not shown to be a transmission route for HIV infection?
 - a. Vertical transmission
 - b. Breast feeding
 - c. Vectors
 - d. Blood transfusion
 - e. Heterosexual sex

6. Which of the following enzymes have critical importance in the establishment of HIV infection?
 - a. Neuraminidase
 - b. DNA polymerase
 - c. Protein kinase
 - d. RNA polymerase
 - e. Reverse transcriptase

Chapter VI.21. Sexually Transmitted Infections

1. What is the triad of symptoms that suggests pelvic inflammatory disease?
2. What is likely to be the most common STI in adolescents in the United States?
3. Why are adolescents more susceptible to acquiring STIs than adults?
4. What treatment regimen would not be appropriate for an adolescent in Hawaii with confirmed gonococcal cervicitis?
 - a. doxycycline 100mg PO BID x 7 days
 - b. ceftriaxone 125mg IM x 1 day
 - c. cefixime 400mg PO x 1 day; plus azithromycin 1g PO x 1 day
 - d. ciprofloxacin 500mg PO x 1 day
5. True/False: Suppressive therapy for genital herpes with acyclovir effectively eliminates viral shedding.
6. Which test is more specific for syphilis? RPR, VDRL, or FTA-Abs (fluorescent treponemal antibody absorption)?
7. What are the criteria for hospitalization of a patient with suspected pelvic inflammatory disease?

Chapter VI.22. Common Viral Exanthems

1. Name the type of exanthem depicted in the case described at the beginning of this chapter.
 - a. Exanthem infectiosum
 - b. Exanthem subitum
 - c. Hand-foot-mouth disease
 - d. Varicella
 - e. Measles

2. Symptoms of congenital rubella include all of the following EXCEPT
 - a. congenital heart defects
 - b. hydrocephalus
 - c. deafness
 - d. microphthalmia
 - e. zig-zag scarring

3. The mother of a patient comes in to your office stating that she has read terrible things about the vaccinations and doesn't want to give her child any. Which of the following statements is FALSE regarding vaccinations.

- a. The risk of acquiring chicken pox after exposure in the healthy, varicella immunized child is less than 10%.
- b. Vaccines have no adverse affects.
- c. Many vaccines need to be administered more than once.
- d. Rubella incidence has decreased 99% since 1969.
- e. Adverse effects of illnesses prevented by vaccines include death and damage to the central nervous system.

4. A 3 year old patient is seen for several days of fever and refusal to eat. Physical examination reveals a slightly dehydrated child with punched out, painful oral ulcers with associated small red macules on the palms and soles. What type of treatment would you recommend?

- a. Rest and fluids
- b. Rest, fluids, and amoxicillin
- c. Rest, fluids, acetaminophen, and vanilla ice cream
- d. Rest, fluids, acetaminophen, and acyclovir
- e. Rest, fluids, acetaminophen, and ciprofloxacin

5. Your patient has been diagnosed with varicella. Her aunt is pregnant and is not immune to chicken pox. When is the soonest that the aunt can visit the patient?

- a. Immediately, if she is his favorite aunt.
- b. When the lesions crust over.
- c. When the lesions are completely healed.
- d. Two months after the lesions heal.
- e. After the delivery of the fetus.

Chapter VI.23. Epstein-Barr Virus Infections

1. A 16 year old male presents with sore throat, fever, and cervical lymphadenopathy. A throat culture is done which is positive for group A streptococcus. Treatment is initiated with penicillin. He returns two days later with worsened symptoms, despite taking the medicine. Which of the following is the most appropriate step to do next?

- a. Switch to azithromycin.
- b. Obtain a CBC and Monospot.
- c. Check anti-VCA, anti-EA, and anti-EBNA titers against EBV.
- d. Assume the patient has infectious mononucleosis and start acyclovir and prednisone.

2. Which of the following is FALSE regarding EBV infection in young children?

- a. Primary infection is usually asymptomatic.
- b. Heterophil antibodies are usually positive.
- c. Immunocompromised patients are at risk for lymphocytic interstitial pneumonitis
- d. Complications are less common than in adults.

3. Which syndrome has NOT been found to be associated with EBV?

- a. Nasopharyngeal carcinoma
- b. Oral hairy leukoplakia
- c. Aplastic anemia
- d. Kaposi's sarcoma

4. An 18 year old female presents with malaise, fever, sore throat, and lymphadenopathy. Her CBC reveals atypical lymphocytosis, but her Monospot test is negative. Which of the following statements is TRUE?
- The Monospot test is not a highly sensitive test.
 - Her symptoms may be due to primary infection by cytomegalovirus (CMV).
 - There is no role for EBV-specific antibodies in making the diagnosis.
 - The atypical lymphocytes represent circulating infected B lymphocytes.
5. Which of the following statements about EBV infection is TRUE?
- The syndrome of infectious mononucleosis results from primary infection with the virus.
 - Infection usually occurs via contact with the blood of an affected person.
 - About 25% of older adults show serologic evidence of prior infection.
 - Splenic rupture is a frequent complication in EBV-associated infectious mononucleosis.

Chapter VI.24. Polio

- The 3 serotypes of the poliovirus belong to which family of viruses?
- Of the 4 acute clinical presentations (asymptomatic, abortive, nonparalytic aseptic meningitis, or flaccid paralysis poliomyelitis) which is the most common?
- What are the AAFP, AAP, ACIP childhood immunization schedule recommendations for polio vaccination?
 - Exclusive OPV
 - Exclusive IPV
 - Mixed IPV/OPV (first two doses being with IPV)
 - Four doses of the Sabin vaccine
- Which vaccination (OPV or IPV) should be used for the following clinical situations?
 - Vaccination of children in an endemic country.
 - Doctor has remaining OPV supplies. Third dose for an infant living with an agammaglobulinemic Grandpa.
 - Doctor has remaining OPV supplies. Third dose for a child whose parents refuse any more injections.
 - Doctor has remaining OPV supplies. 2 month old's first polio immunization.
 - Outbreak of "wild type" polio in the United States
- Describe the proposed pathophysiology of post-polio syndrome.
- True/False: The March of Dimes is named after the campaign where Americans mailed in their dimes to fight polio.

Chapter VI.25. Rabies

- Which animals are most frequently reported rabid in the United States? (select all true answers)
 - Squirrels
 - Raccoons
 - Rabbits
 - Hamsters
 - Skunks
- Which of the following would provide the best method for ante-mortem diagnosis of rabies in a human?
 - Identification of clinical symptoms.
 - Direct fluorescent antibody testing.
 - Identification of Negri bodies.
 - Observation of the animal in question to be rabid.
 - PCR of isolate from the saliva of the victim.

3. True/False: Inoculation of rabies from animal to human requires a physical animal-human contact.
4. In which of the following cases would post-exposure rabies prophylaxis be appropriate (select all appropriate):
 - a. A tour group observes a large colony of bats emerge from a cave.
 - b. While cleaning out the attic, a man removes a dead bat without using gloves.
 - c. A child is bitten by his pet dog in Hawaii.
 - d. A dead bat is removed from the crib of a child.
5. Which animal is most likely to transmit rabies to humans by mere contact (as opposed to a bite)?
 - a. Bat
 - b. Raccoon
 - c. Skunk
 - d. Coyote
 - e. Cat

Chapter VI.26. Rocky Mountain Spotted Fever

1. True/False: RMSF is most prevalent in the Rocky Mountain states.
2. True/False: RMSF can be "ruled out" based on a lack of history of tick bite.
3. True/False: Treatment of RMSF is often empiric.
4. True/False: Rash typically starts on the trunk and spreads distally.
5. Which is the preferred method of removing an attached tick?
 - a. Use a lit match or cigarette to burn the tick stimulating it to detach and flee.
 - b. Gently pinch the body of the tick with fingers and lift straight off.
 - c. Use fine-tipped tweezers to grasp the tick as close to the skin as possible and pull upward with slow steady pressure.
 - d. Apply petroleum jelly (Vaseline) over the tick and wait for the tick to suffocate or detach for air.
 - e. Don't remove, leave the tick alone.
6. Which of the following is NOT a recommended means of RMSF prevention?
 - a. Insect or tick repellants to clothing and exposed skin.
 - b. Prophylactic doxycycline prior to exposure to tick infested areas.
 - c. Minimize exposed skin with light [Note spelling change]-colored clothing.
 - d. Avoid known tick infested areas.
 - e. Survey skin and scalp after exposure to tick infested areas.

Chapter VI.27. Lyme Disease

1. True/False: Over 90% of children with Lyme disease can be treated successfully with oral antibiotics.
2. True/False: Children with Bell's palsy should be treated with corticosteroids.
3. True/False: Multiple EM lesions are a sign of late disseminated Lyme disease.
4. True/False: Lyme vaccine is recommended for persons aged 15-70 years whose exposure to a tick-infested habitat is frequent and prolonged.
5. True/False: If a patient has an EM lesion, a diagnosis of Lyme disease can, and should, be made without serologic testing.

6. True/False: Most patients with Lyme disease do not recall having had a tick bite.
7. True/False: Patients with uncomplicated early disseminated disease should receive 30 days of antibiotics.
8. True/False: Lyme vaccine is a live-virus vaccine.
9. True/False: Lyme disease occurs most commonly in spring and summer, when nymphal ticks feed.
10. True/False: Lyme serology is so highly specific that positive results always predict the presence of Lyme disease, even in patients at low risk for the disease.
11. True/False: The number of cases reported annually has increased approximately 25-fold since national surveillance was begun in 1982.

Chapter VI.28. Leptospirosis

1. The most specific physical finding of leptospirosis include:
 - a. fever
 - b. conjunctival suffusion
 - c. renal failure
 - d. myalgia
2. More characteristic findings in the immune phase of anicteric leptospirosis include:
 - a. fever
 - b. jaundice
 - c. renal failure
 - d. aseptic meningitis
3. Good prognostic factors for the patient in our case include all of the following, except:
 - a. good urine output
 - b. normal leukocytes
 - c. normal coagulation tests
 - d. no infiltrates on chest radiography
4. Leptospira are best cultured from:
 - a. blood
 - b. plasma
 - c. urine
 - d. CSF
 - e. none of the above
5. Therapy of leptospirosis may include all of the following except:
 - a. alkalization of urine
 - b. supportive therapy
 - c. doxycycline
 - d. penicillin
6. Which clinical factor best distinguishes the life threatening form of leptospirosis from the more common self-limited form of leptospirosis?
 - a. azotemia
 - b. pneumonia
 - c. meningitis
 - d. dehydration
 - e. jaundice

Chapter VI.29. Cat Scratch Disease

1. True/False: Cat scratch disease is usually transmitted by flea-infested kittens.
2. True/False: Cat scratch disease is more common in dry, desert-like areas, as compared to humid climates.
3. True/False: Adenopathy due to cat scratch disease usually develops rapidly, within a few hours.
4. True/False: When patients have hepatosplenic cat scratch disease, their liver function tests are always abnormal, and they always have concomitant lymphadenopathy.
5. True/False: Azithromycin is the only antibiotic that has been shown to be effective in the treatment of typical CSD lymphadenopathy in a double-blind, placebo-controlled trial.
6. True/False: Serology is the diagnostic test of choice for cat scratch

disease. Chapter VI.30. Malaria

1. The species of malaria associated with adherence to endothelial walls, cerebral malaria, and a high mortality rate is:
 - a. *P. falciparum*
 - b. *P. vivax*
 - c. *P. malariae*
 - d. *P. ovale*
2. The fever of malaria:
 - a. can be tertian (occurring every 48 hours).
 - b. can be quartan (occurring every 72 hours).
 - c. occur with no pattern at all.
 - d. all of the above.
3. The clinical manifestations of the cyclic fever of malaria are caused by the:
 - a. pre-erythrocytic phase
 - b. hepatic stage
 - c. erythrocytic stage
 - d. sexual stage
4. Liver hypnozoites (dormant form) can be effectively treated with:
 - a. chloroquine
 - b. mefloquine
 - c. primaquine
 - d. doxycycline
5. The pathogenesis of malaria can affect which of the following organ systems:
 - a. liver
 - b. brain
 - c. lungs
 - d. kidneys
 - e. spleen
 - f. GI tract
 - g. all of the above

6. Prophylaxis for malaria includes all of the following except:
- chloroquine
 - mefloquine
 - permethrin impregnated mosquito nets
 - 35% DEET
 - avoiding mosquitoes during the day

Chapter VI.31. Protozoans and Parasites

- Name two parasites which are associated with the ingestion of uncooked freshwater fish?
- What is the most common parasitic worm in American children?
- Name two parasites associated with the ingestion of poorly cooked pork?
- Name two motile (flagellated) protozoans infections commonly found in the U.S.
- Name two types of hookworms.
- Name four protozoans and two parasites transmitted by mosquito vectors.
- Name 3 or 4 protozoans and parasites that are transmitted by biting flies.
- Name 2 or 3 protozoans and parasites that invade the brain.

Chapter VI.32. Candida and Fungal Infections

- The most common cause of Tinea capitis in the United States is:
 - M. canis*
 - T. tonsurans*
 - M. audouinii*
 - T. capitans*
- True/False: Tinea Capitis, "black dot" pattern, is best diagnosed with Wood's lamp.
- True/False: Tinea pedis is most commonly seen in infant females.
- True/False: Oropharyngeal candidiasis and candidal diaper dermatitis often occur together because of *C. albicans* colonization of the gastrointestinal tract.
- Tinea versicolor lesions appear as:
 - Hyperpigmented macules
 - Reddish brown macules
 - Hypopigmented macules
 - All of the above
- Indicate whether the following agents are active against tinea, candida or both:
 - tolnaftate
 - nystatin
 - clotrimazole
 - miconazole
 - amphotericin
 - ketoconazole

Chapter VI.33. Necrotizing Fasciitis

1. The most common species of bacteria isolated from Type I NF is:
 - a. Staphylococcus
 - b. Streptococcus
 - c. Bacteroides
 - d. Clostridium

2. Which imaging modality is most useful in differentiating cellulitis from NF?
 - a. Plain radiograph
 - b. MRI
 - c. CT
 - d. Ultrasound

3. The virulence factor which has been found to protect streptococcal species from phagocytosis is:
 - a. Streptokinase
 - b. M-protein
 - c. Streptococcal pyrogenic exotoxins
 - d. Streptolysin O
 - e. Hyaluronidase

4. Type III NF is most often caused by:
 - a. Clostridium perfringens
 - b. Group A beta-hemolytic streptococcus
 - c. Bacteroides
 - d. Campylobacter

5. First line treatment for streptococcal NF is:
 - a. Erythromycin
 - b. Gentamicin
 - c. Doxycycline
 - d. Penicillin

Chapter VI.34. Lymphadenitis and Lymphangitis

1. What are the indications for biopsy of a lymph node?
2. What is the most common cause of acute bilateral cervical lymphadenopathy in children?
3. What is the most common cause of acute unilateral cervical lymphadenitis associated with fever and suppuration?
4. What is the most appropriate treatment of suppurative cervical lymphadenitis caused by nontuberculous mycobacteria?
5. What are some causes of prolonged cervical lymphadenitis in children?

Section VII. Cardiology

Chapter VII.1. Congestive Heart Failure

- 1. What is the most common congenital heart defect with a left to right shunt causing congestive heart failure in the pediatric age group?**
 - a. Atrial septal defect
 - b. Atrioventricular canal
 - c. Ventricular septal defect
 - d. Patent ductus arteriosus
 - e. Aortopulmonary window

- 2. True/False: Jugular venous distention is a common finding in infants with heart failure.**

- 3. What is the most likely age an infant with a large ventricular septal defect will begin manifesting symptoms of congestive heart failure?**
 - a. 1 day
 - b. 1 week
 - c. 1 month
 - d. 6 months
 - e. 1 year

- 4. True/False. Administration of supplemental oxygen to a child with a large left to right shunt lesion will help improve the degree of congestive heart failure.**

- 5. What is the dominant mechanism with which infants and young children increase their cardiac output?**
 - a. By increasing ventricular contractility
 - b. By increasing heart rate
 - c. By increasing ventricular end-diastolic volume
 - d. By decreasing heart rate
 - e. By increasing respiratory rate

- 6. True/False: All neurohormonal and sympathetic responses of the body to heart failure are beneficial.**

- 7. The earliest sign of congestive heart failure on a chest X-ray is:**
 - a. Increased heart size.
 - b. Kerley B lines.
 - c. Central pulmonary vascular congestion.
 - d. Pulmonary edema.
 - e. Pleural effusion.

Chapter VII.2. Acyanotic Congenital Heart Disease

1. True/False: Congenital heart disease is always detectable at birth.
2. True/False: Equal blood pressures in the right arm and left leg rule out the diagnosis of coarctation of the aorta.
3. Which are the three most common acyanotic congenital heart lesions?
4. True/False: The presence of palpable femoral pulses rules out the diagnosis of aortic coarctation.
5. True/False: Surgical repair of PDA does not require cardiopulmonary bypass.
6. Explain how a child with an isolated VSD (classified as an acyanotic lesion) could become cyanotic?
7. True/False: Medical students and residents will typically not hear the murmur of a VSD during the initial newborn assessment in the nursery because the murmur of a VSD is subtle and low pitched.

Chapter VII.3. Cyanotic Congenital Heart Disease

1. A two day old cyanotic infant with a grade 3/6 ejection systolic murmur is noted to have decreased pulmonary vascular markings on chest x-ray and left axis deviation on EKG. The most likely diagnosis is:
 - a. Tetralogy of Fallot
 - b. Transposition of Great Vessels
 - c. Truncus Arteriosus
 - d. Tricuspid Atresia
2. A 2 year old infant is noted to have mild cyanosis who assumes a squatting position during long walking. He is noted to have increasing fussiness followed by increasing cyanosis, limpness and unresponsiveness. The most likely underlying lesion is:
 - a. Hypoplastic left heart
 - b. Transposition of the Great Vessels
 - c. Anomalous Pulmonary Venous Return
 - d. Tetralogy of Fallot
 - e. Aspiration with obstruction to air passages
3. An infant with a marked cyanotic congenital heart defect with decreased pulmonary vascularity should be treated with:
 - a. Digoxin
 - b. Indomethacin
 - c. Prostaglandin E1
 - d. Epinephrine
4. Cyanosis is produced by the presence of deoxygenated hemoglobin of at least:
 - a. 1-2 gm/dL
 - b. 3-5 gm/dL
 - c. 6-8 gm/dL
 - d. 9-10 gm/dL
5. A "tet spell" or "blue" spell of tetralogy of Fallot is treated with all of the following except:

- a. oxygen
- b. knee chest position
- c. morphine
- d. digoxin
- e. propranolol
- f. phenylephrine
- g. sodium bicarbonate

6. Pulmonary vascularity is increased in all of the following except:

- a. TAPVR
- b. Tricuspid atresia
- c. TGV
- d. Hypoplastic left heart

7. Pulmonary vascularity is decreased in all of the following except:

- a. Tetralogy of Fallot
- b. Pulmonary atresia
- c. TAPVR
- d. Tricuspid atresia

Chapter VII.4. Rheumatic Fever

1. What is the main difference between Rheumatic Heart Disease (RHD) and Acute Rheumatic Fever (ARF)?

- a. In ARF there is an elevated ESR
- b. In RHD there is a prolonged P-R interval
- c. In ARF there is a history of arthralgias
- d. In RHD there is evidence of chronic heart disease
- e. In ARF there is evidence of erythema marginatum

2. All of the following are included in the revised Jones Major criteria EXCEPT:

- a. New murmur (carditis)
- b. Migrating polyarthritis
- c. Chorea
- d. Maculopapular rash
- e. Subcutaneous nodules

3. A 7 year old girl presents with a tender and swollen right knee as well as a more recently appearing swollen left wrist. She also has a fever. This patient fulfills which of the following modified Jones criteria?

- a. 1 Major 1 minor
- b. 1 Major 2 minors
- c. 2 Majors
- d. 2 Minors
- e. 1 Major only

4. Which of the following symptom lists of ARF are in the correct order of most common' least common?

- a. Erythema marginatum, subcutaneous nodules, carditis, fever
- b. Arthritis, carditis, chorea, erythema marginatum
- c. Chorea, erythema marginatum, subcutaneous nodules, carditis, fever
- d. Arthritis, chorea, fever, carditis, subcutaneous nodules

e. Fever, chorea, carditis, erythema marginatum

5. Salicylates are directed primarily at what symptom in ARF?
- Rash
 - Fever
 - Arthritis
 - Chorea
 - Carditis
6. Corticosteroids are directed primarily at what symptom in ARF?
- Rash
 - Fever
 - Arthritis
 - Chorea
 - Severe Carditis

Chapter VII.5. Carditis

1. What is the most common microorganism found in pediatric infective endocarditis?
- Staph aureus.
 - Strep viridans
 - E. coli
 - Pneumococci
 - Strep pyogenes
2. What is the preferred antibiotic treatment for the microorganism in question 1?
- Penicillin G x 2 weeks
 - Penicillin G x 4 weeks
 - Oxacillin x 6 weeks
3. Which microorganism(s) will most likely NOT manifest as an acute infective endocarditis in the pediatric setting?
- S. aureus
 - Neisseria
 - Strep. pyogenes
 - HACEK (Haemophilus species (H. parainfluenzae, H. aphrophilus, and H. paraphrophilus), Actinobacillus actinomycetemcomitans, Cardiobacterium hominis, Eikenella corrodens, and Kingella species).
4. Does the pediatric case presented at the beginning of this chapter meet the Duke Criteria for Diagnosis of infective endocarditis?
- Yes.
 - No.
 - Need more information.
5. What type of prophylactic antibiotic against infective endocarditis would you prescribe to a nine-year old female, with a past medical history only remarkable for an allergic reaction to penicillin, scheduled for a tooth extraction the next day?
- Amoxicillin.
 - Ampicillin.
 - Clindamycin.
 - Cefazolin.
 - None.

6. What is the most common microorganism that causes pediatric infectious myocarditis in the United States?
- Strep viridans.
 - Tuberculosis.
 - Staph aureus.
 - E. coli.
 - Virus.
7. Which of the following answer is the most severe clinical manifestation commonly found in pediatric myocarditis?
- Myocardial infarction.
 - Heart failure.
 - Pericarditis.
 - SLE.
 - None of the above.
8. Which is the most helpful test to diagnose pericarditis?
- Cardiac enzymes.
 - EKG.
 - Echocardiogram.
 - X-ray of the heart silhouette.
 - Answers b and d.
9. Which of the following is/are treatments options for pediatric postpericardiotomy syndrome?
- Salicylates.
 - Pericardiocentesis.
 - Bed rest.
 - Prednisolone.
 - All of the above.

Chapter VII.6. Arrhythmias

- What are the two most common forms of SVT in the pediatric population?
- What are the two most common types of congenital heart defects associated with SVT?
- Name two instances in which SVT may present as a wide complex QRS tachycardia.
- In a hemodynamically stable patient who presents with SVT, what are the two most commonly used methods for attempted conversion to a sinus rhythm?
- True/False: Supraventricular tachycardia is the most common cause of syncope in the pediatric age group.

Chapter VII.7. Vascular Rings and Slings

1. Which vascular anomaly will exhibit a complete vascular ring?
 - a. right aortic arch, mirror branching, left ligamentum from left subclavian
 - b. right aortic arch, aberrant left subclavian
 - c. left aortic arch, aberrant right subclavian
 - d. pulmonary sling

2. Which vascular anomaly may present in adolescence or adulthood with dysphagia?
 - a. double aortic arch
 - b. right aortic arch, aberrant left subclavian
 - c. left aortic arch, aberrant right subclavian
 - d. pulmonary sling

3. What vascular anomaly is most associated with severe tracheobronchial anomalies?
 - a. Right aortic arch, left subclavian
 - b. Double aortic arch
 - c. Pulmonary artery sling
 - d. All of the above

4. All of the following are common symptoms of vascular rings except:
 - a. wheezing
 - b. hoarse cry
 - c. stridor
 - d. dysphagia

5. All of the following studies could find evidence to support the diagnosis of a suspected vascular ring except:
 - a. Esophagram
 - b. Pulmonary function tests
 - c. CXR
 - d. Echocardiogram

6. Describe the structures which form the vascular ring in a double aortic arch.

7. Describe the differences between a vascular ring and a vascular sling.

Section VIII. Pulmonology

Chapter VIII.1. Interpretation of Blood Gases and Pulse Oximetry

1. Which patient has a higher oxygen content? Patient A with a pO₂ of 100 or patient B with a pO₂ of 70?
2. ABG pH 7.31, pCO₂ 60, pO₂ 80, bicarb 30, BE +4. What is the best description for this ABG considering the concepts of metabolic or respiratory acidosis or alkalosis, and metabolic or respiratory compensation?
3. Describe a possible clinical situation which would yield the ABG in question number 2 above?
4. At what pO₂ or oxygen saturation does cyanosis become visible?
5. Write an example of an ABG in a patient with moderately severe diabetic ketoacidosis.
6. In a cardiac arrest victim, you get an ABG which shows pH 6.72, pCO₂ 55, pO₂ 200, bicarb 7, BE -25. What can you do to reverse the acidosis?
7. Well oxygenated patients are pink and poorly oxygenated patients are cyanotic. Is there a stage in between these? What is the color of these patients if they aren't pink and they aren't cyanotic? The answer to this question is not found in the above chapter.
8. What condition would give you the following results in an ill appearing patient breathing supplemental oxygen: Pulse oximeter reading 100%, pO₂ on ABG 350 Torr, co-oximetry (true oxygen saturation) 65%.

Chapter VIII.2. Asthma

1. How can you best describe asthma?
2. Can you describe the various medications to treat asthma?
3. Can you describe the parameters that are used to classify severity of asthma?
4. Describe clinical findings signifying the severity of an acute asthma exacerbation.
5. Discuss the approach to an asthmatic in relationship to formulating an acute asthma treatment plan. What questions do you ask, what physical findings do you look for, and what laboratory parameters are measured?
6. Formulate an asthma maintenance plan.
7. Describe various triggering factors and mechanisms by which they might exert their action.
8. Describe the immunologic chain of events that ultimately leads to bronchospasm and inflammation.
9. Discuss the pros and cons of corticosteroid use in children and compare them with use in adults.
10. How would you convince parents of asthmatics to use medications when their children are not openly symptomatic?

Chapter VIII.3. Cystic Fibrosis

1. The percentage of CF patients with pancreatic exocrine dysfunction (decreased lipase, amylase, etc.) is:
 - a. 10%
 - b. 25%
 - c. 50%
 - d. 85%

2. The carrier rate for the CF gene in the white population is:
 - a. 1 in 10
 - b. 1 in 15
 - c. 1 in 25
 - d. 1 in 50

3. The frequency of cystic fibrosis is:
 - a. whites>blacks>latinos>asians
 - b. whites>latinos>blacks>asians
 - c. whites>asians>latinos>blacks
 - d. latinos>whites>blacks>asians

4. An abnormal sweat test is:
 - a. diagnostic of cystic fibrosis
 - b. supportive of the diagnosis of cystic fibrosis
 - c. has been replaced by genetic testing
 - d. an abnormal sodium value

5. The most common CF gene is:
 - a. R1066C
 - b. Delta F508
 - c. Not detected by genetic screening
 - d. Present in less than 40% of patients

6. The percentage of CF patients with sinus opacification and/or infection is:
 - a. 10%
 - b. 25%
 - c. 50%
 - d. 75%
 - e. 95%

7. What percentage of CF male patients have azoospermia
 - a. 10%
 - b. 25%
 - c. 50%
 - d. 75%
 - e. 95%

8. The CFTR gene is located on chromosome:
 - a. 5
 - b. 7
 - c. 9
 - d. 11
 - e. 13

9. The life expectancy of newly diagnosed patients with cystic fibrosis is:
- 5 years
 - 10 years
 - 15 years
 - 20 years
 - 30 years
10. Organisms characteristically isolated from the sputum of patients with cystic fibrosis includes all the following except:
- Staphylococcus aureus
 - Streptococcus pneumoniae
 - Klebsiella pneumoniae
 - Pseudomonas aeruginosa
 - Burkholderia cepacia

Chapter VIII.4. Chronic Lung Disease of Infancy (Bronchopulmonary Dysplasia)

1. True/False: BPD is a common condition affecting most preterm infants requiring mechanical ventilation.
2. All of the following factors are included in the pathogenesis of chronic lung disease except:
 - infection
 - antenatal corticosteroids
 - oxygen toxicity
 - patent ductus arteriosus
3. Chronic lung disease is defined as:
 - ventilator dependency at 2 weeks of age
 - oxygen dependency at 36 weeks postconceptional age
 - oxygen dependency at 28 days postconceptional age
 - oxygen dependency at 28 days postnatal age
 - b and d
4. An effective prevention measure for BPD is:
 - surfactant therapy
 - vitamin A supplementation
 - fluid management
 - management of patent ductus arteriosus
 - all of the above
5. For adequate growth, infants with chronic lung disease frequently require a caloric intake of:
 - 80 kcals/kg/day
 - 100 kcals/kg/day
 - 120 kcals/kg/day
 - 140 kcals/kg/day
6. True/False: Inhaled corticosteroids are as effective as systemic steroids in the treatment of BPD, but with reduced side effects.

Chapter VIII.5. Bronchiectasis in Children

1. True/False: Causes of bronchiectasis in childhood include cystic fibrosis, asthma and immunodeficiency.
2. True/False: Bronchiectasis has been traditionally classified as round, cylindrical or cavitating.
3. True/False: Most commonly today, bronchography is required for the diagnosis.
4. True/False: Chronic aspiration is a recognized cause of bronchiectasis in children.
5. True/False: Children of Polynesian descent are at no increased risk of bronchiectasis.
6. True/False: Therapy for bronchiectasis in children includes early surgical resection.

Chapter VIII.6. Foreign Body Aspiration

1. True/False: Foreign body aspiration is sufficiently uncommon that it need not be considered in a patient with a chronic cough.
2. Which radiographic imaging study would be the most helpful if a foreign body aspiration is suspected in a child (<3 y.o.)?
 - a. PA
 - b. Inhalation/Exhalation
 - c. Lateral
 - d. Decubitus
3. Describe the three clinical phases of foreign body aspiration.
4. What would be worse to aspirate: organic or non-organic material? Why?
5. True/False: Aspirated foreign bodies in children are more likely to be in the right main-stem bronchus than the left main-stem bronchus.
6. Why should a blind finger sweep never be done in a child with a foreign body aspiration?
7. What physical exam sign/symptom is most suggestive of foreign body aspiration?
 - a. Fever
 - b. Polyphonic wheezing
 - c. Cough
 - d. Stridor
 - e. Monophonic wheezing
8. What physical exam sign/symptom is most worrisome in terms of degree of airway compromise?
 - a. Fever
 - b. Polyphonic wheezing
 - c. Cough
 - d. Stridor
 - e. Monophonic wheezing
9. True/False: Nuts + Choking = Bronchoscopy

Chapter VIII.7. Pulmonary Hemosiderosis

1. Which of the following findings are not usually present in a patient presenting with pulmonary hemosiderosis?
 - a. Fever
 - b. Parenchymal consolidations
 - c. Hypercarbia
 - d. Hypoxemia
 - e. Cough
2. Why is it important to classify hemosiderosis as primary or secondary?
3. What kind of lung disease can be seen in pulmonary hemosiderosis?
 - a. Obstructive disease
 - b. Restrictive disease
 - c. Mixed obstructive and restrictive
 - d. Any of the above
4. Which of the following is not part of the classic triad of symptoms seen in pulmonary hemosiderosis?
 - a. Pulmonary hemorrhage
 - b. Anemia
 - c. Hemoptysis
 - d. Pulmonary infiltrates
 - e. None of the above
5. True/False: Lung biopsy is the diagnostic test of choice for idiopathic pulmonary hemosiderosis.

Chapter VIII.8. Pulmonary Vascular Anomalies

1. What shunt fraction is considered clinically significant for the manifestation of symptoms in Scimitar Syndrome?
2. Why would you want to correct the underlying condition of scimitar syndrome early?
3. What are the complications of untreated pulmonary sequestrations?
4. What type of shunt is typical in extrapulmonary sequestration?
5. What type of sequestration is associated with a diaphragmatic hernia?
6. List three or more ways in which Scimitar syndrome differs from pulmonary sequestration.

Chapter VIII.9. Bronchogenic Cysts and Congenital Cystic Adenomatoid Malformations

1. Which of the following lesions contain no cartilage?
 - a. Bronchogenic cyst
 - b. Congenital cystic adenomatoid malformation
 - c. Both of the above
 - d. Neither of the above

2. Which of the following lesions is a form of foregut cyst?
 - a. Bronchogenic cyst
 - b. Congenital cystic adenomatoid malformation
 - c. Both of the above
 - d. Neither of the above

3. Which of the following lesions is usually associated (has a direct connection or communication) with the tracheobronchial tree?
 - a. Bronchogenic cyst
 - b. Congenital cystic adenomatoid malformation
 - c. Both of the above
 - d. Neither of the above

4. In symptomatic lesions, both CCAM and bronchogenic cysts should be resected. In which of the following, can asymptomatic lesions be followed clinically?
 - a. Bronchogenic cyst
 - b. Congenital cystic adenomatoid malformation
 - c. Both of the above
 - d. Neither of the above

5. Which of the following lesions frequently cause symptoms by mass effect?
 - a. Bronchogenic cyst
 - b. Congenital cystic adenomatoid malformation
 - c. Both of the above
 - d. Neither of the above

6. Which type of CCAM has the best prognosis?
 - a. Type 0
 - b. Type I
 - c. Type II
 - d. Type III
 - e. Type IV

7. Which type of CCAM is most common?
 - a. Type 0
 - b. Type I
 - c. Type II
 - d. Type III
 - e. Type IV

Chapter VIII.10. Congenital Airway Problems

1. What is the most common cause of laryngeal anomalies in infants?
2. Classically, the stridor in laryngomalacia is:
a) inspiratory b) expiratory c) biphasic
3. The secondary form of tracheomalacia is usually due to:
a. a congenital deformity of the supporting tracheal rings.
b. an extrinsic compression such as a vascular anomaly.
c. surgical intervention such as tracheoesophageal fistula repair.
d. b and c.
e. all of the above.
4. Anatomically, congenital subglottic stenosis is usually associated with what other airway malformation?
5. As the second most common laryngeal anomaly, vocal cord paralysis accounts for what percentage of laryngeal lesions?
6. A child with a diagnosis of recurrent croup may suggest which airway anomaly?
7. Most cases of laryngomalacia resolve by what age?
a. 6-12 months old
b. 12-18 months old
c. 18-24 months old
d. 24-36 months old
8. In general, bilateral vocal cord paralysis can be attributed to a _____nervous system problem, while unilateral vocal cord paralysis is usually caused by an injury to the _____nervous system.

Chapter VIII.11. Sleep Disorders

1. Which of the following helps to distinguish sleep terror from nightmares?
a. Child does not recall the incident in the morning.
b. Child is diaphoretic upon awakening.
c. Common sleep disorder to occur in childhood.
d. None of the above.
2. In which of the following cases would PSG (polysomnographic recordings) not be as helpful?
a. Narcolepsy
b. Sleep terror
c. Sleep apnea
d. a & b
3. Which of the following is NOT a primary sleep disorder?
a. Tourette's syndrome
b. Sleep bruxism
c. Rhythmic movement disorder
d. Protodyssomnia of infancy
4. Describe the clinical tetrad of narcolepsy?
5. Describe at least two causes of obstructive sleep apnea and two causes of non-obstructive sleep apnea?
6. Circadian rhythm dyssomnias typically occur in which age group?

Chapter VIII.12. Sudden Infant Death Syndrome (SIDS)

1. True/False. Sudden Infant Death Syndrome has been nearly eradicated due to changes in infant positioning.
2. Which of the following disorders may mimic SIDS:
 - a. galactosemia
 - b. disorders of fatty acid oxidation
 - c. maple syrup urine disease
 - d. hypothyroidism
3. True/False. Co-sleeping is an acceptable practice if a mother is breast-feeding.
4. Infanticide should be considered in dealing with a SIDS death when:
 - a. the parents are adolescents
 - b. the infant is younger than 2 months of age
 - c. previous ALTEs have occurred while under the care of the same person
 - d. intrathoracic petechiae are present on post-mortem
5. True/False. Supine or non-prone positioning is beneficial in reducing the incidence of SIDS in infants born at <32 weeks gestation.
6. An appropriate response to a parent who has lost their child to SIDS is to:
 - a. reassure them that they can always have another child
 - b. use their infant's name often when speaking with them
 - c. tell them you know how they feel
 - d. speak critically about the previous medical management of their infant

7. True/False. Home cardiorespiratory monitors do

not prevent SIDS

Section IX. Gastroenterology

Chapter IX.1. Infant Colic

1. Which of these are NOT a feature of the infant colic syndrome?
 - a. distinctive high-pitched pain cry
 - b. inconsolability
 - c. paroxysmal onset
 - d. vomiting
2. Which of these is correct?
 - a. colic usually occurs in infants greater than 3 months of age
 - b. fever often accompanies colic
 - c. colic is very rarely seen
 - d. none of the above are correct
3. All of the following are correct regarding historical red flags, except:
 - a. Red flags suggest that this intractable crying infant may not be due to the classic "infantile colic syndrome".
 - b. Red flags include head trauma.

- c. Red flags exclude maternal illicit drug use.
- d. Red flags include paradoxical irritability.

4. Physical red flags include which of the following (check all that apply):

- a. fever
- b. lethargy
- c. poor feeding
- d. abdominal tenderness

5. True/False: Good advice for parents assumes their infant is trying to communicate a need or desire resulting from the parents inadvertent failure to respond to their infant's desires.

6. An acceptable approach(es) to infant colic include(s):

- a. Let the baby cry and ignore the baby.
- b. Put the baby in a car seat on the washing machine.
- c. Shake the baby to sleep.
- d. Try to discover why your infant is crying.

Chapter IX.2. Abdominal Pain

1. True/False: Surgical causes of abdominal pain are much less common than non-surgical causes.
2. True/False: Predicting a finding from a hypothesis is called deductive reasoning.
3. What characteristics differentiate hollow viscus from solid viscus and peritoneal pain?
4. Pain from distended intestines is appreciated in what area?
5. Where is the pain of urogenital origin referred?

Chapter IX.3. Gastroenteritis and Dehydration

1. Which diarrhea causing organism may be also cause neurologic symptoms?
2. What is the most common viral cause of acute gastroenteritis, and what are its associated symptoms?
3. How is Giardia lamblia most easily diagnosed and how is it treated?
4. List 4 physical signs of dehydration in children?
5. How are children with mild dehydration initially treated?
6. How are children with severe dehydration initially treated?

Chapter IX.4. Biliary Atresia

1. True/False: A 2 week old infant presents with persistent jaundice to the office. No further work up is necessary since this is physiologic jaundice.
2. A DISIDA scan report, for a patient in whom biliary atresia is suspected, comes back stating that there was poor uptake into the liver and no visualization of the isotope into the bowel. Can you diagnose biliary atresia in this patient?
3. A liver biopsy shows hepatocellular ballooning and the presence of multinucleated giant cells. Is this consistent with biliary atresia?

4. A patient presents to you with lightly colored stool; however, when the stool is broken up it is noticed that the center is clay colored. What is this indicative of?
5. A 16 week old patient is diagnosed with biliary atresia, should he/she undergo a Kasai procedure if there are no contraindications or should the patient just wait for a liver transplant?

Chapter IX.5. Hepatitis

1. Why are aminotransferases, alkaline phosphatase, and GGT not considered liver function tests? What is the most useful test for liver function?
2. True/False: Most infants and young children with hepatitis A present with jaundice.
3. A family is planning a vacation in China that is known to have a high rate of hepatitis A. How would you give preexposure prophylaxis to this family who has a 15 month old and a 5 year old child?
4. A labor and delivery nurse informs you that a term infant was just born whose mother is HBsAg negative and anti-HBs positive. How would you approach this infant for prophylaxis?
5. A 1600 gm infant is born to a mother who is HBsAg positive, anti-HBc positive, and anti-HBs negative. The NICU nurse is asking what your order is for this patient. Out of these three HepB tests, which one is the most useful in your decision making process.
6. Name three organ systems involved in Wilson disease and its manifestations.
7. What element is implicated in Wilson disease?
8. What organ systems are involved in alpha-1-antitrypsin deficiency and what are their manifestations?

Chapter IX.6. Gastroesophageal Reflux

1. True/False: Gastroesophageal Reflux is a rare phenomenon in childhood.
2. For the vomiting infant:
 - a. The parents can be reassured it is a process the child will outgrow as they get older.
 - b. Thickening the feedings sometimes works.
 - c. Proper positioning may be helpful.
 - d. Deserves further evaluation.
3. A one month old second born female presents with worsening of her GE reflux. The regurgitation remains effortless, but is increasing in volume and seems more prominent an hour or so after meals. She has been more demanding of feedings and has had fewer wet diapers over the last few days and is losing weight. Her parents have felt "something moving" in her stomach in the hour after feedings over the last week. What is happening?
4. True/False: A 4 year old with complaints of abdominal pain that disrupt school attendance warrants a two week trial of a proton pump inhibitor.
5. True/False: A diagnosis of pain due to gastroesophageal reflux is likely to lead to a lifetime of expensive medication.

Chapter IX.7. Gastrointestinal Foreign Bodies

1. At what three areas of the esophagus are foreign bodies commonly located?
2. If a coin is seen as a disk on the anteroposterior film, is it in the esophagus or trachea?
3. True/False: A sharp object in the distal esophagus may be observed for 7 days if the patient is asymptomatic.
4. True/False: There is a high risk for mercury toxicity if the contents of a disk battery leak into the GI tract.
5. What are phytobezoars?
6. If an 12 month old swallows a penny, is there any possibility that it is in the trachea?
7. What accounts for the increased incidence of ingested disc batteries?

Chapter IX.8. Constipation

1. The nurse points out a two day old healthy term infant who is otherwise ready for discharge who still has not passed meconium. Your next step is:
 - a. Order a suppository prior to discharge.
 - b. Careful physical examination, including digital rectal examination.
 - c. Give a normal saline enema to prep for a barium enema.
 - d. Call radiologist to discuss an unprepped barium enema
 - e. Rectal biopsy.
2. The exam of a 3 year old with recurrent impaction is normal except for the impaction and the absence of an anal wink. Which of the following are true.
 - a. An anal wink is not commonly found in this age group.
 - b. The anus may be so traumatized by the impaction that the wink cannot be reliably elicited.
 - c. There may be a neurogenic component to the problem in addition to the psychogenic one.
3. Your examination of a chronically soiling 13 year old female finds a normal sized rectum containing soft stool. Is this routine encopresis?
4. A 6 month old infant has been getting suppositories and enemas every 3-4 days because she does not otherwise defecate. The stools were passed without apparent trouble on breast feeding. Rectal examination finds a normal sized rectum as far as you can reach. Does this rule out Hirschsprung's disease?
5. The barium enema performed yesterday was read as normal, but the remaining barium did not pass overnight. You obtain a followup film this morning, and find dilute barium evenly distributed from the cecum to the rectum. What is the likely diagnosis and why?

Chapter IX.9. Hirschsprung's Disease

1. True/False: A digital rectal examination carefully performed is most important in the diagnosis of Hirschsprung's disease in a newborn infant.
2. True/False: Post operative diarrhea from enterocolitis is a common occurrence.
3. In a newborn infant with abdominal distention and/or vomiting, what is the most significant clinical finding to raise the suspicion of Hirschsprung's disease?

4. True/False: In a child over a year of age with a radiographic transition zone, a rectal biopsy is required for a definitive diagnosis?

5. What cell line differentiates into Auerbach's and Meissner's plexus and may be responsible for other associated neurological defects?

Chapter IX.10. Gastrointestinal Bleeding and Peptic Ulcer Disease

1. You are called to the nursery where you are shown a burp cloth with loose clots of regurgitated blood. The newborn in question is sleeping quietly, with completely normal vital signs and no sign of tenderness or other bleeding when examined. You recall his mother presented with placenta previa. What do you do next?

2. At a two month well baby visit, his parents bring in a diaper double-bagged because of the foul odor. The stool is tarry and tests positive for occult blood, but the child appears particularly robust, having gone from a birth weight of 7 pounds 1 ounce to his current weight of 12 pounds 10 ounces. He is somewhat fussy and demanding of feedings, and his mother complains of getting no rest as she has to feed him hourly. Recently, her left breast has become quite sore and there is intense pain when he nipples. On examination, the infant is colicky, but there is no abdominal tenderness and his vital signs are also within normal limits with no adjunct signs of intravascular volume depletion. What is going on?

3. 3 year old presents with melena but no hematemesis, and no abdominal pain. How do you evaluate him?

4. Melena is usually indicative of upper GI bleeding. Indicate how this can sometimes be due to lower GI bleeding.

5. Red blood per rectum is usually indicative of lower GI bleeding. Indicate how this can sometimes be due to upper GI bleeding.

6. A 14 year old female has yet to show secondary sexual development which you have always attributed to excessive involvement with the school track team. However in the last 6 months her finishing times on the mile (her favorite event) have steadily lengthened from second best in the state to this week's race where she could not finish. She presents today complaining of loose stools, streaked with blood. How do you work up her illness?

7. A 3 year old boy presents to the emergency department passing bright red blood per anus. He is diaphoretic and tachycardic (120 supine, 140 upright) and complains of generalized abdominal pain. You are unable to localize tenderness but are comfortable that there is no rebound tenderness and he is not at risk of perforation. Placement of an NG tube to lavage his stomach is negative. By the time you have given enough crystalloid to replete his blood volume, his hemoglobin has dropped to 7 grams. Since his summer physical 2 months ago had included a hemoglobin of 12, you realize he has indeed lost a substantial portion of his blood volume over a short period of time. He is admitted to the hospital, where over the next two days as you wait for the stool culture results. He requires 250 cc transfusions daily to maintain his hemoglobin and you realize that the brisk bleeding continues. The stools remain bright red. What do you do next?

Chapter IX.11. Inflammatory Bowel Disease

1. What portion(s) of the GI tract are affected by Crohn's disease (CD) versus ulcerative colitis (UC)?

2. Which IBD has a greater association with cancer?

3. What are the common histologic findings in CD and UC?

4. Name three extraintestinal findings in IBD?

5. Describe the three types of CD and UC.

Chapter IX.12. Malabsorption Conditions

1. What are the three phases of digestion and absorption discussed in this chapter?
2. Dietary fats, proteins, and carbohydrates are hydrolyzed and stabilized by digestive enzymes and bile in which phase?
3. Identify the phase in which digested food is moved from the lumen into the cells.
4. True/False: The symptoms of malabsorption are worse in older children compared to younger children.
5. True/False: Diarrhea is the most common presenting symptom of malabsorption in younger children.
6. True/False: Withdrawal of gluten-containing food from a patient with celiac disease is often enough to reverse the symptoms of malabsorption.

Chapter IX.13. Meckel's Diverticulum

1. What is the most common congenital gastrointestinal anomaly?
2. What embryologic structure composes a Meckel's diverticulum?
3. Are Meckel's diverticula more likely to be found in males rather than females?
4. What kind of ectopic mucosa is commonly found inside of a Meckel's diverticulum?
5. How do Meckel's diverticula usually present?
6. How do young children with symptomatic Meckel's diverticula usually present?
7. What are the principal complications of Meckel's diverticula?
8. What is the most useful imaging modality used to diagnose a Meckel's diverticulum?
9. A false negative Meckel's scan could be due to what?
10. What is the Meckel's rule of 2's (four elements)?

Section X. Surgery

Chapter X.1. Wound Management

1. What is the purpose of using epinephrine in local infiltration and topical anesthesia?
2. Name the drawbacks of tissue adhesives in laceration repair.
3. What has the best cosmetic result in the repair of lacerations: sutures or tissue adhesives?
4. How long does it take for the tissue adhesive 2-OCA to fall off after application?
5. What are the adverse effects of using tetracaine adrenaline cocaine (TAC) gel?
6. What is the major clinical reason for preferring healing by secondary or tertiary intention (as opposed to primary closure)?
7. True/False: Antibiotics have only a modest effect on reducing the rate of wound infections in contaminated wounds.

Chapter X.2. Inguinal Hernias and Hydroceles

1. True/False: Bilateral inguinal hernias are common in premature infants.
2. Which of the following statements is false?
 - a. Each testis descends through the inguinal canal into the scrotum within the processus vaginalis.
 - b. A hydrocele can result from incomplete fusion of the processus vaginalis.
 - c. A scrotal hydrocele, or simple hydrocele, is a type of non-communicating hydrocele.
 - d. A communicating hydrocele can develop into an inguinal-scrotal hernia. Some use the terms interchangeably.
 - e. A hernia sac can contain intestine, omentum, testis/ovary or fallopian tube.
3. What is the classic clinical presentation of an inguinal hernia?
4. True/False: The risk of incarceration and strangulation of an inguinal hernia is highest in the first 12 months of life.
5. Which of the following is not part of the differential diagnosis of an inguinal-scrotal swelling in children?
 - a. Varicocele
 - b. Undescended or retracted testis
 - c. Volvulus
 - d. Testicular torsion
 - e. Testicular cancer
6. True/False: All inguinal hernias will eventually require surgery.
7. Which of the following is not a risk factor for development of an inguinal hernia?
 - a. Presence of a ventriculoperitoneal shunt
 - b. Congenital heart disease
 - c. Prematurity
 - d. Cystic fibrosis
 - e. Family history of inguinal hernias
8. True/False: After herniorrhaphy, hernia recurrence is rare.

Chapter X.3. Appendicitis

1. What is the difference between colicky and peritoneal pain?
2. Where is McBurney's point?
3. What two characteristics of the tenderness at McBurney's point make the diagnosis of appendicitis?
4. In cases of right lower quadrant pain and tenderness what is the second most frequent system implicated as its cause?
5. What is mittelschmerz?

Chapter X.4. Intussusception

1. The most common type of intussusception is:
 - a. ileoileal
 - b. colocolic
 - c. ileocolic
 - d. ileo-ileocolic
2. Contraindications for non-surgical reduction of an intussusception include all of the following except:
 - a. symptoms for longer than 24 hours
 - b. shock
 - c. intestinal perforation
 - d. peritonitis
3. Which is the most common pathological lead point found with intussusception?
 - a. neoplasm
 - b. appendicitis
 - c. polyps
 - d. intestinal duplication
 - e. Meckel's diverticulum
4. A pathologic lead point can be identified in approximately what percentage of patients with intussusception?
 - a. 1%
 - b. 5%
 - c. 10%
 - d. 15%
 - e. 25%
5. The "classical triad" of symptoms of intussusception include:
 - a. diarrhea
 - b. vomiting
 - c. fever
 - d. bloody stools
 - e. abdominal pain
6. Which element of the "classical triad" usually appears first?
 - a. diarrhea
 - b. vomiting
 - c. fever
 - d. bloody stools
 - e. abdominal pain

7. All three of the "classical triad" of symptoms is found in what percentage of patients with intussusception?
- 9%
 - 21%
 - 50%
 - 70%
 - 90%
8. True/False: A normal abdominal series rules-out intussusception.
9. If a mass is palpable on physical examination, it is most often found in the:
- right upper quadrant
 - right lower quadrant
 - left upper quadrant
 - left lower quadrant

Chapter X.5. Malrotation and Volvulus

1. What are the two mechanisms of a bowel obstruction associated with malrotation?
2. Does the term "malrotation" refer to any patient condition, symptom or malformation description that is relevant for clinicians?
3. What is the most reliable imaging procedure to identify or rule out a malrotation in the absence of a midgut volvulus?
4. Name two different types of intestinal volvulus and describe how they are different.
5. Is it likely that one could have a malrotation and never have a volvulus throughout life?

Chapter X.6. Gastroschisis and Omphalocele

1. The earliest way to diagnose an anterior abdominal wall defect is:
 - by physical exam
 - by history
 - by fetal ultrasound
 - by fetal CT scan
2. The following are correct regarding omphaloceles except:
 - is usually covered by a translucent membrane
 - is frequently associated with other congenital malformations
 - is lateral to the umbilical stump
 - is within the umbilical ring
3. The following are true about gastroschisis:
 - occurs lateral to the umbilical stump
 - can be diagnosed antenatally
 - at birth often have edematous matted intestinal loops
 - all of the above
4. Treatment of abdominal wall defects includes:
 - immediate surgical repair
 - pushing the intestines back into the abdominal cavity while still in the delivery room
 - provide immediate optimal resuscitation and stabilization first, and then surgery
 - always do primary closure in both lesions

5. The true statement below is:
- The surgeon does not need to worry about other associated defects as the neonatologist will already have treated them.
 - There are essentially no late surgical problems after repair.
 - Improved ultrasound diagnosis has resulted in some women seeking termination of pregnancy as early as 12 weeks gestation.
 - The long term outcome of survivors reveal poor growth and development.

Chapter X.7. Diaphragmatic Hernia

- The earliest way to diagnose a diaphragmatic hernia is:
 - by physical exam
 - by history
 - by fetal ultrasound
 - by fetal CT scan
- The following are correct regarding diaphragmatic hernia except:
 - is usually on the left side
 - is frequently associated with hypoplastic lungs
 - can present similar to a tension pneumothorax
 - is frequently asymptomatic at birth
- The following are true about diaphragmatic hernias:
 - often have scaphoid abdomen on exam
 - can be diagnosed antenatally by ultrasound
 - at birth often have persistent cyanosis and respiratory distress
 - all of the above
- Treatment of diaphragmatic hernia includes:
 - immediate surgical repair
 - pulling the intestines back into the abdominal cavity while still in the delivery room
 - provide immediate optimal resuscitation and stabilization first, and then surgery
 - always do primary closure of the diaphragm
- The true statement below is:
 - The surgeon does not need to worry about medical problems as the neonatologist will already have treated them.
 - There are essentially no medical problems after surgical repair.
 - Improved ultrasound diagnosis has resulted in some women seeking termination of pregnancy.
 - The long term outcome of survivors reveals no significant chronic pulmonary problems.

Chapter X.8. Pyloric Stenosis

- What is the "classic" presentation of HPS?
- How is HPS diagnosed?
- What is the "classic" laboratory finding in HPS?
- What is the initial step in management?

5. Which of the following sets of electrolytes could be seen with HPS (Na, K, Cl, bicarb):
- 130, 2.7, 90, 28
 - 130, 5.8, 94, 22
 - 130, 3.9, 98, 17
 - 148, 4.1, 108, 13

Chapter X.9. Intestinal Atresias, Duplications and Microcolon

- The double-bubble sign on plain abdominal radiograph is diagnostic of what kind of atresia?
- How could you distinguish between an esophageal atresia with tracheoesophageal fistula (TE) from an esophageal atresia without TE fistula?
- What other abnormalities are associated with an esophageal atresia?
- How does an esophageal or duodenal atresia differ etiologically from a jejunal or an ileal atresia?
- What makes undiagnosed intestinal duplication potentially life threatening?

Chapter X.10. Craniofacial Malformations

- In the newborn nursery, the mother of a child with a cleft lip and palate typically has a lot of concerns and will ask about the following. What do you tell her?
 - What caused the cleft lip?
 - Was there anything that she did or took in her early pregnancy that could have caused this, before she knew that she was pregnant?
 - What about feeding the baby and can she breast feed?
 - What surgeries the baby will need, and when?
 - If they have another baby, what are the chances that the next baby will have a cleft lip? What about the babies' children?
- Why do cleft palate children develop more ear aches?
- Why do cleft palate children have trouble with speech development, and what can be done to minimize this?

Chapter X.11. Abscesses

- True/False: Some abscesses can resolve spontaneously.
- What is the most common organism involved in abscess formation?
- True/False: All abscesses are treated by incision and drainage.
- What is the rationale behind multi-drug antibiotic treatment?
- Does a person have to be immunocompromised to develop an abscess?
- What are the complications of untreated abscesses?

Chapter X.12. Lymphangiomas

1. Which of the following is NOT a kind of lymphangioma?
 - a. lymphangioma simplex or circumscriptum
 - b. capillary lymphangioma
 - c. cavernous lymphangioma
 - d. cystic hygroma
 - e. subdural hygroma

2. Which two of the following choices are NOT characteristic of cystic hygromas?
 - a. bluish color
 - b. increases in size with dependent position
 - c. if superficial, transilluminates brightly
 - d. does not enhance with contrast in MRI
 - e. large neck mass presenting at birth

3. True/False: The differential for a lymphatic malformation depends on its location.

4. In the U.S., primary treatment of lymphatic malformations can include all of the following EXCEPT:
 - a. surgical excision
 - b. no treatment if benign
 - c. pharmacological sclerotherapy
 - d. radiation therapy

5. Complications of cystic hygromas in the head and neck include all of the following EXCEPT:
 - a. airway obstruction
 - b. esophageal obstruction
 - c. infection
 - d. hydrops fetalis
 - e. hemorrhage
 - f. no exceptions (all above are correct)

Section XI. Hematology

Chapter XI.1. Anemia

- 1. What two classification schemes can be used to narrow down the differential diagnosis of anemia in children?**
- 2. What laboratory finding suggests that an anemia is due to a decreased production of red blood cells?**
- 3. What elements of the history, physical, and laboratory evaluation suggest increased red cell destruction as the cause of anemia?**
- 4. What is the best test to rule in or rule out iron deficiency? Justify your answer.**
- 5. True/False: A child raised in a lead based paint containing home that is well maintained has a significantly lower chance of lead poisoning than if that home is in disrepair.**
- 6. True/False: Cow's milk exerts a direct toxic effect on the intestinal mucosa of some infants, leading to microscopic blood loss and iron deficiency anemia.**
- 7. True/False: Children with iron deficiency anemia caused by excessive cow's milk intake often have a history of black or tarry stools.**
- 8. True/False: The iron content of cow's milk is zero or very close to zero.**
- 9. The lab reports a patient's hemoglobin as 7 g/dl, and the reticulocyte count as 1%. The published normal value for the reticulocyte count is 0.7% to 2.0%, so the reticulocyte count is within the laboratory's normal range. How would you interpret this reticulocyte count?**
 - a. This reticulocyte count is normal, so the patient's bone marrow is making RBCs adequately.**
 - b. This reticulocyte count is low. The laboratory's normal values are incorrect.**
 - c. This reticulocyte count value is normal for a patient with a normal hemoglobin, but for a severely anemic patient, the reticulocyte count should be high. Thus, in view of this patient's severe anemia, this patient's reticulocyte count is actually low and indicative of a condition in which RBCs are not being produced.**
 - d. This reticulocyte count is too high for a low hemoglobin. Thus, this is indicative of a hemolytic etiology.**

Chapter XI.2. Thalassemia

- 1. In reference to the case presentation at the beginning of the chapter, what is the best approach to an otherwise healthy, asymptomatic 12 month old female with the hemoglobin of 9.1 g/dl (MCV 58) on routine CBC screen and the presence of Hemoglobin Barts on her newborn screen?**
 - a. explain to the parents that the baby may have thalassemia and obtain an electrophoresis.**
 - b. start the baby on Fe supplements and order an electrophoresis.**
 - c. start the baby on Fe supplements, recheck in a month, and if the hemoglobin is not improved then, assume the baby has thalassemia.**
 - d. counsel the family that the baby has a form of alpha thalassemia, and that no immediate other tests or Fe supplements are needed.**

2. A 15 year old Filipino female is noted to have a hemoglobin of 10.6 g/dl with an MCV of 65 on routine testing. She reports regular menses lasting 4-5 days each cycle. She has no specific complaints. She is unaware of a family history of anemia. By history, her diet appears to be nutritionally adequate. PE is normal; specifically there is no hepatosplenomegaly, jaundice, or scleral icterus. What is the most appropriate management?

- a. start on oral contraceptives and recheck a CBC in two months
- b. start on empiric Fe while awaiting results of a hemoglobin electrophoresis and iron studies.

Recheck CBC in 2 months if iron was deficient.

- c. check for Hemoglobin Barts; if not present start on Fe supplements and recheck CBC in 2 months
- d. order a hemoglobin electrophoresis; if Hemoglobin H is not found start on Fe while Fe studies are pending, and recheck CBC in 2 months if iron deficiency anemia was present

3. A newborn Laotian boy is noted to have Hemoglobin E on his newborn screen. He is otherwise well. A family history is not available due to a language barrier. What is the least pertinent issue to be considered here?

- a. presence of Hemoglobin Barts
- b. hemoglobin at 6 months of age
- c. hemoglobin level now
- d. the order of the hemoglobins printed on the newborn screen

4. Indicate whether iron supplementation is indicated or contraindicated in each of the following clinical situations.

- a. Menstruating female with a hemoglobin of 10.0 g/dl., with no known hemoglobinopathies.
- b. Beta thalassemia patient who just lost a modest amount of blood from a scalp laceration.

Hemoglobin is 9.5 g/dl.

- c. Healthy alpha thalassemia trait male who wants to build up his hemoglobin to run a marathon.
- d. Menstruating female with alpha thalassemia trait who has had heavy and prolonged periods for the past year. Her hemoglobin is 8.0 and her iron levels and ferritin demonstrate severe iron deficiency.

5. Some ethnic groups with alpha thalassemia trait have a small risk of hydrops fetalis, but other groups have no risk. How is this possible? (The answer to this question was not stated in the chapter, but it can be answered with exceptionally brilliant thinking.)

Chapter XI.3. Sickle Cell Disease

1. Of the following, what is the best approach for a febrile child with sickle cell disease?

- a. CBC, BC, oral hydration, IM or oral antibiotics if source of infection is noted on PE.
- b. CBC, BC, IM ceftriaxone, follow-up with PCP next day.
- c. CBC, BC, admit for IV hydration and IV antibiotics.
- d. CBC, BC, no oral antibiotics if no specific source of infection is noted on PE.

2. A 13 year old girl with sickle cell anemia is admitted to the hospital for treatment of a pain crisis. She states her right arm and shoulder started hurting yesterday evening. She has taken acetaminophen with codeine every 3 hours for the last 8 hours, but the pain has only escalated. She denies recent fevers, cough, or URI symptoms. She is on no routine pain medications at home, and was last admitted 5 months ago with a similar pain crisis. On PE, she is in obvious pain, and is crying. Her exam is remarkable for pallor, and slight scleral icterus. She has full range of motion of the right arm, and the rest of her joints. CBC shows a hemoglobin of 7.9 g/dl, WBC 17.8, and platelet count of 543 thousand. Appropriate initial management includes:

- a. IV hydration if oral intake is insufficient, IV or PO pain management as needed.
- b. IV hydration, hydromorphone PCA plus continuous infusion.
- c. IV hydration, IM meperidine prn.
- d. IV hydration, transfusion of PRBC, IV narcotic q 4 hours prn.

3. Explain why most states have adopted newborn screens that identify sickle cell disease at birth.

4. Explain why children with sickle cell disease do not develop symptoms until after 6 months of age?
5. Will a child with sickle beta thalassemia be identified as such on its newborn screen? Why or why not?

Chapter XI.4. Bone Marrow Failure

1. What is the treatment of choice for severe acquired aplastic anemia?
2. What laboratory study is diagnostic for Fanconi's anemia?
3. How can one differentiate between Diamond Blackfan anemia and transient erythroblastopenia of childhood?
4. What is the triad associated with dyskeratosis congenita?
5. Which two factors are associated with gastrointestinal hemorrhage in infants with TAR syndrome?
6. Name some viruses and drugs which cause aplastic anemia?
7. What is the i-antigen and what hematologic problems is it associated with?

Chapter XI.5. Newborn Hematology

1. True/False: Newborns with Down syndrome and elevated white counts and immature forms frequently progress to leukemia.
2. True/False: Factor VIII deficiency is one of the vitamin K dependent factors leading to Hemorrhagic disease of the newborn.
3. Rh antibodies in mothers can result from:
 - a. previous mismatched transfusions
 - b. prior miscarriages
 - c. fetal maternal transfusion
 - d. all of the above.
4. True/False: Red cell problems are usually seen with abnormalities of white cells and platelets.
5. True/False: Neonatal immune thrombocytopenia can result from maternal auto sensitization or fetal maternal transfusion.
6. True/False: Thalassemia and hemoglobinopathies can present in the neonatal period with severe anemia.

Chapter XI.6. Bleeding Disorders

1. What is the mechanism for the thrombocytopenia in ITP?
2. What is the classic triad associated with hemolytic uremic syndrome?
3. How is hemophilia inherited?
4. Describe some indications for factor VIII administration in a patient with hemophilia A.
5. What are the functions of von Willebrand factor?

6. What combination of laboratory tests are good screening studies for von Willebrand disease?
7. Why is it important to test for blood type in a person with suspected von Willebrand disease?
8. Name the vitamin K dependent factors.
9. Explain why the addition of normal plasma to a patient's PTT test, will help to identify a circulating anticoagulant such as the lupus anticoagulant.

Chapter XI.7. Transfusion Medicine

A 7 year old boy is being worked up for profound pancytopenia. He was well until one week ago when his grandparents noted pallor. He has had no recent history of fever, and is otherwise well. He was initially seen yesterday in the hematology clinic, where a CBC showed a hemoglobin of 5.3 g/dl, WBC 1.9 K/ml with 96% lymphocytes, and a platelet count of 4,000. He has a bone marrow aspirate scheduled for tomorrow. He is brought back in to the clinic today, because he has epistaxis, which has been ongoing for 1 hour now. He states he feels weak and dizzy.

Exam: He is afebrile, BP 110/40, HR is 186 with a mild gallop. Weight is 26 kg (75%ile). He is lying down, with a tissue to his nose, and bright red blood is dripping out. He is alert and oriented, nontoxic, and comfortable. He is pale appearing, conversing appropriately, and no other overt bleeding is noted. His abdomen is benign.

CBC today shows hemoglobin 5.1, WBC 1.3, and platelet count 5,000. After IV access is obtained, he is given a fluid bolus and a "type and hold" for blood status is ordered.

1. In the case above, you decide to transfuse the 26 kg patient with both PRBCs and one unit of single donor platelets. Which is the best way to transfuse the PRBCs?
 - a. Transfuse 2 units, each over 6 hours, with furosemide in between the units.
 - b. Transfuse 1 unit over 3 hours
 - c. Transfuse 390 ml over 4 hours
 - d. Transfuse 260 ml over 2 hours
2. During the transfusion of platelets, this patient develops 3 small hives (urticarial lesions) on his back. Which is the correct response? No pre-medications were given.
 - a. Continue the transfusion. Stop and medicate if more hives appears.
 - b. Stop the transfusion. Give diphenhydramine and proceed when the hives clear.
 - c. Stop the transfusion. Draw blood for type and cross to check the crossmatch for that unit. Give diphenhydramine, and proceed with the same unit when the hives clear, and if the repeated crossmatch is OK.
 - d. Stop the transfusion. Give diphenhydramine and methylprednisolone, and proceed when the hives resolve.
3. During the transfusion of PRBC, the child starts to complain of lower back pain during the transfusion. What is most likely happening?
 - a. A febrile reaction from donor white blood cells causing an inflammatory response.
 - b. A hemolytic reaction involving donor antibodies to recipient red blood cells.
 - c. A hemolytic reaction involving donor red blood cells and recipient antibodies.
 - d. Recipient mast cell histamine release, stimulated by donor antigen presenting cells.
4. All of the following should be done with this complaint of lower back pain, EXCEPT:
 - a. Consider IV corticosteroids.
 - b. Hydrate with IV fluid bolus.
 - c. Repeat crossmatch with unit of blood being transfused.
 - d. Administer subcutaneous epinephrine.

5. Which of the following children should receive a transfusion of PRBC?
- A 2 year old with Hgb 2.8 g/dl (etiology unclear at the moment), HR 200, with gallop.
 - A 2 year old Jehovah's Witness with Hgb 2.8 g/dl (etiology unclear at the moment), HR 200 with gallop.
 - A 4 year old just diagnosed with Neuroblastoma, Hgb 6.8 g/dl, HR 134.
 - A 13 year old girl, presents with butterfly rash on her face, has fevers, Hgb 6.8 g/dl, rales, splenomegaly, HR 156.
 - All of the above
6. Irradiation of blood products:
- Will prevent donor white blood cells from proliferating in the recipient's body.
 - Will kill many common infections that could be transmitted in extraneous donor WBC or plasma.
 - Could, in theory, take the place of blood filters.
 - Is very expensive and tedious, and therefore should be used in only selected cases.
7. An 11 month old boy weighs 7.5 kg, and has Fe deficiency anemia with a Hgb 2.2 g/dl. HR is 188. You decide to transfuse him. Which is the best way to transfuse him with PRBCs (checking the Hgb at appropriate intervals)?
- Transfuse 150 ml over 12 hours.
 - Transfuse 2 half units, each over 4 hours.
 - Transfuse 15 cc/kg, i.e. about 112 ml slowly over 6 hours, then start oral Fe.
 - Transfuse slowly at <3ml/kg/hour, with subunits from a unit split in the blood bank, and discard the remainder of each subunit after 4 hours.
8. All are true of a neonatal unit (of red blood cells) EXCEPT:
- Always CMV negative.
 - Always irradiated.
 - Intended only for babies <2 months of age.
 - Always O negative.

Chapter XI.8. Neutrophil Disorders

1. The risk of infection with neutropenia is highest when:
- Neutropenia onset is rapid
 - Low bone marrow cellularity is present
 - Peripheral destruction of neutrophils is occurring
 - Anti-neutrophil antibody is present
2. The most common cause of neutropenia is:
- Anti-neutrophil antibody
 - Drugs
 - Infection
 - Bone marrow failure
 - Malignancy
3. Neutropenia associated with steatorrhea is most characteristic of:
- Cystic fibrosis
 - Kostmann syndrome
 - Evan's Syndrome
 - Chediak-Higashi Syndrome
 - Shwachman-Diamond Syndrome

4. Neutrophil defect associated with increased infections with catalase-negative organisms
 - a. Hyper-IgE syndrome
 - b. Leukocyte adhesion deficiency type I
 - c. Leukocyte adhesion deficiency type II
 - d. Chronic granulomatous disease
 - e. Pseudo-neutropenia

5. Infections in children with defects in neutrophil function are characterized by:
 - a. Decreased inflammation that may mask serious infection
 - b. Indolent, chronic infections
 - c. Bacterial and fungal organisms
 - d. Elevated erythrocyte sedimentation rate
 - e. All of the above

Section XII. Oncology

Chapter XII.1. Oncology Treatment Principles

1. What are some common opportunistic infections associated with immunosuppression induced by chemotherapy? What is the appropriate prophylaxis for these patients?
2. Give an example of a drug from each of the five classes of current chemotherapy in use.
3. What is a serious side effect for methotrexate use especially intrathecally delivered?
4. What is the mechanism responsible for most chemotherapeutic complications?
5. Where are various places that stem cells may be harvested from in the body?

Chapter XII.2. Leukemia and Lymphoma

1. You are called to the ER to evaluate a 10 year old boy who has been tired for 2 weeks and his parents noticed that he becomes short of breath when he walks upstairs to go to his bedroom. Upon your physical exam, you note that he has some shortness of breath when he is placed in the supine position. Which of the following procedures might you consider initially ?
 - a. Arrange for a better examination of the lungs and possible diagnostic biopsy under general anesthesia.
 - b. PA and Lateral chest x-ray.
 - c. An MRI of the chest to rule out an enlarged heart.
 - d. Diagnostic fine needle aspirate without general anesthesia to find out why he is short of breath.

2. One of your patients (5 year old female) was diagnosed with ALL 6 months ago and is being treated by a pediatric hematologist/oncologist with chemotherapy. She now wants to start back to school and the school administration tells the parents that she needs to be up to date on her immunizations. They would like her MMR administered. What advice do you offer them?
 - a. Even though the child is on chemotherapy, there is evidence that her immune status is competent, therefore she can be given all of her scheduled immunizations.
 - b. Her immune system will only mount an immune response to live, attenuated vaccines, therefore she can receive the MMR vaccine as scheduled.
 - c. MMR vaccine is contraindicated in a child receiving chemotherapy for cancer.
 - d. The parents should wait until the child recovers from the side effects of the current cycle of chemotherapy and then make an appointment for the MMR vaccine.

3. As the pediatrician of a 7 year old boy who was diagnosed with NHL at 4 years of age and successfully completed chemotherapy, the parents made an appointment to have him see you because they were advised by the boy's teacher that he has not been keeping up academically. You review the boy's medical history, and other than the chemotherapy, you do not see anything that would account for the poor school performance. What is the best advice to the parents?

- a. You remind the parents that because of the child's past medical situation, he has a feeling of neglect and abandonment therefore will need some remedial attention to overcome the psychological condition, which is causing his poor academic performance.
- b. There is a high likelihood that the child has a secondary brain tumor, and may need a CT scan of the head.
- c. Having received therapy which compromised the child's immune status, he most likely has meningitis, therefore should be admitted for therapy.
- d. Children who have received chemotherapy and/or radiation may experience delays in growth and development, therefore further testing and gathering of information should be suggested.

4. You are the primary pediatric resident on the hematology/oncology team and covering the service over the weekend. A 6 year old was admitted on Thursday, with a history of being tired, shortness of breath, pallor and weight loss. A prompt and efficient workup revealed a diagnosis of T-cell NHL. Following the family conference and consent process to begin the child on a lymphoma protocol, treatment was started by the weekend. The chemotherapy is being administered properly, with attention to tumor lysis precautions, including vigorous hydration. As you make your midnight rounds, you notice that the documentation of fluid input and output shows a large discrepancy. The amount of fluid administered (orally and intravenously) is almost twice the volume as the urine output. You suspect that the patient is experiencing complications from the chemotherapy and think you should do which of the following:

- a. Increase the hydration because the fluid balance is not equal, and the patient should be receiving more than twice maintenance fluid intake during induction chemotherapy.
- b. Perform a thorough physical exam, have the patient weighed, repeat the serum electrolytes immediately to determine if the patient is fluid overloaded.
- c. The patient is experiencing renal failure, and needs immediate consultation by a nephrologist to begin dialysis.
- d. You decide that the oral fluid intake has not been taken into consideration, which it should be, and estimate the amount the patient has been taking in orally based on what was served on his meal trays. By your calculations, the total fluid intake and output is equal, therefore no further action is needed.

5. The parents of a 5 year old boy bring their son to see you because they are concerned that their son has leukemia. His 3 year old sister had a URI 2 weeks ago, but fully recovered and has been back in school and active. This 5 year old boy has URI symptoms now. They noticed bruising on his legs and arms over the last few days, and their neighbor's daughter had similar findings 2 years ago before she was diagnosed with acute lymphoblastic leukemia. The mother's grandfather died at the age of 80 from leukemia. Your physical exam is unremarkable except for the bruises noted on the anterior legs and on the forearms. He is playful and cooperative. What course of action or advice should you do next?

- a. Because of the strong family history of ALL and the leukemia case in the neighborhood, you should pursue a presumed workup of ALL and notify the state Cancer Control Division.
- b. Obtain a complete blood count.
- c. The bruising strongly makes you suspicious of possible child neglect or abuse. Reassure the parents that you do not suspect them, but you should alert them of your concerns and find out who could possibly be the perpetrator.
- d. Since the bruises are the only abnormal finding, you are less concerned about leukemia, therefore you alleviate the parents' concerns and tell them that the bruising is most likely related to the child's aggressive activities at school.

Chapter XII.3. Solid Tumor Childhood Malignancies

1. A 2 year old boy presents with a large right flank mass, fever, weight loss, proptosis of the right eye, and ecchymosis around the right eye. The most likely diagnosis is:
 - a. Wilms' tumor
 - b. Neuroblastoma
 - c. Hydronephrosis
 - d. Metastatic neuroblastoma

2. What is the most common secondary tumor that develops after survival of retinoblastoma?
 - a. Neuroblastoma
 - b. Soft tissue sarcoma
 - c. Osteosarcoma
 - d. Acute lymphocytic leukemia

3. Which one of the syndromes in the following list is not associated with Wilms' tumor?
 - a. Beckwith-Wiedemann syndrome
 - b. Li-Fraumeni syndrome
 - c. WAGR syndrome
 - d. Denys-Drash syndrome

4. If a teenager comes in complaining of night pain in his knee, which disorder should be at the top of your differential? Which would be the most likely, and which would be the most serious likely consideration?
 - a. Juvenile Rheumatoid Arthritis
 - b. Osteosarcoma
 - c. Paget's Disease
 - d. Stress fracture
 - e. Growing pains

5. Retinoblastoma is often detected by:
 - a. Primary care physicians performing routine ophthalmoscopy checks for a red reflex, but finding a white reflex instead.
 - b. Flash photography of infants and children done by family members.
 - c. Incidental finding on CT scans done for head trauma.
 - d. Genetic counseling and risk analysis.
 - e. Detection of an orbital bruit.

Chapter XII.4. Palliative Care

1. True/False: There is no "ceiling" on the amount of pain medication that can be used in palliative care.
2. True/False: Transfusions are not appropriate for terminally ill patients.
3. True/False: NSAIDs and acetaminophen can potentiate the action of opioids
4. True/False: The amount of pain medication required is whatever it takes to eliminate the pain.
5. True/False: Although the physical suffering related to a child's dying may not be totally eliminated, there is no reason for the child to be in pain.

Section XIII. Nephrology/Urology

Chapter XIII.1. Nephritic Syndrome

1. When does the complement C3 level return to normal in APSGN?
2. What is the significance of finding red cell casts in the urine?
3. What is the significance of finding white cell casts in the urine?
4. How long does hematuria persist in APSGN?
5. Describe some indications for hospitalization of patients with APSGN.
6. What are the clinical elements of the nephritic syndrome?
7. What are classic causes of the nephritic syndrome?
8. A 5 year old boy has a screening urinalysis as part of a general physical exam. The UA shows microscopic hematuria. History suggests that he has impetigo periodically. What a likely cause for the microscopic hematuria?

Chapter XIII.2. Nephrotic Syndrome

1. The most common cause of primary idiopathic nephrotic syndrome is:
 - a. Focal segmental glomerular sclerosis
 - b. Membranoproliferative glomerulonephritis
 - c. Membranous glomerulopathy
 - d. Minimal change disease
2. Common causes of mortality in primary nephrotic syndrome is/are:
 - a. Acute renal failure
 - b. Thromboembolism
 - c. Congestive heart failure
 - d. Peritonitis
 - e. Seizure
3. True/False: A renal biopsy is necessary to confirm the diagnosis of primary idiopathic nephrotic syndrome.
4. The inheritance pattern of primary idiopathic nephrotic syndrome is/are:
 - a. Autosomal recessive
 - b. X-linked recessive
 - c. Autosomal dominant
 - d. Sporadic
5. Reasons for biopsy in a patient with nephrotic syndrome include:
 - a. Continued proteinuria after a week of prednisone therapy.
 - b. Age at onset of 10 months.
 - c. Relapse 1 year after initial course of therapy.
 - d. Cholesterol level greater than 400 mg/dL.
 - e. A patient who has a history of systemic lupus erythematosus

Chapter XIII.3. Cystic Kidneys

1. Which renal cystic diseases are inherited? What is the most common inherited renal disease?
2. How can you differentiate between ARPKD and ADPKD?
3. Compare the outcomes of MCDK and ARPKD?
4. What abnormalities besides renal manifestations should a clinician look for on physical examination of a patient with ARPKD?
5. Do extrarenal manifestations of ADPKD usually present in children?

Chapter XIII.4. Dialysis

1. What are the indications for dialysis in pediatric patients?
2. What situation is CVV-HD preferred over HD or PD?
3. What are the advantages of PD?
4. What are three complications that may occur in patients undergoing hemodialysis?
5. What are some long term complications of renal failure?

Chapter XIII.5. Hemolytic Uremic Syndrome

1. What is the likely etiology of D+ HUS?
2. What defines HUS?
3. What types of blood cells would be most consistent with a diagnosis of HUS in a 3 year old child with bloody diarrhea?
 - a. Atypical lymphocytes
 - b. Elliptocytes
 - c. Myeloblasts
 - d. Schistocytes
 - e. Spherocytes
4. What is the strongest indication for dialysis?
 - a. Serum sodium of 120
 - b. Initial bicarbonate of 14
 - c. Serum BUN 120 mg/dL
 - d. Initial K of 5.2
 - e. Anuria for 3 days
5. True/False: The severity of hemolysis correlates with degree of renal failure?
6. A 3 year old girl presents with signs and symptoms of intussusception which include crampy intermittent abdominal pain, crying with puffy eyes, currant jelly diarrhea, pallor, dehydration and oliguria. Could this patient have HUS? Explain how all of the findings above could be due to HUS instead.

Chapter XIII.6. Urinary Tract Infection

- 1. When is it appropriate to treat empirically for UT! without first properly obtaining an adequate urine specimen for culture?**
- 2. What factors affect the decision of how to obtain a urine specimen when UT! is being considered? How will the method of collection affect the interpretation of culture results? When is a urine specimen obtained by bag collection a definitive test for UT!?**
- 3. What are some host and pathogen factors contributing to the development of UT!?**
- 4. How is pyelonephritis distinguished from lower tract UT!/? What is the importance of making the distinction?**
- 5. What is the commonest clinical presentation of UT! in the child under 2 years of age? What are some associated signs and symptoms which may be present?**
- 6. Which clinical features of UT! are reason to consider parenteral therapy and/or hospitalization?**
- 7. How would you explain to parent and child the technique of obtaining a clean catch mid-stream urine sample: in girls and in circumcised and uncircumcised boys?**
- 8. Familiarize yourself with the technique of transurethral bladder catheterization in male and female infants and toddlers, including: a) Prevention of specimen contamination, b) Selection of appropriate equipment, c) Relevant anatomic landmarks, and d) Possible complications.**

Chapter XIII.7. Hydronephrosis and Reflux

- 1. What is the most common congenital condition detected by prenatal US?**
- 2. What is the initial imaging study that should be done to evaluate a newborn with a history of antenatal hydronephrosis?**
- 3. What further studies should be obtained in a 2 day old male with US findings of hydroureteronephrosis, and a thick walled bladder? What diagnosis is suspected and what is the appropriate treatment?**
- 4. What are the two most common causes of newborn hydronephrosis and how are they distinguished one from another?**
- 5. What further tests should be ordered for the infant, with a history of prenatal hydronephrosis which persists on US on day 2 of life?**
- 6. What are the options for treatment of UPJ and/or UVJ obstructions?**
- 7. What is a ureterocele?**
- 8. What is the cause of primary vesicoureteral reflux?**
- 9. How does antibiotic prophylaxis for the management of vesicoureteral reflux prevent renal scarring?**
- 10. What are the indications for surgical treatment of primary vesicoureteral reflux?**

Chapter XIII.8. Circumcision

- 1. What does neonatal circumcision protect against?**
- 2. What are the 3 most common methods used to perform neonatal circumcision?**
- 3. What are the 2 most common complications of neonatal circumcision?**
- 4. What are the contraindications to performing a newborn circumcision?**
- 5. Should you recommend newborn circumcision? Why or why not?**

Chapter XIII.9. Enuresis

- 1. At what age do parents usually become concerned about bed-wetting?**
- 2. True/False: Most nocturnal enuresis is due to organic causes.**
- 3. Which drug for nocturnal enuresis is cardiotoxic?**
- 4. What laboratory test should be done to evaluate a child with enuresis?**
- 5. What is the bladder capacity of children?**
- 6. In evaluating a chronic bed-wetting child, what should you look for in an abdominal exam?**
- 7. True/False: Enuresis alarms produce excellent results if the child wakes up spontaneously when the alarm goes off.**

Chapter XIII.10. Acute Scrotum

- 1. What are the signs and symptoms that help to differentiate acute testicular torsion from epididymitis?**
- 2. How is color Doppler ultrasound helpful in the differential diagnosis of acute scrotum?**
- 3. What is the cremasteric Reflex? Prehn's sign? The blue dot sign? The bell clapper deformity?**
- 4. What is the time frame most advantageous to restoring viability of a torsed testicle?**
- 5. How is acute testicular torsion managed?**
- 6. How is acute epididymitis managed?**

Chapter XIII.11. Ambiguous Genitalia

- 1. What clinical findings in an apparent newborn male raise the possibility of intersexuality?**
- 2. What clinical findings in an apparent newborn female raise the possibility of intersexuality?**
- 3. What findings in an apparent adolescent suggest the possibility of intersexuality?**
- 4. What are the two most common causes of ambiguous genitalia in the newborn?**
- 5. What laboratory and imaging studies should be done to investigate the infant with ambiguous genitalia?**

6. What factors need to be weighed in deciding the appropriate sex of rearing for a newborn with ambiguous genitalia?

7. What genital reconstruction may be necessary in an infant with ambiguous genitalia and an assigned male sex of rearing? An assigned female sex of rearing?

Chapter XIII.12. Hypospadias

1. What is the incidence of hypospadias in newborn males in the United States?

2. Why is the presence of non-palpable gonads and hypospadias worrisome?

3. What are the anomalies most commonly associated with hypospadias?

4. What are the goals of hypospadias repair?

5. What are some common complications of hypospadias repairs?

6. Describe the possible locations for the hypospadiac urethral meatus.

7. How should chordee be described?

Section XIV. Critical Care and Emergency Medicine

Chapter XIV.1. Pulmocardiac Resuscitation

1. The most common cause of pulmocardiac arrest in children is:

- a. Acute myocardial infarction
- b. Hemorrhagic shock
- c. Nonaccidental trauma
- d. Ventricular fibrillation
- e. Hypoxia and respiratory failure

2. Endotracheal intubation is not indicated for which of the following:

- a. Control and protection of the airway.
- b. Prolonged mechanical ventilation.
- c. Tension pneumothorax.
- d. Hyperventilation of the patient with a head injury.
- e. Improved oxygen delivery and ventilation.

3. The drug/treatment of choice for asystole in children is:

- a. Atropine
- b. Calcium chloride
- c. Adenosine
- d. Defibrillation
- e. Epinephrine

4. A 12 year old child comes to the ED pulseless. ECG reveals a wide complex tachycardia.

Initial management should be:

- a. Immediate defibrillation.
- b. Immediate synchronized cardioversion.
- c. Adenosine
- d. Epinephrine

5. The most common cause of PEA in children is:

- a. Tension pneumothorax
- b. Metabolic acidosis
- c. Toxic ingestions
- d. Profound hypovolemia
- e. Hyperkalemia

6. The most common cause of bradycardia in children is:

- a. Hypokalemia
- b. Heart block
- c. Hypoxemia
- d. Toxic ingestions
- e. Myocarditis

Chapter XIV.2. Shock

1. Prioritize the initial management of the child with shock:

- a. Administer oxygen
- b. Administer volume resuscitation
- c. Support a patent airway
- d. Support blood pressure and perfusion with cardioactive drugs
- e. Administer antibiotics
- f. Address oxygen carrying capacity with administration of blood if anemia is present

2. The most sensitive indicator of intravascular volume in the pediatric patient is:

- a. Cardiac output
- b. Preload
- c. Heart rate
- d. Stroke volume

3. In the trauma patient with compensated shock, who is otherwise stable blood should be considered as part of volume resuscitation:

- a. Immediately after the airway is secured and intravenous access
- b. After 20 cc/kg of isotonic fluid has been administered without clinical response
- c. After 40 cc/kg of isotonic fluid has been administered without clinical response
- d. After 60 cc/kg of isotonic fluid has been administered without clinical response
- e. After isotonic fluid administration has resulted in inadequate clinical response and the patient requires operative repair

4. Which circulatory finding is the hallmark of the diagnosis of late (decompensated) shock?

- a. Capillary refill of 4 seconds
- b. Altered mental status
- c. Depressed anterior fontanelle
- d. Hypotension
- e. Absent distal pulses

5. An alert, 6 month old male has a history of vomiting and diarrhea. He appears pale and has an RR of 45 breaths per minute, HR of 180 beats per minute, and a systolic blood pressure of 85 mm Hg. His extremities are cool and mottled with a capillary refill time of 4 seconds. What would best describe his circulatory status?

- a. Normal circulatory status
- b. Early (compensated) shock caused by hypovolemia
- c. Early (compensated) shock caused by supraventricular tachycardia
- d. Late (decompensated) shock caused by hypovolemia
- e. Late (decompensated) shock caused by supraventricular tachycardia

6. Appropriate initial management for the child described in question 6 would include which of the following?
- Initiation of oral rehydration therapy
 - Placement of an intraosseous line, fluid bolus of 20 ml/kg of normal saline
 - Placement of an intravenous (IV) line, fluid bolus of 20 ml/kg of normal saline
 - Placement of an IV line, adenosine 0.1 mg/kg IV
7. A 2 month old infant is brought to the ED with a pulse of 180 and BP 50/35 mm Hg. A liver edge is palpable to the umbilicus. Skin is mottled, capillary refill is 6 seconds with weak distal pulses. Chest x-ray reveals cardiomegaly. During the administration of 20 ml/kg of Ringer's lactate, respirations become labored and rales are heard. The next step would be:
- Sodium bicarbonate 1 mEq/kg IV
 - Repeat fluid bolus 20 ml/kg
 - Dopamine 5 to 10 mcg/kg/min IV infusion
 - Synchronous cardioversion 0.5 joule/kg
 - Epinephrine 0.01 mg/kg of the 1:10,000 solution IV

Chapter XIV.3. Respiratory Failure

- True/False: To diagnose respiratory failure one must obtain an ABG.
- Etiologies of respiratory failure include:
 - burns
 - botulism
 - asthma
 - pneumonia
 - c & d
 - all of the above
- Upper airway problems are generally manifest by:
 - wheezing
 - grunting respirations
 - stridor
 - tracheal deviation
- A previously healthy child with acute onset of respiratory distress and unilateral wheezing should be suspected of having:
 - reactive airway disease
 - croup
 - foreign body
 - epiglottitis
- Children with a neurologic conditions resulting in respiratory failure often display:
 - retractions
 - rapid abdominal breathing
 - head bobbing
 - none of the above
- Reactive airway disease is characterized by:
 - distal airway swelling
 - increased secretions
 - airway constriction
 - wheezing
 - all of the above
- True/False: Respiratory distress in a child with a tracheostomy should be considered a plugged or misplaced tracheostomy tube, until proven otherwise.

8. ARDS is characterized by:
- large alveolar-arterial gradient
 - reduced compliance
 - low morbidity & mortality
 - a & b

Chapter XIV.4. Intubation

- True/False: Neuromuscular relaxants should always be used for endotracheal intubation.
- The appropriate ETT size for a 4 y.o. is: a) 5.0 b) 4.0 c) 6.5
- True/False: A cuffed ETT is appropriate for a 5 year old in respiratory failure.
- True/False: Bag mask ventilation should be used to ventilate a child with dysmorphic features until an anesthesiologist is available for endotracheal intubation.
- True/False: For infants, a Macintosh blade is the most useful for endotracheal intubation.
- In an intubated patient the most likely cause of acute deterioration is:
 - shock
 - airway problems
 - need for chest physiotherapy

Chapter XIV.5. Mechanical Ventilation

- SIMV stands for:
 - synchronized intermittent mandatory ventilation
 - simplified intermittent mechanical ventilation
 - synchronized interspersed mechanical ventilation
- Name 2 prerequisites for extubation.
- True/False: The ventilator FiO₂ should never be reduced below 40%.
- True/False: There are very specific, pediatric evidence based protocols that will guide you, step by step, on ventilation management.
- Minute ventilation = respiratory rate x _____
- Physiologic PEEP is (in mmHg):
 - 3-4
 - 1-2
 - 5-6
- A good indicator of adequate tidal volume is:
 - good chest rise
 - adequate breath sounds
 - oxygen saturation = 100%
 - a and b
- As compliance worsens in a child receiving pressure controlled mechanical ventilation, the TV delivered to the patient will:
 - increase
 - decrease

9. If the patient has the ABG: pH 7.28, pCO₂ 50, pO₂ 120, BE -3, which of the following ventilator changes would NOT be a good idea:

- a. decrease the FiO₂
- b. decrease the I-time
- c. decrease the PEEP
- d. decrease the rate

Chapter XIV.6. Submersion Injuries

1. All of the following are considered risk factors for drowning except:

- a. Head trauma
- b. Alcohol use
- c. Upper respiratory infection with wheezing
- d. Seizure disorder
- e. Illegal drug use

2. True/False: The American Academy of Pediatrics advocates swimming classes for all children over two years of age.

3. Which of the following factors is associated with a poor outcome in a drowning case?

- a. Low blood sugar level
- b. Submersion longer than 5 minutes
- c. Drug or alcohol use
- d. Return of spontaneous cardiac rhythm following CPR
- e. CPR for less than 3 minutes

4. Which of the following interventions will improve the outcome in a drowning victim?

- a. Early intubation
- b. Transfer to a trauma center
- c. Intravenous access
- d. Early bystander CPR
- e. Cervical spine precautions

5. All of the following are complications after a submersion injury except?

- a. Adult respiratory distress syndrome (ARDS)
- b. Arrhythmias
- c. Renal dysfunction
- d. Hyponatremia
- e. Aspiration pneumonia

Chapter XIV.7. Pneumothorax and Other Air Leaks

1. True/False: A primary spontaneous pneumothorax in a tall thin boy does not require further work-up other than for treatment of the pneumothorax.

2. In order to emergently decompress a tension pneumothorax, one should insert a large bore needle between:

- a. the second and third interspace in the midaxillary line
- b. the fourth and fifth interspace in the midclavicular line
- c. either a or b
- d. neither a or b

3. List the different categories and classifications of pneumothoraces.

4. Pick the two conditions which you would most likely to encounter a tension pneumothorax:
 - a. NICU ventilator patient for RDS.
 - b. Near drowning patient on blow-by oxygen.
 - c. Hydrocarbon aspiration.
 - d. Blunt chest trauma.
 - e. Stab wound to the mid lateral torso.

5. True/False: A chest tube is always the standard of care for the treatment of a pneumothorax.

6. A "sucking chest wound" refers to what kind of air-leak syndrome?
 - a. Interstitial emphysema
 - b. Simple pneumothorax
 - c. Tension pneumothorax
 - d. Communicating pneumothorax
 - e. Pneumomediastinum

Chapter XIV.8. Trauma

1. The first priority in the resuscitation phase of any pediatric trauma patient is:
 - a. To immediately establish vascular access.
 - b. To establish and maintain patency of the airway while maintaining cervical spine immobilization.
 - c. To obtain immediate x-rays and laboratory studies in order to ascertain the patient's overall status.
 - d. To alleviate any pain with intravenous analgesics in order to facilitate a more reliable physical examination.

2. The leading cause of death in children >1 year of age is:
 - a. Sudden infant death syndrome.
 - b. Lethal cardiac dysrhythmias.
 - c. Meningitis.
 - d. Trauma.
 - e. Leukemia.

3. The most common etiology of shock in the pediatric trauma patient is:
 - a. Neurogenic shock.
 - b. Cardiogenic shock.
 - c. Anaphylactic shock.
 - d. Hypovolemic shock.
 - e. Tension pneumothorax.

4. The main goal of the primary survey of trauma resuscitation includes:
 - a. Obtaining STAT portable radiographs of the neck, chest and abdomen.
 - b. Assessment and stabilization of the child's airway, breathing and circulation.
 - c. Obtaining immediate vascular access with a central line.
 - d. Performing immediate endotracheal intubation to prevent aspiration.
 - e. A trauma surgeon must be present to perform the primary survey.

5. All of the following statements regarding pediatric trauma are true except:
 - a. The majority of pediatric trauma-related fatalities are due to motor vehicle related accidents.
 - b. The majority of trauma that occurs in children is due to blunt trauma rather than penetrating trauma.
 - c. Cervical spine trauma is more common than abdominal trauma.
 - d. Multisystem trauma is common in children who sustain motor vehicle related accidents.

6. The abdominal organ that is most commonly injured in children is the:
- Duodenum.
 - Pancreas.
 - Liver.
 - Kidneys.
 - Spleen.
7. What area of the body is associated with the greatest frequency of serious injuries in children?
- Head.
 - Neck.
 - Chest.
 - Abdomen.
8. Which of the following scenarios would be most suspicious for possible child abuse?
- A 2 year old who presents with a tibial fracture after reportedly falling down a few steps.
 - A 1 year old who presents with a forehead hematoma after reportedly falling out of a stroller.
 - A 3 month old who presents with a nondisplaced femur fracture after reportedly rolling off the changing table.
 - A 3 year old who presents with a spiral fracture of the tibia after reportedly getting his leg twisted while falling off a tricycle.

Chapter XIV.9. Toxicology

1. The majority of accidental ingestions in the pediatric population occur in which age group?
- 6 months to 1 year of age.
 - 18 months to 3 years of age.
 - 4 years to 6 years of age.
 - 8 years to 12 years of age.
2. The most common route of toxic exposures is via:
- Inhalation.
 - Dermal contact.
 - Bites and stings.
 - Ingestion.
 - Ocular contact.
3. A mother of a 2 year old boy calls you because she suspects that her son may have eaten a few of his grandmother's "heart pills." She claims that her son seems fine and that the possible ingestion may have occurred 30 minutes ago. What is the best action for you to take as the child's pediatrician?
- Have the mother induce vomiting immediately by sticking her finger in the child's mouth.
 - Immediately give the child eight ounces of water or milk to dilute the concentration of pills in his stomach.
 - Have her administer ipecac syrup immediately in order to induce vomiting.
 - Advise no interventions at the present time, but also advise her that if the child should begin to develop any symptoms to go to the emergency department for further treatment.
 - Call you local poison control center immediately for advice.
4. The gastrointestinal decontamination method of choice for a child who presents to the emergency department with multiple episodes of vomiting two hours after ingesting a toxic amount of iron is:
- Syrup of ipecac.
 - Orogastric lavage.
 - Activated charcoal with sorbitol.
 - Multiple doses of activated charcoal.
 - Whole bowel irrigation.

5. A child with a suspected ingestion presents to the emergency department with delirium, tachycardia, mydriasis, dry mucous membranes and warm/dry skin. This child exhibits signs and symptoms of which toxidrome?

- a. Anticholinergic.
- b. Sympathomimetic.
- c. Cholinergic.
- d. Opioid.
- e. Sedative hypnotic.

6. A parent suspects that her 18 month old son may have accidentally ingested a few pellets of rat poison. The mother should:

- a. Not panic and simply wait to see if her son develops any signs and symptoms of toxicity before calling her pediatrician.
- b. Call 911 immediately since this may be a medical emergency.
- c. Call her local poison control center immediately for advice, rather than waiting to see if her son will develop signs and symptoms of toxicity.
- d. Induce vomiting by giving her son a teaspoon of ipecac syrup.
- e. Rush her son to the nearest emergency department for immediate gastric lavage and activated charcoal.

7. Activated charcoal would NOT be an effective method of gastrointestinal decontamination for which one of the following ingestions?

- a. Albuterol.
- b. Ferrous sulfate.
- c. Amoxicillin.
- d. Carbamazepine.
- e. Phenobarbital.

Chapter XIV.10. Acetaminophen Overdose

1. The toxic intermediate N-acetyl-p-benzoquinoneimine is formed via which pathway?

- a. Sulfation
- b. Glucuronidation
- c. Cytochrome P-450
- d. Glutathionation

2. True/False: An adolescent presents with an acute ingestion of acetaminophen 5 hours prior. She is lethargic and is not responding appropriately. This clinical presentation is due to the acetaminophen toxicity.

3. If charcoal has been given, the dose of N-acetylcysteine should be increased by:

- a. Not increased.
- b. 5-10%
- c. 10-20%
- d. 30-40%
- e. 50-60%

4. True/False: Hepatotoxicity is rare in children with a single dose acetaminophen ingestion.

5. N-acetylcysteine is most effective if given within how many hours of the acetaminophen ingestion?

6. Which is the first clinical stage that liver function tests may be abnormal?

- a. Stage I
- b. Stage II
- c. Stage III
- d. Stage IV

7. A patient arrives to the emergency department 7 hours after intentionally ingesting an unknown amount of acetaminophen. What should be done?
- Directly admit the patient to the floor and await a psychiatric consult.
 - Draw a stat acetaminophen level and await the result before further treatment.
 - Give the patient syrup of ipecac if she has not vomited and then administer activated charcoal.
 - Draw a stat acetaminophen level and administer NAC.

Chapter XIV.11. Iron Overdose

1. True or False: Charcoal is effective in binding iron and should be given in significant iron ingestions.
2. A 3 year old female (15 kg) ingested 15 of her mom's prenatal (325 mg ferrous sulfate) iron tablet. How much elemental iron per kilogram did she take?
- 15 mg/kg
 - 25 mg/kg
 - 45 mg/kg
 - 65 mg/kg
 - 85 mg/kg
3. Deferoxamine chelates the:
- Ferrous ion (Fe^{++}).
 - Ferric ion (Fe^{+++}).
4. The two basic mechanisms of iron toxicity include:
- Direct corrosive effect on the gastrointestinal mucosa.
 - Formation of a toxic metabolite.
 - Binding to the protein transferrin.
 - Toxic effect of the free ion.
5. Gastrointestinal symptoms may improve in which clinical (latent) stage of iron poisoning?
- Phase I
 - Phase II
 - Phase III
 - Phase IV
 - Phase V
6. True or False: Total iron binding capacity (TIBC) is a reliable predictor of toxicity in iron poisoning?
7. The whole bowel irrigation rate in children is?
- 5 ml/kg/h.
 - 25 ml/kg/h.
 - 75 ml/kg/h.
 - 100 ml/kg/h.
8. The deferoxamine infusion rate should initially be started at:
- 15 mg/kg/h.
 - 25 mg/kg/h.
 - 40 mg/kg/h.
 - 50 mg/kg/h.

Chapter XIV.12. Child Abuse

1. A one year old child presents with facial bruising and a spiral fracture of the right femur. The parents state the child was bouncing on the bed and fell off and hit a nightstand. The leg is splinted in the emergency room. The patient has stable vital signs and does not appear to be in any pain. Child protective services has been contacted and a report has been filed. The hospital social worker wants to discharge the patient home pending the investigation. This child is medically stable for discharge. Should he be sent home?
2. What is Munchausen syndrome by proxy?
3. Define failure to thrive?
4. What is the key to determining nonaccidental injury as opposed to accidental injury?
5. True/False: Bruises that have different coloring can be used to date the time of the injuries.

Section XV. Endocrinology

Chapter XV.1. Diabetes Mellitus

1. What is a reasonable goal range for infants, children, and teens?
2. Which type of diabetes is primarily an autoimmune problem?
3. The identical twin of a patient with type 1 diabetes has what risk for developing type 1 diabetes?
4. Which antibodies are often present in type 1 diabetes?
5. What is a hemoglobin A1C?
6. In the early phases of type 2 diabetes, is the fasting blood sugar or the postprandial blood sugar elevated?

Chapter XV.2. Thyroid Disorders

1. True/False: The major secretory product of the thyroid gland is T3.
2. True/False: A low T4 and low TSH at newborn screening suggests thyroid dysgenesis.
3. True/False: Most patients with Hashimoto thyroiditis present with a goiter and are asymptomatic.
4. True/False: Graves' ophthalmopathy is more severe in children than in adults.
5. True/False: Graves' disease occurs equally among males and females.
6. True/False: Papillary carcinoma is the most common type of thyroid cancer in children.

Chapter XV.3. Short Stature

1. What is the AMPH of a girl whose mother is 175 cm (5'9") and father is 193 cm (6'4")?
2. A) How should height be measured on a 22 month old boy? B) How should height be measured on a 39 month old girl?

3. You are evaluating a boy with a height below the 5% for age and weight is at the 50% for age. You are concerned that his growth is secondary to an endocrine cause. Should you order a serum growth hormone level in your work-up?
4. How do you obtain a bone age on a 20 month old child?
5. What is the cause of short stature in a 14 year old boy with a normal growth velocity and Tanner 2 genitalia on physical exam?

Chapter XV.4. Adrenal Disorders

1. Urinary excretion rates of 17-hydroxycorticosteroids (17-OHCS) reflect the blood levels of:
 - a. Mineralocorticoids
 - b. Glucocorticoids
 - c. Sex steroids
 - d. Adrenal androgens
2. The daily secretory rate for plasma cortisol is approximately:
 - a. 5 mg / square meter / day
 - b. 12 mg / square meter / day
 - c. 25 mg / square meter / day
 - d. 50 mg / square meter / day
3. Congenital adrenal hyperplasia due to 21-alpha-hydroxylase deficiency is inherited as a(n):
 - a. Autosomal recessive trait.
 - b. Autosomal dominant trait.
 - c. X-linked recessive trait.
 - d. Sporadic disorder from a spontaneous gene mutation.
4. Acquired adrenal insufficiency in school age children and adolescents may present with:
 - a. Hypertension and a "Buffalo Hump".
 - b. Hypernatremia and hypokalemia.
 - c. Hypoglycemia and postural hypotension.
 - d. Biochemical findings of suppressed ACTH levels.
5. Chronic, primary adrenal insufficiency (Addison's disease) in children is most commonly due to:
 - a. Tuberculosis
 - b. Adrenal hemorrhage
 - c. Autoimmunity
 - d. Tumor
6. True/False: If patients have received large doses (i.e., greater than physiologic replacement) of glucocorticoids for a short period of time (i.e., less than one month) or small doses (i.e. less than physiologic replacement) for any period of time, adrenal function will likely resume shortly after cessation of therapy.
7. Which of the following is a hypertensive form of congenital adrenal hyperplasia?
 - a. Simple virilizing 21-hydroxylase deficiency
 - b. Salt-losing 21-hydroxylase deficiency
 - c. 11-hydroxylase deficiency
 - d. 3-beta dehydrogenase deficiency

8. Which of the following laboratory tests are most appropriate for monitoring the effectiveness of steroid replacement therapy in acquired, primary adrenal insufficiency ?

- a. 17-OH progesterone, androstenedione and ACTH levels.
- b. fractionated catecholamines and homovanillic acid (HVA) levels.
- c. post-dexamethasone urinary free cortisol and 17OH corticosteroids levels.
- d. ACTH, plasma renin and serum electrolyte levels.

9. A 2 week old infant presents with projectile vomiting and dehydration. The infant's electrolytes are as follows: Na 126, K 6.5, Cl 92, Bicarb 15, glucose 60. These electrolyte results are most compatible with which of the following diagnosis ?

- a. pyloric stenosis with bicarbonate loss from repeated vomiting.
- b. congenital Cushing's syndrome from excess mineralocorticoid effect.
- c. pheochromocytoma from excess catecholamine effect.
- d. salt-wasting CAH from mineralocorticoid deficiency.

10. Cushing's syndrome is characterized by the presence of:

- a. hyponatremia and hyperkalemia.
- b. an elevated urinary free cortisol excretion.
- c. genital virilization from excess adrenal androgens.
- d. low serum cortisol and increased ACTH levels.

Chapter XV.5. Antidiuretic Hormone

1. What is actions does ADH have?
2. What clinical manifestations might one see in a case of diabetes insipidus?
3. How might one distinguish nephrogenic from central diabetes insipidus?
4. Are levels of ADH under regulatory control in SIADH?
5. What is the most common neoplastic cause of SIADH?
6. If hyponatremia is found, what is the most useful next test to determine the etiology of the hyponatremia.
7. True/False: 3% sodium chloride solution (hypertonic saline) can be used safely to raise the serum sodium level in SIADH.

Chapter XV.6. Calcium Disorders

1. True/False: The main biochemical findings in hypoparathyroidism are hyperphosphatemia and hypocalcemia.
2. True/False: Calcitonin injections can be used to raise a patient's serum calcium level.
3. True/False: Breast feeding prevents rickets.
4. True/False: Elevated levels of parathyroid hormone always result in hypercalcemia.
5. True/False: Vitamin D alone is curative all various forms of rickets.

Section XVI. Rheumatology

Chapter XVI.1. Systemic Lupus Erythematosus

- 1. List at least 6 of the 11 diagnostic criteria for SLE.**
- 2. Name 3 drugs which are used for the treatment of SLE.**
- 3. Which of the following statements are false?**
 - a. Leading causes of morbidity and mortality for children with SLE are infection, renal disease, and CNS involvement.**
 - b. ANA, anti-ds DNA antibodies, anti-Sm antibodies are part of the criteria for diagnosis of lupus**
 - c. Ophthalmologic complications are infrequent in children with SLE**
 - d. UV emissions may exacerbate lupus**
- 4. True/False: A positive ANA test is a useful screening test for SLE?**
- 5. True/False: Patients with a lupus anticoagulant have a prolonged PTT and they have hemorrhagic tendencies similar to patients with hemophilia.**

Chapter XVI.2. Juvenile Rheumatoid Arthritis

- 1. Which of the following tests has a high positive predictive value for JRA**
 - a. erythrocyte sedimentation rate**
 - b. C-reactive protein**
 - c. HLA-B27**
 - d. antinuclear antibody**
 - e. white blood count**
- 2. True/False: JRA is largely a clinical diagnosis.**
- 3. True/False: All patients with suspected JRA should be referred to an ophthalmologist for a thorough eye examination.**
- 4. Name three types of JRA and how are they different.**
- 5. List some pharmacologic treatments for JRA that have been used or are being studied.**
- 6. Non-steroidal anti-inflammatory drugs (NSAIDs) inhibit inflammation, reduce fever and reduce pain. Theoretically, how does the action of NSAIDs in treating JRA differ from the action of NSAIDs treating an ankle sprain?**

Chapter XVI.3. Vasculitis

- 1. Which immunoglobulin is prominently involved with the lesions of Henoch-Schonlein purpura?**
- 2. What is the tetrad of Henoch-Schonlein purpura?**
- 3. What histopathological term is used to describe the light microscopic findings in the skin biopsy of HSP?**
- 4. Infantile polyarteritis nodosa (IPAN) is considered by some to be the severe end of the spectrum of which other vasculitis of childhood?**
- 5. Name three connective tissue diseases of childhood, which are sometimes complicated by vasculitis.**

Section XVII. Ophthalmology

Chapter XVII.1. Neonatal Conjunctivitis and Eye Prophylaxis

1. Which details of this patient's presentation (in the case) distinguish his illness from neonatal N. gonorrhoeae infection?
2. Besides the infant presented in the case vignette, which other family members should be treated for this condition?
3. What etiologies should be considered when a neonate presents with eye drainage?
4. Of 1% silver nitrate solution, 0.5% erythromycin ointment, 1% tetracycline ointment and 2.5% povidone-iodine solution, which is/are considered effective for prophylaxis of ocular chlamydial infection?
5. What is the treatment for C. trachomatis ophthalmia? For N. gonorrhoeae ophthalmia?
6. What are the long-term complications of N. gonorrhoeae ophthalmia neonatorum? Of neonatal C. trachomatis infection?
7. Infants under 6 weeks of age are at increased risk for the development of what disease following treatment with erythromycin?

Chapter XVII.2. Primary Care Eye Examination

1. What is the differential diagnosis of an absent pupillary light reflex (red reflex)?
2. What condition causes leukocoria?
3. A parent is worried that her Asian baby has crooked eyes. How would you assess whether this is pseudostrabismus?
4. What is the distance of focus for infants?
5. At what age can an infant follow an object to the midline, past the midline, and 180 degrees?
6. How can you assess extraocular movements in the uncooperative or young child?
7. What is one way you can look at the fundus in the uncooperative child?

Chapter XVII.3. Strabismus and Amblyopia

1. What is the most common form of infantile strabismus?
2. What is the upper age limit in the definition of infantile esotropia?
3. How is amblyopia most commonly treated?
4. Name 3 entities in the differential diagnosis of infantile esotropia.
5. By what age should surgery be undertaken for infantile esotropia?
6. What is the consequence of not recognizing infantile strabismus in a timely fashion?

Chapter XVII.4. Eye Infections and Conjunctivitis

1. Herpes simplex conjunctivitis:

- a. may be chronic.
- b. may be associated with skin vesicles.
- c. may recur.
- d. all of the above.

2. Common causes of periorbital cellulitis include the following:

- a. sinusitis
- b. chalazion
- c. dental infection
- d. eyelid skin laceration

3. A three-year old boy presents with an acute red lump in his right upper eyelid, the pediatrician diagnoses that it is an acute chalazion. What are the proper treatments?

- a. warm compress
- b. antibiotic eyedrops
- c. oral antibiotics
- d. topical corticosteroid

4. An 18 year old female presents with a chronic follicular conjunctivitis and a diagnosis of chlamydial conjunctivitis is made. What is the proper treatment?

5. A four month old male has congenital tear duct obstructions and has symptoms of chronic tearing and mucus. His primary care physician prescribes topical sulfacetamide drops three times a day to clear up the mucus, but after using the drops for one month, his eyelids are more erythematous than ever and the conjunctiva is more swollen and he constantly rubs his eyes. What should be done?

Chapter XVII.5. Corneal Abrasions

1. An eye with a corneal abrasion should be patched if:

- a. it is associated with a corneal infiltrate.
- b. it has been scratched by a fingernail.
- c. it occurs in a contact-lens wearer.
- d. it is large and is in the center of the cornea.

2. A 4 year old boy was playing with sparklers on the 4th of July. He held it up high and his parents think that some sparks fell into his eye. He has some small blisters around his eyelids and he is complaining of intense eye pain. He refuses to open his eyes for an examination because of pain. Which of the following are possible options (more than one correct answer is possible):

- a. topical proparacaine as a single dose to facilitate an examination.
- b. intramuscular morphine to facilitate an examination.
- c. topical proparacaine now and p.r.n. at home for discomfort.
- d. acetaminophen with codeine syrup.

3. A 10 year old boy presents to the pediatrician with a red and teary eye for a day. He had been to a soccer practice on the day before presentation and the red eye began after that. The pediatrician does not see a corneal abrasion with fluorescein and sends him home with topical antibiotics. He still has the same symptoms the next day. What should the pediatrician do?

4. A 16 year old female presents to the primary care doctor with the complaint of bilateral red and painful eyes since waking up. She had forgotten to take off her soft contact lenses the night before because she was too tired. The primary care physician does not see any corneal abrasions but there are some small "white" dots in the corneas. What should be done?

5. A 4 year old boy presents to the emergency room with a red and painful right eye after a swing had accidentally hit the eye on the playground. On examination, he does not like to have the left eye covered because he "cannot see". The eyelids are swollen and ecchymotic and the conjunctiva has hemorrhages. The physician sees a blood clot covering 65 percent of the anterior chamber. What is the appropriate management?

Section XVIII. Neurology

Chapter XVIII.1. Neurologic Examination

1. Name the steps involved of the older child's neurological examination.
2. Name five primitive reflexes.
3. What extraocular muscles are innervated by abducens and trochlear nerves?
4. What does optokinetic nystagmus signify? When can it be performed in an infant?
5. What is the pronator sign? What does it test for?
6. In what two instances can a positive Babinski's sign be seen in normal patients?

Chapter XVIII.2. Cerebral Palsy

1. Cerebral Palsy may have changing clinical features in: (select one)
 - a. The brain abnormality.
 - b. Effects on the motor system.
 - c. That seizures are usually not treatable after a few years.
 - d. Subtypes - first a person has the choreoathetoid type, then the spastic type, and then becomes quadriplegic.
 - e. Decrease in IQ over time.
2. Currently, most cases of cerebral palsy with a known etiology are thought to be
 - a. Prenatal in origin.
 - b. Perinatal in origin.
 - c. Postnatal in origin.
3. What is the most common type of cerebral palsy?
 - a. Spastic
 - b. Choreoathetoid
 - c. Ataxic
 - d. Mixed
 - e. All are equally common
4. Which of the following is NOT a worrisome sign that may indicate cerebral palsy?
 - a. Poor rate of head growth
 - b. Hand preference at 6 months of age
 - c. Scissoring of the legs
 - d. Obesity
 - e. High muscle tone
5. True/False: Because of the neuromotor dysfunction and associated conditions, children with cerebral palsy rarely live into adulthood.
6. True/False: Children with hemiplegia have a higher rate of ambulation than diplegia and quadriplegia

Chapter XVIII.3. Febrile Seizures

1. At what ages do febrile seizures occur? How common is this problem?
2. In what percentage of patients will febrile seizures occur a second time?
3. What are the differences between simple and complex febrile seizures? Why is it important to know this distinction (think of recurrence risk of febrile seizures, development of epilepsy, and work-up)?
4. A febrile seizure is a diagnosis of exclusion. What other diagnoses should be considered in a child with fever and seizures?
5. According to the guidelines put forth by the American Academy of Pediatrics' Practice Parameter, who should be strongly considered to receive a lumbar puncture?
6. Most patients with febrile seizures can be discharged home. What are three indications for a child who should be hospitalized for overnight observation?
7. Although diazepam (Valium) can be used to prevent recurrences when given at the start of a febrile illness, what are its disadvantages?
8. A key part to management is reassurance. What are three ways parents should be reassured and educated?

Chapter XVIII.4. Epilepsy

1. List 4 basic types of seizures (hint: two are partial and two are generalized).
2. List some of the old names that correlate to each of the above 4 seizure types and indicate the reason these old names were used.
3. A 14 year old girl is found unconscious. Witnesses say that she had some facial twitching. She gradually awakens and tells you that she smelled some burning rubber just prior to feeling faint. She tried to call for help, but couldn't speak. She now seems to be normal. A CT scan demonstrates a left temporal lobe arteriovenous malformation. What seizure type is she likely to have had and why?
4. Can the term petit mal be used to describe a seizure of small jerking movements of one arm?
5. Name some tests/studies which would be ordered for a 7 year-old girl who presents to the emergency department actively having a generalized seizure which stops spontaneously. She is afebrile and was brought in by her babysitter who is unaware of any history except that she may have been on some kind of medicine.
6. Why would an eventual MRI be useful for the patient in questions 5 if there are no obvious reasons for the seizure?
7. If a patient has no epileptiform activity on an EEG does that rule-out epilepsy? Why?
8. What are typical EEG findings in generalized absence seizures? In infantile spasms?
9. What AEDs (anti-epileptic drugs) are used for treatment of generalized absence seizures?
10. What percent of children with epilepsy eventually enter long-term remission? What percent of children with epilepsy never become seizure free on AEDs?

Chapter XVIII.5. Status Epilepticus

- 1. After oxygen, the first drug that is administered to a patient in status epilepticus is from what drug class?**
- 2. Name three other anticonvulsant drugs, not belonging to the class above, that can be given IV?**
- 3. Name two ways that diazepam can be given in status epilepticus?**
- 4. Which benzodiazepine has the longest duration?**
- 5. In status epilepticus, what drug should be administered after a benzodiazepine in most instances (other than in neonates)?**
- 6. What is the most serious complication of status epilepticus?**
- 7. Name 5 causes of status epilepticus?**

Chapter XVIII.6. Infant Botulism

- 1. The mother of a 4 month old infant asks if it is okay to coat a pacifier with honey to soothe her baby, what is your response?**
- 2. What is the basic mechanism of action of botulinum toxin?**
- 3. Describe the typical clinical presentation of infant botulism. Why may the diagnosis be unclear initially? What is the classic age distribution?**
- 4. What are the principle methods that can be used to confirm infection by C. botulinum?**
- 5. What are the indications for antibiotic treatment in an infant with infant botulism? Why are aminoglycoside antibiotics contraindicated?**
- 6. What is the role of human botulinum immunoglobulin in the treatment of infant botulism?**
- 7. What is the prognosis for an infant infected with infant botulism?**
- 8. Describe the basic difference between "botulism" and "infant botulism".**

Chapter XVIII.7. Guillain-Barre Syndrome

- 1. What is the most commonly identified antecedent infection in Guillain Barre syndrome?**
- 2. What is meant by albuminocytologic dissociation?**
- 3. True/False: Improvement in strength occurs in the order in which it was affected.**
- 4. Why is IVIG preferred over plasmapheresis in children?**
- 5. When should a child with GBS be intubated?**

Chapter XVIII.8. Multiple Sclerosis

1. **True/False: Childhood MS most commonly occurs in children between the age of 10-15 years.**
2. **The etiology of MS is probably related to:**
 - a. **A dysfunction in autoimmune regulation**
 - b. **Environmental factors**
 - c. **Hereditary factors**
 - d. **All of the above**
3. **True/False: Visual disturbances is one of the most common manifestations of childhood MS.**
4. **True/False: Laboratory investigations usually provide a definitive diagnosis for MS.**
5. **True/False: Corticosteroids can speed the recovery from an acute attack.**

Chapter XVIII.9. Hydrocephalus

1. **Define hydrocephalus and distinguish this term from macrocephaly and megalencephaly.**
2. **What are the two classic classifications of hydrocephalus and give examples of each?**
3. **What are the most common causes of congenital hydrocephalus?**
4. **What is X-linked hydrocephalus?**
5. **True/False: The Dandy-Walker syndrome is usually diagnosed at birth.**
6. **What is the purpose of routine cranial ultrasound screening in the very low birth weight infant?**
7. **True/False: CT is the best imaging method for the diagnosis of hydrocephalus after the neonatal period?**
8. **What is the frequency of shunt failure after initial surgical treatment of hydrocephalus?**
9. **What is the rate of infection after shunt insertion, and what is the most likely etiologic agent?**
10. **True/False: Most children with hydrocephalus go on to have IQs consistent with mental retardation.**

Chapter XVIII.10. Neural Tube Defects

1. **True/False: Vitamin supplementation prior to pregnancy has been found to reduce the risk of neural tube defects.**
2. **True/False: Spina bifida patients have neurogenic bladders.**
3. **True/False: Hydrocephalus develops in meningomyelocele patients because of cord tethering.**
4. **True/False: Children with meningomyelocele have a high risk of developing latex allergy, therefore, they should not be exposed to latex from birth.**
5. **True/False: High meningomyeloceles result in lower extremity paralysis, but most patients with low lying meningomyeloceles are able to ambulate on their own or with assistive devices.**

Chapter XVIII.11. Neurofibromatosis

1. How many cafe au lait spots are needed to diagnose neurofibromatosis? How big do they need to be in prepubertal and postpubertal patients?
2. What is the hallmark tumor in NF-2? How is it manifested in a patient?
3. If you see a patient with cafe au lait spots who you suspect has von Recklinghausen's disease, what tests or evaluations need to be performed?
4. What types of neurofibromas can become malignant?
5. What skin manifestations occur in the newborn period? How about in older children and adults?
6. What is the genetic inheritance pattern for neurofibromatosis? What percentage of cases occur without a family history of NF (sporadic)?
7. What are the eye tumors that you can find on the iris of NF-1 patients called?

Chapter XVIII.12. Tuberous Sclerosis Complex

1. How is tuberous sclerosis complex inherited?
2. What percentage of TSC is sporadic (due to new mutations)?
3. Name three dermatological features of TSC. At what ages do each of these lesions occur?
4. What is the treatment of choice for infantile spasms that is approved by the FDA?
5. What is the EEG pattern of infantile spasms?
6. If a patient is diagnosed with TSC by computed tomography of the brain, what other tests must be done in the work-up?

Chapter XVIII.13. Head Trauma and Hemorrhage

1. True/False: Epidural hematomas have a crescent shaped mass on CT scan
2. True/False: Epidural hematomas are mostly produced by venous blood.
3. True/False: The prognosis for epidural and subdural hematomas are about the same as long as the hematomas have been evacuated early.
4. True/False: Since epidural hematoma is always a neurosurgical emergency and subdural hematoma is less often a neurosurgical emergency, epidural hematomas are more serious (i.e., the prognosis is poorer) than subdural hematoma.
5. True/False: Infants are at low risk for having intracranial injuries.
6. True/False: Hypotension and hypoxia are two monitoring parameters that are extremely important to avoid in a child with a moderate to severe head injury.
7. True/False: The equation to calculate cerebral perfusion pressure is: $CPP=MAP-ICP$.

8. True/False: Hyponatremia can occur secondary to inappropriate anti-diuretic hormone release in moderate to severe head injuries.
9. True/False: A 4 year old male child fell and hit his head on the carpet about 5 hours ago. There is no reported history of loss of consciousness or vomiting. His PE is normal, and he is acting appropriately at the time of the visit. A CT scan should be ordered to assess this child for intracranial injury even though the risk of serious injury is remote.
10. True/False: A patient has a GCS of 9 if he can open his eyes to a noxious stimuli, has inappropriate speech, and flexes his extremities to pain.

Chapter XVIII.14. Muscular Dystrophy

1. How are Duchenne and Becker muscular dystrophy inherited?
2. What protein is absent in Duchenne muscular dystrophy?
3. What is the Gowers' maneuver (or sign)?
4. What are some early signs and symptoms of Duchenne muscular dystrophy?
5. What is the average life expectancy for Duchenne muscular dystrophy? What do they die from? When do they lose ambulation?
6. By what age do almost all patients with Duchenne muscular dystrophy present with weakness?
7. Name three other organ systems, besides the musculoskeletal system, that are affected in Duchenne muscular dystrophy.
8. What is the only medication proven to improve weakness in DMD?

Chapter XVIII.15. Myopathy and Myositis

1. True/False: Can sun exposure result in flare-ups in JDM?
2. What is the rate of recurrence in JDM?
3. Myopathies are most likely to cause:
 - a. Delayed language skills.
 - b. Sensory impairment.
 - c. Delayed developmental motor milestones.
 - d. Delayed social adaptive behavior.
4. Each of the following is true about myopathies, except:
 - a. Distal weakness suggests a myopathic condition.
 - b. Weakness is the primary symptom.
 - c. Weakness or pain following exercise is a common feature of metabolic myopathies.
 - d. Pain is not usually a feature of muscular dystrophies.

5. Which of the following (may be more than one) are typical of acute viral myositis but not JDM?
- Acute onset.
 - Pain.
 - Biceps involvement.
 - Elevated CPK.
 - Elevated ESR.
 - Spontaneous resolution.

Chapter XVIII.16. Developmental Brain Anomalies

- What is the most common type of Chiari malformation?
- What CNS structure is displaced in Chiari malformations?
- What are the 3 general categories of neuronal migration abnormalities?
- What basic abnormality is revealed with lissencephaly on MRI imaging and gross inspection?
- What other abnormalities are often found with type II Chiari malformations?

Chapter XVIII.17. Reye Syndrome

- True/False: Reye syndrome is most often preceded by a history of viral illness.
- The cause of Reye syndrome is:
 - liver failure
 - brain abscess
 - unknown
 - too much fat in the diet
- Which drug is associated with the development of Reye syndrome?
 - antidepressants
 - salicylates
 - cancer chemotherapy
 - barbiturates
- Reye syndrome is primarily a disease of:
 - adults
 - the elderly
 - children and adolescents
 - infants
- What is/are the most common feature(s) of Reye syndrome?
 - liver infection
 - rapid accumulation of fat in the liver
 - inflammation of the brain
 - b and c
- Treatment of Reye syndrome focuses on:
 - Maintaining cerebral perfusion.
 - Ammonia removal or detoxification.
 - Treating hypoglycemia.
 - Preventing urinary tract infection.

Chapter XVIII.18. Brain Tumors

1. Which statement(s) about pediatric brain tumors are true:
 - a. Most common childhood solid tumor.
 - b. Brainstem and cerebellar locations more common than adults.
 - c. Incidence rate appears to be increasing.
 - d. Overall survival has not kept pace with other childhood tumors.
 - e. All of the above.
 - f. b and d only.

2. Which of the following is not a common presenting sign of brain tumors?
 - a. Visual problems
 - b. Fever
 - c. Seizure
 - d. "flu-like" symptoms
 - e. Headaches with early morning emesis

3. Brain stem tumors:
 - a. Should always be biopsied
 - b. Are infratentorial
 - c. Can be cured with aggressive resection
 - d. May present with cranial nerve abnormalities
 - e. All of the above
 - f. b and d only

4. Which of the following is most consistent with improved long-term survival in children with brain tumors?
 - a. Young age at diagnosis
 - b. Subtotal tumor resection
 - c. Brain stem location
 - d. Gross total tumor resection
 - e. The use of regular-dose chemotherapy

5. Long term sequelae of brain tumors in children include:
 - a. Decreased cognition
 - b. Impaired memory
 - c. Growth hormone deficiency
 - d. Delayed puberty
 - e. All of the above

Chapter XVIII.19. Arteriovenous Malformations

1. True/False: AVMs represent abnormal embryonic and fetal morphogenesis during the retiform stage of development of endothelial channels (approximately day 48 of human embryogenesis).

2. All of the following are used in the treatment of AVMs except:
 - a. Excision
 - b. Stereotactic radiotherapy
 - c. Embolization
 - d. Cryotherapy
 - e. Occlusion of feeding vessels

3. True/False: The rare AVM that produces a very enlarged "vein of Galen aneurysm" can cause heart failure in infancy as a result of large volume blood flow through the shunt.

4. True/False: Occipital AVMs are frequently associated with hemangiomas of the face (Sturge-Weber syndrome).

5. True/False: The decision to treat an individual patient with an AVM requires balancing the natural history of the disease and in particular, the risk of hemorrhage against the risk of an interventional procedure.

6. True/False: Significantly decreased perfusion pressure is uncommon in areas adjacent to an AVM.

Section XIX. Orthopedics

Chapter XIX.1. Fractures

1. Why do pediatric fractures heal faster than adult fractures?
2. How is a fracture described?
3. How is external fixation different from internal fixation?
4. What is the most frequently fractured bone in pediatric patients?
5. What kind of fracture is sustained in a toddlers fracture?
6. How can a toddler's fracture be distinguished from child abuse?
7. What other injury is commonly associated with a mid or proximal ulna fracture?
8. Name at least three fractures that are difficult to identify on X-rays and must often be diagnosed clinically?

Chapter XIX.2. Splinting

1. What are the common indications for splinting?
2. What is the purpose of splinting?
3. What are the complications involved with splinting, and how should these complications be evaluated by the patient?
4. Should sprains be splinted in a pediatric patient?
5. Briefly compare and contrast plaster and fiberglass splints.
6. What conditions warrant an orthopedic consult prior to splinting?
7. When choosing a splint strip size, what is the general rule of thumb?
8. What temperature of water should an inexperienced person use when splinting?
9. What is the first step in splinting?
10. What are some reasons for preferring splinting over casting?

Chapter XIX.3. Scoliosis

1. How is idiopathic scoliosis defined clinically and radiographically?
2. Who is more commonly affected - males or females?
3. As a diagnosis of exclusion, what other causes of scoliosis must be eliminated?
4. What physical findings are present in patients with scoliosis?
5. In the forward bending test, what physical finding suggests scoliosis?
6. What are the primary considerations when planning treatment?
7. What three forms of treatment are valid?
8. What is the long term prognosis for a patient with scoliosis in adulthood?

Chapter XIX.4. Osteomyelitis

1. True/False: The most common pathogen in acute hematogenous osteomyelitis is Group A streptococci.
2. True/False: A sequestration is an area of loose necrotic bone that is a result of acute osteomyelitis.
3. True/False: The duration of antibiotic therapy for acute hematogenous osteomyelitis is typically 7-10 days.
4. True/False: Two clinical conditions for surgical intervention in acute osteomyelitis are the ability to aspirate pus from the lesion and a lack of response to medical treatment in 36-48 hours.
5. True/False: Plain X-rays will always show bony changes within the first few days of the onset of acute osteomyelitis.
6. True/False: The most common bone involved in acute hematogenous osteomyelitis in children is the tibia.
7. True/False: Osteomyelitis has a propensity to involve the diaphysis of the long bones.
8. True/False: Since Staph aureus is the most common organism involved in osteomyelitis, initiating therapy with an anti-Staph aureus penicillin such as oxacillin is generally accepted as adequate.

Chapter XIX.5. Septic Arthritis

1. True/False: Septic arthritis is a disease most commonly found in adolescent males.
2. True/False: In septic arthritis, the hips and knees are the most commonly affected joints.
3. True/False: In a child with septic arthritis of the hip, redness, swelling, and warmth are often detectable on physical exam.
4. True/False: Children with toxic synovitis never present with fever.
5. True/False: The ESR and CRP can usually distinguish between toxic synovitis and septic arthritis.
6. True/False: The most common bacterial etiology of septic arthritis is Staph aureus.

7. **True/False: Haemophilus influenzae type B used to be a common cause of septic arthritis in young children, but this is very uncommon today.**
8. **True/False: Surgical arthrotomy is always warranted for cases of septic arthritis.**

Chapter XIX.6. Hip Conditions

1. **What three questions should be considered in the limping child? Why?**
2. **What are three common causes for limping in the toddler? Juvenile? Adolescent?**
3. **What physical findings are noted in a newborn with DDH?**
4. **What physical findings are found in the toddler with hip dislocation?**
5. **What three factors are required for normal hip development to guide treatment for DDH?**
6. **What is the proposed etiology of LCP?**
7. **What are the four radiographic stages of LCP?**
8. **What factors influence the long-term prognosis most significantly for LCP?**
9. **What is the typical body habitus for a patient with SCFE?**
10. **What physical findings are present in SCFE?**
11. **What is the overall prognosis with proper treatment for SCFE?**

Chapter XIX.7. Common Sprains and Dislocations

1. **What is the usual mechanism of injury in an ankle sprain?**
2. **Which ankle ligament is most commonly injured?**
3. **Early management of acute ankle sprain employs RICE. What does this mnemonic stand for?**
4. **What is the mechanism of injury in nursemaid's elbow?**
5. **How do you reduce subluxation of the radial head (nursemaid's elbow)?**
6. **If you suspect an ACL knee injury in a patient, what specific test can you do to assess ACL laxity. Should you be worried about other injuries in this patient?**
7. **What nerve is commonly injured in an anterior dislocation of the shoulder. What are the typical neurologic deficits associated with this injury?**
8. **Describe two procedures to reduce an anterior shoulder dislocation.**

Chapter XIX.8. Sports Injuries

1. What is the definition of Osgood-Schlatter's disease?
2. Who is Osgood Schlatter disease and Sever's disease commonly seen in?
3. Is it common to have Osgood-Schlatter disease in both knees?
4. What is the definition of Little League elbow?
5. What types of athletes are subject to Little League elbow besides baseball pitchers?
6. What is a blowout fracture of the orbit?
7. What is the best imaging technique to identify a blowout fracture?
8. How can you reduce elevated intraocular pressure?
9. What is the most severe complication of a hyphema and how can you prevent this?

Section XX. Adolescent Medicine

Chapter XX.1. Puberty

1. What is the first objective physical sign of puberty in the male? In the female?
2. The difference in age between the initiation of pubertal (sexual) changes in the male and female is how many months?
3. What is the definition of delayed puberty? Precocious puberty?
4. What is the height age?
5. The best indicator of the biological age of the individual is?

Chapter XX.2. Anabolic Steroids

1. True/False: Anabolic steroid use is usually effective in enhancing athletic performance.
2. Name the two most common routes of anabolic steroid administration. Which is the more hepatotoxic route?
3. In an adolescent using anabolic steroids who is at Sexual Maturity Rating (Tanner Stage) II, what is a major danger involving the musculoskeletal system?
4. In which patients should pediatricians consider the possibility of anabolic steroid use?
5. What is the role of the pediatrician in addressing anabolic steroid use?

Chapter XX.3. Substance Abuse

1. The prevalence of alcohol abuse and dependence among 17 to 19 year olds in the United States is closest to:
 - a. 1%
 - b. 10%
 - c. 30%
 - d. 50%
 - e. 90%
2. True/False: Stimulant treatment of Attention Deficit Hyperactivity Disorder increases risk for future substance abuse.
3. True/False: Death may occur during intoxication with alcohol or an illicit substance.
4. True/False: Death may occur during withdrawal from alcohol or an illicit substance.
5. Match the following substances with their associated syndromes:

a. Barbiturates	i. Severe encephalopathy
b. "Ecstasy"	ii. Lung cancer
c. Inhalants	iii. Rhabdomyolysis during intoxication
d. Marijuana	iv. Wanting to touch/be touched during intoxication.
e. Methamphetamine	v. Seizures during withdrawal
f. PCP	vi. "Swiss cheese" appearance on functional brain imaging

Chapter XX.4. Adolescent Suicide and Violence

1. True/False: Mood disorders should be seriously considered in all teenagers with disruptive behaviors and decline in academic performance.
2. True/False: Otitis media, meningitis, and pneumonia are the top leading causes of death in children and adolescents.
3. True/False: The comprehensive bio-psycho-social approach to suicide/violence prevention is a potentially life saving skill that all physicians should practice.
4. True/False: Physicians should liberally use antidepressants to treat any child or adolescent who appears depressed.
5. True/False: A teenager who intentionally ingests a large yet non-toxic dose of a non-toxic medication may still be at significant risk for suicide.
6. True/False: Physicians caring for teenagers with disruptive behaviors should attempt to minimize contact with the teenagers' families.
7. True/False: In the future, pediatricians will likely have little role in violence prevention, because there are projected to be enough child and adolescent psychiatrists to fulfill this role.

Chapter XX.5. Eating Disorders

1. What is the leading cause of death in patients diagnosed with anorexia nervosa?
2. What is the most likely electrolyte abnormality in patients with bulimia nervosa who engage in self induced vomiting?
3. Name three indications for medical hospitalization of a patient with an eating disorder.

4. A teenaged female reports feeling healthy, denies feeling fat, and has normal menstrual periods. However, she has evidenced a 20 lb. weight loss. What is the most likely diagnosis?
5. Name six possible conditions or disorders on the differential diagnosis of excessive weight loss in an adolescent.
6. Which disorder is most likely to present with a normal physical exam, anorexia nervosa or bulimia nervosa?

Chapter XX.6. Adolescent Sexuality

1. True/False: The incidence of U.S. adolescent sexual activity has increased over the past decade.
2. A 16-year-old boy reveals to you that he has become increasingly aware of his sexual attraction to other boys. Which is the most appropriate first response as a pediatrician to this revelation?
 - a. Reassure the boy that such feelings are normal and may or may not be indicative of a homosexual or bisexual orientation.
 - b. Report this revelation to the patient's parents.
 - c. Refer the patient to a therapist trained in "reparative therapy."
 - d. Discuss the dangers of anal intercourse, including HIV infection and other STIs.
 - e. Suggest the boy spend more time with appropriate male role models and activities.
3. True/False: The onset of sexual activity in older adolescents may have different antecedents, predictors and consequences than that in younger adolescents.
4. True/False: Sexual experimentation is a normal part of adolescent development.
5. In the field of pediatrics which of the following is considered abnormal in adolescent sexual development.
 - a. Masturbation
 - b. Sexual coercion
 - c. Homosexual orientation
 - d. Sexual fantasies
 - e. Sexual experimentation

Chapter XX.7. Adolescent Gynecology

1. Can a physician provide family planning services to a minor without parental knowledge? If an adolescent demands confidentiality, how can a physician prevent the transfer of billing/insurance information to reach parents?
2. What is the normal age range for menarche?
3. What are some common treatments for dysmenorrhea?
4. Name some things that should be discussed with a female adolescent during a physician visit?
5. What is the normal cycle length, amount of blood loss, and duration of flow in menses?
6. What is the most common side effect of progestin-only contraceptive methods?
7. If a speculum exam cannot be performed, or the patient refuses, how can screening for chlamydia and/or gonorrhea be accomplished?

Section XXI. Skin

Chapter XXI.1. Eczematous Dermatitis (Atopic Dermatitis and Seborrhea)

1. True/False: Seborrhea starts in infancy at the same time as atopic dermatitis.
2. True/False: Many infants who have seborrhea will eventually develop atopic dermatitis.
3. True/False: The prevalence of atopic dermatitis is generally higher in more developed societies and may be in part related to diverse environmental stimuli present in these communities.
4. Which of the following is a true statement?
 - a. Seborrhea produces dry scales on the scalp of infants.
 - b. Both seborrhea and atopic dermatitis benefit from scale removal.
 - c. Seborrhea is not pruritic.
 - d. Hydrocortisone cream can be used in cradle cap dermatitis.
5. A 5 year old child presents with a red, itchy rash in a 2 cm band across his abdomen below the umbilicus. The most likely diagnosis is:
 - a. Contact dermatitis
 - b. Scabies
 - c. Atopic dermatitis
 - d. Shingles

Chapter XXI.2. Acne

1. Organisms associated with the inflammatory process of acne include all of the following except:
 - a. *Pityrosporum ovale*
 - b. *Propionibacterium acnes*
 - c. *Strep pyogenes*
 - d. *Staphylococcus epidermidis*
2. All of the following are true statements are true of isotretinoin except:
 - a. Cheilitis and xerosis necessitate discontinuing the drug
 - b. Pseudotumor cerebri is sometimes irreversible
 - c. The drug can be used in fertile women
 - d. Increased levels of low density lipoproteins are sometimes seen
3. True/False: Comedones can be thought of as small pustules that can eventually develop into cystic acne.
4. True/False: Closed comedones are composed of small pus collections.
5. True/False: Retin-A (tretinoin) and Accutane (isotretinoin) both act to decrease hyperkeratosis.

Chapter XXI.3. Hemangiomas, Vascular Malformations and Nevi

1. True/False: Proliferating vascular endothelium can be arrested with laser treatment.
2. True/False: The concerned parent whose child has a protuberant, growing vascular lesion in early childhood can often be reassured that the lesion will involute with time.
3. Common manifestations of Sturge-Webber Syndrome include all of the following except:
 - a. Meningeal vascular malformations
 - b. Choanal atresia
 - c. Homonymous hemianopia
 - d. Mental retardation
4. True/False: Like most hemangiomas, Kasabach-Merritt Syndrome lesions tend to involute with time, but do not disappear.
5. True/False: Lentigines are "age spots" that crop up in sun exposed areas.
6. True/False: Peutz-Jeghers syndrome often is picked up when hyperpigmented macules are found on the lips of children with chronic abdominal pain.

Chapter XXI.4. Burns

1. When is antibacterial ointment indicated?
2. When treating an infant, what are some special considerations that must be acknowledged?
3. When should a patient be sent to a burn unit?
4. How is the %TBSA calculated?
5. What formula is used to determine the amount of fluid administered to the pediatric burn patient within the first 24 hrs?
6. Despite following the above fluid formula, a burn patient has a continuous urine output via urinary catheter of only 0.2 cc/kg/hr (ideally, this should be about 1 cc/kg/hr). The child appears to be moderately edematous. Should the fluid rate be increased or continued at the same rate?

Chapter XXI.5. Bites and Stings

1. A ten year old male is stung by a bee. Upon examination of the sting site, a stinger is still embedded in the skin. What should you do?
 - a. Pinch it off
 - b. Brush it off
 - c. Wait till you seek medical attention
2. A twelve year old male moving boxes in the basement experienced a pinprick sensation on his right hand followed by muscle cramps and swelling in his right axilla. On presentation to the ER a target lesion is noted on his right hand. The patient is noted to be nauseated, sweating, hypertensive, and tachycardic. What is the probably culprit?
 - a. Centipede
 - b. Scorpion
 - c. Yellow jacket
 - d. Black widow
 - e. Brown violin spider

3. True/False: Ticks, flies and mosquitoes can cause anaphylaxis.
4. True/False: Snakes and scorpions are some of the most venomous animals in Hawaii.
5. What two spiders are found in Hawaii that can inflict a serious and potentially deadly envenomation?
6. True/False: Repeat anaphylactic reactions to insect stings are more common in adults than in children.
7. A teenage boy fishing is accidentally poked by a spiny fish. The site becomes red and painful. What are reasonable management steps.
 - a. Local wound care
 - b. Epinephrine
 - c. Application of heat to sting site
 - d. Antibiotic ointment
 - e. Tetanus toxoid
 - f. Contact a poison information center

Chapter XXI.6. Common Skin Conditions

1. Name the three layers of skin. Name three functions of skin.
2. What organism is responsible for the development of warts?
3. What are the two organisms responsible for infection in acute paronychia?
4. What is the treatment for lice?
5. Who should receive varicella zoster immunoglobulin?
6. What characteristics of a mole are suspicious for malignant melanoma?

SectionXXII. Reviewing the Medical Literature

Chapter XXII.1. Statistics

1. You have interviewed 50 children who have been hospitalized for bicycle related head injuries and found that 14 of them were wearing a bicycle helmet at the time of the accident. In a control group (children without injuries riding their bicycle on a community bicycle path), you observe the first 100 children and note that 92 of them are wearing bicycle helmets. What descriptive statistics should be described here? What inferential statistical test should be done?
2. If the result of the inferential statistical test for the example above is $p=0.001$, what conclusion can be drawn?
3. What would the null hypothesis be for the example above?
4. Indicate whether the following are categorical variables or continuous variables?
 - a. Type of health insurance.
 - b. Cholesterol.
 - c. Oxygen saturation.
 - d. Respiratory rate.
 - e. Subdural hematoma.
 - f. Lumbar puncture result.
 - g. Cervical spine fracture.

5. You are doing a study on oxygen saturation values in asthmatics presenting to an emergency room. You find that asthmatics who are eventually discharged home had a mean oxygen saturation of 95.6% at initial presentation, but the asthmatics who require hospitalizations presented with a mean oxygen saturation of 94.5%. What are the descriptive statistics that should be presented? What inferential statistical test should be used here?
6. In the example above the p value is found to be 0.001. This is considered highly significant since the p value is so small. Comment on whether this highly significant result is clinically important?
7. Is the oxygen saturation measurement distributed in a normal fashion? In other words, if you plotted a value of oxygen saturation for 10,000 patients, would the shape of the distribution be bell shaped? Explain why or why not.
8. Without doing a statistical test, indicate whether you think the following examples show groups that are significantly different or not and justify your answer:
 - a. Mean IQ in two groups are 90 and 120. The standard deviation is 45 for both groups.
 - b. Mean weight in two groups are 45 and 55 kilograms. The standard deviation is 3 for the first group and 2 for the second group.
 - c. Mean oxygen saturations in two groups are 94% and 97%. The standard deviation is 2% for both groups.

Chapter XXII.2. Evidence-Based Medicine

1. What are the 7 basic steps outlining the evidence-based medicine approach to clinical problems?
2. Why is randomization important?
3. What is an "intention-to-treat analysis?"
4. How do you calculate relative risk, relative risk reduction (RRR), absolute risk reduction (ARR), and number needed to treat (NNT), and what do these values mean?
5. What is the "95% confidence interval?"
6. Why is "blinding" important?
7. What are sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) and how do you calculate these values?
8. What are positive and negative likelihood ratios, and how do they differ from sensitivity and specificity?
9. How are pretest and posttest probabilities calculated and applied?
10. How can evidence-based medicine help you in your practice of medicine?

Chapter XXII.3. Epidemiology and Research Methodology

1. At the Acme emergency department, the hospitalization rate for all ED patients is 6%. The emergency physicians at Acme have developed a test to predict the need for hospitalization. When this test is positive, there is a 93% chance that the patient will NOT need hospitalization. Is this a useful test?
2. In a meta-analysis of midazolam (Versed) sedation in children undergoing procedures, a scan of the literature identified 10 studies. 7 of these studies concluded that midazolam was highly efficacious in accomplishing sedation without significant adverse effects. Three studies concluded otherwise. The metaanalysis concludes that midazolam is an effective agent for pediatric sedation. Comments?
3. True/False: Sweden and Norway have lower mortality rates than the U.S.
4. Poor country PP has a border with a wealthy country WW. The age adjusted mortality rate for WW is higher than for PP, suggesting that PP is a healthier country than WW. This is obviously not the case as one can observe by traveling through both countries. How can this discrepancy be explained?
5. You read in a textbook of medicine citing the incidence and prevalence of diabetes mellitus. Which number (incidence or prevalence) is more useful to describe the epidemiology of diabetes? When is one preferred over the other? How accurate are these numbers? Where do these numbers come from?
6. Define sensitivity, specificity, positive predictive value and negative predictive value. Which of these is frequently >90% even if the test is a poor one?

7. Is it possible to have a test that has a nearly 100% sensitivity, specificity, positive predictive value and negative predictive value? If so, give an example of such a test in clinical medicine.

Answers to pediatric questions

Section I. Office Primary Care

Chapter I.1. Pediatric Primary Care

1. False. Proximity to the patient is also an important factor. A general surgeon practicing in a small town might be the best person to handle a suspected case of appendicitis, for example.
2. False. Although some third party payors have standards written into their contracts with physicians, and the American Academy of Pediatrics has created a standard, not all pediatricians adhere to these standards.
3. True. Many factors are involved, including the training of the primary care pediatrician and past experience with similar cases.
- 4.d
- 5.e

Chapter I.2. Growth Monitoring

1. $BMI (kg/m^2) = \text{weight in kilograms} / \text{the square of the height in meters}$.
2. First 18 months of life.
3. a) If the child's weight is below the 5th percentile, or b) if weight drops more than two major percentile lines.
4. 85th percentile.
5. 30 grams, or 1 oz per day.
6. At 5 years of age. Those who rebound before 5 years have a higher risk of obesity in childhood and adulthood.
7. It does not provide an accurate index of adiposity since it does not differentiate between lean tissue and bone from fat.
8. Congenital pathologic short stature: infant born small and growth gradually tapers off throughout infancy. Constitutional growth delay: weight and height drop in their percentiles near the end of infancy, parallel the norm through middle childhood, and accelerate toward the end of adolescence. Adult size is normal. Familial short stature: Infant and parents are small. Growth runs parallel to and just below the normal curves.
9. Predicted adult height = (mother's height + father's height) divided by 2, and adding 6.5 cm for males, and subtracting 6.5 cm for females, with a range of 2 standard deviations (one standard deviation is about 5 cm).

Chapter I.3. Developmental Screening of Infants, Toddlers and Preschoolers

- 1.c
2.
a
- 3.c
- 4.e
- 5.d
- 6.b

Chapter I.4. Immunizations

- 1.e
- 2.c
- 3.a. It should be noted that the current parenteral influenza vaccine is not a live attenuated virus. However, a non-parenteral intranasal live attenuated influenza vaccine is available.
- 4.d
- 5.c
- 6a.passive
- 6b.active
- 6c.passive
- 6d.active
- 6e.active
- 6f.passive

Chapter I.5. Hearing Screening

1. True
2. TORCH: toxoplasmosis, rubella, CMV, herpes
3. False
4. Best test for this age group: Behavioral tests that rely on operant conditioning, such as visual reinforcement audiometry (VRA) involves testing one's response to specific tones projected within a soundproof room from different locations.
5. Screening failure is attributable to middle ear disease. Yet, this does not completely rule out a sensorineural defect.
6. True

Chapter I.6. Anticipatory Guidance

- 1.False
- 2.False
- 3.c
- 4.True
- 5.e
- 6.False
- 7.e

Chapter I.7. Common Behavioral Problems in Toddlers and Young Children

- 1.d
- 2.c
- 3.e
- 4.e
5. Reward good behavior and do it quickly and often. Avoid accidentally rewarding bad behavior. Punish some bad behavior by using mild punishment.
6. Time-out can be used initially with one or two targeted behaviors and once the parent and child get used to the technique, it can be expanded to more problem behaviors. Getting started with time-out should occur after caregivers agree on this as a form of mild punishment. It should then be explained to the child before it is initially used so the child can understand what to expect the first time it is used. The child should immediately be placed in a very boring and safe predetermined location using up to ten words in less than ten seconds from the time the target behavior occurred. The child should be placed in time-out for one minute for every year of life (for example a five year old would sit in time out for five minutes) up to a maximum of about 10 minutes. A small portable timer should always be used to remind the child when the time-out is over. Once the timer rings the child will be asked why they went to time-out. Once they produce the answer, the parent drops the issue and goes about their daily activities as usual. Time-out is not designed to make a child feel bad or humiliated.
7. Pediatricians should be available to offer counseling on routine visits with their patients. When the pediatrician observes bad behaviors in the office they should observe how the parent handles them and offer advice in a nonjudgmental way if they note errors. Pediatricians may also provide tips on effective parenting when the child is very young and be particularly sensitive to the needs of first time parents who may not know the correct way to discipline. One good way to find out how a parent is likely to discipline, is to ask them how they were disciplined as a child and the pediatrician can adjust their advice accordingly. It is very important to remain nonjudgmental and calm as you describe these techniques, as you don't want to add additional stress to a parent who is already taking on a very difficult task of raising a child. Be compassionate, listen and gently advise.
8. A pediatrician would likely want to advise a parent to see a specialist like a child psychiatrist or child psychologist if the problem seems to be more than they can handle. Some of these behaviors include extreme aggression and violence or if the child is engaging in dangerous behaviors. If the child is threatening or trying to hurt or kill themselves or others, this needs to be taken very seriously. The pediatrician will need to clinically assess the situation and decide if an emergency room visit is warranted. Threats of self-harm or harm to others should always be considered as a potential emergency.

Chapter I.8. Disabilities and Physician Interactions with Schools

- 1.b
- 2.a
- 3.d
- 4.d
- 5.False

Chapter I.9. Autism and Language Disorders

1. b, c, e
2. a, b, c, e
3. all are correct
4. False, medications are used symptomatically for particular behaviors or related affective disorder.
5. a, b, d, e

Chapter I.10. Attention Deficit/Hyperactivity Disorder

1. False
- 2.a,c,d
- 3.d
- 4.
- e
- 5.c
- 6.
- a

Chapter I.11. Medical Insurance Basics

1. False. The service is not covered in this patient's plan even if it is deemed medically necessary.
2. True. The patient must be informed beforehand that the service may not be covered and that he or she will be expected to pay if they wish to have the service done.
3. False. Contracts between third party payers and providers stipulate that balance billing is not allowed when fees exceed maximum allowable charge on a covered service.
4. True. See Hawaii Revised Statutes Chapter 432e.
5. False. An insurer must observe its operating budget, which is dependent on the premiums received. Insurers cannot generate new money; they can only redistribute what they collect after expending reasonable amounts for operations. Reserves are for unforeseen emergencies. Repeated withdrawals from reserves threaten the solvency of the third party payer.

Chapter I.12. Pediatric Dental Basics

1. True
2. Disorders of tooth eruption and positioning (premature, delayed, or failure of eruption, malocclusion or abnormal alignment), abnormalities of tooth number (supernumerary tooth), size and shape (macrodonia, microdonia, or twinning), structure (AI or DI), and color (intrinsic or extrinsic staining).
3. False. Dentinogenesis imperfecta is the condition that may occur with osteogenesis imperfecta.
4. Streptococcus mutans
5. Fluoride supplementation, good oral hygiene that includes brushing and flossing, limiting the amount but more importantly the frequency of intake of sweets (especially the habit of bedtime bottle feeding, eating in between meals and at bedtime), regular dental visits.
6. It is very likely that this history is not correct. These appear to be baby bottle caries, which is the most likely cause. It may be that mother feels guilty that she is not following your advice so she is denying that the child continues to go to bed with a bottle. Another possibility is that she is giving the child juice in a bottle at night and does not consider this to be "bottle feeding". Grandparents living in the same household will often interfere with childhood rearing practices, since they may insist on letting the child have a bottle to prevent the child from crying.

7. The best thing to do with the tooth is to push it back into its original location after a gentle rinse, if the child is cooperative. Otherwise, the tooth can be placed in saline gauze or milk. The tooth should not be scrubbed.

Section II. Nutrition

Chapter II.1. Nutrition Overview

1. False. Formula still lacks the immunological advantages of breast milk.
2. False. Vegetarian diets are NOT recommended for the first two years of life.
3. True.
4. Yes, at 6 months in children in a community with a non-fluorinated water supply.
5. b. 50% of energy from FAT.
6. No, this child will lose weight (failure to thrive). This child is consuming 40 ounces per day which is only 800 calories per day. This child needs 900 calories (100 cal/kg/day) just for maintenance alone. Growth requires a caloric intake in excess of maintenance.

7. Roughly 64 calories. Protein=4 calories/gram, carbohydrate=4 calories/gram, fat=10 calories/gram. 12 calories from protein, 32 calories from carbohydrates, 20 calories from fat, no calories from sodium total calories=64 calories (roughly).

8. This child is receiving 10% (10 gram/100cc) intralipids at 1cc/hr, or 24 cc/day, which is 2.4 grams per day, which is 24 calories from fat per day. He is getting D12.5% (12.5 gm/100c) at 5.5cc/hr, or 132 cc/day, which is 16.5 grams of dextrose per day, which is 66 calories from carbohydrates per day. He is getting 2 grams of amino acids per 100cc, which means that he gets 2.64 grams of amino acids per day, which is 10.5 calories from protein per day. He is getting a total of 100.5 calories per day, which is 118 calories per kg/day. Since his maintenance caloric requirement is 100 calories/kg/day, he is getting more than maintenance which should give him the potential to grow.

Chapter II.2. Breastfeeding

1. Approximately 60% of women breastfeed immediately post-partum, 20% are still breastfeeding at 6 months, and less than 5% are still breastfeeding at 1 year.
2. The Healthy People initiative set a target to increase the proportion of mothers who exclusively breastfeed to 75% at post-partum, 50% at 6 months, and 25% at 1 year.
3. The AAP recommends exclusive breastfeeding for the first 4-6 months of life, with continued breastfeeding to at least 12 months of age, and thereafter for as long as mutually desired.
4. Advantages of breastfeeding include health, nutritional, immunologic, developmental, psychological, social, economic, and environmental benefits. The major disadvantages to breastfeeding include time and energy required of the mother, decreased paternal (father) participation, and lack of universal social acceptance of breastfeeding practices by the public.
5. Anatomic and physiologic changes that occur in the breast include: a) differentiation of epithelial alveolar cells into secretory cells for milk production. b) proliferation of glandular tissue and ductile development by progesterone. c) copious milk production following placental expulsion due to prolactin unopposed by progesterone. d) milk ejection or milk let-down reflex by oxytocin.
6. Carbohydrate, protein, and fat composition differ. Human milk contains lactose as the main carbohydrate source, high whey to casein protein ratio, and variable fat stores which are dependent on maternal diet. Formulas have variable carbohydrate source which include lactose, starch or other complex carbohydrates. Protein sources can also vary by formula type: casein, whey, soy or protein hydrolysate. Fat sources in infant formula can vary as well: triglycerides with long or medium chains, etc. Breastmilk has more absorbable iron, calcium and zinc than formula.
7. Barriers to successful breastfeeding include: physician misinformation and apathy, insufficient prenatal breastfeeding education, inappropriate interruption of breastfeeding, early hospital discharge, and late hospital follow-up care.
8. Indicators for inadequate breastfeeding include: less than 6 urinations per day and 3-4 stools per day by day 5-7 of life, decreased activity level, difficulty arousing, weight loss of greater than 15% of birth weight within the first week of life.
9. Provide good breastfeeding education at the prenatal visit, be well educated on anatomy and physiology of breastfeeding, advocate for breastfeeding policies.

Chapter II.3. Infant Formulas

1. Breastfeeding is regarded first and foremost except when it is not practical, desired or medically contraindicated.
2. From a practical standpoint, whether it is breast milk or infant formula, a healthy term infant is the best regulator of the frequency and quantity of their nutritional intake. However, since we are scientists at heart; during the first 6 months of life approximately 95-115 kcal/kg/day is recommended.
3. In a term infant, iron deficiency is uncommon before 4-6 months of age because of the abundance of iron stores at birth. To compensate for the depletion of iron stores by growth, dietary iron must be provided to exclusively breastfed infants. Iron fortified formulas can prevent iron deficiency in formula fed infants. Guidelines from the Committee on Nutrition of the AAP recommend 2-3 mg/kg/day of elemental iron.
 - 4a They are about the same. Human milk contains approximately 2/3 kcal/cc (20 kcal/oz). The standard infant formula usually remains close to this range.
 - 4b Whey:Casein of human milk is 70:30 as compared to a ratio of 18: 82 for cow milk. Please refer to the text to review the clinical significance of this profile difference.
 - 4c The carbohydrate content is about the same.
 - 4d Lipids constitute approximately 50% of the calories in human milk (5.7 g/100kcal) and standard infant formula (4.4-6.0 g/100kcal).
5. The clinical significance of the difference in whey:casein ratio between human and bovine milk is illustrated when unmodified casein-predominant cow milk enters the acidic environment of the human stomach and forms a relatively hard curd of casein and minerals. This curd can be difficult for an infant to digest. Thus, the AAP recommends that cow's milk not be used until after the first birthday.
6. Lactose is the main carbohydrate in mammalian milk. The lactose concentration of human milk is 7g/dL, cow milk contains 5 g/dL. Lactose is added to most standard infant formula to achieve the concentration of human milk. Soy formulas do not contain lactose; they contain sucrose, glucose polymers, or a mixture of the two.

Chapter II.4. Fluids and Electrolytes

- 1 b
- 2 c
- 3 4kg: $4 \times 100 = 400$ cc over 24 hours. 3 mEq Na per 100 cc, 2 mEq K per 100 cc. D5-1/4NS + 20 mEq KCl per liter run at 17 cc/hour. 25 kg: $1500 + 5 \times 20 = 1600$ cc over 24 hours. Maintenance electrolytes are the same. D5-1/4NS + 20 mEq KCl per liter run at 67 cc/hour.
- 4 Since normal osmolarity is about 300, the Na concentration in NS must be about half that (since Na and Cl ions make up the total osmolarity), which is 150 mEq/L. 1/2NS is half that (75 mEq/L), 1/3NS is 50 mEq/L and 1/4NS is 38 mEq/L.
- 5 An intravascular volume expanding fluid is required to resuscitate severe dehydration and hypovolemic shock. D5-1/4NS is not an intravascular volume expanded (see text). NS and LR are intravascular volume expanders. The resident should not have used the term "isotonic" since what he/she really meant, was to administer an intravascular volume expanding IV solution.
- 6 The patient has normal kidneys, which will regulate his overall fluid status. Even normal infants drink about 250 cc/kg (about 2.5 times maintenance), which is why they use a lot of diapers. Since formula is only 2/3 of a calorie per cc, he needs more than maintenance to reach maintenance caloric intake. His excess fluid volume will be urinated out. Maintenance fluid volume is the volume which results in minimum work for the kidney. If less than maintenance fluid is taken in, the kidney must work (consume energy) to retain fluid. If more than maintenance fluid is taken in, the kidney must work to excrete excess fluid. Kidney energy consumption (work) is minimized at some point between these two extremes and this is the "maintenance volume". Patients receiving fluid volumes less than or greater than maintenance will not likely develop fluid balance problems as long as their kidneys are functioning normally. However, if they are very ill, it would be best to minimize renal stress by optimizing their fluid balance.
- 7 Oral rehydration with WHO ORS should be implemented immediately. Pedialyte is for maintenance fluid, is suboptimal for rehydration and is only useful for children with mild dehydration. This child is not ill enough to utilize one of the 5 IV sets available. According to studies, the mortality rate for oral rehydration and IV rehydration are the same for this type of dehydration.

8. 24 hour maintenance volume is 1300 cc. This is split up into three even 8 hour blocks. Maintenance electrolytes are 3 mEq Na and 2 mEq K per 100 cc. Deficit volume is 1120 cc (7% of 16 kg), half of which is given in the first 8 hour block with the other half distributed over the next two 8 hour blocks (1/4 for each 8 hour block). Since dehydration has occurred over a 4 day period, 60% of the deficit comes from the ECF (672 cc) and 40% comes from the ICF (448 cc). Thus, the sodium replacement for ECF fluid is 140 mEq per liter and the potassium replacement for ICF is 140 mEq per liter. The Na deficit is replaced as the deficit fluid is replaced over the next three 8 hour blocks (1/2 + 1/4 + 1/4). Half of the K deficit is replaced distributed evenly over the three 8 hours blocks (1/6 + 1/6 + 1/6). The results of these calculations are shown below:

Weight 16 kg 7% dehydration	24 hours	First 8 hours	Second 8 hours	Third 8 hours
Maintenance volume	1300 cc	433 cc	433 cc	433 cc
Maintenance Na	39 mEq	13 mEq	13 mEq	13 mEq
Maintenance K	26 mEq	9 mEq	9 mEq	9 mEq
Deficit volume	1120 cc	560 cc	280 cc	280 cc
Deficit Na (60%)	94 mEq	47 mEq	24 mEq	24 mEq
Deficit K (40%)	63 mEq	10 mEq	10 mEq	10 mEq
Maintenance+Deficit volume	2420 cc	993 cc	713 cc	713 cc
Maint+Def Na	133 mEq	60 mEq	37 mEq	37 mEq
Maint+Def K	89 mEq	19 mEq	19 mEq	19 mEq
IV rate		124 cc/hr	89 cc/hr	89 cc/hr
Na concentration		60 mEq/L	52 mEq/L	52 mEq/L
K concentration		19 mEq/L	27 mEq/L	27 mEq/L

D5-1/3NS+19 mEq KCl per liter run at 124 cc/hour for 8 hours, then D5-1/3NS+27 mEq KCl per liter run at 89 cc/hour for 16 hours. The KCl should actually be approximated to 20 mEq/L for the first 8 hours, then 25 mEq/L for the next 16 hours. This would make it easier for the nursing staff to carry out the order.

Chapter II.5. Failure to Thrive

- 1.False
- 2.True
- 3.False
- 4.True (can help detect renal disorders)
- 5.False
- 6.True
- 7.True

Chapter II.6. Malnutrition and Vitamin Deficiencies

1. A. kwashiorkor. B. marasmus
2. True
3. True
4. b, c, e
5. True
6. a, b, d
7. b, d
8. True
9. a, b, d, e

Section III. Neonatology

Chapter III.1. Routine Newborn Care

1. Vitamin K prophylaxis, antibiotic eye prophylaxis, bathing, and hepatitis B immunization. Breast feeding should also be considered to be an infection prevention/modifying measure.
2. Newborn blood and metabolic disease screening, hearing screening, physical examination.
3. False
4. True
5. False
6. True

Chapter III.2. Neonatal Hyperbilirubinemia

- 1.e
- 2.True
- 3.b
- 4.c
- 5.True
- 6.True
- 7.False
- 8.False
- 9.False
- 10.d

Chapter III.3. Newborn Resuscitation

1. Antepartum risk factors: None. Intrapartum risk factors: emergency cesarean section, non-reassuring fetal heart tones, use of general anesthesia, narcotics administered to mother within 4 hours of delivery, and abruptio placentae.
2. Fluid in alveoli is absorbed and air fills the air sacs, umbilical cord is clamped disconnecting the infant from the placental circulation and pulmonary vasculature must relax allowing increased pulmonary blood flow and decreased right-to-left shunting.
3. Breathing, heart rate and color.
4. Three or more trained persons would ideally be available for an extensive resuscitation requiring medication administration.
5. Ventilation of the lungs is the most important and most effective step in cardiopulmonary resuscitation of the compromised newborn infant.
6. If the infant continues to be apneic, is gasping, has a heart rate of less than 100 bpm and/or has persistent central cyanosis despite 100% free flow oxygen, then positive pressure ventilation with a bag and mask should be administered. Breaths should be delivered at a rate of 40 to 60 per minute.
7. Noticeable chest wall rise, bilateral breath sounds and improved color and heart rate are indications that ventilation is adequate.
8. If the infant's heart rate remains less than 60 bpm following the initial 30 seconds of positive pressure ventilation, chest compressions must be started and assisted ventilation continued. Three compressions should be administered for every one assisted ventilation so that 90 compressions plus 30 breaths are given each minute.
9. Liver laceration and rib fracture.
10. The recommended dose is 0.1 to 0.3 ml/kg of a 1:10,000 solution (equal to 0.01 to 0.03 mg/kg). It can be administered through an endotracheal tube or through an umbilical vein catheter.

Chapter III.4. High Risk Pregnancy

- 1.false
- 2.d
- 3.b
- 4.true
- 5.b
- 6.false

Chapter III.5. Common Problems of the Premature Infant

- 1.true
- 2.a,c
- 3.c
- 4.d
- 5.b
- 6.c
- 7.d
- 8.c
- 9.d
- 10.b
- 11.false

Chapter III.6. Respiratory Distress in the Newborn

1. TTN
2. TTN symptoms occur soon after birth. Later onset of symptoms should suggest other disorders.
3. Meconium, blood, amniotic fluid.
4. Air leaks such as a tension pneumothorax.
5. Surfactant deficiency, which causes some alveoli to collapse next to alveoli which are emphysematous. Some atelectatic alveoli are adjacent to rigid bronchi. These conditions lead to a reticulogranular infiltrate (ground glass) and air bronchogram pattern on the chest radiograph.
6. Group B Streptococcus, gram negative rod organisms (usually E. coli) and Listeria monocytogenes.
7. Cyanotic congenital heart disease.

Chapter III.7. Cyanosis in Newborns

1. Hypoplastic right heart syndrome/Pulmonary atresia (these two are part of a spectrum) and transposition of the great vessels.
2. d. All of the choices are correct.
3. False
4. c
5. b
6. Ventricular septal defect (VSD), overriding aorta, pulmonic stenosis, right ventricular hypertrophy. The severity of the pulmonic stenosis is the most important factor in determining the degree of cyanosis.
7. False.
8. True.

Chapter III.8. Neonatal Hypoglycemia

1. False
2. a
3. c
4. $GIR = (\text{dextrose \%} \times \text{ml/kg/d}) / 144$. Start at 6-8 mg/kg/min and titrate.
5. a, b and c are all correct.

Chapter III.9. Neonatal Seizures

1. false
2. c
3. false, since it is poorly absorbed from the infant GI tract.
4. d
5. true
6. a

Chapter III.10. Neonatal Sepsis

1. Blood and urine cultures, if not already done.
2. Clinical sepsis with poor perfusion and neutropenia; possible septic shock with narrow pulse pressure.
3. a) Repeat CBC to monitor the neutropenia and thrombocytopenia. b) Volume bolus to improve perfusion. c) Follow-up exam of abnormal tone and cry after instituting supportive therapy. d) Start broad spectrum antibiotics parenterally. e) Transfer from the normal nursery to a higher level nursery or intensive care unit for continuous monitoring of vital signs.
4. Seven to ten days empirically, given the clinical presentation and depending on culture results. Serial CRPs may also be used to assist with duration of treatment.
5. Any 2 from the battery reviewed by Sinclair (14) gave 62% for sepsis proved or probable.
6. Again any 2 from the above reference (14) gives 98% negative predictive accuracy for sepsis proved or probable. However, the CBC and differential alone will give you two out of this battery.
7. Yes. At least one ml should be obtained for blood cultures.
8. Yes
9. No. This has implications for the current AAP protocol for monitoring infants whose mothers did not receive prophylaxis.
10. 2.5 per 1000 live births, with mortality rate of 8.7% (18). Clinical sepsis is cited as 3.6 per 1000 live births with mortality of 4.3%. Figures are much higher for VLBW infants.

Chapter III.11. Congenital and Perinatal Infections

1. Small for gestational age, microcephaly, jaundice, pale skin, petechiae, blueberry muffin spots, hepatomegaly, and splenomegaly
2. A congenital infection is an infection seen in the newborn infant that was acquired transplacentally during the first, second, or early third trimester. A perinatal infection is acquired either around the time of delivery or during the 1st week of extrauterine life.
3. Rubella virus, cytomegalovirus (CMV) Toxoplasma gondii, Treponema pallidum, human immunodeficiency virus (HIV), human parvovirus B19 and Epstein-Barr virus (EBV)
4. True
5. Periventricular calcifications are seen in congenital CMV while diffuse calcifications in the brain are seen in congenital toxoplasmosis.
6. False
7. Hepatitis B vaccine and hepatitis B immune globulin.
8. False

Chapter III.12. Necrotizing Enterocolitis

1. False, an estimated 25% show visible bloody stool.
2. c. Dopamine may actually reduce the risk of NEC by increasing mesenteric blood flow.
3. False, the development of resistant organisms presently discourages routine prophylactic antibiotic use.
4. Reduced intestinal motility increases the chances of bacterial overgrowth.
5. Acceptable answers include: 1) oral feeding cessation, 2) nasogastric decompression, 3) intravenous fluid therapy, 4) systemic antibiotics, 5) umbilical catheter removal, 6) acid-base electrolyte balance monitoring, 7) early consultation with a surgeon.

Section IV. Genetics

Chapter IV.1. Prenatal Genetic Screening and Testing

- 1.d
- 2.false
- 3.c
- 4.c
- 5.d
- 6.c
- 7.b
- 8.a
- 9.true
10. b

Chapter IV.2. Congenital Anomalies and Teratogenesis

- 1.d
- 2.c
- 3.b
- 4.a
- 5.d
- 6.d
- 7.c

Chapter IV.3. Common Chromosomal Disorders

1. Trisomy 13, Trisomy 18
2. Trisomy 18. Heart failure and pneumonia
3. Fragile X syndrome; Huntington disease; Friedreich ataxia; and myotonic dystrophy
4. VALIDATE: VSD, Atlanto-occipital instability, Leukemia, Immunodeficiency, Duodenal atresia, Alzheimer's disease, Thyroid dysfunction, Endocardial cushion defect.
5. Ovarian dysgenesis
6. Elevated estradiol to testosterone ratio
7. b,c,d

Chapter IV.4. Inborn Errors of Metabolism

1. False: Many infants with metabolic defects classified as storage disorders (lipid storage disorders) and fatty acid oxidation defects will present at many months of age.
2. e. And, there are many other disorders that can be on the list of possibilities, including child abuse (shaken baby).
3. c, d, f. The other answers are incorrect because: a. Newborn screening is not a diagnostic tool; it merely indicates need for further definitive testing. b. Obviously, physicians do not need more paperwork. e. Ideally, newborn screening could identify all metabolic disease, however, since cost and technology are prohibitive, the current principles are to screen for diseases which have a "significant" prevalence in a population and have some potential for treatment.
4. True: Unfortunately, there are no permanent cures, only lifelong supportive measures to mitigate the effects of the metabolic disease.
5. c

Chapter IV.5. Inherited Connective Tissue Disorders

1. Presence of associated physical findings. Family history. Location of fracture (femur and radius vs tibia and radius), type of fracture (comminuted mid shaft vs epiphyseal and greenstick). Radiographic appearance of the fractures (i.e., presence of osteopenia).
2. Careful fracture history, identifying weak bones, and targeting physical therapy to strengthen those bones.
3. Any of the following: pectus carinatum (or excavatum sufficiently severe to require surgery), reduced upper to lower segment ratio, positive wrist and thumb signs, scoliosis greater than 20 degrees of curvature, reduced extension of elbows, medial displacement of medial malleolus causing pes planus, protrusio acetabuli.
4. Aortic root dilation causing aneurysm and dissection.
5. Any three of the following: hyperextensible doughy skin, atrophic scars, joint hypermobility, connective tissue fragility, and bruising.
6. Marfan syndrome, unlike homocystinuria, is not associated with mental retardation.

Chapter IV.6. Genetic Testing and Gene Therapy

1. False. Newborn screening is not diagnostic. Rather, it is a screen for illness with VERY poor specificity, which, if positive, must be followed with a more specific diagnostic test.
2. Sequence knowledge of the disease locus and mutant alleles and the 1:1 correlation of test to disease allele. For disease conditions with multiple mutant alleles, all possibilities must be specifically tested.
3. The disease does not affect the patient until adulthood when she can make her own decisions. There is no effective prophylactic treatment for a child that will prevent the illness before she reaches adulthood. Testing may be appropriate for a 17 year old who desires pregnancy, has the consent of her parents, and who plans to make the decision to become pregnant based on the information of the test.
4. Bone marrow transplant.
5. Vectors transport engineered nucleic acids (DNA or RNA) into existing human cells.
6. 1) DNA based: Insertion of intact functional gene. Insertion of intact functional promoter or exons to correct production. Insertion of DNA for the purposes of disrupting expression of a gene. Insertion of single stranded DNA for the purposes of binding to mRNA and preventing translation. 2) RNA based: Insertion of RNA to be reverse transcribed and incorporated into DNA. Insertion of RNA to be translated immediately. Insertion of RNA ribozyme to destroy mRNA. Insertion of anti-sense RNA to prevent translation of mRNA.

Chapter IV.7. Basic Genetic Principles

1. b. An autosomal dominant condition which is lethal in infancy is not going to survive in the gene pool. Such conditions must be autosomal recessive to survive in the gene pool. Most autosomal recessive conditions are enzyme deficiencies. An X-linked enzyme deficiency is also a possible answer, but this is less likely and it is not one of the choices given.
2. b,d. Enzyme deficiencies must be homozygous for the condition to manifest, because a 50% reduction of the enzyme level is generally sufficient to carry out the biochemical reaction involved, such that no clinical disease results. The observed inheritance pattern is autosomal recessive. Enzymes on the X-chromosome such as RBC G6PD are not present on the Y-chromosome, so enzymes can also be inherited in an X-linked recessive fashion. An enzyme deficiency is not likely to manifest from a spontaneous new mutation, because it would have to coincidentally occur in both alleles for this to occur.
3. e. Trisomy 21 results from meiotic nondisjunction in about 95% of patients. About 4% have a Robertsonian translocation. A small percentage of patients are mosaic. An even rarer cause of trisomy 21 is the 21q21q translocation, a chromosome comprised of two chromosome 21 long arms. It is thought to originate as an isochromosome.
4. c. There is a far greater probability of males expressing recessive alleles in their phenotypes if they are carried on X chromosomes. For females to have such traits, they would have to inherit the recessive allele for them on both of their X chromosomes.

5. e. An exchange of fragments of chromatids between non-homologous chromosomes during the first meiotic division is termed a translocation.

Section V. Allergy and Immunology

Chapter V.1. Common Allergies and Management

- 1.d
- 2.a
- 3.a
- 4.e
- 5.b
- 6.b
- 7.a
- 8.c
- 9.d
- 10.e

Chapter V.2. Anaphylaxis and Other Acute Allergic Reactions

1. false
2. Epinephrine. Pediatric dosage for epinephrine is 0.01mg/kg up to a max dose of 0.5mg per dose or 0.5ml of 1:1000 SQ/IM Q15minutes for two doses and then Q4 hours as needed. The adult dosage is 0.2- 0.5ml of a 1:1000 epinephrine solution.
3. Adjunctive therapies includes antihistamines, bronchodilators, and perhaps glucagon and corticosteroids.
4. e. This is erythema multiforme.
5. b

Chapter V.3. Food Allergies

1.b. Tingling in the mouth after eating fruits suggests the possibility of an oral allergy syndrome. Dizziness after eating Chinese food is more likely due to an adverse non-allergic reaction to MSG. Facial redness after drinking a glass a wine may be due to tyramine.

- 2.a
- 3.a
- 4.e
- 5.e

6.f. Chinese and southeast Asian foods are frequently cooked with peanut oil. None of the above are safe. Ice cream is potentially contaminated by nuts since nuts are frequently served with ice cream or mixed with ice cream. Dry pet food and chili frequently contain peanuts. Pastry may contain peanuts even if they are called other types of nuts such as almonds.

7.a. Lactose is merely a disaccharide. Lactose by itself is not part of milk protein. However, if the source of lactose is a dairy product, then this should be avoided. All of the other products including "nondairy" creamers and canned tuna may contain milk or milk products.

Chapter V.4. Corticosteroids

1.d. Norepinephrine is a hormone of the adrenal medulla, not the adrenal cortex. Corticosteroids are by definition hormones of the adrenal cortex.

2.d. Dexamethasone is a high-potency, long-acting glucocorticoid. Prednisone, prednisolone, and triamcinolone are intermediate-potency glucocorticoids.

3.a. Eosinophils, lymphocytes, and monocytes are reduced in the peripheral circulation after corticosteroid administration. Although neutrophil numbers are increased, their bactericidal activity is decreased.

4.d. Safely tapering corticosteroids in a patient who has taken corticosteroids for more than 10 days, involves reducing the previous week's levels by 25%, and the patient should be monitored clinically for signs of corticosteroid withdrawal (malaise, anorexia, headache, lethargy, nausea, fever, loss of cardiovascular tone, with hypotension, shock, and death) and a worsening of the condition that the corticosteroids were originally given for.

5.a. Th1 cells are stimulated by IL-12 from APC to cause a cellular immune response. Th2 cells, upon stimulation by IL4, cause a humoral response. IL-12 will inhibit IL-4 production as well. Glucocorticoids cause a decrease in IL-12 secretion by APC and IL-12 responsiveness in Th1 cells. This inhibition of IL-12 frees IL-4 to have a more unopposed effect, triggering an enhanced humoral response.

6.c. Glucocorticoids inhibit production of arachidonic acid, prostaglandins, thromboxanes, leukotrienes, and nitric oxide, all of which are involved in the inflammatory response. Neutrophils are increased in the peripheral blood, not decreased.

7. a,b,c are correct. 0.2 mg/kg of dexamethasone would probably be the best answer, although its duration is longer than that of methylprednisolone. This should not be a problem for status asthmaticus. 10 mg/kg of hydrocortisone has equivalent glucocorticoid activity, but it has unnecessary mineralocorticoid activity. 2 mg/kg of prednisone is roughly the same as 2 mg/kg of methylprednisolone, but prednisone would have to be given orally since it cannot be given IV. 20 mg/kg of dexamethasone is clearly an overdose, which results from multiplying by 10 instead of dividing by 10. A good clue would be that dexamethasone comes in 10 mg vials. A 400 mg dose would require 40 vials. This should clearly prompt questioning by pharmacy and nursing staff. Whenever a pediatric dose requires more than one vial, the dose should be questioned.

8. The symptoms of croup and status asthmaticus are largely due to the inflammatory response induced by the viral infection. The virus itself causes less of a problem compared to the body's inflammatory response. Corticosteroids suppress the inflammatory response resulting in less laryngeal and bronchial inflammation. It cannot be assumed that this is true for all viral infections. For example, in viral pharyngitis, the symptoms of a sore throat and nasal congestion may be suppressed with corticosteroids. However, it may cause more harm than good. In the case of croup and status asthmaticus, numerous studies have supported the net benefit of corticosteroids in these two conditions. In bacterial meningitis due to H. flu, a similar benefit has been demonstrated, but for bacterial meningitis due to other organisms and for viral meningitis, the benefit has not been clearly demonstrated.

Chapter V.5. Immune Deficiency

- 1.e
- 2.c
- 3.c
- 4.e
- 5.c
- 6.b
- 7.c
- 8.e
- 9.c
- 10.b

Chapter V.6. Hematopoietic Stem Cell Transplantation and Graft Versus Host Disease

1. e
2. False. HLA matching is the best predictor.
3. d
4. True
5. b

Section VI. Infectious Disease

Chapter VI.1. Virology

1. Poor pappy adds hep to her pox: Parvovirus, papovavirus, adenovirus, hepadnavirus, herpesvirus, poxvirus. The first three are naked, the latter three are enveloped.
2. Naked viruses cause acute infection only. Some enveloped viruses are capable of chronic infection.
3. PEECoRnA: polio, entero, echo, coxsackie, rhino, hepA.
4. VZV and HSV are similar in that they both cause acute vesicular infections with lifelong latency and recurrence. EBV and CMV are similar in that they both cause infectious mononucleosis type syndromes. CMV and HSV both cause congenital viral infection malformation syndromes.
5. Rhinovirus, RSV, parainfluenza virus, coronavirus, adenovirus. Influenza virus may be included also.
6. Pete can float toward the coast backward: picorna, calci, flavi, toga, corona, retro.
7. None. Only enveloped viruses can cause chronic infection.
8. Raspberry filled parfaits are often burned: rhabdo, filo, paramyxo, arena, orthomyxo, bunya.
9. Viruses are too small to be seen on light microscopy. On electron microscopy, nearly all naked viruses have an icosahedral shape.
10. Herpesvirus (HSV, VZV, CMV), picornavirus (poliovirus, enteroviruses), flavivirus (encephalitis), togavirus (encephalitis), rhabdovirus (rabies), bunyavirus (encephalitis).

Chapter VI.2. Basic Bacteriology

1. This is Staph epi which is almost always resistant to methicillin and cephalosporins.
2. The peritoneal fluid is likely to grow multiple stool organisms. E. coli will predominate. A polymicrobial anaerobic infection is also likely. To properly culture anaerobes, an anaerobic culture swab sent in special anaerobic media (e.g., thioglycolate) must be sent.
3. They are usually polymicrobial and they have a foul odor.
4. Tetanus, botulism, diphtheria, toxic shock, staphylococcal scalded skin syndrome, scarlet fever, etc.
5. Early antibiotic treatment results in a slightly shorter course of symptoms, but the main reason to treat is to prevent suppurative complications and rheumatic fever.
6. Lancefield classification to determine if this organism is group A, group B, etc.
7. Pneumococcus or Staph epi (contaminant).
8. Most likely gram positive cocci is pneumococcal meningitis. Most likely gram negative cocci is meningococcal meningitis.
9. This is an inappropriate order. The stool will be full of enterobacteriaceae, anaerobes, and enterococcus. The gram stain will show mostly gram negative rods and perhaps a few gram positive cocci.
10. It is not possible to determine this with certainty in most instances. However, healthy patients who are no longer ill by the time the culture comes back are unlikely to have had Staph epi bacteremia. Thus, in these patients, the Staph epi is most likely a contaminant. In patients with indwelling plastic (central catheters, ventriculoperitoneal shunts), it should be assumed that the Staph epi is a clinically important infection, probably colonizing the plastic tubing.

Chapter VI.3. Fever

1. True
2. c
3. False
4. False
5. 6 months for boys, 24 months for girls.

6. False. At the most, teething might causes a very slight temperature elevation.
7. False. Otitis media is not considered to be a reliable source of causing a high fever. Other conditions, such as UTI, need to be considered.
8. False.

Chapter VI.4. Inhibitory and Bactericidal Principles (MIC & MBC)

1. When the level of the antibiotic is so high that all organisms are killed.
2. When the level of the antibiotic is so low that organism growth is inhibited, but they are not killed.
3. No. MIC/MBC or Schlichter tests are only useful when a very long course of antibiotics are anticipated and the patient must be changed to oral antibiotics to complete the antibiotic course as an outpatient. These tests are necessary to determine if it is possible to attain sufficient blood levels with the oral antibiotics to predict therapeutic success. The most common clinical scenarios would be for osteomyelitis, septic arthritis and bacterial endocarditis.
4. A Schlichter test should be performed when the lab is unable to measure levels of the antibiotic that is to be used.
5. When we don't have an organism (cultures are negative).
6. We are never totally sure. We do know that compared to blood levels, most antibiotics have lower levels in bone and in joint fluid, but higher levels in urine.

Chapter VI.5. Antibiotics

1 and 2. There are at least four, and probably five, and possibly six. No doubt in the future, there will be more. How do these cephalosporins differ from each other and what characteristic places them in a given generation? The answer to this question is not an easy one. If you enter "fourth generation cephalosporin" into Medline's search engine, you will find some articles on fourth generation cephalosporins. Similarly, searches for fifth and sixth generation cephalosporin yields some articles. If I was a slick marketer of drugs, I would simply call my new cephalosporin "Tenth Generation" and almost everyone would buy it. However, what specific characteristic of the cephalosporin makes it clinically useful over other cephalosporins? If the drug was a tenth generation cephalosporin, but it had no clinical advantage over an existing third generation cephalosporin, then there is no need for a such a tenth generation cephalosporin. The generation is not nearly as important as the specific property of the cephalosporin which makes it clinically useful over another cephalosporin.

3. Osteomyelitis: Most likely Staph aureus. Bacterial meningitis: Pneumococcus, meningococcus, Haemophilus influenzae type B (HiB).

4. For osteomyelitis, we could cover the Staph aureus with an anti-Staph aureus penicillin such as oxacillin, nafcillin or methicillin or a first generation cephalosporin such as cefazolin. However, resistance to these drugs is currently about 25% to 30%. Although there is a good chance the patient will respond, in 25% to 30% of cases, this treatment will fail and the patient will suffer the consequences of inadequate treatment which would include: death from sepsis, Staph pneumonia, spread of the osteomyelitis, chronic osteomyelitis requiring an amputation, etc. None of these complications are minor, therefore, 75% coverage is inadequate. We need 100% coverage empirically since osteomyelitis is a serious infection. Thus, IV vancomycin is the treatment of choice here. For the bacterial meningitis case, we need an antibiotic to effectively cover these organisms and additionally, we need an antibiotic that will penetrate the blood brain barrier into the CSF. Chloramphenicol would be satisfactory here, but we don't use this because of its side effects. IV ceftriaxone or cefotaxime would penetrate the CSF well and cover meningococcus and HiB, and most pneumococcus, but pneumococcus has a small frequency of high level resistance to cephalosporins, so vancomycin must be added.

5. What organism is most likely? Mycoplasma or viral. Pneumococcus is unlikely since she is afebrile. The best antibiotic choice would be an erythromycin.

6. Although trimethoprim/sulfamethoxazole (Bactrim or Septra) is commonly recommended because of its broad coverage for this indication, this drug causes Stevens-Johnson syndrome more commonly than others. If the parents accept this increased risk, then this should be documented on the chart. Most parents are not willing to accept this increased risk since other antibiotics are available. Amoxicillin will probably work, but there is a high frequency of resistance which is generally not a probably for simple cystitis, but in a febrile 18 month old, there may be some degree of pyelonephritis as well. Resistance to cephalosporins is infrequent. Thus, an acceptable answer here would also be a first generation cephalosporin such as cephalexin. IM ceftriaxone can also be given at the initial patient encounter to ensure high initial antibiotic levels and initial compliance.

7. Cost, compliance, convenience, efficacy, etc. While EES is \$10 and azithromycin is \$70, some patients may choose to pay more if the more expensive drug has significant advantages. Additionally, since most patients have drug plans, the difference may be negligible (e.g., \$5 vs. \$10). Compliance is essential for the drug to be effective. EES must be taken four times a day for 10 days while azithromycin is once a day for five days. Additionally, EES may have more GI side effects. Clearly a once a day medication is more convenient than a q.i.d. medication. If both medications are efficacious, perhaps it is best to discuss these differences with the patient and give them some input in the decision.

Chapter VI.6. Otitis Media and Otitis Externa

1. 6 to 18 months of age.
2. Attendance in day-care, second-hand cigarette smoke exposure, craniofacial abnormalities, bottlefeeding in the horizontal position.
3. Pneumatic otoscopy (myringotomy/tympanocentesis is the gold standard, but not the best diagnostic tool because of its invasiveness).
4. AOM: otalgia, fever, hearing loss, associated with upper respiratory tract infection; TM that is opaque or erythematous and bulging with poor mobility, perforation. OME: commonly asymptomatic but may have hearing loss; retracted TM.
5. Streptococcus pneumoniae, non-typable Haemophilus influenzae, Moraxella catarrhalis.
6. Amoxicillin
7. Amoxicillin-clavulanic acid, cefuroxime axetil, intramuscular ceftriaxone
8. Significant conductive hearing loss; young infant since they cannot communicate their symptoms; associated suppurative upper respiratory tract infection; concurrent permanent conductive and sensorineural hearing loss; speech-language delay because of effusion and hearing loss; alterations in the tympanic membrane such as a retraction pocket; middle ear changes such as adhesive otitis media or involvement with the ossicles; previous surgery for otitis media; frequent recurrent episodes; and persistence of the effusion for 3 months or longer in both ears or 6 months or longer in one ear.
9. Conductive and sensorineural hearing loss, mastoiditis, cholesteatoma, labyrinthitis, facial paralysis, meningitis, brain abscess, and lateral sinus thrombosis.
10. Pseudomonas aeruginosa.
11. Excessive wetness, lack of cerumen, preexisting skin problems, and trauma.
12. 2% acetic acid or dilute alcohol.

Chapter VI.7. Sinusitis

1. Amoxicillin 45-50 mg/kg/day. A higher dose should be prescribed if pneumococcal resistance is likely.
2. Up to 10% will progress.
3. Allergic rhinitis, viral infections, cystic fibrosis, foreign body.
4. Mucosal thickening of at least 4mm, air fluid levels, opacification.
5. Periorbital cellulitis.

Chapter VI.8. Mastoiditis

1. S. pneumoniae, H. influenzae (non-typable), and M. catarrhalis.
2. S. pneumoniae, S. pyogenes, and S. aureus.
3. Meningitis, epidural empyema, subdural empyema, venous sinus thrombosis.
4. Facial nerve paralysis, deafness, labyrinthitis, petrositis, Bezold abscess.
5. In the older child the ear is up and out and in the infant it is down and out.
6. False
7. True

Chapter VI.9. Oral and Upper Respiratory Infections

1. any of the answers may be correct depending on your practice setting.
 - a. for difficult to reach families or someone you don't trust to follow up.
 - b. is probably what you would do for most families you felt comfortable with follow up (i.e., you could reach them on the phone if you needed to).
 - c. is what you might do if you are playing the odds; it's probably viral.
 - d. is what you might do during an epidemic.
2. a, c and d (b - HIV antibody test - is usually negative during this period and PCR for p24 antigen, RNA or reverse transcriptase is required).
3. d
4. b (antitoxin must be given with antibiotics)
5. a, b and d (no one is sure what causes PFAPA)

Chapter VI.10. Pertussis

- 1.a. A false negative can occur in those who have received amoxicillin.
2. None of the choices are correct. Choices a and e are the closest to being correct, but technically, these answers are incorrect. Mycoplasma pneumonia might show up as a pneumonia on a CXR, but this would be non-specific for mycoplasma. Additionally, some mycoplasma infections may not cause a pneumonia. Foreign body aspiration might show up on a CXR, but these often require special views such as an expiratory view or a lateral decubitus view. Foreign body aspiration is frequently occult.
3. a-2, b-1, c-3, d-4
- 4.d. Suctioning of nose, oropharynx, or trachea always precipitates coughing, occasionally causes bronchospasm or apnea, and should be done prn only.
5. Increased intrathoracic and intra-abdominal pressure during coughing can result in conjunctival hemorrhages, petechiae on the upper body, epistaxis, hemorrhage in the central nervous system and retina, pneumothorax and subcutaneous emphysema, and umbilical and inguinal hernias. A child protective services report is not necessarily indicated since pertussis could cause this. Other clinical or psychosocial findings inconsistent with pertussis may lead one to report this to child protective services.

Chapter VI.11. Pulmonary Infections

- 1.c. Overall, viruses cause the majority of pneumonias in children; however, the incidence of viral pneumonia decreases with age, becoming less common in older children and adolescents.
- 2.b
- 3.False
- 4.False. Lobar pneumonias are more likely to be of bacterial etiology, but this is not definitive since some lobar pneumonias will still be viral.
- 5.d
- 6.a
- 7.True
- 8.d
- 9.False

Chapter VI.12. Croup and Epiglottitis

1. d.
2. False. Routine airway visualization is stressful and may precipitate respiratory arrest. If epiglottitis is unlikely, then airway visualization appears to be safe. In the event of respiratory arrest, laryngoscopy will be necessary for tracheal intubation.
3. d is the best answer. c is also correct in that nebulized albuterol does have some efficacy in croup, but nebulized epinephrine is better.
4. d.
5. Most textbooks would suggest that this is false in that a longer observation period is generally recommended. However, most patients are low risk and can be discharged soon after dexamethasone and epinephrine are administered. Severe patients or those who do not respond as well should be observed for longer periods of time.

Chapter VI.13. Cellulitis

- 1.b
- 2.a
- 3.a
- 4.d
- 5.a

Chapter VI.14. Meningitis

1. This is most likely a viral meningitis. He is older, so his risk of bacterial meningitis is lower. He has been fully immunized, which presumably means that he has had H. influenzae, type B vaccine. He has probably had pneumococcal vaccine, but this can't be automatically assumed. He is alert, ambulatory, and not toxic in appearance, which all suggest that he does not have an overwhelming infection such as bacterial meningitis.

2. This is most consistent with viral meningitis. Although he has a high percentage of segs, this is still consistent with early viral meningitis. Cases of bacterial meningitis which have not been pre-treated with antibiotics almost always have more than 90% segs. The gram stain does not show any organisms which makes bacterial meningitis less likely. This laboratory analysis of his CSF suggesting viral meningitis, is consistent with his clinical appearance which also suggests viral meningitis (see the answer to #1 above).

3. Pneumococcus, meningococcus and Haemophilus influenzae type B. Pneumococcus is usually sensitive to penicillins and cephalosporins, but some resistance has emerged so vancomycin should be given in addition to cefotaxime or ceftriaxone. Meningococcus is sensitive to penicillin so cefotaxime or ceftriaxone provides sufficient coverage. H. influenzae type B is sensitive to cefotaxime and ceftriaxone, but this organism is not a common cause of bacterial meningitis due to widespread immunization against this organism.

4. CSF 1 shows bacterial meningitis. The increased number of cells in the CSF with a predominant number of neutrophils makes this a strong likelihood possibility. In addition, he also has a very low glucose CSF level (CSF, blood glucose ratio of 25%) and an increased protein value sometimes. Cases of early viral meningitis can present with an increased number of cells and neutrophils but usually the CSF glucose is normal or not lower than 40% of the blood CSF value.

CSF 2 is normal. The normal number of WBCs in the CSF depends upon the age of the patient. The younger and more immature the infant is, the higher the value is. CSF glucose value depends upon the value of glucose in the blood and upon the integrity of the blood brain barrier. In patients with normal meninges the CSF value is usually about 75% of the blood level. When the meninges become inflamed, the active transport of glucose across the blood brain barrier becomes altered and the ratio drops proportionately to the degree of inflammation. Most viral meningitis produce less changes than bacterial meningitis accordingly CSF glucose values are lower in bacterial meningitis.

CSF 3 shows viral meningitis. Most cases of viral meningitis will present with a moderate increase in the number of white cells and a percentage of neutrophils not higher than 60-70%.

CSF 4 is inconclusive. The high percentage of neutrophils indicates that bacterial meningitis is possible. It would be wise to administer antibiotics until more information can be obtained. The gram stain result will be helpful. If it is positive for organisms, then this indicates bacterial meningitis. If the gram stain is negative, bacterial meningitis still cannot be totally ruled out. The child's clinical condition is not part of this table, but in reality, a child who is alert, active and playful is more likely to have viral meningitis, as opposed to a lethargic, toxic child who is more likely to have bacterial meningitis. This will probably turn out to be a case of viral meningitis despite the high percentage of neutrophils, since an early viral meningitis will often have high neutrophil percentages. A repeat LP 12 to 24 hours from the first LP will be helpful. A repeat LP which demonstrates a clear shift toward mononuclear cells, is consistent with viral meningitis, while no shift, or only a slight shift would suggest bacterial meningitis. Culture of the CSF will be most definitive if it is positive, but this result will not be available for at least 24 hours.

Chapter VI.15. Encephalitis

1. a. viral
2. HSV, St. Louis encephalitis, and rabies virus.
3. a. HSV
4. Japanese encephalitis-decorticate or decerebrate posturing, Eastern equine encephalitis-highest mortality, Post-infectious encephalitis-involvement of multiple CNS levels, St. Louis encephalitis-SIADH, La Cross encephalitis-Aedes triseriatus.
5. e. Rabies virus
6. False. Antiviral therapy has only decreased mortality, NOT morbidity.

Chapter VI.16. Sepsis

- 1.a
- 2.b
- 3.b
- 4.d
- 5.a

Chapter VI.17. Kawasaki Disease

1. Presence of fever ranging between 38 and 41 degrees C, and four out of five principal diagnostic criteria which include: discrete conjunctival injection without exudates, changes in the mouth, polymorphous erythematous rash, changes in the hands and feet, and unilateral cervical lymphadenopathy.
2. Intravenous gamma globulin treatment.
3. Children <1 year of age and those untreated with IVIG.
4. Stevens-Johnson syndrome, erythema multiforme, serum sickness.
5. Measles, adenovirus, toxic shock syndrome, scarlet fever, staphylococcal scalded skin syndrome.

Chapter VI.18. Staphylococcal and Streptococcal Toxic Shock Syndromes

1. True
2. True
3. True
4. True
5. False. The mortality rate for Strep TSS is 30-70%. The mortality rate for Staph TSS is much lower.
6. True
7. True
8. True
9. True
10. True. Examples include impetigo and paronychia.

Chapter VI.19. Tuberculosis

- 1.False
- 2.True
- 3.False
- 4.False
- 5.True
- 6.True
- 7.True
- 8.True
- 9.False
- 10.False

Chapter VI.20. Human Immunodeficiency Virus (HIV) Infections

- 1.e
- 2.a
- 3.e
- 4.
- b

5.c
6.e

Chapter VI.21. Sexually Transmitted Infections

1. Abdominal pain, adnexal tenderness on bimanual exam, and cervical motion tenderness.
2. Human papillomavirus (HPV) is estimated to be the most common STI among young, sexually active people in the United States, though many HPV infections are asymptomatic. According to the CDC, an estimated 5.5 million people of all ages contract HPV each year in the United States. On the other hand, chlamydia is the most commonly reported infectious disease in the United States.
3. Adolescents adopt high risk behaviors including early onset of sexual activity, multiple sexual partners, or drug/alcohol use which may impair judgment. Adolescents generally are less able to access health care due to embarrassment about their condition, financial constraints, or transportation barriers.
4. d. Quinolones are no longer recommended for the treatment of gonorrhea in Hawaii or infections acquired in Asia. In 2000, the CDC collected 5,461 isolates for its Gonococcal Isolate Surveillance Project (GISP). 14.3% of the GISP isolates in Hawaii were found to be quinolone-resistant *N. Gonorrhoeae* (QRNG), compared to 0.2% of samples collected within the continental United States and Alaska. Furthermore, since QRNG is becoming more common in West Coast areas, the use of fluoroquinolones in California is probably inadvisable.
5. False. Acyclovir and other antivirals only reduce viral shedding, but they do not eliminate the risk of transmission. Suppressive therapy reduces the frequency of symptomatic genital herpes recurrences by 70% to 80% for patients with 6 or more recurrences a year.
6. FTA-Abs is more specific, but it is still not totally diagnostic of syphilis since patients with yaws will still have a positive FTA-Abs. Other false positive results of FTA-Abs may occur with patients with various medical problems. The differential diagnosis of a positive treponemal antibody test includes other treponemal diseases such as pinta, yaws, and endemic syphilis.
7. Criteria for hospitalization include: surgical emergencies (e.g., appendicitis) that cannot be excluded, pregnancy, failure to respond to outpatient treatment, suspected noncompliance or intolerance to outpatient treatment, nulligravid status, severe illness (including nausea, vomiting, or high fever), suspected tubo-ovarian or other pelvic abscess.

Chapter VI.22. Common Viral Exanthems

- 1.a
- 2.e
- 3.b
- 4.c
- 5.b

Chapter VI.23. Epstein-Barr Virus Infections

1. The answer is b. In this case, the group A streptococcus probably represents colonization rather than the etiology of the patient's symptoms. Infectious mononucleosis may have a similar presentation to streptococcal pharyngitis, and must be considered if a patient is not responding clinically to treatment with antibiotics. Diagnosis may be made with a Monospot test as well as the presence of atypical lymphocytes on CBC. EBV titers are not usually needed in diagnosis, but may be considered if the Monospot is negative and EBV infection is to be ruled out. Treatment with acyclovir or corticosteroids has not been proven to be of clinical benefit in uncomplicated cases of infectious mononucleosis.
2. The answer is b. Primary EBV infection occurs more commonly in childhood and is often asymptomatic. In children who do develop symptomatic EBV infection, heterophil antibodies are more often negative. Lymphocytic interstitial pneumonitis may occur in children with HIV. Complications occur less commonly in children than in adults.
3. The answer is d. The first three have all been found to be associated with EBV infection. Kaposi's sarcoma is associated with a different human herpes virus, referred to as human herpes virus-8 or HHV-8.
4. The answer is b. The Monospot test is a highly sensitive test, although ten percent of EBV-associated infectious mononucleosis may be negative. There are also a number of organisms that may cause an infectious mononucleosis-like syndrome but are not associated with formation of heterophil antibodies. The most common cause of a heterophil-negative infectious mononucleosis-like syndrome is CMV, which this patient likely has. Obtaining antibody titers specific against EBV and CMV may clarify the diagnosis. The atypical lymphocytes that may be seen with either EBV or CMV infection represent activated T lymphocytes, which proliferate in response to infected B lymphocytes.

5. The answer is a. The syndrome of infectious mononucleosis results from primary infection with EBV, particularly when it is delayed until adolescence or young adulthood. It is usually transmitted through close contact with oral secretions of an infected individual. The virus is ubiquitous, and almost all adults over age 40 show serologic evidence of prior infection. Splenic rupture is a rare complication of EBV-associated infectious mononucleosis.

Chapter VI.24. Polio

1. Picornaviridae family (Pico=small, RNAviridae=RNA virus).
2. Asymptomatic presentation is up to 95% of the cases.
3. The correct answer is b, exclusive IPV immunization.
- 4a OPV (for endemic countries).
- 4b IPV (Household contact, especially since Grandpa might be changing the diapers).
- 4c OPV (May receive 3rd and/or 4th oral doses).
- 4d IPV (Immunization through all IPV schedule).
- 4e OPV (Mass vaccination campaign to control outbreaks).
5. The proposed mechanism includes the dropout of neurons that were reinnervated after the initial paralytic poliomyelitis infection due to increased metabolic stresses.
6. True. The March of Dimes was originally named the National Foundation for Infantile Paralysis.

Chapter VI.25. Rabies

- 1.b,e
- 2.e
- 3.False
- 4.b,d
- 5.a

Chapter VI.26. Rocky Mountain Spotted Fever

1. False. Primarily south-Atlantic and south-central states.
2. False. A history of tick bite or exposure is obtained in only 60% of cases.
3. True. Therapy should never be withheld until a definitive diagnosis is made. Poorer outcome with increased mortality is associated with delay in initiating treatment.
4. False. Rash typically starts on the hands/wrists and feet/ankles. Involvement of the palms and soles is classic.
- 5.c
- 6.b

Chapter VI.27. Lyme Disease

1. True
2. False. Bell's palsy due to Lyme disease should NOT be treated with corticosteroids.
3. False
4. True
5. True
6. True
7. False
8. False
9. True
10. False. Positive Lyme serology in low risk cases are usually false positives.
11. True

Chapter VI.28. Leptospirosis

1. b, 2. d, 3. c
- 4.e. None of the above. Leptospira are difficult to culture. Culture requires special laboratory techniques not available at most clinical labs. Thus, the diagnosis is usually confirmed by serology.
- 5.a
- 6.e. Jaundice indicates icteric leptospirosis, which is a more serious condition which has a higher mortality rate. Azotemia is an additional marker of severity.

Chapter VI.29. Cat Scratch Disease

1. True.
2. False. Cat scratch disease is more common in humid climates because humidity is necessary for the existence of cat fleas.
3. False. Cat scratch disease adenopathy develops slowly, usually over 10-14 days.
4. False. With hepatosplenic CSD, LFTs are usually normal, and only 50% of patients have concomitant lymphadenopathy.
5. True.
6. True.

Chapter VI.30. Malaria

1. a. *P. falciparum* is unique among malarial species in that it has mechanisms to adhere to vascular endothelial walls. This produces a microvascular disease, leading to poor perfusion and metabolic acidosis. This hypoperfusion can affect almost any organ in the body, but this is of greatest significance in that it can cause cerebral malaria, which can cause a change in consciousness and seizures. Long-term effects due to cerebral malaria can also be seen. *P. vivax* is the most common form of malaria, but produces a more milder form of the disease.
2. d. The fever of malaria can produce any pattern of fever, with *P. falciparum* most known for its lack of recognizable fever patterns. Classically, the release of merozoites from red blood cells all in one group at similar times causes an inflammatory response, the production of TNF-alpha, and a characteristic pattern of fever depending on the particular species. The fever occurs approximately every 48 hours (called tertian malaria) for *P. falciparum*, *P. vivax*, and *P. ovale*, and 72 hours (called quartan malaria) for *P. malariae*.
3. c. The life cycle of malaria is very complex. It starts with malarial sporozoites being released from the anopheles mosquito. In the pre-erythrocytic stage sporozoites travel to the liver, with the patient being asymptomatic during this time. Sporozoites form schizonts, which eventually produce thousands of merozoites. These merozoites are released from hepatocytes, and infect red blood cells, giving rise to the erythrocytic stage of the life cycle. The erythrocytes burst after infection, releasing merozoites, which is the major cause of the cyclical fever. These merozoites can infect new blood cells, or form gametocytes. Male and female gametocytes are taken up by the mosquito, where they reproduce and form new sporozoites, completing the life-cycle during the mosquito's next blood meal.
4. c. Sporozoites infecting the liver can form into schizonts and can also form hypnozoites. These can remain dormant in the liver, causing an infection months later. The dormant liver-stage of the malarial life cycle, seen in *P. vivax* and *P. ovale*, is effectively treated with primaquine.
5. g. The microvascular disease of *P. falciparum* can affect almost any tissue of the body, giving rise to the many clinical features of malaria.
6. e. Prophylaxis for malaria includes using permethrin impregnated mosquito nets, avoiding mosquito bites using 35% DEET, and chemoprophylaxis most commonly with chloroquine or mefloquine. The anopheles mosquito usually bites from dusk to dawn, not during the day, and it is during these times that travelers should be particularly careful.

Chapter VI.31. Protozoans and Parasites

1. *Diphyllobothrium latum* (fish tapeworm), *Clonorchis sinensis* (Asian liver fluke),
2. Pinworms (*Enterobius vermicularis*).
3. *Trichinella spiralis*, *Taenia solium*.
4. *Trichomonas vaginalis*, *Giardia lamblia*.
5. *Ancylostoma duodenale*, *Necator americanus*
6. Malaria (*Plasmodium vivax*, *falciparum*, *haematobium*, *malariae*), filariasis (*Wuchereria bancrofti*, *Brugia malayi*).
7. *Tryp cruzi* [reduviid bug vector, which is not really a fly, but it is a biting bug], *T. rhodesiense* and *T. gambiense* [tsetse fly vector], leishmania [sandfly vector], *Onchocerca* [*Simulium* blackfly vector], loa loa eye worm [*Chrysops* fly].
8. *Taenia solium* (neurocysticercosis), *Naegleria fowleri*, Toxoplasmosis, *Loa loa* (eye).

Chapter VI.32. Candida and Fungal Infections

1. b. *T. tonsurans* is the most common cause of tinea capitis in the United States.
2. False. Tinea capitis, "black dot" pattern, is caused by *T. tonsurans*. This is an endothrix infection, thus would not be visible by Wood's lamp. Diagnosis is best done with KOH prep or culture.
3. False. Tinea pedis is most common in preadolescent and adolescent males.
4. True. *C. albicans* often colonizes the gastrointestinal tract. In 57% of patients with oropharyngeal candidiasis, candidal diaper dermatitis is also seen (6).
5. d. All of the above. Tinea versicolor lesions present differently depending on the individual's natural skin color. In light skinned individuals they often appear as reddish brown scaly lesions. In darker skinned individuals they can appear as either hyperpigmented or hypopigmented macules.
 - 6a tinea only.
 - 6b candida only.
 - 6c both.
 - 6d both.
 - 6e both.
 - 6f both.

Chapter VI.33. Necrotizing Fasciitis

- 1.c. *Bacteroides* is the most common bacteria isolated in polymicrobial NF. *Staphylococcus*, *streptococcus*, and *clostridium* are also commonly found.
- 2.a. Plain films are routinely used to differentiate cellulitis and NF. MRI and CT are currently under investigation for utility, however, they are costly and time consuming. Answers b and c could be correct, but ultrasound (answer d) is not useful. If NF is suspected, surgical exploration is necessary and will yield the same information.
- 3.b. The M protein inhibits the activation of complement and prevents phagocytosis. The other virulence factors listed belong to the streptococcal species, but have different roles in causing infection.
- 4.a. *Clostridium* causes gas gangrene and crepitus, which characterizes Type III NF. The other bacteria listed are causes of Type I or Type II NF.
- 5.d. First line therapy for streptococcal NF is penicillin according to current guidelines. Unfortunately, one does not initially know that the NF is due to GABHS. Most anaerobes are penicillin sensitive. Adding clindamycin may be useful even if the organism is penicillin sensitive since it may inhibit protein synthesis (toxin production) in non-replicating organisms. For other organisms, anti-microbial therapy should be based on culture and sensitivity results when they are obtained.

Chapter VI.34. Lymphadenitis and Lymphangitis

1. Persistent enlargement despite empiric therapy, persistent enlargement or no improvement with negative laboratory work up, solid fixed mass, mass located in the supraclavicular area, accompanying constitutional signs of persistent fever or weight loss.
2. Self limited, systemic viral infections such as adenovirus, influenza, and RSV are most common. EBV and CMV also can present as acute bilateral cervical lymphadenitis.
3. *Staph aureus* and *Strep pyogenes* (group A strep). Suppuration is more likely to be present with *Staph aureus*.
4. Complete surgical excision of the node is required to avoid development of a draining fistula.
5. Nontuberculous mycobacteria and cat scratch disease are common. EBV, CMV, toxoplasmosis, histoplasmosis, HIV are other infectious etiologies. Malignant diseases such as leukemia, lymphoma and solid tumors such as neuroblastoma, rhabdomyosarcoma and nasopharyngeal carcinoma also need to be considered.

Section VII. Cardiology

Chapter VII.1. Congestive Heart Failure

- 1.c
- 2.False
- 3.c
- 4.False
- 5.b
- 6.False
- 7.a

Chapter VII.2. Acyanotic Congenital Heart Disease

1. False. The physiologic pulmonary hypertension present in a newborn can prevent blood flow across a septal defect or PDA. These can be detected several hours after birth or several days after birth. Other congenital heart disease lesions may remain occult for longer period of time.

2. False. An aberrant right subclavian artery originating below a coarctation will produce equal pressures in the right arm and leg.

3. VSD, ASD, PDA. Of these, VSD is the most common.

4. False. Development of collateral vessels to the lower body can produce palpable femoral pulses.

5. True.

6. Congestive heart failure and pulmonary edema may cause hypoxia. If the hypoxia is severe enough, visible cyanosis will result, although this can be overcome with oxygen and other treatments for pulmonary edema and congestive heart failure. Long standing excessive pulmonary blood flow leads to pulmonary hypertension and Eisenmenger's complex, right to left shunting and cyanosis.

7. False. They cannot hear the murmur of a VSD on day 1 because on day 1, pulmonary vascular resistance is still high, which restricts left to right flow through the VSD. On day 2, pulmonary vascular resistance is lower, so left to right shunting through the VSD increases making the murmur louder.

Chapter VII.3. Cyanotic Congenital Heart Disease

- 1.d
- 2.d
- 3.c
- 4.b
- 5.d
- 6.b
- 7.c

Chapter VII.4. Rheumatic Fever

- 1.d
- 2.d
- 3.a
- 4.b
- 5.c
- 6.e

Chapter VII.5. Carditis

1. b.
2. b. Choice a is too short of a course and choice c is the preferred treatment for methicillin sensitive *S. aureus* infective endocarditis.
3. d.
4. a. The patient had positive blood cultures (1 major), and (3 minors) fever greater than 38 degrees C, a predisposing structural cardiovascular lesion (VSD), and evidence of an immunologic phenomenon (microscopic hematuria).
5. e. No antibiotics are needed, because this particular patient has no risk factors for infective endocarditis.
6. e.
7. b. Although c may be associated with viral myocarditis, viral pericarditis is most likely self-limiting.
8. c. Answers b and d may not show any abnormal findings.
9. e.

Chapter VII.6. Arrhythmias

1. Atrioventricular reentrant tachycardia (AVRT) and AV nodal reentrant tachycardia (AVNRT).
2. Ebstein anomaly and L-transposition of the great vessels.
3. With the presence of a bundle branch block or with antidromic conduction.
4. Vagal maneuvers and intravenous adenosine.
5. False.

Chapter VII.7. Vascular Rings and Slings

- 1.b
- 2.c
- 3.c
- 4.b
- 5.b
6. right aortic arch, left aortic arch, connecting to the descending aorta.
7. A vascular ring involves the aorta and its branches. A vascular sling involves the pulmonary artery. In the vascular sling, the left pulmonary artery arises from the right pulmonary artery and compresses the trachea posteriorly.

Section VIII. Pulmonology

Chapter VIII.1. Interpretation of Blood Gases and Pulse Oximetry

1. This cannot be determined without knowing the hemoglobin or hematocrit of each patient. Patient A could paradoxically have a lower oxygen content if he has a substantially lower hemoglobin (severely anemic) than patient B.
2. This is a respiratory acidosis with metabolic compensation.
3. This patient has bronchopulmonary dysplasia (chronic lung disease) with chronic CO₂ retention and metabolic compensation. An alternative answer would be an adult with chronic emphysema. An incorrect answer is acute respiratory failure, because if the respiratory failure were acute, the patient would not have enough time for metabolic compensation and his bicarb would be 24 or lower.
4. Visible cyanosis requires a certain amount of deoxygenated hemoglobin which is why the answer to this question depends on the hemoglobin or hematocrit. Patients with low hematocrits require a lower pO₂ for visible cyanosis compared to patients which higher hematocrits. So there is no single answer to this question. For example, a patient with cyanotic congenital heart disease may have a high hemoglobin to compensate. If his chronic oxygen saturation is 80%, he can compensate by having a higher hemoglobin such as a hemoglobin of 16. He will be visibly cyanotic because 20% (100% minus 80% oxygen saturation) of his 16 hemoglobin is desaturated (i.e., 3.2 Hgb is desaturated). For a normal child with a hemoglobin of 13 to have 3.2 desaturated Hgb, this child would have to have 25% (3.2 divided by 13) desaturation (i.e., an oxygen saturation of 75%). Thus, one patient may look bluer at 80% saturation, while another would less blue at 80% because of different hemoglobins.

5. The pH should be low. The bicarb should be low (metabolic acidosis). There should be some respiratory compensation so the pCO₂ should be low (hyperventilation or Kussmaul respirations). The pO₂ should be fairly normal. So an example might be pH 7.14, pCO₂ 30, pO₂ 100, bicarb 10, BE -17.

6. This is a cardiac arrest so the patient is probably intubated. The high pCO₂ indicates that the patient is being hypoventilated or the endotracheal tube is not in the trachea. Proper placement of the endotracheal tube should be confirmed. The tidal volume and respiratory rate need to be increased to increase the minute ventilation to decrease the pCO₂. Better chest compressions to improve pulmonary blood flow will also facilitate the removal of CO₂. The bicarb is low causing a metabolic acidosis. Sodium bicarbonate can be given intravenously to reverse the metabolic acidosis.

7. Their color is pale. Thus pallor can suggest anemia, poor skin perfusion or hypoxia.

8. CO poisoning.

Chapter VIII.2. Asthma

1. Asthma is best thought of as a chronic inflammatory condition consisting of obstruction of the airways of the lung caused by spasms of the smooth muscle surrounding the airways which, in some cases, can be easily reversed by beta adrenergic bronchodilators. In other cases, corticosteroids may be necessary to reverse the airway obstruction by reducing the inflammatory changes responsible for the airway narrowing. These changes may be caused by a variety of different stimuli.

2. Medications are divided into groups directed towards relaxing bronchial smooth muscles (relievers) and reversing the inflammation (controllers).

3. This answer can be divided into two parts. The first is used to describe the degree of severity of the acute asthmatic episode. These would include rate and effort of respirations, ability to move air through a peak flow meter or spirometer, and oxygen and carbon dioxide concentration in the arterial blood. The second parameter involves the sensitivity of the airways (i.e., the chronic severity classification described in the chapter). Day symptoms, night coughing episodes, peak flow, coughing with exercise, prolonged coughing after upper respiratory infections, and coughing with drinking ice-cold beverages help to categorize the severity of asthma.

4. Wheezing may be heard but if the attack is very severe there may be no wheezing at all (due to poor air exchange). Aeration is a good indicator of acute severity. Evidence of respiratory distress (retractions, tachypnea) indicates increasing severity until respiratory failure occurs (at which point, the patient may tire and exhibit seemingly less respiratory distress). Hypoxemia is also indicative of severity. Peak flow is typically low for acute exacerbations. For mild cases, cough may be present at any phase of an asthmatic episode and may be the only sign that bronchospasm is occurring. A peak flow meter reading before and after a challenge of inhaled bronchodilator may reveal an increase in the airflow indicating the presence of bronchospasm.

5. Always consider the triggering event in formulating the treatment plan. Avoidance of the trigger can be very cost effective. Preventive use of medications can be very useful such as preemptive use of medication with first sign of a cold. Analysis of the symptom's response to initial treatment can guide you in up regulating or down regulating medications. Use of the peak flow meter can serve as an objective means of adjusting medications. If cough and wheezing occur often and there are signs/symptoms of chronic asthma, a maintenance plan of daily medication should be initiated. Efforts should be made to approximate the degree of inflammation in the airways. This estimation can serve to guide you in the type and dosage of antiinflammatory medications to use. A contingency plan of what medications to use during an acute episode can be helpful and may help to avoid an unnecessary emergency visit to the hospital.

6. The asthma maintenance plans are dependent on the patient's severity class (step 1, 2, 3, or 4). For all "persistent" levels, a daily plan will usually involve a long-acting bronchodilator and corticosteroid, LTRA, cromolyn and/or theophylline two to three times a day. Regular monitoring with peak flow meter readings can help to determine if the treatment is helping to return the lungs to normal function. A "rescue" plan using short acting bronchodilators with optional systemic corticosteroids may be needed for breakthrough wheezing.

7. Allergen exposure is mediated through IgE with resultant immediate and late phase reactions. A variety of mediators are released and cause a cascade of immunologic events culminating in tissue edema, increased mucous production, and sloughing of the epithelial layer of the inner lining of the airways. This affects the free and easy movement of air to the alveoli, which affects air exchange and causes atelectasis as the smaller air ways are completely plugged by the thickened mucous.

8. Triggering mast cells cause release of mediators, which can cause immediate effects on the lung tissue and smooth muscles. Other mediators are formed and released later and serve primarily to attract inflammatory cells. Some of these late mediators help to capture the incoming cells. Other mediators recruit epithelial cells and transform them into participants of the reaction causing them to release more mediators (biologic amplification).

9. The critical issue of steroids in children is that of linear growth. It is now well established that the use of inhaled steroids has significantly less effect on growth than systemic corticosteroids. The length of steroid use (inhaled or systemic), may have some effect on growth but its effect is temporary and in many studies final growth of asthmatics is generally no different than in non asthmatics (i.e., catch up growth occurs if the corticosteroids can be stopped for a period of time long enough for this to occur). Chronic inflammatory suppression (long term use of inhaled corticosteroids) improves the long term outcome of asthma (i.e., less severity in the future).

10. This is where your ability to practice medicine is tested. You need to educate and persuade the parents that your recommendations are in the best interest of their child and that it is based on considering the risks against the benefits. This is ideally done without making the parents feel guilty or intimidated by the potential for fatal outcomes. While our goal may be to maintain the patient's lifestyle and lung function, patients may see their goal as getting off medications as soon as possible. For persistent asthmatics, they should be convinced that this is a chronic disease and long term medications will be required. Long term use of medications is generally very safe and not addictive.

Chapter VIII.3. Cystic Fibrosis

- 1.d
- 2.c
- 3.b
- 4.b
- 5.b
- 6.e
- 7.e
- 8.b
- 9.e
- 10.b

Chapter VIII.4. Chronic Lung Disease of Infancy (Bronchopulmonary Dysplasia)

1. False
2. b
3. e
4. e
5. d
6. False

Chapter VIII.5. Bronchiectasis in Children

1. true
2. false
3. false
4. true
5. false
6. false

Chapter VIII.6. Foreign Body Aspiration

1. False.
2. d.
3. First phase: Acute symptomatic period that immediately follows the incident. May see choking, gagging, coughing, and/or cyanosis. High risk of death. Second phase: Quiescent asymptomatic period. May last minutes to months depending on location, type, and ease of movement of the foreign body. Third phase: Renewed symptomatic period. May see wheezing, chronic cough, fever, hemoptysis. High risk of complication.

4. Organic material is worse to aspirate because it will cause a more intense inflammatory response, thereby increasing the risk for complications. Additionally, most organic material is non-radiopaque making it more difficult to visualize.
5. False. Right and left foreign bodies occur at roughly the same frequency.
6. A blind finger sweep may reposition the foreign body causing a complete airway obstruction.
7. d
8. d
9. True. Whenever a choking episode occurs while a young child is eating nuts, the risk of foreign body aspiration is high. Bronchoscopy should be highly considered here (9).

Chapter VIII.7. Pulmonary Hemosiderosis

1. c. Hypercarbia is not usually seen because compensatory mechanisms usually overcome the problems of reduced gas exchange by increasing minute ventilation (either by increasing rate or depth of ventilation).
2. It is one scheme to help identify the etiology for a condition with numerous causes. Treatment is more likely to be successful after identifying and treating the primary cause.
3. d. Bronchospasm, edema, and mucus can narrow the airway causing obstructive disease similar to asthma. Chronic inflammation can increase interstitial fibrin and collagen deposits which then reduce compliance resulting in giving restrictive disease. Any combination of the two is possible.
4. a. The classic triad is iron deficiency anemia, pulmonary infiltrates and hemoptysis, although hemoptysis is seen less commonly in children. "Pulmonary hemorrhage" does result in hemosiderosis, but it is not part of the classic triad.
5. False. There is controversy over whether a lung biopsy should be undertaken for all patients with significant PH. It could be argued that all patients who have PH without a known etiology (suspected IPH) should have a lung biopsy. But since IPH is a diagnosis of exclusion, a lung biopsy doesn't preclude the other parts of the evaluation, including history, exam, radiology and laboratory studies. Pathology from lung biopsy is seldom diagnostic alone and can only be interpreted in light of the other information.

Chapter VIII.8. Pulmonary Vascular Anomalies

1. >2:1 pulmonary flow to systemic flow.
2. To prevent future complications such as: pneumonia, arrhythmia, and irreversible pulmonary hypertension (13).
3. Recurrent pulmonary infections, bronchiectasis and hemorrhage.
4. Typically, it is left-to-right venous drainage: pulmonary venous/systemic artery to the systemic venous system. Intrapulmonary sequestrations typically shunt systemic blood to the pulmonary vein (systemic artery to the pulmonary vein, which is left to left).
5. Extrapulmonary sequestration (30% are associated with diaphragmatic hernias).
6. 1) Sequestration contains bronchi that do not communicate with the trachea. 2) Two types of sequestration (intrapulmonary and extrapulmonary). 3) Dextrocardia and ASD usually accompany Scimitar syndrome. 4) Intrapulmonary sequestration venous drainage enters the left heart, while the venous drainage of Scimitar and extrapulmonary sequestration enters the right heart circulation.

Chapter VIII.9. Bronchogenic Cysts and Congenital Cystic Adenomatoid Malformations

- 1.b
- 2.a
- 3.b
- 4.d
- 5.c
- 6.b
- 7.b

Chapter VIII.10. Congenital Airway Problems

1. Laryngomalacia
2. a. inspiratory
3. d. b and c
4. small or malformed cricoid cartilage
5. 20%
6. congenital subglottic stenosis
7. c. 18 to 24 months old
8. central, peripheral

Chapter VIII.11. Sleep Disorders

- 1.a
- ,
- 2.b
- 3.a
4. Sleep attack, cataplexy, sleep paralysis, hypnagogic hallucinations
5. Obstructive: Tonsillar enlargement, Prader-Willi syndrome, Pickwickian. Non-obstructive: Prematurity, Ondine's Curse.
6. Adolescence

Chapter VIII.12. Sudden Infant Death Syndrome (SIDS)

- 1.False
- 2.b
- 3.False
- 4.c
- 5.True
- 6.b
- 7.True

Section IX. Gastroenterology

Chapter IX.1. Infant Colic

- 1.d
- 2.d
- 3.c
- 4.abcd
- 5.true
- 6.d

Chapter IX.2. Abdominal Pain

1. True
2. True
3. Crampy (hollow viscus) versus steady (solid viscus and peritoneal).
4. Mid-abdomen
5. Flank, groin and ipsilateral scrotum or labium

Chapter IX.3. Gastroenteritis and Dehydration

1. Shigella.
2. Rotavirus. It causes fever, vomiting, and watery diarrhea.
3. The diagnosis can be made by antigen detection, identifying cysts in the stool, endoscopy or examination of jejunal contents. It is treated with metronidazole or furazolidone.
4. Sunken fontanelle, absence of tears, sunken eyes, sticky/tacky oral mucosa, delayed capillary refill, reduced skin turgor, inactivity/lethargy, tachycardia, hypotension.
5. With oral rehydration, small frequent volumes 5-20cc every 5-10 minutes, advanced slowly.
6. With IV fluid infusion of normal saline or lactated Ringer's at 20cc/kg. Oral rehydration with ORS is commonly employed in other countries.

Chapter IX.4. Biliary Atresia

1. False. Persistent jaundice needs to be worked up before permanent damage is done by any number of pathological conditions, such as BA. Since there is little risk involved, the threshold to obtain a serum fractionated bilirubin should be low. If there is an elevation of conjugated bilirubin at 14 days of age or earlier, it is by definition neonatal cholestasis.
2. No. With poor uptake into the liver you can only state that there is cholestasis. This may be transient cholestasis due to hepatitis, or it may be due to severe damage to the hepatocytes by several possible causes including biliary atresia. To make a diagnosis, there needs to be normal uptake in the liver with no movement into the bowel, even after 24 hours. Pretreatment with phenobarbital improves the yield on the DISIDA scan.
3. Yes, this histopathology is consistent with the histopathology seen with biliary atresia. However, it is also consistent with idiopathic neonatal hepatitis and therefore a definitive diagnosis can not be made on this biopsy result alone.
4. The presence of clay colored or acholic stools are indicative of cholestasis. The lack of bile flow into the bowel prevents the characteristic stool coloring. The superficial light coloring is due to the sloughing of pigmented cells during the transit in the bowel and does not affect the core of the stool.
5. While there is little chance of long-term survival with the patient's native liver in someone who undergoes the Kasai procedure after 3 months of age, there is some benefit. The Kasai procedure can lead to extended survival time with the native liver, allowing the patient to stabilize baseline health. There is also a benefit in that there will be longer period of time to find a donor and prepare the patient for transplantation. However, each patient is different and some may be better served by primary liver transplantation.

Chapter IX.5. Hepatitis

1. These enzymes are found within the hepatocyte, and therefore are indicative of hepatocellular damage, and not actual function of the liver. The most useful test for liver function is prothrombin time.
2. False. They are usually anicteric.
3. The 15 month old should receive immunoglobulin (too young to receive Hep A vaccine). The 5 year old can receive the Hep A vaccine since she is over 2 years of age. The vaccine is given as two doses 6 months apart.
4. The mother is actually immune to hepatitis B, perhaps from receiving hepatitis B vaccinations in the past or from a previous exposure to hepatitis B. She does not have infection, she is not contagious and in fact, she is immune. This infant does not need HBIG prophylaxis, but should be vaccinated against hepatitis B in the usual fashion.
5. The mother has a positive HBsAg, which means that she is contagious. Therefore, this infant needs HBIG and hepatitis B vaccine prior to 12 hours of age. Because this premie is less than 2 kg, a 3-dose vaccine schedule should be instituted after this infant is over 2 kg, and not counting the initial dose because he was less than 2 kg. After completion of the 3-dose schedule, he should be tested serologically for anti-HBs and HBsAg 1-3 months after completion of the series. If his anti-HBs (<10 mIU/ml) is low and HBsAg is negative, then he should receive 3 additional doses of vaccine at a 0, 1, and 6-month schedule, with anti-HBs testing done 1 month later to determine immunity. The mother's status could be consistent with acute hepatitis B, chronic hepatitis B, or a hepatitis B carrier state. The most important serologic test out of the three listed is the HBsAg, since this test tells us whether the mother is contagious and the newborn requires HBIG prophylaxis.
6. Brain (or nervous system), liver, and eye. Manifestations are neuropsychiatric symptoms, hepatitis, and Kayser-Fleischer rings.
7. Copper.
8. Lung and liver. The pulmonary manifestation is emphysema and hepatic manifestations include prolonged jaundice in infants, neonatal hepatitis syndrome, mild elevations of aminotransferases in toddlers, portal hypertension and severe liver dysfunction in older children, and chronic hepatitis, cryptogenic cirrhosis, and hepatocellular carcinoma in adults.

Chapter IX.6. Gastroesophageal Reflux

1. False. Though most episodes are asymptomatic, reflux is a routine physiologic phenomenon in everyone, at every age. It is gastroesophageal reflux DISEASE that is uncommon in most of childhood.
2. d. Remember regurgitation is effortless, vomiting is forceful and is atypical for uncomplicated GE reflux. It can indicate obstruction or metabolic derangement, and represents a problem that requires an answer in as short a period of time as possible (even if the answer is a diagnosis of routine gastroenteritis).
3. Consider pyloric stenosis, even if only a few of the classic symptoms and signs are present. Waiting for the diagnosis to become more obvious further delays surgical intervention and increases the risk of complications such as hypochloremic alkalosis and dehydration. See differential diagnosis above.
4. This one is arguable, but my personal preference is to start treatment with antacids since it offers a means of immediate relief of any truly peptic pain episode, and younger children are better reinforced by immediacy of the response. Of course a good history and physical should come first to verify the pain does fit a "peptic" pattern, as constipation is more likely at this age.
5. False. The vast majority of uncomplicated pain seems to respond to mechanical measures, avoidance of caffeine, nicotine, and the like, and intermittent antacid use. It is only when the pain episodes remain disruptive more than once weekly that it is generally warranted to proceed to chronic medical therapy, and then only at the minimal doses necessary unless other complications (e.g., Barrett's esophagus) occur.

Chapter IX.7. Gastrointestinal Foreign Bodies

1. The level of the cricopharyngeus muscle in the proximal esophagus, the aortic arch crossover in the midesophagus, and the lower esophageal sphincter.
2. The esophagus because of its orientation.
3. False. A sharp object in the esophagus should be endoscopically removed immediately to prevent perforation.
4. False. The mercuric oxide in disk batteries is not readily absorbed by the GI tract.
5. Accumulations of plant and vegetable matter.
6. A penny cannot fit in an infant's trachea.
7. More gadgets which use disc batteries increases the likelihood that these batteries will be left around the house for young children to put into their mouths.

Chapter IX.8. Constipation

1. Answer d is correct, and the radiologist will appreciate the warning as to why the exam is being requested without prior bowel cleanout (which may otherwise be performed as part of the radiology routine, rendering the same end result as answer c). Answer a will not only miss the diagnosis but may also render diagnosis more difficult later if the pattern is set for stimulation for defecation. Answer b may give the diagnosis if a microcolon can be identified on exam, but can make interpretation of a barium enema difficult. Answer c is wrong for the same reasons as a and b. Answer e is doing too much too soon.

2. Correct answers are both b and c. Anal winks can be expected at any age unless the anus has indeed been badly traumatized. Its absence usually indicates a neurogenic component, and the examiner is prompted to carefully assess the tone of the sphincter and retrospectively look for other signs of aberrant function of the longer neuron sensory and motor tracts or signs of sacral anomalies. If the issue is still in doubt, it can be deferred by one visit. The process can still be addressed by full fecal softening and re-establishment of regular bowel habits since the therapies diverge at a later stage where a timing suppository needs to be added to maintain regular defecation as the weaning progresses and the stool becomes firmer. Full fecal softening is needed initially for both causes to address the flaccidity of the rectum.

3. No, the absence of impaction is worrisome, and the behavioral and social history are likely incomplete. The above pattern suggests voluntary soiling, in which a socially uncomfortable behavior is expressed to avoid an even more uncomfortable behavior, such as sexual abuse.

4. NO! The enemas may have dilated the rectum beyond the reach of the examining digit, and it is common for patients with short segment Hirschsprung's disease to pass the softer stools of breast feeding but have trouble with formula and pureed food. Expert radiographic evaluation is necessary, and the assistance of a pediatric surgeon or gastroenterologist may be helpful.

5. This is the typical appearance of the delayed view in a patient with Hirschsprung's disease. The obstruction is of high enough a grade that the portion of the colon with normal ganglion innervation has set up a "to and fro" pattern of peristalsis, evenly mixing the remaining barium with the increased fluids present in the lumen, rather than transporting the barium to the rectum where the excess fluid is removed (which is the appearance of the normal colon).

Chapter IX.9. Hirschsprung's Disease

1. false
2. true
3. No meconium for the first day of life.
4. false
5. neural crest cells

Chapter IX.10. Gastrointestinal Bleeding and Peptic Ulcer Disease

1. A modified Apt test can be done. Take the loose clots and suspend them in a minimal amount of tap water (you need a visibly pink supernatant composed of free hemoglobin, hence the tap water to lyse the cells). Centrifuge the cells and to 5 cc of pink supernatant add 1 cc of 1% sodium hydroxide. Read in two minutes: adult hemoglobin turns yellow or brown, fetal hemoglobin remains pink. If the supernatant turns yellow, the blood is mother's, and every one can relax.

2. This infant has no sign that the bleeding originates with him, as bleeding sufficient to produce melena should leave him quite shocky. The history gives every sign that he has induced a mastitis (and nipple bleeding) in his mother, and she is able to compensate for the several ounces of blood loss that produced the melanotic stool. You counsel her on proper feeding and handling techniques to keep the infant satisfied without having to overfeed, and have his mother avoid feeding on the affected side until the inflammation subsides. At followup in a week, all are smiling.

3. ABC's first. He shows no sign of acute intravascular volume depletion, but looks a little pale and turns out to be mildly anemic, indicating a longer standing problem. Next, place an NG tube to look for upper GI bleeding but you find no evidence of this. Now what? There is evidence of bleeding in an area bathed in acid, but it is not the stomach (or the duodenum). If he is hemodynamically stable, you have time to pretreat with a histamine-2 receptor blocker to improve the yield of a Meckel's scan looking for ectopic gastric mucosa. This finds a hot spot in the lower mid-abdomen which the technician assures you is not tracer in the bladder. You contact your pediatric surgeon for minimally invasive removal of a presumptive Meckel's diverticulum with acid-secreting ectopic gastric mucosa.

4. The black color is due to blood exposure to acid. Acid fermentation can take place in the cecum. If this occurs and the transit time is relatively slow, bleeding in this area can present as melena. Bleeding from a Meckel's can also result in acid exposure in the lower GI tract.

5. The acid level in the stomach is low (possibly due to antacids and H2 blockers) and/or the bowel transit time is very rapid. Also, the bleeding may originate from the duodenum which does not expose the blood to acid if the pylorus is tight or the level of stomach acid is low.

6. The history has all the hallmarks of inflammatory bowel disease, but still the common things are more common. The physical examination shows no weight loss (but little net gain over the year), and she has a mild temperature elevation (100.5 degrees) and tachycardia (105) but no specific findings in the abdomen other than a mild increase in the amount of fluid and gas palpable in the small bowel and colon. Along with the CBC and ESR, you obtain a rectal swab for stool culture. There is no anemia, but the WBC count is slightly elevated and the ESR is 6. You are puzzled until the stool culture results return 2 days later, positive for *Campylobacter*. You call to discuss the results and find her new puppy had been ill the week before (dogs can both harbor and become ill from this organism), and the poor race performance actually arose because she was getting fed up with her coach (her father) and had been wanting to quit. Since she is still out of school with the cramping and diarrhea, you start her on erythromycin, offer to act as a go-between on the issue of changing sports, and annotate her chart to remind yourself to monitor for other signs of depression in the future.

7. As the negative gastric aspirates over the last 2 days indicate no UGI source, you prep him for colonoscopy to look for a lower GI bleeding site. GoLYTELY is used in hopes of diluting the bleeding as blood rapidly absorbs all light even in a thin film, and you anticipate much suctioning and lavage which will markedly extend the time for the procedure. As he will be under anesthesia anyway, you also obtain consent for EGD for completeness' sake. At endoscopy, the EGD study finds the pylorus is tightly shut as there is a large duodenal ulcer (not a simple erosion) with a visible vessel (an indicator of high risk of recurrent bleeding). With this you joyfully cancel the colonoscopy as being unnecessary, and chalk up the experience as a reminder that rapid transit times and the low acid production of early childhood can sometimes prevent the blood from encountering enough acid to turn to acid hematin or melena. Indeed, the higher the volume lost, the more acid is needed and the less likely the reaction. Unfortunately, as the finding was a therapeutic surprise, you are unprepared to address the ulcer in any invasive manner (sclerotherapy, heater probe, etc.) and have to return the patient to intensive care on an IV histamine receptor blocker and carafate and sufficient antacid to keep the pH of the gastric contents, measured every hour, above 6.5 (and well above the 4.5 activation level of pepsin). Preparations are made to return with the proper equipment the next day if he continues bleeding, only to find the bleeding stops with the procedure (and the drop in splanchnic pressures encountered under anesthesia), the current measures are more than sufficient, and no further transfusions are required. The patient makes a rapid and full recovery, with no recurrence in over 5 years (based on actual personal experience).

Chapter IX.11. Inflammatory Bowel Disease

1. CD affects the gut anywhere between the mouth to the anus, while UC affects the colon.
2. UC has a greater risk for cancer. CD only slightly increases the risk for cancer.
3. CD: Transmural inflammation, skip areas, aphthoid lesions, fissuring ulceration, granuloma, fibrosis. UC: Mucosal inflammation, diffuse involvement, crypt abscesses, crypt distortion.
4. Joints: arthralgias are more common than arthritis. Integument: erythema nodosum and pyoderma gangrenosum. Eyes: episcleritis, uveitis, and rarely, orbital myositis. Hepatobiliary system: sclerosing cholangitis, chronic active hepatitis. Pancreas: pancreatitis. Renal system: nephrolithiasis, hydronephrosis. Coagulation system: hypercoagulability. Bone: decreased bone density.
5. Crohn's disease may be subdivided into 3 categories: 1) The fistulizing type, 2) Patients with fibrostenosing disease, and 3) The inflammatory category. Ulcerative colitis is divided into three categories: mild, moderate, severe.

Chapter IX.12. Malabsorption Conditions

1. Luminal phase, mucosal phase, and transport (removal) phase.
2. Luminal phase.
3. Mucosal phase.
4. False. Younger patients often display a more acute and wider-ranging symptomatology than older children.
5. True.
6. True.

Chapter IX.13. Meckel's Diverticulum

1. Meckel's diverticulum is the most common congenital anomaly of the gastrointestinal tract, affecting about 2% of the population.
2. The embryologic yolk-stalk or omphalomesenteric or vitelline duct
3. Meckel's diverticula appear in males and females at equal frequencies, however, males are 3 times more likely to develop symptomatic or complicated Meckel's diverticula.
4. Gastric mucosa is present in 80% of all heterotopic cases.
5. Most cases of Meckel's diverticula are asymptomatic, are detected at autopsy, or incidentally during unrelated abdominal surgery.
6. The infant or young child who has a massive, painless bout of dark red rectal bleeding most likely has Meckel's diverticulum.
7. The principal complications of Meckel's diverticulum include ulceration, hemorrhage, small bowel obstruction (may be due to volvulus or intussusception), diverticulitis, and perforation.
8. A Meckel's scan (technetium-99m pertechnetate scintigraphy).
9. False negative scans are seen in Meckel's diverticulum that do not contain ectopic gastric mucosa and in Meckel's diverticulum with rapid bleeding that prevents the accumulation of tracer in the diverticulum.
10. Meckel's rule of four 2's: a) Occurs in 2% of the population, b) Only 2% of those with a Meckel's manifest clinical problems, c) Usually located 2 feet proximal to the ileocecal valve and the diverticulum is approximately 2 inches long, d) Symptoms commonly manifest at age 2 years.

Section X. Surgery

Chapter X.1. Wound Management

1. Since epinephrine is a vasoconstrictor, it slows the rate of local anesthetic release into the general circulation permitting a higher total dose of local anesthetic that can be given (useful if the wound is large), it extends the duration of action, and decreases bleeding.
2. Lower tensile strength compared to sutures and thus it can't be used in areas of high tension such as wounds over joints. If it gets wet, the adhesive may fall off prematurely.
3. The research done on the comparisons between sutures and tissue adhesives have shown that they have comparable cosmetic results.
4. Approximately 7 to 10 days
5. Cocaine component: arrhythmia, urticaria, drowsiness, excitation, seizure, vomiting, flushing, and death. TAC should be avoided near mucous membranes. TAC is no longer available in most centers.
6. Significantly contaminated wounds, are at greater risk of infection if closed by primary intention.
7. True. Heavily contaminated wounds will develop infection despite antibiotic treatment.

Chapter X.2. Inguinal Hernias and Hydroceles

1. True
2. a
3. Intermittent inguinal, scrotal or labial swelling that spontaneously resolves.
4. True
5. c
6. True
7. b
8. True

Chapter X.3. Appendicitis

1. Movement alleviates colicky pain but exacerbates peritoneal pain.
2. 4 to 5 cm (1.5 to 2 inches) cephalad on a line drawn between the anterior-superior iliac spine and the umbilicus.
3. Persistent and constant in nature.
4. Genitourinary.
5. Literally "middle pain" caused by a ruptured ovarian follicle which occurs approximately in midmenstrual cycle.

Chapter X.4. Intussusception

- 1.c
- 2.a
- 3.e
- 4.c
- 5.b,d,e
- 6.e
- 7.b
- 8.false
- 9.a

Chapter X.5. Malrotation and Volvulus

1. a) Ladd's bands compressing and obstructing the proximal small bowel. b) Midgut volvulus.
2. The term "malformation" originates from the embryological formation of the malrotation which is of little or no value for clinicians.
3. Upper GI series. Barium enema and ultrasound are less reliable.
4. Midgut volvulus and sigmoid volvulus. Midgut volvulus is a true surgical emergency involving nearly the entire small bowel which will infarct unless the volvulus is relieved surgically. Sigmoid volvulus, which occurs in the elderly, involves the sigmoid colon and can usually be relieved without surgical means.
5. It is unlikely, but it can happen. About half the patients with a malrotation will present in the neonatal period, with the other half presenting at any other age.

Chapter X.6. Gastroschisis and Omphalocele

1. c
2. c
3. d
4. c
5. c

Chapter X.7. Diaphragmatic Hernia

1. c
2. d
3. d
4. c
5. c

Chapter X.8. Pyloric Stenosis

1. A 3 to 4 week old male infant who presents with progressively severe, non-bilious vomiting, which may be projectile. The vomiting occurs immediately after feeding, after which the infant is still hungry and wants to feed again. On physical exam, the infant may display signs of dehydration. Visible waves of peristalsis may be seen and an "olive" may be palpable.
2. A palpable "olive" is pathognomonic but is very difficult to determine with certainty. If the pylorus cannot be palpated, ultrasound is diagnostic with 90% sensitivity.
3. The "classic" laboratory finding is a hypochloremic, hypokalemic metabolic alkalosis. However, due to more expedient diagnosis, this metabolic abnormality is seen in less than 10% of patients.
4. The initial step in management involves fluid resuscitation and correction of any metabolic abnormalities. HPS is not a surgical emergency, and any fluid deficits or alkalosis should be corrected prior to surgery to decrease surgical/anesthetic risks.
5. Electrolyte patterns are not pathognomonic for pyloric stenosis. The correct answers are a and c. Pattern "a" is a classic early vomiting picture, often seen with HPS. Pattern "c" is a picture of vomiting resulting in dehydration and lactic acidosis. This can also be seen later in the clinical course of HPS as dehydration worsens. Pattern "b" is typical of adrenal crisis (low Na, high K). Pattern "d" is typical of hypernatremic dehydration.

Chapter X.9. Intestinal Atresias, Duplications and Microcolon

1. Duodenal atresia.
2. Esophageal atresia with tracheoesophageal fistula results in a gas within the bowel, esophageal atresia without tracheoesophageal fistula does not.
3. VACTER association; includes vertebral defects, anal atresia, congenital cardiac anomalies, tracheoesophageal fistula with esophageal atresia, radial upper limb hypoplasia and renal defects.
4. Esophageal or duodenal atresias result from failure of the lumen to recanalize. A jejunal or ileal atresia results from an intrauterine ischemic event.
5. Undiagnosed intestinal duplications may cause a bowel obstruction or may undergo malignant transformations in adults.

Chapter X.10. Craniofacial Malformations

1a The clefting is caused by improper migration of the lateral lip segments in utero. This is a complex process, and sometimes it malfunctions.

1b Probably not, and reassurance is the best treatment as the parents will inevitably feel some guilt. For future pregnancies, good nutrition (especially folic acid) and avoidance of toxins (alcohol, cigarettes, drugs, medications, environmental) are helpful. For further discussion, see <http://www.cleft.net/reduce>.

1c The parents will probably need help in learning how to feed their baby, since the baby has less ability to create suction. Making a larger opening in the nipple, and using a broad nipple can help - the baby can get milk by compressing the nipple with the tongue rather than sucking. Breast feeding is possible, but more difficult. For a nice discussion of this, see <http://www.samizdat.com/pp2.html>

1d The surgeries involve repair of the lip in the first year, repair of the cleft palate at about age 1, repair of the alveolar cleft at 6-10 years, and repair of the cleft nasal deformity as a teenager, after growth is complete. Each of these may involve one major operation, and perhaps one or more refinement operations if desired.

1e The incidence of cleft lip in the general population is about 1:750. This approximately doubles for each affected family member, so the next baby would have about a 1:375 chance of having a cleft. For more precise evaluation, consultation with a genetic counselor is recommended.

2. In cleft palate, the muscles of the soft palate (levator palatini) are incorrectly aligned: they cannot cross the midline as they normally do. Thus, contraction of these muscles does not pull on the Eustachian tube to open it up, and the ears remained "plugged", causing serous otitis which then can get infected and cause otitis media.

3. Because of the clefting of the palate, the children cannot build up air pressure in the mouth (the air escapes into the nose). Thus, they cannot properly form the sounds which require increased air pressure (b, p, t, k, g, v, and s). As they try to learn to speak, they substitute other sounds for the ones that they cannot make ("compensatory articulations"). As they get older, it becomes increasingly difficult for them to unlearn these habits, so repair of the cleft palate should be done prior to speech development if possible. In addition, hearing is often slightly impaired, as noted above.

Chapter X.11. Abscesses

1. True

2. Staph aureus

3. False, lung abscesses are not.

4. Abscesses are often mixed infections, therefore antibiotic treatment needs to provide adequate coverage of the common bacteria associated with that type of abscess. Some antibiotics (notably clindamycin) may provide synergistic efficacy as well.

5. No

6. Bacteremia, rupture into neighboring tissue, bleeding by erosion into nearby vessels, impaired function of the affected organ or systemic effects such as cachexia and anorexia.

Chapter X.12. Lymphangiomas

1.e. A subdural hygroma is liquefaction of a subdural hematoma.

2.a & b. These are indicative of venous malformations.

3.true

4.d. Radiation is reserved as a last resort.

5.f

Section XI. Hematology

Chapter XI.1. Anemia

1. Classification by red blood cell size (microcytic, normocytic, and macrocytic anemias) and classification by mechanism (decreased production, increased destruction, and blood loss).
2. Low reticulocyte count.
3. History: dark urine. Physical exam: jaundice, scleral icterus, splenomegaly. Lab: elevated LDH, AST, indirect bilirubin; decreased serum haptoglobin; positive direct antibody test (DAT, also known as Coombs test), high reticulocyte count.
4. Bone marrow stain for iron has the highest positive predictive value and specificity, but it is too invasive in most instances. Low serum ferritin is diagnostic of iron deficiency, but its wide range of normal values and its fluctuation with acute inflammation may make interpretation difficult. Serum iron coupled with TIBC and % iron saturation are satisfactory, but this test is subject to some laboratory fluctuation as well. Response to a therapeutic trial of iron is also acceptable as proof of iron deficiency. No actual correct answer to this question.
5. True
6. True
7. False
8. False. Cow's milk contains a modest amount of iron, but little of it is bioavailable.
9. c

Chapter XI.2. Thalassemia

1. Answer is d. Since the child had Hemoglobin Barts on the newborn screen, a form of alpha thalassemia is present. The hemoglobin of 9.1g/dl implies that it is likely Hemoglobin H thalassemia. There is no need to do a hemoglobin electrophoresis, since the type of thalassemia (alpha) is already known. Additionally, Hemoglobin H is so fast moving that it is typically missed on routine hemoglobin electrophoresis, thereby giving "normal" results. In general, therefore, hemoglobin electrophoresis is typically useless in evaluating for alpha thalassemia. This patient and her family should be provided with genetic counseling and education. She should be counseled to avoid supplemental iron, as a true iron deficiency is extremely rare in Hemoglobin H thalassemia. If iron deficiency is ever suspected, iron studies should be done to clearly document a true deficiency before iron supplementation is started.
2. Answer is b. The two most likely etiologies of the anemia in this young lady are iron deficiency or a form of thalassemia. She could most effectively be managed with a trial of iron (for one month). If a repeat CBC shows no change, then either alpha or beta thalassemia should be considered. A hemoglobin electrophoresis would be the next step if the iron trial fails. An increase in Hemoglobin A2 is very suggestive of beta thalassemia. In this case, the mild anemia would indicate a heterozygous beta thalassemia (beta thalassemia minor). Workup may stop there with proper genetic counseling and patient education. If the hemoglobin electrophoresis is normal, or near normal, then alpha thalassemia is the most likely cause.
3. Answer is C. The effects of Hemoglobin E are most significant when combined with beta thalassemia minor (see text), which is why the newborn's current hemoglobin (mostly fetal hemoglobin with no beta chains) is of the least concern. A CBC should be done at 9 or 12 months of age to screen for coexisting beta thalassemia.
 - 4a Fe is indicated as a therapeutic trial. But if no improvement in the hemoglobin results, then a thalassemia is possible.
 - 4b Fe is contraindicated since it will not improve the hemoglobin and it will add to the potential for iron toxicity.
 - 4c Fe is contraindicated, since it will not improve his hemoglobin and it will add to the potential for iron toxicity.
 - 4d Despite the presence of thalassemia, iron deficiency is documented by laboratory studies, so iron supplementation is indicated until iron deficiency resolves. Once iron deficiency is no longer present, iron supplements become contraindicated.

5. The four alpha genes are not inherited independently. They are inherited in pairs on each chromosome. Thus, a patient with alpha thal trait who has two defective alpha genes and two normal alpha genes could have this in one of two ways: 1) AX/AX, or 2) AA/XX, where "A" is a normal alpha gene and "X" is a defective alpha gene. Some ethnic groups have the genes arranged in the first form only, in which case, two parents with alpha thal trait would always pass AX to their child resulting in a child with AX/AX (alpha thal trait). Fetal hydrops (XX/XX) could never result from such a genetic arrangement. However, if both parents with alpha thal trait were AA/XX, then their children could either be: AA/AA, AA/XX, or XX/XX (fetal hydrops).

Chapter XI.3. Sickle Cell Disease

1.c. This fever is significant, thus there will be an increase in sickling, and the patient is at risk for vasoocclusive events. Therefore, IV hydration is necessary. It is also prudent to start empiric antibiotics after blood cultures are obtained.

2.b. Appropriate initial management should include vigorous IV hydration, plus IV pain management to include both a continuous infusion and a PCA. One would not transfuse initially, because a transfusion of packed red blood cells will only increase the viscosity of the blood, causing more sickling. Also, one does not know at this point, what the baseline hemoglobin is. The hemoglobin of 7.9 g/dl may not be very different than baseline. If there is further hemolysis, and a transfusion is indicated, it should be done carefully after several hours of IV hydration. Also, remember that meperidine increases seizure activity in children with sickle cell anemia, and is contraindicated.

3. It has been shown that a proactive approach to sickle cell disease decreases morbidity and mortality. Therefore, by identifying all children with sickle cell disease at birth, before symptoms start (usually after 1 year of age), quality of life can be improved.

4. Only after 6 months of age is gamma globin chain production decreased and beta globin chain production sufficient to cause sickling.

5. No. Both beta and sickle anomalies are on the beta globin gene. The newborn screen will identify the sickle hemoglobin, but will not identify the abnormal beta globin genes. The newborn screen will therefore appear as that for sickle cell trait with Hemoglobins F, A, S.

Chapter XI.4. Bone Marrow Failure

1. Stem cell transplantation from a matched sibling donor or other compatible stem cell source.
2. Diepoxybutane induced chromosome breakage (increased in patient with Fanconi's anemia).
3. Diamond Blackfan anemia presents at an earlier age (<1 year) and may have associated physical anomalies. At diagnosis, MCV, hemoglobin F and i-antigen are increased. TEC presents at an older age (>1 year). Since it is acquired, there are no associated anomalies. MCV, hemoglobin F and i-antigen should be normal.
4. Skin hyperpigmentation, mucous membrane leukoplakia, dystrophic nails.
5. Cow's milk allergy and thrombocytopenia.
6. Viruses: hepatitis, HIV and parvovirus. Drugs: Chemotherapy, chloramphenicol.
7. The i-antigen is a marker found on immature red cells. It, along with fetal hemoglobin and macrocytosis are manifestations of the fetal-like hematopoiesis seen in the stressed bone marrows of patients with acquired aplastic anemia, Fanconi's anemia, and Diamond Blackfan anemia.

Chapter XI.5. Newborn Hematology

- 1.F
- 2.F
- 3.d
- 4.F
- 5.T
- 6.T

Chapter XI.6. Bleeding Disorders

1. ITP is an immune-mediated disorder in which circulating antiplatelet antibodies target epitopes on the platelet membrane. The antibody-coated platelets are subsequently destroyed by macrophages in the reticuloendothelial system.
2. Thrombocytopenia, microangiopathic hemolytic anemia, and uremia.
3. X-linked recessive.
4. Following trauma or injury, especially head injury; to treat spontaneous bleeding, such as hemarthrosis or deep muscle bleeding, and prior to procedures, including dental work.
5. von Willebrand factor is a cofactor for platelet adhesion and carrier protein for factor VIII.
6. Bleeding time, PTT, and ristocetin cofactor.
7. Patients who have blood group O have a lower normal range for von Willebrand studies.
8. Factors II, VII, IX, and X.
9. If the prolonged PTT is due to a factor deficiency, then the addition of factors from the "normal plasma", will correct the PTT. However, if the PTT is due to a circulating anticoagulant such as heparin or a lupus anticoagulant, the circulating antibody will inhibit the "normal" factors and the PTT will remain prolonged. Failure to normalize the PTT after the addition of normal plasma, implies the presence of a circulating anticoagulant.

Chapter XI.7. Transfusion Medicine

1. b. Once a unit is spiked (IV infusion begun from unit bag), any uninfused blood must be discarded after 4 hours. Thus, the most time allowed for 1 unit to run is over 4 hours. Therefore, a unit may not be transfused over 6 hours. Giving 390 ml would give this patient 15 ml/kg, but giving this over 4 hours would be slightly too fast with such a low and fast falling hemoglobin. Additionally, it would expose the patient to a second donor, and half of the second unit would be discarded (wasted). Giving 262 ml means giving 1 unit (about 250 ml), and about 10 ml from a second unit (discarding the rest). Giving this over 2 hours would also be too fast as noted.
2. b. For just a few hives, it is not necessary to check the crossmatch of the blood, since this will detect antibodies causing hemolysis. Urticaria is not a hemolytic reaction. Usually diphenhydramine alone can resolve the hives, and the same unit can be continued with the diphenhydramine in effect.
3. c. See text
4. d. Epinephrine has no known beneficial effect on the hemolytic process.
5. e. All of these children should probably receive a transfusion.
6. a. See text
7. d. A unit of PRBCs can be split in the blood bank (like neonatal units) so that only one part of this is out of the blood bank and infusing into the patient at a given time (which can infuse up to 4 hours). Additionally, a child with such an extremely low hemoglobin needs to be transfused very slowly, at least initially, so as not to push his already compromised heart into further failure. With severe anemia, the patient is already in high output congestive heart failure. Blood is a potent volume expander which can suddenly worsen the CHF. Thus, the transfusion must proceed very slowly under close hemodynamic monitoring.

Chapter XI.8. Neutrophil Disorders

- 1.b
- 2.c
- 3.e
- 4.d
- 5.e

Section XII. Oncology

Chapter XII.1. Oncology Treatment Principles

1. Common infections include candidiasis, aspergillosis, and *Pneumocystis carinii*.

Prophylactic treatment with trimethoprim/sulfamethoxazole is indicated.

2. Hormones (prednisone), antimetabolites (methotrexate, 5-fluorouracil), plant alkaloids (etoposide, vincristine, paclitaxel), antibiotics (doxorubicin, bleomycin), anti-angiogenesis drugs.
3. Leukoencephalopathy
4. Most of these work by inhibiting some metabolic pathway or DNA synthesis, which ultimately leads to cytotoxicity
5. Bone marrow, peripheral blood, and sometimes even cord blood.

Chapter XII.2. Leukemia and Lymphoma

1. b. The fact that the child is short of breath in the supine position could be related to a mediastinal mass, which can be identified on a chest x-ray. A mediastinal mass could be a potential emergency situation, therefore a chest x-ray should be considered shortly after the history and physical exam are completed.
2. c. Live vaccines are contraindicated throughout the treatment course due to the immunocompromised status of the patient.
3. d. Delays in growth and development may occur as a result of chemotherapy and/or radiation therapy.
4. b. The chemotherapy may have induced tumor lysis causing hyperuricemia, which in turn may be affecting the kidneys.
5. b. As part of the differential diagnosis, you should consider ITP.

Chapter XII.3. Solid Tumor Childhood Malignancies

1. d
2. c
3. b
4. Growing pains (e) are ill-defined, but are supposedly very common, so from a numerical standpoint, this diagnosis is probably the most common. However, since this age group is one of the peak ages for osteosarcoma (b) and since this is a serious condition that should be diagnosed as early as possible, osteosarcoma is the most serious likely consideration.
5. a, b, and d are correct.

Chapter XII.4. Palliative Care

1. True
2. False
3. True
4. True
5. True

Section XIII. Nephrology/Urology

Chapter XIII.1. Nephritic Syndrome

1. C3 levels return to normal within a 6-8 week period in APSGN. Persistently low C3 levels suggest a cause other than APSGN.
2. The presence of red cell casts on urinalysis almost always indicates the presence of glomerulonephritis. They can also be seen after strenuous exercise and renal trauma.
3. The presence of white cell casts on urinalysis can be seen in APSGN, interstitial nephritis and pyelonephritis.
4. Gross hematuria resolves within days to weeks. Microhematuria may persist for months.
5. An uncertain diagnosis, significant hypertension, anticipated poor follow-up, cardiovascular or cerebrovascular compromise, etc.
6. Gross hematuria, oliguria, hypertension, edema (usually mild).
7. APSGN and Goodpasture's. Other causes of nephritis include SLE nephritis, MPGN, RPGN, Alport's, etc.
8. Convalescing APSGN.

Chapter XIII.2. Nephrotic Syndrome

1. d. Minimal change disease or "nil disease" accounts for 80-85% of cases of primary idiopathic nephrotic syndrome in childhood.
2. b and d. Infection, especially peritonitis and thrombosis account for the majority to nephrotic syndrome mortality.
3. false. The decision to perform a renal biopsy is usually deferred until the initial course of corticosteroid is initiated, unless there are specific risk factors such as age below one or above 10, hypertension on presentation or decreased complement on presentation.
4. d. Primary nephrotic syndrome is sporadic in nature. Congenital nephrotic syndrome is passed in an autosomal recessive manner.
5. b and e. Nephrotic syndrome in a child less than 1 year old may indicate congenital nephrotic syndrome and renal biopsy is often performed. In a patient with SLE, the nephrotic syndrome is likely secondary and a renal biopsy is indicated.

Chapter XIII.3. Cystic Kidneys

1. ARPKD and ADPKD are inherited. MCDK is usually non-heritable. ADPKD is the most common inherited renal disease.
2. ARPKD: bilateral enlargement and microcysts on ultrasound. Hepatic fibrosis is also present in ARPKD. ADPKD: macrocysts and usually involve extrarenal cysts in the liver, pancreas, ovary, and/or spleen. ADPKD will also have a positive family history in a parent and the aunts/uncles on the affected parent's side of the family.
3. Unilateral MCDK has an excellent prognosis with most cases decreasing in size. ARPKD, since it is bilateral, eventually leads to end-stage renal disease.
4. Signs of portal hypertension: spider nevi, esophageal varices, hepatomegaly. There can also be signs of respiratory distress or abnormal feeding due to the compressive effects of enlarged kidneys.
5. No, extrarenal manifestations of ADPKD such as intracranial aneurysms and extrarenal cysts usually present in adulthood.

Chapter XIII.4. Dialysis

1. Renal failure with uremia; BUN over 150 mg/dl; creatinine over 10 mg/dl; severe hyperkalemia; severe acidosis; refractory fluid overload (CHF); certain inborn errors of metabolism; certain acute poisonings; tumor lysis syndrome.
2. In hemodynamically unstable patients.
3. Can be done at home; no complex machinery; no vascular access.
4. Hypotension, seizures, hypothermia.
5. Anemia; acidosis; hypertension; growth retardation, renal osteodystrophy, platelet dysfunction.

Chapter XIII.5. Hemolytic Uremic Syndrome

1. E. coli O157:H7
2. Microangiopathic hemolytic anemia, thrombocytopenia, and renal failure.
3. d. schistocytes
4. c. serum BUN >100
5. False
6. Crampy abdominal pain (due to colitis), crying with puffy eyes (due to abdominal cramps, fluid retention due to renal failure causing puffy eyes), currant jelly diarrhea (actually bloody diarrhea due to E. coli O157:H7), pallor (due to hemolytic anemia), dehydration (due to diarrhea), oliguria (due to renal failure).

Chapter XIII.6. Urinary Tract Infection

1. Empiric treatment for UT! should not be initiated without first obtaining an adequate specimen for culture. The only pediatric exception would be a child so severely ill (in septic shock and/or anuric) that waiting to obtain a urine sample could be life threatening. One might consider empiric treatment without culture in an uncomplicated older teen, however, such patients are rarely "uncomplicated" when considering issues such as recurrence, sexually transmitted diseases, etc.
2. The method of obtaining a urine specimen is affected by the patient's age, severity of illness, state of cooperation, toileting abilities, and whether or not antibiotics are to be started empirically. The colony count considered positive varies with the collection method: any growth with suprapubic aspiration; greater than or equal to 10,000 CFU for a catheterized specimen; and greater than or equal to 100,000 CFU for a clean catch specimen. Bag specimens are only definitive when culture result is negative (and therefore should not be used if empiric therapy is to be initiated).
3. Host factors contributing to development of UT! include uncircumcised male, labial adhesions, poor hygiene, constipation, urinary tract obstruction, dysfunctional voiding patterns, and neurogenic bladder. Pathogens are those commonly found in the vicinity of the urethra: skin and GI organisms, as well as bloodborne organisms in the neonate. The strains of E. coli which commonly cause UT! show increased adherence to uroepithelial cells.
4. Classical signs of pyelonephritis include CVA tenderness, fever, and signs of systemic illness, while lower tract disease is milder and may present with only urinary urgency, frequency, or dysuria. Abnormal DMSA scan or elevated CRP results support the diagnosis of pyelonephritis.
5. The commonest presentation of UT! in the child under two years of age is fever. Associated signs and symptoms may include vomiting, diarrhea, irritability, poor feeding, malodorous urine, oliguria, constipation, or jaundice.
6. Empiric parenteral therapy and/or hospitalization should be considered when suspected UT! is associated with signs of urosepsis, severe clinical illness, dehydration, immunologic compromise, or urologic abnormality. Vomiting, poor oral intake, or concerns for poor compliance are also reasons to use parenteral therapy.
7. "Clean catch mid-stream" urine sample means that the urethral meatus and surrounding area should be clean, and that the urine collected should be from the middle of the stream: i.e., the first few drops of urine should not be collected. For girls, cleaning involves separating the labia and cleaning the area (usually with a series of 3 pre-moistened antiseptic towelettes). For circumcised boys, the glans of the penis should be similarly cleansed. For uncircumcised boys the foreskin is gently retracted prior to cleaning. After cleaning, the child voids over the toilet, with the parent "catching" the urine in a clean specimen cup after the first few drops are passed. In girls this is often more easily accomplished by having the child sit facing backwards on the toilet, so the parent can easily catch the urine stream from behind the child.

8a Transurethral catheterization is an invasive procedure and is performed using standard sterile technique, including povidone/iodine wash of the periurethral and perineal areas, sterile field, sterile gloves, and sterile catheter and specimen cup.

8b Infant feeding tubes in #5 or #8 french size are adequate for most infants and toddlers. It is not necessary or advisable to use a Foley catheter, as there is no need for a balloon. The catheter is removed as soon as the sample is obtained.

8c The catheter is introduced into the urethral meatus, and advanced gently until there is return of urine. This is done with the infant in the supine, "frog-leg" position. The catheter tip may be lubricated with sterile lubricant or sterile water. In circumcised boys the urethral meatus is easily seen. In uncircumcised boys it is usually revealed by gentle retraction of the foreskin (if not, the foreskin is retracted as far as is easily possible and the catheter introduced with gentle probing until the meatus is located). The urethral meatus may be less easy to see in infant girls. It is helpful to remember that it lies anterior to the vaginal introitus, and to be familiar with the often fleshy appearance of the infant hymen. Separation of the labia, adequate light, and familiarity with the appearance of the genitalia facilitate locating the urethral meatus. A frequent error is introduction of the catheter into the vagina (recognized by the absence of urine return and by resistance to gentle advancement of the catheter beyond a couple of centimeters). Some practitioners opt in this situation to leave the misdirected catheter in place while a second catheter is introduced into the urethra (using the first catheter to "block" or mark the vaginal introitus). Whether or not the first catheter is left in place, a new sterile catheter must be used for the second attempt, to avoid contamination with vaginal flora.

8d Complications of urethral catheterization include doubling back of the catheter (either in the urethra or in the vagina), trauma to the urethral meatus or mucosa, and possible introduction of infection. There can be subsequent stricture formation. Familiarity with the anatomy and avoidance of any forceful catheter advancement can minimize the risk of complications. A lubricated catheter of appropriate size should advance easily through the urethra. Any resistance should be taken as a sign to retract the catheter rather than to advance it more forcefully. The risk of introduction of infection is minimized by careful adherence to sterile technique.

Chapter XIII.7. Hydronephrosis and Reflux

1. Hydronephrosis represents 50% of all abnormalities detected with prenatal US.
2. A renal and bladder US should be obtained on day 2 of life. US done earlier may yield a false negative (no hydronephrosis) due to low urine output not distending the collecting systems. If it is normal, then the US should be repeated at 1 month of age, and be normal before considering the hydronephrosis to have resolved.
3. A VCUG should be obtained to evaluate for posterior urethral valves. If PUV are present, the VCUG will show a prominent bladder neck, a dilated posterior urethra, with a bulging membrane at the distal aspect of the verumontanum. The bladder may be thickened. Reflux may be present. The treatment is centered on securing adequate drainage of the urinary tract; initially by placement of a urinary catheter, and later by transurethral ablation of the valves. A vesicostomy (surgical formation of a cutaneous bladder stoma) may be done as a temporizing measure if the infant cannot undergo transurethral ablation of the valves.
4. Ureteropelvic junction (UPJ) obstruction is the most common cause, with ureterovesical junction (UVJ) obstruction being the second most common cause of congenital hydronephrosis. They are distinguished by the fact that with UPJ obstruction, the ureter is not dilated, whereas the ureter is dilated with UVJ obstruction.
5. The infant should be placed on antibiotic prophylaxis (with penicillin) and a VCUG and diuretic renal scan done at 4 to 6 weeks of age.
6. In infants noted to have good (35 to 40% or greater) split function on the renal scan, then serial ultrasound and diuretic renal scans (at 3 to 6 months of age, then at 12 month of age) may be used to follow the patient nonsurgically, on antibiotic prophylaxis. If there is renal function deterioration, breakthrough UTIs, or symptoms of renal colic, then surgery (pyeloplasty in UPJ obstruction, and ureteral reimplant in UVJ obstructions) is indicated. Only 25% of children with UPJ obstructions will require conversion to surgical management.
7. A ureterocele is a cystic dilation of the distal ureter at the level of the ureteral orifice. A ureterocele which has prolapsed into the urethra is the most common cause of congenital bladder outlet obstruction in females. Transurethral incision of the ureterocele is a minimally invasive treatment for symptomatic ureteroceles.

8. The ectopic insertion of the ureter into the bladder wall laterally results in a short intravesical ureter (a short submucosal bladder tunnel), which acts as an incompetent valve during urination, allowing urine to reflux back up into the ureter.

9. The antibiotic prophylaxis sterilizes the urine, and thus prevents bacteria ascending up the refluxing ureters, from causing pyelonephritis and renal scarring/damage. This allows time for normal growth and development of the ureter and bladder to occur. With growth, lengthening of the submucosal bladder tunnel/intravesical ureter results in the resolution of reflux over time, particularly in those with lower grades of reflux. Observation includes serial cystograms (usually nuclear scintigraphy) every 12 to 18 months.

10. The failure of medical management (and thus the need for ureteroneocystostomy) is indicated by breakthrough UTIs, the development of new renal scars, or the failure of reflux to resolve over time. Non compliance or allergic reactions to the prescribed antibiotics may also lead to the failure of medical management.

Chapter XIII.8. Circumcision

1. Penile cancer, balanitis, phimosis, urinary tract infection, reduced risk of HIV.
2. Gomco clamp, the Bronstein (Mogen) clamp, and the Plastibell.
3. Bleeding and infection.
4. Hypospadias, chordee, epispadias, penile torsion, micropenis, significant prematurity, blood dyscrasia, or family history a bleeding disorder.
5. Yes or no; see reasons associated with each answer. Yes, because it protects against penile cancer, etc., (see #1). No, because of the risks of complications of infection, bleeding, concealed penis, penile adhesions, meatitis, fistula formation, penile amputation and penile necrosis.

Chapter XIII.9. Enuresis

1. Typically at age 5 or 6 years.
2. False.
3. Imipramine.
4. Urinalysis with specific gravity, glucose, protein, blood and white cells.
5. Most adults have a bladder capacity between 250-400 ml, but the average bladder capacity in children can be approximated by the formula: volume (oz.) = 2 + age in years.
6. The abdominal exam should assess for masses secondary to enlarged urinary organs (bladder, kidney) and for evidence of palpable stool in the colon suggesting fecal impaction.
7. True.

Chapter XIII.10. Acute Scrotum

1.	Acute testicular torsion Epididymitis	
Onset	Acute	More gradual
Fever	Absent	May be present
Cremasteric reflex	Absent	Usually present
Scrotal lie of testicle	Cephalad/transverse	Lower in scrotum
Prehn's sign	No change in pain	Decrease in pain
Pyuria	Absent	May be present
Dysuria	Absent	May be present

2. Blood flow to the testicles can be evaluated rapidly and the testicular anatomy can be assessed. Normal or increased blood flow is seen in epididymitis, while absent blood flow is indicative of torsion. Testicular rupture as in trauma, can also be identified.

3. Cremasteric reflex: Gently stroking the medial thigh elicits spermatic cord cremasteric muscle contraction and testicular movement. Prehn's sign: elevation of the affected testicle may improve the pain in epididymitis. Blue dot sign: a torsed ischemic testicular appendage may appear as a blue dot through the scrotal skin. Bell clapper deformity: incomplete investment of the tunica vaginalis onto the testicle and epididymis, with the testicle being predisposed to rotate, and torse, more easily than if the tunica vaginalis were present.

4. Detorsion within 6 hours of the onset of the torsion.
5. Acute scrotal exploration and testicular detorsion with bilateral testicular fixation (if the testicle was detorsed and salvageable).
6. Antibiotics for acute epididymitis.

Chapter XIII.11. Ambiguous Genitalia

1. Bilateral non-palpable testes in a full term infant. Hypospadias associated with separation of the scrotal sacs. Undescended testes with hypospadias.
2. Clitoral hypertrophy. Foreshortened vagina with single opening. Inguinal hernia containing a gonad.
3. Amenorrhea, inappropriate breast development, virilization, or the onset of "cyclic hematuria".
4. Congenital adrenal hyperplasia and mixed gonadal dysgenesis.
5. Chromosomal karyotype, pelvic ultrasound, genitogram, cystovaginoscopy, gonadal inspection and biopsy, and biochemical studies as necessary (i.e., in an infant with symmetrical masculinization and non-palpable gonads, serum 17-hydroxyprogesterone, deoxycorticosterone, electrolytes, and glucose would be checked because of suspected congenital adrenal hyperplasia).
6. Fertility potential, capacity for normal sexual function, endocrine function, potential for malignant change in a gonad, and psychosexual factors.
7. Male reconstruction may require hypospadias repair, orchiopexy, and removal of inappropriate gonads and internal Mullerian structures. Female reconstruction may require a feminizing genitoplasty (clitoral reduction and vaginoplasty), as well as the removal of inappropriate gonadal tissue.

Chapter XIII.12. Hypospadias

1. 1 in 300 newborn males.
2. Nonpalpable gonads and hypospadias (especially severe proximal hypospadias) is associated with an increased risk of the presence of an intersex state (about 27%) (4).
3. Cryptorchidism and inguinal hernias.
4. A normal appearing circumcised penis with the meatus at the glans tip. The erect penis should be straight.
5. Urethral fistula, urethral stricture and recurrent penile chordee.
6. Glanular, coronal, distal penile shaft, midshaft, penoscrotal, scrotal, perineal.
7. Mild, moderate, severe.

Section XIV. Critical Care and Emergency Medicine

Chapter XIV.1. Pulmocardiac Resuscitation

- 1.e
- 2.c
- 3.e
- 4.a
- 5.d
- 6.c

Chapter XIV.2. Shock

1. c,a,b,d,f,e
2. c
3. c
4. d
5. b
6. c
7. c. This represents a case of cardiomyopathy with four classic findings of congestive heart failure. Note that the patient's condition worsened with fluid administration. Dopamine would be the first agent to try. Epinephrine may be used later in desperation since its alpha effect may have detrimental consequences on overall circulation.

Chapter XIV.3. Respiratory Failure

- 1.false
- 2.f
- 3.c
- 4.c
- 5.d
- 6.e
- 7.true
- 8.d

Chapter XIV.4. Intubation

- 1.false
- 2.a
- 3.false
- 4.true
- 5.false
- 6.b

Chapter XIV.5. Mechanical Ventilation

1. a
2. Coughing or gag intact. NPO. Minimized sedation. Adequate oxygenation on 40% FiO₂ with CPAP less than or equal to 4. Availability of personnel to reintubate if necessary. Availability of equipment to reintubate if necessary.
3. False
4. False
5. tidal volume
6. a
7. d
8. b
9. d

Chapter XIV.6. Submersion Injuries

1. c
2. False. The AAP recommends against swimming lessons below the age of 4 years.
3. b
4. d
5. d. Hyponatremia may occur in a salt water submersion victim, but it is not considered clinically important in most instances and it is not considered to be a "complication".

Chapter XIV.7. Pneumothorax and Other Air Leaks

1. False. A patient with this type of body habitus should have a work-up that includes looking for a connective tissue disorder such as Marfan's syndrome.
2. d. It is the second or third interspace in the midclavicular line or the fourth or fifth interspace in the midaxillary line.
3. Categories: Spontaneous and traumatic. Subcategories: Primary and Secondary. Classifications: Simple, Communicating, and Tension.
4. a & e. Tension pneumothorax is most likely to occur on ventilator patients and those with penetrating chest trauma. A stab wound to the lateral mid thorax is very likely to have entered the lower thorax.
5. False. Treatment depends on the classification of pneumothorax.
6. d.

Chapter XIV.8. Trauma

- 1.b
- 2.d
- 3.d
- 4.b
- 5.c
- 6.
- e
- 7.
- a
- 8.c

Chapter XIV.9. Toxicology

- 1.b
- 2.d
- 3.
- e
- 4.
- e
- 5.
- a
- 6.c
- 7.b

Chapter XIV.10. Acetaminophen Overdose

- 1.c
- 2.False. Acute ingestion of acetaminophen does not cause altered mental status.
- 3.d
- 4.True
- 5. 8 hours
- 6.b
- 7. d

Chapter XIV.11. Iron Overdose

- 1.False
- 2.d
- 3.b
- 4. a & d
- 5.b
- 6.False
- 7.
- b
- 8.a

Chapter XIV.12. Child Abuse

1. This child should be admitted to the hospital for his initial management and evaluation of potential child abuse. The hospital can offer the necessary diagnostic studies necessary to determine the presence and extent of other injuries. In addition the hospital environment offers an opportunity to observe child and family interactions by trained staff. It is the obligation of those caring for this child to insure that he be returned to a safe environment (16).
2. It is a unique form of child abuse where the child's caregiver inflicts or fabricates illness on the child.
3. When a child's weight is plotted on a growth curve and is found to be below the 5th percentile for their chronological age.

4. One of the major keys in determining the difference between accidental injuries and abusive ones is that the description of the incidents does not match the injury.

5. False. Many variables can affect the progression of a bruise. Bruises do tend to follow different stages progressing from red to green, yellow, brown and then clearing. An exact time frame cannot be established when the injury occurred, only that some bruises are older than others.

Section XV. Endocrinology

Chapter XV.1. Diabetes Mellitus

1. Infants: 100-200. Children: 80-180. Teenagers: 70-120.
2. Type 1
3. 50%
4. Anti islet cell, anti insulin, and anti GAD antibodies
5. HgA1C is the combination of hemoglobin and glucose. It is elevated when the glucose levels are high and it is a good marker for diabetes control.
6. Postprandial.

Chapter XV.2. Thyroid Disorders

- 1.False
- 2.False
- 3.True
- 4.False
- 5.False
- 6.True

Chapter XV.3. Short Stature

1. 177.5 cm (5'10")
2. A) supine B) standing
3. No, random serum growth hormone levels are generally unhelpful in the work-up of short stature.
4. hemiskeleton
5. constitutional delay of growth and adolescence

Chapter XV.4. Adrenal Disorders

- 1.b
- 2.b
- 3.a 4.c
- 5.c
- 6.True
- 7.c
- 8.d
- 9.d
- 10.b

Chapter XV.5. Antidiuretic Hormone

1. The main biologic actions of ADH are to reduce the rate of urine flow by increasing the reabsorption of solute-free water from the filtrate in the distal tubules and collecting ducts of nephrons. This occurs via V2 receptors. When ADH acts on V1 receptors it causes vasoconstriction and contraction of smooth muscle elements.
2. Besides polyuria and polydipsia, physical exam and lab studies are typically within normal limits. However, in severe cases, signs and symptoms of hypernatremia and dehydration may be present.
3. Vasopressin challenge test: polyuria and polydipsia are corrected in central diabetes insipidus, but not corrected with standard doses in nephrogenic diabetes insipidus.
4. Yes and No. There are 4 types, only one is regulated by osmolality; however, the osmostat is reset to a lower osmolality.
5. Small cell lung cancer
6. The urine sodium is the test that should be done next. If the urine sodium is low, then the hyponatremia is due to total body sodium depletion. If the urine sodium is high, then the hyponatremia is due to SIADH, Addisonian crisis, diuretics, or salt losing nephropathy.
7. False. Hypertonic saline infusion is dangerous.

Chapter XV.6. Calcium Disorders

1. True.
2. False. Calcitonin lowers serum calcium levels.
3. False. Breast milk contains low levels of vitamin D. Vitamin D supplementation will prevent rickets.
4. False. A compensatory increase in PTH in response to hypocalcemia (such as with rickets) will usually result in low or normal calcium levels. High PTH levels should result in hypercalcemia; however, pseudohypoparathyroidism is an end-organ resistance to PTH, so despite an elevated PTH, patients have hypocalcemia.
5. False. The mainstay of therapy in hypophosphatemic rickets is oral phosphate replacement. Calcitriol is used to decrease the amount of phosphate needed (increases intestinal phosphate absorption), and prevent hypercalcemia and secondary hyperparathyroidism.

Section XVI. Rheumatology

Chapter XVI.1. Systemic Lupus Erythematosus

1. Malar rash, discoid rash, photosensitivity, oral ulcers, arthritis, serositis, renal disorder, neurologic disorder, hematologic disorder, immunologic disorder, antinuclear antibody
2. Corticosteroids, NSAIDs, hydroxychloroquine, cyclophosphamide, azathioprine, methotrexate, cyclosporine, and mycophenolate mofetil
- 3.c. Retinal toxicity may be a complication of hydroxychloroquine therapy. Long-termed corticosteroid therapy may be complicated by cataracts, glaucoma, and increased intra-ocular pressure. Rare cases of orbital/ocular vasculitis may occur.
4. The answer is true, depending on your interpretation. The ANA test is non-specific in that a positive ANA test by itself is not diagnostic of SLE. The ANA is frequently positive in normal individuals. However, a screening test is not a diagnostic test, but it is just used to screen. A negative ANA suggests that the patient does not have SLE. The answer to this question true, but it should be noted that the ANA is frequently ordered excessively and inappropriately.
5. False. It is true that patients with a lupus anticoagulant have a prolonged PTT. However, the lupus anticoagulant paradoxically is associated with and increased risk of thrombosis, rather than hemorrhage.

Chapter XVI.2. Juvenile Rheumatoid Arthritis

1. None of these answers are correct. None of these tests have a high positive predictive value for JRA.
2. True.
3. True. Iridocyclitis may be difficult to diagnose by a non-ophthalmologist.
4. Polyarticular, pauci-articular, systemic JRA. Refer to the chapter for how they are different.
5. NSAIDs, Cox-2 inhibitors, hydroxychloroquine, oral gold, D-penicillamine, methotrexate, sulfasalazine, glucocorticoids, TNF-alpha antagonists, IV gammaglobulin.
6. In JRA, NSAIDs inhibit an inflammatory reaction which is pathological and destructive. The inflammation which occurs in an ankle sprain is largely a repair process. The benefit of using NSAIDs to inhibit this type of inflammation is less clear.

Chapter XVI.3. Vasculitis

1. IgA
2. purpura, arthritis, abdominal pain and glomerulonephritis.
3. leukocytoclastic vasculitis.
4. Kawasaki disease.
5. JRA, SLE, dermatomyositis, scleroderma and Behcet disease.

Section XVII. Ophthalmology

Chapter XVII.1. Neonatal Conjunctivitis and Eye Prophylaxis

1. Late presentation, presence of pseudomembranes and accompanying pneumonia.
2. The patient's mother and her sexual contacts should seek medical attention and treatment for urogenital chlamydia and other sexually transmitted diseases.
3. Chemical irritants, *Neisseria gonorrhoeae*, and *Chlamydia trachomatis* are the most common causes. However, *Staphylococcus aureus*, group A or B streptococcus, *S. pneumoniae*, *Haemophilus influenzae*, *Pseudomonas aeruginosa* and Herpes simplex virus should also be remembered as potential pathogens.
4. None.
5. Infants who develop chlamydial conjunctivitis with or without pneumonia should be treated with oral erythromycin (50mg/kg/day in 4 divided doses) for 14 days. For nondisseminated *N. gonorrhoeae* ophthalmia neonatorum, infants should receive ceftriaxone (25-50 mg/kg IV or IM) once. Alternatively, 100 mg/kg of cefotaxime (IV or IM) can also be given.
6. Without prompt treatment, *N. gonorrhoeae* ocular infection may result in corneal ulceration and perforation, iridocyclitis, anterior synechiae, and panophthalmitis leading to permanent vision loss and blindness. Left untreated, chlamydia conjunctivitis will subside within 2-3 weeks, but chronic infection is common. Chlamydia pneumoniae is the most serious consequence of neonatal *C. trachomatis* infection. The pneumonia does not appear to be life threatening; however, the disease can lead to chronic cough and longterm pulmonary impairment
7. Infantile hypertrophic pyloric stenosis.

Chapter XVII.2. Primary Care Eye Examination

1. Cataracts, retinal detachment, and other pathology that is obscuring the vitreous or aqueous clarity.
2. Retinoblastoma.
3. Performing a Cover Test and corneal light reflex test.
4. About an adult's arm length.
5. To the midline is 1 month, past the midline is 2 months, and 180 degrees is 5-6 months.
6. Two methods are to spin the child and turning his head, both of which use the vestibular systems.
7. By being patient, looking at the child's red reflex in all four quadrants in a stationary position from about 12 inches away, and as you move closer, viewing the optic disk as it passes by, and lastly the fovea by telling the child to look directly at your "magic light."

Chapter XVII.3. Strabismus and Amblyopia

1. Infantile esotropia.
2. 6 months.
3. Patching.
4. Possible answers: pseudoesotropia, accommodative esotropia, sixth nerve palsy, sensory deprivation esotropia, nystagmus-blockage syndrome, Duane syndrome, Mobius syndrome.
5. 1 year of age.
6. The child will have a permanent reduction in visual function. This can range from reduction of stereopsis to total blindness in one eye. It is possible for stereopsis to be lost even if visual acuity is preserved (i.e., measured visual acuity is 20/20) since stereopsis is dependent on vision, plus integration and processing of the images by the brain.

Chapter XVII.4. Eye Infections and Conjunctivitis

1. The answer is d. Herpes simplex conjunctivitis can present with all of the above.
2. The answer is all of the above. Although a skin laceration is easily diagnosed, a sinusitis needs to be confirmed with a CT scan. A chalazion is usually diagnosed by history or a fluctuant skin mass in the eyelid. A dental infection involving the upper teeth can easily spread itself into the orbit.
3. Topical corticosteroid is the only choice that is not appropriate for a primary care physician to prescribe. The rest of the choices are appropriate, although most chalazia do not require oral antibiotics.
4. Topical erythromycin for two weeks and oral erythromycin for two weeks for the patient AND oral erythromycin for two weeks for her sexual partner.
5. The baby is probably developing an allergic reaction to the long-term use of topical sulfacetamide. The eyedrops should be discontinued right away and patient can be treated with tear duct massage and another antibiotic eyedrop on an as-needed basis.

Chapter XVII.5. Corneal Abrasions

1. Choice d is the correct answer. A corneal abrasion which is at significant risk for infection should not be patched. Choices a, b, and c are all at higher risk for infection.
2. Choices a and b are all reasonable answers. Choice d would be too slow for an office or emergency department, but it would be reasonable if one is willing to wait for it to take effect. Choice c is incorrect because topical ophthalmic agents should not be sent home with patients. Prolonged corneal anesthetic use often results in corneal complications because this blocks the eye's natural protection reflexes to minimize further corneal injury.
3. The differential diagnosis consists of corneal foreign body, conjunctival foreign body, early conjunctivitis. The eyelids should be flipped to look for small foreign bodies. If possible, the cornea should be inspected again with some magnifying glasses to look for a foreign body as well.
4. Whenever the cornea has white lesions, one should always suspect corneal ulcers or infiltrates. Overnight contact lens wear is the most significant contributor to the development of corneal ulcers in a contact lens wearer. The patient should be referred to an ophthalmologist as soon as possible and the patient should be advised to discontinue contact lens wear until treatment is completed.
5. The patient should have an ophthalmology consult as soon as possible. A metal shield should be placed on the eye, NOT a gauze eye patch (which can press on the eyeball), to decrease further chance of injuring the eye. He probably should be admitted to the hospital for bedrest and observation to decrease the chance of re-bleed.

Section XVIII. Neurology

Chapter XVIII.1. Neurologic Examination

1. Examination of the skull, cranial nerves, strength, cerebellar function, sensory, and reflexes.
2. Ventral suspension, horizontal suspension (Landau reflex), Moro reflex, tonic neck response (fencer's stance), palmar and plantar grasp reflexes, parachute response, reflex placing and stepping responses.
3. Lateral rectus and superior oblique muscles, respectively.
4. Signifies that cortical vision is intact, in addition to showing the integrity of the frontal and parietal lobes, and visual fields. It can be performed at about 4 to 6 months of age.
5. When the arms are lifted, a positive sign is when an arm is hyperpronated with the elbow flexed. It tests for strength of the upper extremities, and a positive sign signifies weakness.
6. In what two instances can a positive Babinski's sign be seen in normal patients? In newborns up to 2- 1/2 years of age and sometimes in patients just after a febrile seizure.

Chapter XVIII.2. Cerebral Palsy

- 1.b
- 2.a
- 3.a
- 4.d
- 5.false
- 6.true

Chapter XVIII.3. Febrile Seizures

1. 6 months to 5 years. It occurs in 2-5% of all children and is the most common reason for convulsions in children less than 5 years of age.
2. 33%
3. Simple seizures are characterized by being less than 15 minutes duration and generalized. Complex febrile seizures are greater than 15 minutes duration, multiple within 24 hours, and focal. Simple febrile seizures have a higher risk for febrile seizures. Complex febrile seizures have a higher risk for epilepsy. One should have a lower threshold for performing tests and hospitalization in cases of complex febrile seizures.
4. Meningitis, encephalitis, Shigella gastroenteritis, medications and toxins, hypoglycemia, electrolyte abnormalities, shaken baby syndrome, accidental head trauma, and epilepsy.
5. Infants less than 12 months of age.
6. Unstable clinical situation, possibility for meningitis, and parents unreliable or unable to cope with the child developing another seizure.

7. Disadvantages include lethargy, drowsiness, ataxia, and masking of a CNS infection.
8. 1) Seizure will not cause brain damage and the risk of a child developing epilepsy is small. 2) Possibility that it can happen again, especially in the first 24 hours. One third of children will have at least another febrile seizure with most occurring within one year of the episode. 3) If seizure occurs again, child should be kept on his or her side. If seizure does not stop within 3 minutes, then emergency medical services should be contacted.

Chapter XVIII.4. Epilepsy

1. Partial simple (also called "partial elementary" or "focal motor"), partial complex, generalized tonic-clonic, generalized absence.
2. Focal motor seizures (partial simple) because only one part of the body exhibits tonic clonic seizures. "Jacksonian seizures" describe focal motor seizures, while "Jacksonian march" describes a partial simple with secondary generalization because of gradual spread of motor activity. Temporal lobe epilepsy (partial complex) due to lesions in the temporal lobe. Psychomotor seizures (partial complex) because they display behavioral changes in addition to focal motor abnormalities, such as twitching and grimacing. Grand mal (generalized tonic-clonic) because they exhibit grand abnormalities as manifested by generalized jerking. Petit mal (generalized absence) because they exhibit smaller abnormalities limited to the eyes and face in most instances, and also because these patients are generally in elementary school and thus petit in size.
3. Partial complex seizures. She has experienced an aura (burning rubber smell). The witnesses suggest mostly facial motor symptoms. She lost consciousness. The temporary expressive aphasia suggests a temporal lobe origin which is confirmed on CT scan which identifies a lesion in the left temporal lobe (which is why this used to be called temporal lobe seizures). Students will often confuse this presentation with generalized absence seizures, which usually occurs in elementary school aged children who have just a few seconds of impaired/loss of consciousness. This is not a partial simple seizure because there are motor, aura, aphasia and olfactory symptoms, in addition to loss of consciousness.
4. No, petit mal refers to generalized absence seizures. Jerking of one arm (even if they are small jerks) are partial simple seizures (focal motor), not generalized absence (petit mal).
5. Electrolytes, glucose, toxicology, AED levels, CT of the head, lumbar puncture would be a basic set of initial tests. An eventual EEG would be in order if no obvious precipitating factors were found.
6. The MRI has better resolution for smaller and isodense lesions (e.g., low-grade gliomas). MRI may also provide better images in some areas (e.g., posterior fossa) and for some lesions types (e.g., neuronal migration disorders, lesions of the neurocutaneous syndromes, AVM).
7. No, a negative EEG does not rule out epilepsy. False negative results can be associated with epileptogenic foci that are deep to the cerebral surface, discharges that are orthogonal to the cerebral surface, excessive muscular artifact, and simply due to limitations in monitoring duration in comparison with the frequency of epileptiform EEG activity. Of all the seizure types, partial complex seizure foci are the most difficult to reliably identify on EEG.
8. Generalized absence seizures typically have a generalized 3 per second (Hertz) spike and slow wave EEG pattern, often provoked by hyperventilation. Infantile spasms have a hypsarrhythmia pattern on EEG which has an asymmetric disorganized mixture of spikes and slow waves.
9. Ethosuximide and valproic acid are used to treat generalized absence seizures.
10. 60-70% of children with epilepsy eventually have good seizure control on AEDs and enter into longterm remission, but 30% will never become seizure free on AEDs.

Chapter XVIII.5. Status Epilepticus

1. Benzodiazepines.
2. Phenytoin (or fosphenytoin), phenobarbital, valproic acid.
3. IV and rectal.
4. Lorazepam.
5. Phenytoin (or fosphenytoin).
6. Hypoxic ischemic brain injury, death.
7. Epilepsy, encephalitis, neoplasm, drug overdose, metabolic derangement, cerebrovascular accident, trauma, etc.

Chapter XVIII.6. Infant Botulism

1. It is recommended to not give honey to any infant under 12 months of age.
2. Botulinum toxin is released by bacteria within the infant's GI tract. From here, the toxin is absorbed and carried by the blood stream to peripheral cholinergic receptors where it binds irreversibly. Clinically, the most important of the peripheral cholinergic receptors is the neuromuscular junction. Here the toxin's action results in flaccid paralysis and hypotonia, which are the classic clinical signs of infant botulism.
3. Initially, infected infants often present with a history of poor feeding, decreased activity and constipation. The diagnosis may not be considered initially because signs of an evolving bulbar palsy, flaccid paralysis and hypotonia may be subtle. Additionally, the infant may be worked up for sepsis if he appears toxic or "lethargic", or for constipation until the "classic" manifestations of infant botulism become apparent. The classic age distribution for infant botulism is 3 weeks to 6 months of age.
4. Isolation of the clostridium botulinum organism in stool can be accomplished in the early stages of disease, it is rarely isolated in blood. The most common method for proving infection is to isolate botulinum toxin in blood or stool samples. Toxin can be detected in the stool of infected infants for up to 4 months. Electrophysiological testing, specifically electromyography, can aid in ruling out other neurologic disorders such as Guillain-Barre syndrome, congenital myopathies, and myasthenic conditions.
5. The use of antibiotics in infant botulism should be reserved only for proven secondary infections such as pneumonia, otitis media or urinary tract infections. Aminoglycosides should be avoided as they are weak pharmacologic neuromuscular blocking agents which may potentate paralysis acutely or cause respiratory failure in an unsuspected infant with botulism being treated for sepsis.
6. Human botulinum immunoglobulin (BIG), which acts by interrupting the blockade of nerve receptors by botulinum toxin, has been shown to reduce the need for mechanical ventilatory support and shorten overall duration of hospitalization.
7. If recognized early and given appropriate supportive care minimizing complications, full recovery and a normal neurologic function can be expected.
8. Classic "botulism" is a food borne disease in which high levels of toxin can be ingested in spoiled food. It often occurs in outbreaks linked to a particular source, and typically afflicts older children and adults. Wound botulism is rare, but is seen disproportionately in adolescents and children. Infant botulism has a more gradual onset. All types of botulism produce disease through a similar pathogenesis.

Chapter XVIII.7. Guillain-Barre Syndrome

1. *Campylobacter jejuni* enteritis.
2. Lack of cellular response (normal WBC count) in the CSF despite an elevated protein level. In the clinical setting of progressive flaccid paralysis, this is diagnostic of Guillain-Barre syndrome.
3. False. Improvement in strength occurs in reverse order (bulbar muscle strength returns first and lower extremity strength returns last).
4. IVIG does not require central venous access and does not decrease blood volume.
5. A child should be intubated if she/he has a rapidly decreasing vital capacity, dyspnea, fatigue, or deterioration of arterial blood gases. Dysphagia, shoulder weakness, and cardiovascular instability are also indications that mechanical ventilation may be necessary.

Chapter XVIII.8. Multiple Sclerosis

1. True
2. d
3. True
4. False
5. True

Chapter XVIII.9. Hydrocephalus

1. Hydrocephalus refers to pathological enlargement of the cerebral ventricles secondary to a mismatch between the amount of production of CSF and its drainage. Macrocephaly is a general term for any head circumference greater than two standard deviations from the mean. Megalencephaly refers to increased volume of the brain parenchyma.

2. Hydrocephalus is divided into two types: communicating and non-communicating. Communicating hydrocephalus is used if CSF flows freely throughout the ventricular system. Non-communicating hydrocephalus indicates that obstruction of CSF occurs somewhere within the ventricular system, including the outlet foramina of Luschka and Magendie. Communicating hydrocephalus may occur from scarring of the leptomeninges after viral or bacterial meningitis, or after a hemorrhagic brain event where the breakdown products of blood lead to diffuse fibrosis of the meninges. Non-communicating hydrocephalus occurs in cases of discrete obstruction within the ventricular system, such as occurs with aqueductal stenosis, the Chiari Malformations, the Dandy-Walker malformation, or mass effect from brain tumors or other mass lesions.

3. The most common causes of congenital hydrocephalus are Chiari malformations and aqueductal stenosis.

4. X-linked hydrocephalus is a form of aqueductal stenosis in which there is a mutation on the X-linked recessive L1 gene, which produces a family of abnormal neuronal cell adhesion molecules that leads to narrowing and obstruction at the level of the cerebral aqueduct.

5. False. The Dandy-Walker malformation, although present at birth, is responsible for less than 5% of cases of congenital hydrocephalus. Approximately 80% of cases will eventually be detected by one year of age.

6. When present, intraventricular bleeding in the very low birth weight infant usually occurs within the first 72 hours of life. Because up to 50% of these events will occur without immediate clinical symptomatology, it is recommended that routine screening be performed between days 4 to 7 of life.

7. False. MRI is the preferred imaging method for the diagnosis of hydrocephalus after the neonatal period as it will also elucidate more precisely than CT the specific etiology of the hydrocephalus. However, in an emergency situation, CT is preferred because it can be done rapidly.

8. Shunt malfunction is a fairly common occurrence with a one-year failure rate of 30 to 40%.

9. The rate of infection after shunt insertion varies among different institutions, and has been reported from 1 to 10%. The most likely etiologic agent is *Staphylococcus epidermidis*.

10. False. The overall outcome and prognosis of hydrocephalus is highly dependent on multiple factors, including age of onset, etiology, the rate of ventricular expansion, and the extent of neurologic damage prior to shunt placement or other corrective intervention. In one study that looked at 129 children 10 years after shunt placement (shunts were placed prior to age two), approximately 60% had IQs over 70, which is generally considered the cutoff for one of the diagnostic criteria for mental retardation.

Chapter XVIII.10. Neural Tube Defects

1. True. Folate supplementation prior to pregnancy and in early pregnancy reduces the risk of neural tube defects.

2. True, in that nearly all patients with myelodysplasia have bladder/bowel dysfunction; however, patients with spinal bifida occulta may only have a vertebral anomaly, without myelodysplasia, in which case, their bladder function will be normal.

3. Controversial question, but probably false. The hydrocephalus is usually due to a Arnold Chiari malformation in the brain (the other end of the neural tube) which results in hydrocephalus. It is probably not cord tethering which causes the hydrocephalus.

4. True.

5. True.

Chapter XVIII.11. Neurofibromatosis

1. 6 spots. >5 mm in prepubertal and >15 mm in postpubertal patients.

2. Vestibular schwannoma (acoustic neuroma). It is manifested by hearing problems.

3. Blood pressure measurements and eye examinations.

4. Deep nodular neurofibromas and diffuse plexiform neurofibromas.

5. Cafe au lait spots in newborn period. Discrete cutaneous and subcutaneous neurofibromas, axillary freckling in the older patient.

6. Autosomal dominant. 50% occur without a family history.

7. Lisch nodules.

Chapter XVIII.12. Tuberous Sclerosis Complex

1. Autosomal dominant.
2. 50%.
3. Ash leaf spots (birth), adenoma sebaceum or facial angiofibroma (5 years old), shagreen patch (after 10 years old).
4. ACTH.
5. Hypsarrhythmia.
6. Echocardiogram and renal ultrasound.

Chapter XVIII.13. Head Trauma and Hemorrhage

1. False. Epidural hematomas are a neurosurgical emergency and have a lenticular (lens or football shaped, also called biconvex) shape on CT scan.
2. False. Only 20% of epidural hematomas are produced by venous blood in children.
3. False. Acute subdural hematoma is associated with substantial brain parenchymal injury so its prognosis is poor compared to epidural hematoma.
4. False. Epidural hematoma is a neurosurgical emergency because its prognosis is dramatically better with early evacuation, while subdural hematoma is less of an emergency because the prognosis is already poor even with hematoma evacuation.
5. False. Infants are at higher risk for sustaining serious head injury. Anatomical considerations that predispose the younger child to head injuries are a large head to body ratio, a relatively weak neck, a thinner skull, and a larger subarachnoid space in which the brain can move freely.
6. True.
7. True.
8. False. Hyponatremia occurs with SIADH. Free-water is retained in the collecting tubules due to antidiuretic hormone causing a dilutional effect of the serum sodium. Hypernatremia is usually caused by the use of hyperosmotic agents such as mannitol or diabetes insipidus.
9. False. In well appearing children 2-18 years of age with no loss of consciousness and a normal neurological exam, no imaging studies are required. Close observation and parental education is all that is needed (6).
10. True. GCS=9: motor=4, verbal=3, and eye opening=2.

Chapter XVIII.14. Muscular Dystrophy

1. Both Duchenne and Becker muscular dystrophy are X-linked recessive.
2. Dystrophin.
3. The Gowers' maneuver is seen when a child climbs up on his thighs with his hands when going from a sitting to standing position. This is due to weakness in the knee and hip extensors.
4. Delay in walking, waddling gait, walking unsteadily with frequent falling, walking on toes, and difficulty at climbing stairs, Gowers' maneuver, and pseudohypertrophy of the calves.
5. 20 to 30 years. They die from pulmonary or cardiac problems. They lose ambulation before 13 years old.
6. 5 years.
7. Pulmonary, cardiac, and neurological (CNS).
8. Corticosteroids.

Chapter XVIII.15. Myopathy and Myositis

1. True. Sun exposure can exacerbate JDM dermatologic lesions and myositis, even during therapy. It is important to advise patients with JDM about appropriate sun protection - large rimmed hat, clothing over majority of body in sun, sunblock with a SPF of 15 or higher.
2. Unknown, but thought to be low. The risk of recurrence of JDM is highest in the first year after diagnosis, therefore maintenance prednisone is usually continued for 2 years.
3. c
4. a
5. a, b and f are correct. Pain is typically greater in viral myositis than in JDM. Acute viral myositis has a propensity to affect the calf region, rather than the biceps. Both viral myositis and JDM have elevated CPK and ESR so these tests do not distinguish the two.

Chapter XVIII.16. Developmental Brain Anomalies

1. Type II (Arnold-Chiari malformation).
2. Cerebellum.
3. Lissencephaly/pachygyria, polymicrogyria, heterotopia.
4. Smooth surface of the cerebral cortex.
5. Myelomeningocele and hydrocephalus.

Chapter XVIII.17. Reye Syndrome

1. True
2. c
3. b
4. c
5. d
6. a

Chapter XVIII.18. Brain Tumors

1. e
2. b
3. f
4. d
5. e

Chapter XVIII.19. Arteriovenous Malformations

1. True
2. D
3. True
4. True
5. True
6. False

Section XIX. Orthopedics

Chapter XIX.1. Fractures

1. Fractures in children heal more rapidly than those in adults because the pediatric bone has a thicker periosteum and more efficient remodeling.
2. A fracture is described by its anatomic location, configuration, relationship of the fracture fragments to each other, and relationship of the fracture fragments to the surrounding tissue. Physeal fractures can be described according to the Salter-Harris system.
3. External fixation refers to fixation of bones by splints, casts or transfixion pins. A cast is sometimes considered merely external support, rather than external fixation. Internal (or intraosseous) fixation is stabilization of the bone fragments by direct fixation to one another with surgical wires, screws, pins, rods, or plates.
4. The clavicle is the most frequently fractured bone in the pediatric population.
5. A toddler's fracture is a subtle non-displaced spiral fracture resulting from a rotational injury while running or playing.
6. A toddler's fracture is subtle and non-displaced, while a large distal tibia fracture is more likely to be associated with severe trauma (not just falling while walking) or child abuse.
7. Radial head dislocation (the Monteggia injury).
8. a) Non-displaced Salter-Harris type I fracture of the distal radius, b) scaphoid fracture, c) radial head fracture, d) Non-displaced Salter-Harris type I fracture of the distal fibula (lateral malleolus).

Chapter XIX.2. Splinting

1. Splints are generally used to temporarily immobilize fractures, subluxations, or soft tissue injuries such as ankle sprains.
2. Splints immobilize the extremity, reducing damage to the nerves, vasculature, muscle, and skin. This will minimize edema and pain. Splints also stabilize fractures and prevent further displacement of subluxations.
3. If the splint is too tight it will compress the swollen extremity causing decreased sensation, paresthesia, and pain. The patient should be educated to check for brisk capillary refill, mobility of distal anatomy, numbness, tingling, burning, and increased pain. The immobility of the joint may cause contractures. Mobility of the distal anatomy should be evaluated. Stiffness of the immobilized joint should be expected. Wrinkles in the splinting material may cause pressure sores and skin breakdown, especially over bony prominences. Skin breakdown often starts with burning or itching, and may progress to ulceration.
4. Conservative treatment involves splinting of the extremity. The general rule is, when in doubt, splint. Splinting is indicated with sprains overlaying an open physis, because of the similar presentation to a Salter-Harris type 1 fracture. However, many sprain injuries (ankle sprain is the best studied example), will improve faster with gentle activity compared to total rest or immobilization.
5. Plaster is inexpensive and it allows for anatomic molding. However, it is relatively heavy and it can take longer to set and cure. Fiberglass is a more expensive, prepackaged, strong and light splint that cures quickly, but does not allow exact anatomic molding. For example, for an ankle fracture, plaster splinting results in a heavy splint, compared to a fiberglass splint which is stronger and lighter.
6. Complicated fractures include open fractures, fractures with any neurovascular compromise, fractures that are too deformed/angulated/displaced to adequately splint, and any dislocation which cannot be reduced in the ED.
7. The strip should be approximately 50% of the circumference of the extremity.
8. Cold water slows the curing process in both plaster and fiberglass, but ROOM TEMPERATURE water rather than cold water should be used. Warm water is best avoided since it will add further heat to the exothermic reaction.
9. Inspection. Wounds must be cleaned and dressed. Neurovascular compromise should be ruled out, and documented.
10. Casting forms a rigid cylinder over the extremity. In the first 24 hours following a fracture, swelling within the cylinder may result in vascular compromise (i.e., compartment syndrome). Splinting initially, then casting later is associated with fewer complications compared to early casting. Additionally, if the extremity is already swollen and a cast is applied, the fit of the cast will be loose once the swelling resolves. Casts are generally applied by orthopedic surgeons who are not always available for minor fractures. Splints provide an immediate means of immobilizing the extremity and do not require the immediate presence of an orthopedic surgeon.

Chapter XIX.3. Scoliosis

1. Clinical - side-to-side (sagittal) curvature of the spine. Radiographic - curvature of the spine whose curvature is greater than or equal to 10 degrees.
2. Females are affected more commonly than males.
3. Congenital, neuromuscular, traumatic, infectious, neoplastic, inflammatory, syndromic and degenerative causes.
4. Side-to-side curvature of the spine, rib hump, shoulder elevation, chest wall deformity, prominence of the scapula on one side.
5. Asymmetry of the rib hump
6. Risk of progression - skeletal maturity and magnitude of curvature.
7. Observation, brace, and surgery
8. Curvature less than 30 degrees - asymptomatic, non-progressive. Curvature greater than 50 degrees - progression in adulthood (1-2 degrees/year).

Chapter XIX.4. Osteomyelitis

1. False. *S. aureus* is the most common. Group A strep is the second most common.
2. True
3. False. Typically the course is for 6-8 weeks, always starting with IV antibiotics and finishing with PO antibiotics if possible.
4. True
5. False. Plain films usually begin to show acute changes 5-7 days into the course of the disease process.
6. False. The femur is the most commonly involved bone. The tibia is the second most commonly involved.
7. False. The metaphysis is the most common site.
8. False. The rate of methicillin resistant *S. aureus* is too high to use oxacillin/methicillin as empiric therapy. Vancomycin should be initially started.

Chapter XIX.5. Septic Arthritis

1. False. It is a condition that usually affects younger children early in the first decade of life.
2. True
3. False. The hip joint is deep and has a significant amount of surrounding tissue, thus inflammation may not be easily detected on physical exam. Exam findings may be subtle, such as asymmetry or loss of function. Decreased and painful range of motion is the best way to detect an effusion by physical exam.
4. False. They also can present with fever. This is why differentiating between toxic synovitis and septic arthritis can be a difficult clinical problem.
5. No definite answer here. Low ESR and CRP values make septic arthritis unlikely. Very high ESR and CRP values make septic arthritis more likely. Intermediate ESR and CRP values are not very helpful in distinguishing toxic synovitis from early septic arthritis.
6. True
7. True
8. False. In larger joints surgical intervention is almost always performed. However in cases of septic arthritis of smaller joints, medical management can be carried out with good results. Orthopedic surgical consult should always be obtained expeditiously whenever the diagnosis is considered.

Chapter XIX.6. Hip Conditions

1. Is it painful? How old is the child? What is the duration of symptoms? These three questions will help to narrow the differential diagnostic possibilities.
2. Toddler: transient synovitis, infection, trauma. Juvenile: trauma, transient synovitis/infection, LeggCalve-Perthes disease. Adolescent: slipped epiphysis, trauma, neoplasia
3. Hip instability - Ortolani sign. Asymmetric gluteal skin folds.
4. Leg length discrepancy, Galeazzi sign (apparent thigh length difference), waddling gait.
5. Concentric reduction of femoral head, stability, remodeling and growth of acetabular cartilage.
6. Although the etiology is unknown (commonly stated as idiopathic), most current theories involve vascular compromise of the femoral epiphysis. Two episodes of infarction are thought necessary to cause the changes consistent with LCP disease in humans. Increased blood viscosity, thrombophilia, and intraosseous venous hypertension have been proposed as mechanisms for vascular compromise.
7. 1. Initial, 2. Fragmentation, 3. Reossification, 4. Residual.
8. Age of patient at onset and proportion of femoral head involvement. Children who have LCP disease before age eight have a better prognosis over children greater than eight years of age at time of onset. The proportion of head involvement forms the foundation for several classification schemes. Maintenance of the height of the lateral column of the femoral epiphysis appears to have the most prognostic significance in children in any age group. Whole head involvement or collapse of the lateral column by more than fifty percent carries a poor prognosis.
9. Obese, delayed maturation of skeletal age.
10. Trendelenburg gait or antalgic limp, obligate external rotation of the hip with flexion, limited internal rotation of the hip.
11. Good to excellent. High activity level. Slow degenerative process of the hip with few cases requiring prosthetic hip replacement.

Chapter XIX.7. Common Sprains and Dislocations

1. Combination of plantar flexion and inversion.
2. Anterior talofibular ligament.
3. Rest, Ice, Compression, Elevation.
4. Traction injury resulting from being lifted or pulled by the hand or arm.
5. Supination or hyperpronation of the forearm at the elbow.
6. Anterior drawer test assesses ACL laxity. Physician should assess for other structural abnormalities in the affected knee, as multiple ligaments and/or menisci may be injured.
7. Axillary nerve injury. Injury to the axillary nerve can result in transient loss of sensation, tingling and numbness to the lateral aspect of the deltoid.
8. Stimson technique or external rotation method. See text.

Chapter XIX.8. Sports Injuries

1. Traction apophysitis of the tibial tuberosity.
2. Osgood-Schlatter: Usually older children or adolescents with male: female of 3:2. Those who do forceful contraction of the quadriceps (jumping sports such as basketball and volleyball). Sever's: Athletes who play with cleats (excess grip in the ground) who push hard while running; also soccer and basketball players.
3. It is more common on the left, however, about 25% have it bilaterally.
4. The term "little league elbow" is used to describe a group of pathologic entities in and around the elbow joint in young throwers secondary to overhead throwing. Valgus stress results in lateral compression and medial traction on the elbow leading to the many types of injuries described in the text.
5. Tennis serving, football quarterbacks, javelin throwers, volleyball spikers.
6. A direct blow to the bony rim causing enough of an increase in intraorbital pressures to fracture the thin interior bones (usually the orbital floor).
7. CT scan, with special coronal views.
8. Topical beta blockers, cycloplegics, osmotic diuretics, carbonic anhydrase inhibitors.
9. The most severe complication is a rebleed. Limiting physical activity in children within the first 72 hours is important. This includes bedrest, no television or videogames, and bilateral eye patching.

Section XX. Adolescent Medicine

Chapter XX.1. Puberty

1. Enlargement of the testes measuring greater than 2.5 cm in length and scrotal changes are the first signs of puberty in the male. The appearance of breast buds in the female indicate the onset of puberty.
2. There is approximately 6 months difference in the age of onset of sexual maturation in the female vs. the male.
3. Puberty is delayed when there is no sign of pubertal development by age 13 years in girls and 14 years in boys. Precocious puberty is secondary sexual development occurring before age 9 years in boys or 8 years in girls.
4. Height age is the age at which the height of the individual is equal to the height of 50 percent of a reference standard population by age and gender. This is done by taking the patient's height and finding the age, at which this height is the 50th percentile on an appropriate height grid.
5. The best indicator of the biological age of the individual is the skeletal age (bone age).

Chapter XX.2. Anabolic Steroids

1. True. One of the reasons it is difficult to dissuade competitive athletes from using anabolic steroids is that it can, in fact, result in increased lean body mass, muscle strength, and aggressiveness. These may, in fact, contribute to enhanced athletic performance.
2. Anabolic steroids may be taken orally or injected intramuscularly. Oral steroids are more hepatotoxic.
3. An adolescent in early puberty who uses steroids risks premature epiphyseal closure with resultant shorter stature than otherwise would be predicted.
4. Anabolic steroid use should be considered and addressed with all adolescent patients, male or female, athlete or non-athlete. Particular attention should be paid to those adolescents who have greater than expected muscle-mass development or in females with signs of masculinization.

5. On an individual level, pediatricians should, without lecturing, initiate an honest discussion of the risks and benefits of steroid use. They should ask all adolescents, and especially those with signs and symptoms of steroid use, about the possibility of using steroids. They also have a role in educating parents, teachers and coaches about the prevalence and dangers of anabolic steroid use.

Chapter XX.3. Substance Abuse

- 1.c
- 2.False
- 3.True
- 4.True
- 5.a-v; b-iv; c-i; d-ii; e-vi; f-iii

Chapter XX.4. Adolescent Suicide and Violence

1. True
2. False
3. True
4. False. Compared with adults, children and adolescents presenting with a major depressive episode are at relatively higher risk of actually having a bipolar disorder. Significant caution must therefore be exercised in prescribing an antidepressant, which may precipitate mania or hypomania. The author advises that child and adolescent psychiatric consultation be sought.
5. True.
6. False. Often, working with the family is a key component of treatment.
7. False. Currently, there are only 6300 child and adolescent psychiatrists in the United States, where the estimated need is for up to 30,000. The population of children is expected to grow 40% in the next 50 years. Pediatricians will likely play a very significant role in insuring the psychosocial health of children.

Chapter XX.5. Eating Disorders

1. Suicide is the leading cause of death in anorexia nervosa. The second highest cause of death is cardiac arrest.
2. Patients who self induce vomiting are most likely to develop a hypochloremic hypokalemic metabolic alkalosis.
3. Three indications for hospitalization of a patient with anorexia nervosa include: a) electrolyte abnormalities (hypokalemia, hyponatremia), b) cardiovascular abnormality (bradycardia, arrhythmia, hypotension), c) inability or refusal to engage in outpatient treatment.
4. The most likely diagnosis is anorexia nervosa. The point is that the most likely cause of significant weight loss in an adolescent female is an eating disorder, even if DSM-IV criteria are not completely met.
5. Disorders other than anorexia nervosa in the differential diagnosis of excessive weight loss in an adolescent include malignancy, diabetes mellitus, hyperthyroidism, malabsorption syndromes, systemic lupus erythematosus, inflammatory bowel disease, depression and substance use.
6. Bulimia nervosa is more likely to present with a normal physical exam. By definition, anorexia nervosa must show weight loss or a failure to gain weight appropriately during puberty.

Chapter XX.6. Adolescent Sexuality

1. False. The incidence of adolescent sexual activity, at least among in-school youth, appears to be declining. In addition, sexually active adolescents report fewer sexual partners and are more likely to use condoms than teenagers in the early 1990s.
2. a. Same-sex attraction is considered a normal part of adolescent and adult sexual experience. It may or may not reflect a bisexual or homosexual orientation, either of which, like heterosexuality, is believed to be established in early childhood and represents a normal developmental outcome.
3. True. The onset of sexual activity in younger adolescents is more likely to be associated with a history of negative life experiences and high-risk behaviors such as sexual abuse, substance use, parent-teen conflict and school problems. In older adolescents, the onset of sexual activity is often a more normative process.
4. True. Pediatrics as a discipline recognizes that sexual experimentation, with oneself and others, is a normal part of adolescent development. More controversial are the issues of age of initiation of sexual activity and the nature of those activities. There is a wide spectrum of viewpoints within pediatrics, reflecting broader societal views, on these latter issues.

5. b. Sexual coercion is a form of violence and, therefore, pathologic. Masturbation, homosexual orientation, and sexual fantasies and experimentation are considered a part of the spectrum of normal adolescent sexual development.

Chapter XX.7. Adolescent Gynecology

1. In Hawaii, a minor who is at least 14 years of age may consent to receive contraceptive services, prenatal care, and STD/HIV/AIDS services. The physician may notify parents (with the consent of the patient), but parental consent or notification is not required. In fact, if an adolescent demands confidentiality, it becomes a difficult situation since it might not be permissible for the physician to release information, even to parents. The wording of the statute is, "left up to the treating physician's discretion in consultation with the minor who received medical treatment", but the statute later states that the minor, "shall have the same legal capacity to act" as an adult, making their demand for confidentiality no different than that of an adult. Most insurance companies provide itemized claim information to the subscriber of the insurance policy (usually the parent). It is not possible to circumvent this in most instances. Thus, adolescents should be counseled that once they have used their parent's medical insurance, their parents will receive such information. They must consent to this release of information, or they must remove the medical insurance information so that an insurance claim is not submitted. They should also understand that they will receive a bill for all medical services, although their ability to pay it should not impede the delivery of medical services. In most instances, it may be appropriate to counsel the adolescent to share this information with their parents, and in many instances, they will consent once they understand all the issues. This requires provision of factual information to the adolescent and patience.

2. 10 to 16 year old, average 12.7.
3. NSAIDs are the treatment of choice in adolescents. Oral contraceptives may also be used.
4. Adolescents should be provided with information about their diagnosis, contraception, breast self-exam, STDs and AIDS. Instruction should be provided on how to track menses. Condom use should be encouraged in those who are sexually active.
5. 21-35 days between menses, 20-60 mL blood loss (avg 35 mL), 3-7 days of menstruation.
6. Irregular bleeding.
7. PCR or LCR (DNA methods) for chlamydia and gonorrhea assayed from a urine sample or vaginal fluid sample.

Section XXI. Skin

Chapter XXI.1. Eczematous Dermatitis (Atopic Dermatitis and Seborrhea)

1. False
2. True
3. True
4. c
5. a

Chapter XXI.2. Acne

1. c
2. a
3. False
4. False
5. True

Chapter XXI.3. Hemangiomas, Vascular Malformations and Nevi

1. False
2. True
3. b
4. False
5. False
6. True

Chapter XXI.4. Burns

1. Antibiotic ointments such as silver sulfadiazine and bacitracin are indicated for all burns except superficial burns.
2. Infants 6 months old or younger are more prone to fluid overload because of their reduced glomerular filtration rates. Additionally, they are more susceptible to hypothermia because they are unable to generate heat by shivering.
3. A patient should be sent to a burn unit if they have serious burns that are beyond the scope of care in the local institution. Examples of this include, second degree burns of 20% TBSA, third-degree burns of 5% TBSA, major burns to the hands, face, feet, perineum, or electrical burns.
4. % TBSA can be estimated by using the rule of nines, the Lund and Browder chart, or by designating the child's palm as 1% of the TBSA. The most accurate method is the Lund and Browder chart.
5. The Parkland formula is used to estimate the amount of fluid appropriate for administration in the first 24 hours.
6. The slow urine output indicates hypovolemia. The fluid infusion rate should be increased to improve the urine output.

Chapter XXI.5. Bites and Stings

1. b
2. d
3. True, anaphylaxis can occur from any repeated insect bite or sting in which re-exposure to an antigen occurs.
4. false
5. Southern black widow and Brown violin spider.
6. true
7. All except b.

Chapter XXI.6. Common Skin Conditions

1. The three layers of skin are the epidermis, dermis, and subcutaneous tissue. The skin serves as a barrier against the environment, protection against desiccation, and plays a role in immune surveillance.
2. Human papilloma virus is organism responsible for the development of warts.
3. Staph aureus is responsible for most infections in acute paronychia.
4. Pediculosis is treated with a shampoo such as 0.5% malathion rinse, permethrin 1% creme rinse, 1% lindane shampoo, or pyrethrin. After the shampoo is rinsed, the hair is combed with a fine toothed comb to remove dead nits. Clothes and bedding must be washed in hot water.
5. Varicella immunoglobulin should be given to immunocompromised individuals, neonates whose mothers develop chickenpox within five days prior to or two days following delivery, and premature neonates born less than 30 weeks gestation who have been exposed to chickenpox.
6. Suspicion of malignant transformation of nevi should arise upon observation of irregular borders, variegated color (multiple colors), size greater than 5-15 mm, and any change in texture including crusting, ulceration, or induration.

Section XXII. Reviewing the Medical Literature

Chapter XXII.1. Statistics

1. Descriptive statistics are the rates of bicycle helmet use in the injured group and in the control group. The proper inferential statistical test to use is a chi-square test.
2. The rate of bicycle helmet use in the injured group is significantly different from that in the control group. It might be tempting to say that bicycle helmets prevent significant head injuries from this study, but such a study is not good enough to conclude this.
3. Bicycle helmet use rates in the two groups are the same.
 - 4a Categorical.
 - 4b Continuous.
 - 4c Continuous.
 - 4d Continuous.
 - 4e Categorical.
 - 4f This could be both depending on what we mean by this. This would be a continuous variable if we are referring to the CSF WBC count, the RBC count, the CSF glucose, or the CSF protein. This would be a categorical variable if we are considering the CSF to be normal or abnormal, or if we are considering the gram stain result (organisms versus no organisms).
 - 4g Categorical. The patient either has it or they don't.
5. The basic descriptive statistic is the mean oxygen saturations in each group. Other commonly cited descriptive statistics are the standard deviations and the ranges for each group, which would describe the spread of the data. The inferential statistical test would be a T-test or ANOVA.
6. This difference is statistically significant, but it is not very clinically important because the difference between 95.6% and 94.5% is only about 1%. Continuous pulse oximetry readings will frequently fluctuate by 2 to 4 percentage points on the same patient without any clinical changes occurring.
7. The oxygen saturation (like most biomedical measurements) is not normally distributed. Most biomedical measurements have a theoretical limit on their values. Oxygen saturation values cannot exceed 100%. Thus, if one creates a distribution of oxygen saturation measurements, it will show a few points below 80%, a few more points between 80% and 90%, a fair number of points between 90% and 95%, a large number of points between 95% and 100%, and no points about 100%. This is not bell shaped. Other examples of theoretical limits are: glucose values cannot go below zero, respiratory rates will not go below 10, etc.
 - 8a These groups are not significantly different. The mean plus or minus two standard deviations should contain approximately 95% of the area under the bell shaped curve. Thus, the shapes of these curves are wide with substantial overlap. It is not likely that these groups will be shown to be significantly different.
 - 8b These standard deviations are small, so the bell shaped curves are very narrow and they do not overlap each other. Thus, it is likely that these groups will be shown to be significantly different from each other.
 - 8c This one is not easily determined. A T-test would have to be run to calculate the p value. The two means are fairly close to each other, but the standard deviation is also small.

Chapter XXII.2. Evidence-Based Medicine

1. I) Identify the clinical question. II) Search for sources of information. III) Identify the source(s) found. IV) Determine whether the results are valid. V) Determine what the results are. VI) Determine whether the results will help you in caring for your patients. VII) Resolve the clinical question.
2. Randomization ensures that both known and unknown factors are evenly distributed between the treatment and control groups, making it more likely that any difference in outcome between the two groups is due to the treatment effect alone.
3. This means that during the analysis of the study results, patients remain in the groups to which they were randomized in the beginning of the study, even if they are unable or unwilling to complete the treatment.
4. Relative risk reduction (RRR) = $1 - Y/X$. Absolute risk reduction (ARR) = $X - Y$. Number needed to treat (NNT) = $1/ARR$. See Table 3.
5. The "95% CI," which means that the exact RRR lies within the range of the confidence interval 95% of the time. The CI speaks to the power of a study, and the factor that has the most impact on a study's power is its sample size.
6. It is well known that if a patient or worker knows that a patient is receiving the study medication, this will bias their assessment of the patient's outcome.

7. Sensitivity = $a/(a+c)$. Specificity = $d/(b+d)$. Positive predictive value (PPV) = $a/(a+b)$. Negative predictive value (NPV) = $d/(c+d)$. See Table 5.

8. LR for a positive test result (+LR) = $[a/(a+c)]/[b/(b+d)] = \text{sensitivity}/(1-\text{specificity})$. LR for a negative test result (-LR) = $[c/(a+c)]/[d/(b+d)] = (1-\text{sensitivity})/\text{specificity}$. LRs are different from sensitivity and specificity because they take into account each individual patient, using the pretest and posttest probabilities.

9. The pretest probability is the clinician's "gestalt" about the chances that a patient has a particular condition based on clinical information such as symptoms, risk factors, and physical examination. The LR then determines how a diagnostic test will affect the pretest probability, making a disease more or less likely, the outcome of which is called the posttest probability.

10. a) Improves the uniformity and standardization of care so that all patients receive optimal care; b) Helps providers make better use of limited resources by seeking the most effective treatments; c) Prevents harmful side effects or outcomes; and d) Makes the literature accessible to all, thereby helping clinicians make the most informed decisions possible.

Chapter XXII.3. Epidemiology and Research Methodology

1. No. Since the Acme emergency department has a hospitalization rate 6%, we know that 94% are not hospitalized. By just stating that all patients do not require hospitalization, I have a 94% chance of predicting this correctly. Therefore, no test at all is better than the 93% predictive value of the Acme physicians' tests. Although 93% sounds like a good number, it is actually a poor number in this case.

2. The more studies you see in the literature on a topic, the more controversial it must be. If the answer were clear-cut, no further publications on the topic are necessary. However, in controversial subject areas, multiple publications are often present in the literature, attempting to clarify the controversy. Thus, the correct conclusion should be that the efficacy of midazolam for pediatric sedation is controversial.

3. No matter what country you live in, we all eventually die. The mortality rate in all countries is 100%.

4. It could be that since PP is so poor, they don't have an organized health department which keeps accurate health statistics. When the World Health Organizations asks PP to submit their age adjusted mortality rate, the health minister in PP just writes down any number and sends it in. This random number just happens to

be lower than the accurately determined age adjusted mortality rate submitted by WW. Another explanation is that since PP has such a poor health care system, any patient who is very ill, is illegally smuggled over the border into WW where the patient shows up in an emergency room. The ethical staff in WW hospitals take care of these very ill patients who frequently die. These death statistics are registered in the health statistics of WW. Thus, many deaths that should have been attributed to PP, actually show up in the age adjusted mortality rate of WW instead. Such a phenomenon could make it appear that many people in PP never die.

5. Prevalence is better for diabetes. Chronic diseases are best described with prevalence while acute diseases are best described with incidence. These numbers may not be very accurate. They may come from disease condition registries or from health department statistics. These systems require that hospitals and/or physicians send in report cards diagnosing the patient's condition so that the statistic can be kept. However, such reports are frequently not made even in "reportable" diseases which the law requires to be reported. Diabetes is not a reportable illness. Another source may be health insurance claims information which contain diagnostic codes.

6. Sensitivity= $TP/(TP+FN)$ =the fraction of all true positives that are caught by the test. A very sensitive test identifies most of the true positives. However, there may still be a substantial number of false positives in a highly sensitive test. Specificity= $TN/(TN+FP)$ =the fraction of negatives that are true negatives. A very specific test correctly identifies most of the true negatives. However, there may still be a substantial number of false negatives in a highly specific test. PPV= $TP/(TP+FP)$ =the likelihood of having a disease if the test is positive. NPV= $TN/(TN+FN)$ =the likelihood of not having a disease if the test is negative. The NPV frequently has a deceptively high value, such as >90% if the disease condition is infrequent.

It is possible. Most of these tests are gold standards since they are nearly perfect and they actually define the disease entity. But generally if a study publishes only two out of these four values, it is likely that are publishing the two best values and the authors have suppressed the other two values which do not appear as good. A test which is has nearly perfect sensitivity, specificity, PPV and NPV is the pregnancy test. Lumbar puncture for meningitis is also quite good. Radiographic images for certain types of fractures which are obvious (e.g., forearm fractures) are also quite good.