Common Childhood Illnesses: Considerations for the Pharmacy Technician
Posttest Questions and Rationale

1. Which of the following statements is correct regarding body composition as pediatric patients age?

A. Body water increases
B. Body fat increases***
C. Body fat decreases
D. None of the above

Correct answer: B
As patients age, two major changes influence drug distribution: body water decreases and body fat increases. Neonates have higher gastric pH and higher skin hydration than older patients. Body surface area is also higher in younger patients.

2. The glucuronidation pathway of drug metabolism may take how long to fully develop?

A. 24 hours
B. 4 months
C. 1 year***
D. 3 years

Correct answer: C
The sulfation pathway is well-developed in infants, but the glucuronidation and oxidation pathways are underdeveloped. The glucuronidation pathway may take up to one year to fully develop, but the oxidative enzymes show variable patterns in expression until adulthood.

3. Which of the following strategies has NOT improved medication safety in pediatric patients?

A. Dosing standardization protocols
B. Revisions to product labeling with regard to age restrictions for cough and cold products
C. Inclusion of pediatric patients in drug studies
D. The availability of over-the-counter products that contain multiple active ingredients***

Correct answer: D
Strategies that reduce medication errors, such as dosing standardization and policies to guide medication-use processes, can minimize negative outcomes for pediatric patients. Computerized order entry systems have also had a positive impact on pediatric medication errors owing to assistance with dose calculation and clinical decision support. As a result of expanded legislation, pediatric studies have been conducted, which has led to new warnings and safety
data, dosing and standardization instructions, and new drug design. Now, healthcare providers can confidently prescribe drugs in a vulnerable population.

4. The risk of medication errors among the pediatric population is increased in which of the following situations?

A. When a measuring device is used
B. When a medication is used for sedation***
C. When single-ingredient products are administered
D. When children are older than 6 years of age

Correct answer: B
The risk of medication errors in young children is increased when a medication is used for sedation, when a medication is used in a daycare setting, when two medications with the same active ingredients are used, when a measuring device is not used, when a product is misidentified, and when a product intended for adult use is used in a child. The risk of an error decreases with age, with the youngest patients being the most likely to be involved in an error. Infants account for the highest proportion of medication errors associated with cough and cold products.

5. According to a public health advisory issued by the US Food and Drug Administration, over-the-counter cough and cold products are not safe for children of what age group?

A. Under 6 months of age
B. Under 2 years of age***
C. Under 4 years of age
D. Under 12 years of age

Correct answer: B
The lack of safety and efficacy data prompted the FDA to issue a public health advisory in 2008 that recommended that cough and cold products not be used in children younger than 2 years of age. Manufacturers subsequently voluntarily changed the labeling of these medications to indicate that they are not for use by children under 4 years of age.

6. What is the most common type of medication error reported during the medication-use process in pediatric patients?

A. Compounding error
B. Labeling error
C. Administration error
D. Dosing error***

Correct answer: D
Pediatric patients are at an increased risk for medication errors compared with adults because doses often need to be calculated based on age, weight, body surface area, and/or clinical condition and dosing errors are reported to be the most common type of error during the medication-use process in pediatric patients.

7. Which of the following medications is associated with the development of Reye’s syndrome in pediatric patients who are less than 15 years of age?

A. Aspirin***
B. Acetaminophen
C. Nafcillin
D. Sulfisoxazole

Correct answer: A

Aspirin should not be used in children under 15 years of age owing to the risk of Reye’s syndrome, a rare condition that causes swelling of the liver and brain.

8. Guaifenesin is appropriate for the treatment of what common childhood condition?

A. Otitis media
B. Attention deficit/hyperactivity disorder
C. Productive cough***
D. Fever

Correct answer: C

Guaifenesin is the most common expectorant. Expectorants alter the consistency of mucus and increase the volume of sputum that is expelled with each cough. Expectorants are appropriate treatments for irritating non-productive coughs and for productive coughs that expel thick secretions.

9. Which of the following antibiotics is the drug of choice for the treatment of acute otitis media?

A. Amoxicillin***
B. Clarithromycin
C. Formoterol
D. Dextromethorphan

Correct answer: A

Amoxicillin 80 to 90 mg/kg/day divided in two doses is the drug of choice for antimicrobial therapy of acute otitis media. Azithromycin and clarithromycin have limited efficacy against common bacterial causes of otitis media, but they may be the best options in patients who cannot tolerate penicillins or cephalosporins.
10. Which drug class carries a black-box warning regarding the increased risk of suicidal thoughts and behaviors in pediatric patients?

A. Cephalosporins  
B. Selective serotonin reuptake inhibitors***  
C. Fluoroquinolones  
D. Inhaled corticosteroids  

Correct answer: B  
Selective serotonin reuptake inhibitors, including fluoxetine, sertraline, paroxetine, citalopram, and escitalopram, are first-line treatment for depression. However, this class of antidepressants offers an increased risk of suicidal thoughts and behaviors in pediatric patients. These drugs are approved for the treatment of depression in pediatric patients, but their labels carry a black-box warning about the need for monitoring therapy in children and adolescents.