AMERICAN COLLEGE OF CLINICAL PHARMACY

Updates in Therapeutics: 2011 Pharmacotherapy Preparatory Review and Recertification Course

POSTTEST ANSWERS – SESSION 1

Pediatrics

1. **Answer A**: Levetiracetam.
   Levetiracetam has not been clearly shown to affect weight in children and is an effective therapy for generalized tonic-clonic seizures. Zonisamide and felbamate are both associated with significant weight loss in children. Additionally, felbamate is generally reserved for patients who are refractory to standard therapies due to its potential to cause severe hematological and hepatic toxicities. Ethosuximide is not generally effective in the management of generalized tonic-clonic seizures.

2. **Answer C**: *Neisseria meningitidis.*
   Group B Streptococcus and herpes simplex virus are common pathogens during the neonatal period, but would be a very unlikely pathogen in an older infant. This patient is at high risk for severe RSV infection due to his premature birth and chronic lung disease, however, his presentation is more consistent with sepsis / meningitis than with viral bronchiolitis (i.e. seizures are more indicative of meningitis and it is rare for a patient to have a clear chest x-ray with bronchiolitis).

3. **Answer D**: Switch to atomoxetine.
   In general, patients who do not respond to one stimulant agent should be treated with a different stimulant before they are considered to have failed this class of drug therapy. However, extended release mixed amphetamine salts should be avoided in this patient as it has been associated with sudden cardiac death in children with structural heart defects. Methylphenidate transdermal system has a similar duration of action and efficacy as methylphenidate OROS, therefore, it is unlikely to benefit this patient as she has already failed therapy with methylphenidate IR and methylphenidate OROS. If adherence or difficulty swallowing pills were a suspected cause of treatment failure in this patient, a patch may be a reasonable alternative. Clonidine may be added as an adjunctive therapy for patients who fail treatment with a single stimulant agent; however, it should not be used as the sole agent for treating ADHD.

4. **Answer D**: Give Tdap as part of his puncture wound management, HPV vaccine because he is sexually active and meningococcal vaccine. Human papillomavirus (HPV) vaccine is recommended by the CDC as part of the routine childhood immunization schedule for females and it is suggested for administration to males between 9 and 18 years old to reduce the likelihood of acquiring genital warts. Since this patient is sexually active, he would likely benefit from receiving the HPV series. It is recommended that the three dose series be administered routinely for girls aged 11-12 years regardless of sexual activity due to the benefit of reducing cervical cancer. Tdap contains reduced antigen quantities compared with DTaP. Due to this difference, Tdap and DTaP are not interchangeable. DTaP is not recommended for use in children older than 7 years. Tdap is preferred to Td for wound management in adolescents who have not previously received a dose of Tdap in order to provide a pertussis booster in addition to tetanus. Five years should have passed since the last tetanus-containing vaccine was administered and the administration of Tdap. Meningococcal vaccine is recommended for routine immunization of all children aged 11-12 years or those between the ages of 13 – 18 years as "catch-up" doses.

5. **Answer D:** High-dose (90 mg/kg/day) amoxicillin should be prescribed for 7 days. Delayed antibiotic prescribing is an acceptable option for children older than 2 years of age without a bulging tympanic membrane or severe systemic symptoms. Antibiotics may also be delayed in otherwise healthy children between the ages of 6 months and 2 years if symptoms are mild and the diagnosis of otitis media is uncertain. Decongestants have not been shown to provide a benefit in the treatment of otitis media and, therefore, are not recommended. Trimethoprim-sulfamethoxazole is not considered a first line option for the treatment of otitis media because of decreased susceptibility of Streptococcus pneumoniae. Prophylactic antibiotics are generally not used because of the significant risk of antimicrobial resistance compared with the minor reduction in the occurrence of otitis media. However, if they are prescribed, it should only be in cases of recurrent otitis media (i.e. four cases of otitis media in 12 months or three cases of otitis media in 6 months). Intramuscular ceftriaxone is generally reserved for patients who have failed other treatment options or in whom poor compliance is a concern. The American Academy of Pediatrics recommends high-dose amoxicillin (80–100 mg/kg/day) as first-line therapy for otitis media which would be the best treatment option for this patient since he has a bulging tympanic membrane and significant systemic symptoms.

Geriatrics

6. **Answer C**: Decrease her gabapentin dose.
   Calculation of R.T.'s creatinine clearance with the Cockcroft Gault equation reveals an estimated clearance of 38 ml/min. RT has renal insufficiency and gabapentin is eliminated by the kidney. In older people with this degree of renal insufficiency, the dose of gabapentin should be reduced by approximately half.

7. **Answer D**: Discontinue the diphenhydramine.
   There is no evidence to suggest that any one cholinesterase inhibitor is more effective than another. While there is now a 23 mg formulation of donepezil available, there is not specific evidence on using 20 mg for increased benefit, especially in patients with an MMSE of 5/30. RT is receiving an anticholinergic medication, diphenhydramine, which can cause confusion in the elderly. Additionally, the use of an anticholinergic with a cholinesterase inhibitor is pharmacologically in opposition and should be avoided.

8. **Answer A**: Quetiapine.
   The use of antipsychotics in the elderly is associated with about a 15% increase in the risk of death. The causes of death vary and include pneumonia, stroke, and cardiac conditions. The FDA has placed a black box warning on all atypical antipsychotics to warn of this potential problem

9. **Answer B**: Add a narcotic.
   After treatment failure with acetaminophen, present guidelines recommend narcotics as the next analgesic of choice. Non-steroidal anti-inflammatory agents are not recommended because their side effects (gastric and renal) outweigh their treatment benefit. RT is presently receiving 2600 mg of acetaminophen and should not have her dose increased.

Gastrointestinal Disorders

10. **Answer C**: Initiate aspirin 81 mg/day and esomeprazole daily.
    This patient experienced a gastrointestinal bleeding episode from development of an ulcer related to the use of chronic aspirin therapy. The patient was not on a gastroprotective therapy before admission; however, he is now considered at high risk of recurrent ulcers because he has

experienced a complication related to his ulcer disease. In addition, the patient has severe cardiovascular disease and is at high risk of recurrent cardiovascular events. This requires the patient to continue his preventive doses of aspirin after discharge. Indefinitely discontinuing his aspirin therapy would place him at high risk of recurrent cardiovascular events, making answer A incorrect. Use of alternate antiplatelet therapy, such as the substitution of clopidogrel for aspirin, has not been demonstrated to be an effective method of reducing subsequent bleeding episodes, even when used in combination with a proton pump inhibitor, making Answers B and D incorrect. Continued use of aspirin at a reduced dose of 81 mg/day in conjunction with a proton pump inhibitor is the optimal regimen for reducing the risk of subsequent cardiovascular events while minimizing gastrointestinal toxicity, making Answer C correct.

11. **Answer B**: Elevating the head of the bed 6–8 inches.
    This patient presents with a 3-month history of symptoms consistent with GERD that appear to be troublesome for this patient. Based on the frequency and troublesome nature of his symptoms, he can be treated with oral acid-suppressive therapy, preferably with a proton pump inhibitor. Nonpharmacologic interventions may be implemented to help further reduce symptoms. The newest GERD guidelines recommend implementing select nonpharmacologic interventions based specifically on the type of patient encountered rather than implementing every nonpharmacologic intervention for all patients. This patient is young and 62 inches tall with a weight of 170 pounds, which gives him a body mass index of 23. Based on this information, further weight loss would unlikely be beneficial, making Answer A incorrect. Because most of his symptoms occur throughout the night, elevating the head of the bed would likely result in further relief, making Answer B correct. Patients with symptoms related to meal intake should be instructed to eat smaller, more frequent meals, making Answer C incorrect. Finally, although alcohol use may exacerbate GERD symptoms, this patient reports infrequent alcohol use, making Answer D incorrect.

12. **Answer D**: Budesonide 9 mg orally once daily.
    This patient presents with symptoms and findings consistent with mild to moderate Crohn disease based on the frequency and number of bloody stools reported, absence of fever, dehydration, anemia, and the ability to tolerate oral intake. Because her disease is located in the terminal ileum and ascending colon, a drug designed to treat this area rapidly and effectively would be preferable. The most recent guidelines for the treatment of Crohn disease in adults indicate that options for this patient would include a 5-aminosalicylate, budesonide, or antibiotic such as metronidazole or ciprofloxacin. Although 5-aminosalicylates are well tolerated and commonly used for Crohn disease, they are generally minimally effective. Likewise, if used, they should be given at an effective dose; thus, Answers A and B are incorrect based on the subtherapeutic dose of these agents. Systemic corticosteroids such as prednisone may be used to acutely suppress inflammation; however, they are generally reserved for moderate to severe disease. Prednisone, at a dose of 40–60 mg/day, is recommended. Answer C is incorrect based on the disease severity and the incorrect dose of prednisone. Budesonide is recommended for patients with disease affecting the terminal ileum, ascending colon, or both. It is formulated to release in a specific area and has less systemic absorption compared with prednisone, making Answer D correct.

13. **Answer A**: Periodic endoscopic band ligation.
    This patient presents with a significant history of alcohol abuse and now has signs, symptoms, and laboratory evidence of cirrhosis. Based on the available evidence, his diagnosis would be Child-Pugh class C. Portal hypertension secondary to cirrhosis leads to the development of esophageal varices, which can subsequently rupture and precipitate significant upper gastrointestinal bleeding. Patients with a new diagnosis of cirrhosis and portal hypertension often undergo a screening endoscopy to detect the presence of varices. According to the guidelines, patients found to have

varices and no history of bleeding are eligible for primary prophylaxis of variceal bleeding if they have medium or large varices. Options include drug therapy or endoscopic interventions. Nonselective β-blockers are preferred as the initial drug therapy for primary prophylaxis; however, this patient has asthma, which precludes the use of a β-blocker, making Answer B incorrect. β1-selective agents are not as effective as nonselective drugs, and the addition of nitrates to β-blockers is not associated with significant gains in efficacy, making Answer C incorrect. Octreotide is used in the setting of acute variceal bleeding; it is not a therapy recommended for preventing variceal bleeding, making Answer D incorrect. Thus, periodic endoscopic band ligation, which is as effective as β-blocker therapy, is the preferred preventive therapy for this patient, making Answer A correct.

14. **Answer B**: β-hCG.
    This patient presents with a history of intravenous drug abuse and signs, symptoms, and laboratory evidence of chronic HCV infection. She has not been previously treated. Given that her current psychiatric condition is controlled, the provider wishes to initiate therapy with pegylated interferon-α and ribavirin, which is the initial drug therapy regimen of choice for chronic HCV infection. Before initiating therapy, several baseline laboratory values should be obtained to monitor for both efficacy and toxicity. Although interferons can be associated with exacerbation of underlying autoimmune disorders, this patient does not have a medical history of autoimmune disorders; thus, obtaining a baseline ANA is unnecessary, making Answer A incorrect. Neither drug is associated with significant alterations in serum calcium or phosphorus, making Answers C and D incorrect. Ribavirin is a known teratogen and is classified as a category X drug. Female patients should have a negative pregnancy test before initiating therapy with ribavirin, making Answer B, obtaining a β-hCG, correct.