Podcast Questions – Basics of Vancomycin Dosing

Pre-podcast questions

1. RF is a 58 year old Caucasian female who is 5'6" and weighs 68 kg. Her serum creatinine is 0.9. Using the Cockcroft-Gault equation, what is her creatinine clearance?
   a. 63.8 mL/min
   b. 73.1 mL/min
   c. 75.0 mL/min
   d. 86.0 mL/min

Answer: 63.8 mL/min
Rationale: The Cockcroft-Gault equation uses ideal body weight in the numerator, not actual body weight. Also, since this patient is female, the answer should be multiplied by 0.85. Therefore, the equation would be as follows: CrCl = 0.85(([140-58] x 59.3)/(72 x 0.9)), which would result as 68.8 mL/min.
Objective: Calculate a patient's creatinine clearance using the Cockcroft-Gault equation

2. MP is a 34-year-old Hispanic female who is 5'1" weighs 79 kg admitted to the medical floor for cellulitis. What dose of vancomycin would you recommend for her first dose?
   a. 1000 mg
   b. 1185 mg
   c. 1250 mg
   d. 1750 mg

Answer: 1250 mg
Rationale: Dosing is based on actual weight, not ideal weight, and doses should be rounded to the nearest 250mg increment if possible. In this case, 1250 or 1500 mg would both be appropriate options for 15-20 mg/kg.
Objective: Determine an appropriate initial dose and frequency of vancomycin for a specific patient

3. TC is a 77-year old male who was recently started on vancomycin every 18 hours due to his renal function. He was given his first dose at 0807 on a Friday. Assuming all doses are given on time, which of these times would be appropriate for a first trough?
   a. 1943 on Saturday
   b. 0807 on Sunday
   c. 1205 on Sunday
   d. 1359 on Sunday

Answer: 1359 on Sunday
Rationale: Troughs should be drawn within a half hour before the fourth dose. Only the fourth option qualifies in this category. Doses in this case would be administered at 18 hour intervals, so the doses would be approximately 0800 on Friday, 0200 on Saturday, 2000 on Saturday, and 1400 on Sunday.
Objective: Suggest appropriate drug level monitoring and assess trough timing

Post-podcast questions

4. GM is a 49-year old male with osteomyelitis of the foot who was appropriately dosed on empiric therapy of vancomycin at a dose of 1250 mg every 12 hours. He has been on the antibiotic long enough to have a trough drawn, which returned at 13.7 mcg/mL. The trough was taken at an appropriate time. How should you proceed with his therapy?
   a. Do nothing. He has been dosed appropriately. Re-check trough in 5-7 days.
   b. 1250 mg every 10 hours
   c. 1500 mg every 8 hours
   d. 1500 mg every 12 hours

Answer: 1500 mg every 12 hours
Rationale: With a dose of 1250 mg every 12 hours returning a level of 13.7 mcg/mL, one can assume that every 250 mg of vancomycin will increase the level by approximately 2.7 mcg/mL based on its first-order kinetics. Therefore, increasing to 1500 mg every 12 hours is an appropriate change. The first option is incorrect because his trough returned low. The second choice is incorrect because q10 hours should not be used due to a potentially confusing dosing schedule. The third option increases the dose and decreases the interval simultaneously, which will likely overcorrect the low level. Typically you only want to change one of the two.
Objective: Adjust the dose or interval of a patient's vancomycin regimen based on the trough

5. JD is a 50-year old female whose creatinine clearance was determined to be 51 mL/min based on the Cockcroft-Gault equation. She is being started on vancomycin. What dosing interval is most appropriate for her initial therapy?
   a. Every 12 hours
   b. Every 24 hours
   c. Every 18 hours
   d. Every 8 hours

Answer: Every 24 hours
Rationale: Based on the patient's creatinine clearance, she falls into the range of 40-59 mL/min, which indicates that she should be started off on q24 hour dosing.
Objective: Determine an appropriate initial dose and frequency of vancomycin for a specific patient

6. HW is a 24-year old male who was started on vancomycin for endocarditis with a 12 hour dosing interval. He had an appropriate trough drawn on Sunday at 0152 before his scheduled dose at 0200. The level returned at 12.6 mcg/mL, so his dose was increased. Due to pharmacy not having the higher dose bag prepared yet, his first dose of the new strength was delayed until 0437. If his subsequent doses are all given at appropriate times, which of these is a reasonable time for his next trough to be drawn?
   a. 0157 on Monday
   b. 0423 on Monday
   c. 5 to 7 days later
   d. He does not need any more troughs drawn

Answer: 0423 on Monday
Rationale: Since this patient's new dose was hung late, all future doses should be delayed by the same amount of time, and the question indicates that they were. Therefore, the next trough should be drawn within thirty minutes of the fourth dose, which would then be scheduled for approximately 0430 on Monday.
Objective: Suggest appropriate drug level monitoring and assess trough timing