AHD: Antibiotics

Case 1

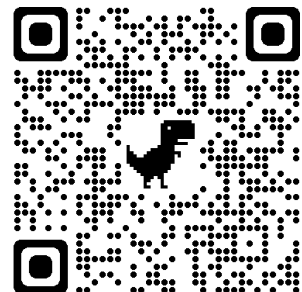
An 68 year-old male with congestive heart failure, atrial fibrillation, on warfarin, chronic lower extremity edema, diabetes mellitus and end-stage renal disease treated with intermittent hemodialysis through a tunneled right internal jugular central venous catheter presents to the emergency room with abrupt onset of right lower extremity pain associated with redness and swelling that evolved over a period of several hours

The patient has a low-grade temperature (99.9°F) at presentation but is otherwise hemodynamically stable. His white blood cell count (WBC) is slightly elevated (10.6 cells/µL)

1. **What is the most likely diagnosis? What else is on your differential?**

2. **How do you describe the pictures attached, which are more consistent with infection vs other etiologies?**

3. **What is the most likely causative pathogen?**



4. **What other pieces of history would you want to obtain from this patient?**

5. **Does the patient need to be hospitalized?**

6. **What antibiotics should be used?**

7. **When would you add coverage for MRSA?**

8. **What else can we do to help him feel better and accelerate the clinical response?**

9. **The above patient was started on intravenous cefazolin, they defervesced and remained clinically stable. After 48 hours of antibiotics, however, the redness and discomfort in the pre-tibial region and medial aspect of the thigh have not yet receded. What next?**

10. **How long would you wait until you would consider expanding therapy?**

11. How long should this infection be treated with antibiotics?

12. <u>Pretend they didn't get better</u>: After 36 hours on cefazolin, his area of swelling has worsened and he is still febrile. What do you think is happening and what will you do?

13. *His blood cultures are positive for MRSA. He should be switched to vancomycin.* He tells you last time he got vancomycin, he got a very hot rash and he doesn't think he should get it again. What are potential side effects? Can he get it? How do you dose and manage the vancomycin?

14. What other antibiotics can be used if they are allergic to Vanc or if it is VISA (Vanc intermediate Staph)?

Case 2

52 yo female with a PMH of HTN, COPD, DMII presents to the ED complaining of frequent urination, burning when she urinates and lower abdominal pain for the past 2 days. No fevers, chills, flank pain, nausea, vomiting or CVA tenderness. She has a normal renal panel. Based off her urinalysis and symptoms you diagnose her with acute uncomplicated cystitis.

1. **What are the most common organisms to cause uncomplicated cystitis?**

2. **What are the recommendations for treating uncomplicated cystitis?**

3. **Name some factors (at least 10) that make a UTI complicated? What does a "complicated" UTI mean?**

4. **What additional bugs must you think about in complicated cystitis?**

5. **If she presented with fever and R-sided flank pain how would your differential and management change? How do you treat acute uncomplicated pyelonephritis?**

6. **The patient is unable to tolerate PO and appears significantly dehydrated. She is admitted for IV Antibiotics. Her blood cultures come back positive for Gram Negative Rods and later speciates to Pan Sensitive E. Coli. How does this change your management?**

7. **How is the treatment of GN bacteremia different from GP bacteremia?**

Case 3

A healthy 24-year-old F student comes to your office complaining of localized pain and swelling over the medial aspect of her left forearm. She reports that she had a scratch injury to this area a few days before. She is otherwise healthy with no current medications or recent hospitalizations. On examination, you find a 7 cm localized area of tenderness and swelling. The central area is fluctuant, surrounded by an area of erythema and induration. Vitals are stable.

1. **What is the diagnosis and what is the best treatment?**

2. **In what cases would you recommend adding antibiotics?**

3. **If you plan to treat with antibiotics, what bugs are you targeting? What antibiotics would you use?**

4. ***You start bactrim and your patient has an increase in their creatinine, what should you do****?*

5. **How would your choice change if the person had an EF of 20%?**

Case 4

A 68-year-old nursing home resident is referred to you by her nurse for an ulcer on the bottom of her right foot. The resident has a history of poorly controlled diabetes complicated by stage III chronic kidney disease, retinopathy and neuropathy. She has experienced several foot infections involving both feet in the past with at least one of these infections caused by methicillin-resistant *Staphylococcus aureus* (MRSA). These healed without the need for surgical intervention. She reports long-standing callouses underneath the balls of both feet for several months.

On exam, the patient is afebrile and hemodynamically stable. Her foot reveals a 1x1.5cm ulcer underneath the 3rd MTP joint. There is no surrounding erythema, minimal wound drainage and an absence of any fullness in the midfoot.

1. **What would make you worry this ulcer/wound is infected?**

2. **How would you manage this patient?**

Exam of the resident's extremity demonstrates intact dorsalis pedis and posterior tibial arterial pulses. Monofilament testing demonstrates loss of sensation to the pre-tibial region bilaterally. Her wound was sharply debrided in clinic and the callous on the contralateral foot was similarly debrided. Her wound was packed with an alginate primary dressing and sterile gauze secondary dressing and was scheduled to be changed every 48 hours.

Plain films of the foot are negative for subcutaneous gas, foreign body or any evidence of underlying osteomyelitis. She was also provided with a hind-foot walker shoe to offload the forefoot. At her 1-week follow-up, the resident's wound was stable. A 2-week follow-up was cancelled and the resident now presents with redness and drainage from the wound.

By report, the resident's wound began to drain more about a week ago but this was not conveyed to her medical providers. Except for the erythema surrounding the wound, the resident's exam is otherwise unchanged. The resident is afebrile and hemodynamically stable with a borderline WBC count (10.3 cells/µL) and C-reactive protein (CRP; 2.5 mg/dL). Repeat plain films are unchanged from baseline.

3. **What is your clinical impression and how would you manage the patient now? What bugs are you covering for? What antibiotics would you consider?**

4. **Should you culture the wound?**

5. **How would you manage this patient now? What are you treating for? What antibiotics would you consider?**

6. **Do you need Pseudomonas coverage?**

7. **What are your next steps in the management of this patient?**

8. **What is your plan for antibiotics in this scenario?**

Case 5

55 year old female with history of asthma and HTN presents to the hospital with non-localized pain, diarrhea and subjective fevers x 1 day. In the ER, T: 100.8, HR: 90, RR: 16, BP: 110/70. Labs: WBC: 18K cells/mm^3; the remainder of his labs are within normal limits.

1. **What is your differential for this patient's pain?**

2. **What is your work up for this patient?**

CT Scan of the abdomen/pelvis with IV contrast shows a non-perforated diverticulitis. He is admitted to the hospital for antibiotics.

3. **What are microbiological pathogens you need to consider in this infection?**

4. **What antibiotic(s) would you start empirically?**