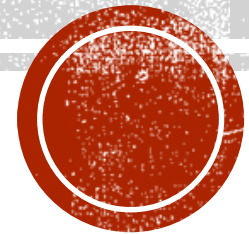


# MANAGING SOFT TISSUE INFECTIONS

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# MICROBIOLOGY OF WOUNDS

- 100% of all wounds will yield growth
  - If you get a negative culture you something is wrong!
- Pseudomonas while ubiquitous does not routinely need to be covered in DFI
  - Cover when there is a significant localized process
  - It does not cause cellulitis
- Cellulitis is almost always caused by Beta Hemolytic Strep
  - Staph aureus involvement usually is associated with a purulent process
- Anaerobes are often “tagging along” and best dealt with by debridement of devitalized tissues
- Smell is a poor diagnostic test
- If you encounter *Strep anginosus* look for the abscess!



# SPECIMEN COLLECTION

- Avoid swabs whenever possible
  - Can't grown anaerobes from the typical swab for cultures
- Blood cultures are not typically indicated<sup>1</sup>
  - Fever alone is not an indication
  - Indications
    - Animal bites
    - Severe infections
    - Lymphedema
- Tissue or fluid aspirates are superior
- If concerned about an invasive fungal organism it is best to handle the tissues gently
- Consider splitting the tissue for path an culture in the OR prior to submission
  - Formalin is not a good media for living things!
- Not all wounds require a specimen
  - If no active infection there is no need for routine culturing



# SOURCE CONTROL

- From the ID perspective this is paramount
  - Antimicrobials can't penetrate dead tissue
- Complete debridement of devitalized tissues
- Repeat debridement as needed
- Bone and/or tissue path and cultures from clean margins



# DIABETIC FOOT ULCERS

- **Neuropathy**
  - Affects motor, sensory and autonomic pathways
  - Neuro-osteoarthropathy (Charcot's foot)
- **Peripheral Vascular Disease**
  - PAD most important cause of vascular impairment
  - 1% increase in A1c = 25 % increase in RR of PAD
- **Metatarsal heads particularly vulnerable**
- **Multifactorial process with neuropathy, PAD and frequently infection leading to complications**
- **Increased risk of amputation**
  - $\frac{1}{4}$  of DFU will result in an amputation
- **Polymicrobial colonization**
- **Treat the most likely pathogen**



# CHOOSING ANTIMICROBIALS FOR DFI

- Are systemic antimicrobials indicated?
- Broad to narrow
- Consider topical agents to reduce bacterial burden
- Oral vs Intravenous
  - More severe infections should be managed with IV antibiotics
  - Some agents have high bioavailability
    - Quinolones
    - Tetracyclines
    - Bactrim



# MANAGEMENT OF CELLULITIS

- Most cases are caused by beta-hemolytic streptococci
- When to consider other organisms:
  - Purulent process think of Staph
  - Penetrating injury
  - Marine exposure
    - *Vibrio vulnificus*/*parahaemolyticus*
- Look for areas of breakdown in skin barrier
  - Between toes
  - Eczema
  - Skin hydration
- Elevation
- Compression to reduce edema
- Prophylaxis/Suppression



# BITE WOUNDS

- Typically polymicrobial
  - Host skin flora + animal oral flora
- Specific organisms
  - *Eikenella corrodens* – human
  - *Pasteurella* – cat, dog
  - *Capnocytophaga* – dog, cat
    - Severe sepsis in asplenic, cirrhotics
- Treatment
  - Surgical debridement
  - Amox/Clav, Amp/Sulb
  - Prophylactic antibiotics often indicated
- Rabies
  - Indicated
    - Bat, Skunk, Bobcat, Fox, Raccoon
- Tetanus





# CHOOSING ANTIMICROBIALS

- **Susceptibility and Resistance**
  - R means resistance but S does not mean Success!
  - MIC (Minimum Inhibitory Concentration)
  - Know the local resistance patterns
  - Antibiogram
- **Duration of treatment**
  - In general antimicrobials should be stopped when there is no evidence of active infection
  - Bone infection requires longer treatment
    - The ideal regimen has not been definitively established
  - The better your source control the shorter the needed length of treatment



# CHOOSING ANTIMICROBIALS

- Broadest Spectrum (Gram Negative, Gram Positive, Anaerobes)
  - Carbapenems
    - No MRSA
    - Pseudomonas coverage except Ertapenem
  - Penicillin + Lactamase Inhibitors
    - Ampicillin + Sulbactam
    - Piperacillin + Tazobactam
  - Quinolones
    - Moxifloxacin also covers anaerobes
- Beta-hemolytic Streptococci
  - 100% susceptible to Penicillin
  - Clindamycin not always susceptible



# CHOOSING ANTIMICROBIALS

- Methicillin resistant MRSA
  - When to cover
    - History of MRSA
    - High rates of MRSA in the community
    - Severe infections (septic in ICU)
  - Vancomycin
  - Linezolid
  - Ceftaroline
    - Very broad in coverage
  - Daptomycin
  - Doxycycline/Minocycline
  - Trimethoprim-Sulfamethoxazole
  - Clindamycin
    - Inducible resistance
  - Dalbavancin/Oritavancin



# CHOOSING ANTIMICROBIALS

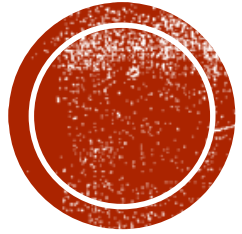
- Methicillin susceptible *Staph aureus*
  - Cefazolin
  - Nafcillin
  - Dicloxacilin
  - Clindamycin
  - Doxycycline/Minocycline
- Duration of Treatment
  - Stop when there is no evidence of active infection



# RECOMMENDED REFERENCES

- 2012 IDSA Clinical Practice Guideline for the Diagnosis and Treatment of Diabetic Foot Infections
- Practice Guidelines for the Diagnosis and Management of Skin and Soft Tissue Infections: 2014 Update by the Infectious Diseases Society of America





**THANKS!**

