

## PeaceHealth Hospitals

### Decision Protocol for Foot Infection

**Services Involved:** Podiatry, Infectious Diseases, Vascular Surgery, Pathology, Hospitalist, Emergency Medicine, Antibiotic Stewardship, Microbiology Lab

**Purpose:** Design standardized diagnostic and management algorithms for patients with foot infection concerning for osteomyelitis admitted to PeaceHealth Hospitals:

#### Pre-Operative:

1. **Ideally hold antibiotics if clinically stable, afebrile, no significant cellulitis (erythema < 2cm from wound), and no abscess, even if osteomyelitis seen on imaging. Wait until diagnostic cultures are available to direct therapy.**
2. When antibiotics are indicated, choose antibiotics based on the severity of infection and previous culture data if available.
3. Do not routinely include anti-MRSA therapy in non-severe DFI (diabetic foot infection) unless risk factor of previous MRSA positive culture or significant purulent cellulitis present
3. Do not routinely include anti-Pseudomonas therapy in non-severe DFI unless risk factor of previous Pseudomonas positive culture documented in patient's chart.
4. For admitted patients with suspected deep foot infection:
  - a. Routine labs including CRP
  - b. X-ray imaging, consider MRI
  - c. Vascular studies (ABI, TBI or Toe-Pressure). Consider Vascular Surgery evaluation if concern or abnormal
  - d. Podiatry consult
  - e. Consider wound care team and diabetes educator evaluations
  - f. Urgent surgical consultation for severe infection complicated by gangrene, necrotizing infection, deep abscess, compartment syndrome, or limb ischemia

#### Antibiotic selection for foot infection:

- a. Mild infection (skin or subcutaneous tissue only, erythema <2cm):
  - i. Cephalexin 1g PO TID or Cefadroxil 1g PO BID
  - ii. Consider amoxicillin-clavulanate 875/125 mg PO BID instead if abscess
  - iii. TMP-SMX 1 DS tab PO BID or linezolid 600 mg PO BID if MRSA
- b. Moderate infection (infection deeper than subcutaneous tissues, erythema >2cm, no significant systemic manifestations):
  - i. Cefazolin 2g IV q8hrs or
  - ii. Ampicillin-sulbactam IV 3g q6hrs (preferred if abscess present)
  - iii. Vancomycin IV per pharmacy dosing if MRSA risk
- c. Severe infection (deep infection with signs of sepsis including fever, leukocytosis, hypotension, tachycardia):
  - i. Ampicillin-sulbactam IV or IV vancomycin if MRSA risk
    - ii. IV Vancomycin plus ceftriaxone if septic shock present
    - ii. Cefepime instead of ceftriaxone for septic shock if *Pseudomonas* risk

\*Pharmacy and Infectious Diseases available to answer questions regarding empiric antibiotic coverage (i.e. allergies, unique previous culture data, MDRO, etc.). If blood cultures positive for *Staph aureus*, *Pseudomonas*, or *Candida* species, formal ID consult is warranted.

MRSA risk is defined as prior isolation of MRSA from a relevant culture; MRSA nares PCR has no predictive value.

*Pseudomonas* risk is defined as prior recent isolation of *P. aeruginosa* from a relevant culture.

### Culture Samples:

1. Do NOT obtain a specimen for culture by swabbing a superficial wound. Studies show superficial wound swab does NOT correlate with bone biopsy culture samples.
2. Cleanse and debride the wound before obtaining any specimen for culture
3. In patients with suspected osteomyelitis of the foot, collect a sample of bone (percutaneously or surgically) to culture clinically relevant bone microorganisms and for histopathology.
4. Intraoperatively:
  - i. Send grossly infected deep tissue sample from base of ulcer for culture after debridement. This will facilitate soft tissue infection targeted treatment if bone cultures are negative
  - ii. Send specimen from the clean resected margin for pathology (+/- bone culture)

### Post-Operatively:

1. Continue preoperative empiric antibiotic coverage until culture results return
2. Pathology will be read ideally within 72 hours (as long as clean margin analysis ordered stat)
3. If bone infection completely resected (pathology negative), antibiotics for 72 hours post-operatively is typically sufficient
  - i. If soft-tissue infection such as cellulitis still present after complete resection, pathogen-directed antibiotics for up to 5-7 days should be given depending on severity.
  - ii. If patient has complete resection of infection along with negative clean margin culture/pathology, patient may need prolonged therapy if also presented with positive blood cultures in order to fully treat the bacteremia (i.e. 1 week for Gram-negative rod, up to 2 weeks for Streptococcal species, and 2-6 weeks for *Staph aureus* bacteremia).
4. ID consultation recommended for cases with bone/joint involvement that is not completely resected.

### Special Circumstances:

1. By judgement of podiatry or other surgical service, if bone resection performed well past area of infection, process of obtaining bone culture may not be deemed necessary and antibiotics can be safely discontinued after 72 hours.
2. In a patient with uncomplicated forefoot osteomyelitis, for whom there is no other indication for surgical treatment per podiatry evaluation, consider treating with antibiotic therapy without surgical resection of bone. In those not requiring urgent surgery, patients can be considered for a two-step approach for combined soft tissue and bone infection: prescribe antibiotic therapy for the soft tissue infection guided by curettage sample at base of ulcer, followed by 1-2 week period off antibiotics, then a percutaneous bone biopsy performed sent for culture/pathology (with further treatment only if results demonstrate osteomyelitis).

**Table 5. Recommendations for Collection of Specimens for Culture From Diabetic Foot Wounds**

#### Do

- Obtain an appropriate specimen for culture from almost all infected wounds
- Cleanse and debride the wound before obtaining specimen(s) for culture
- Obtain a tissue specimen for culture by scraping with a sterile scalpel or dermal curette (curettage) or biopsy from the base of a debrided ulcer
- Aspirate any purulent secretions using a sterile needle and syringe
- Promptly send specimens, in a sterile container or appropriate transport media, for aerobic and anaerobic culture (and Gram stain, if possible)

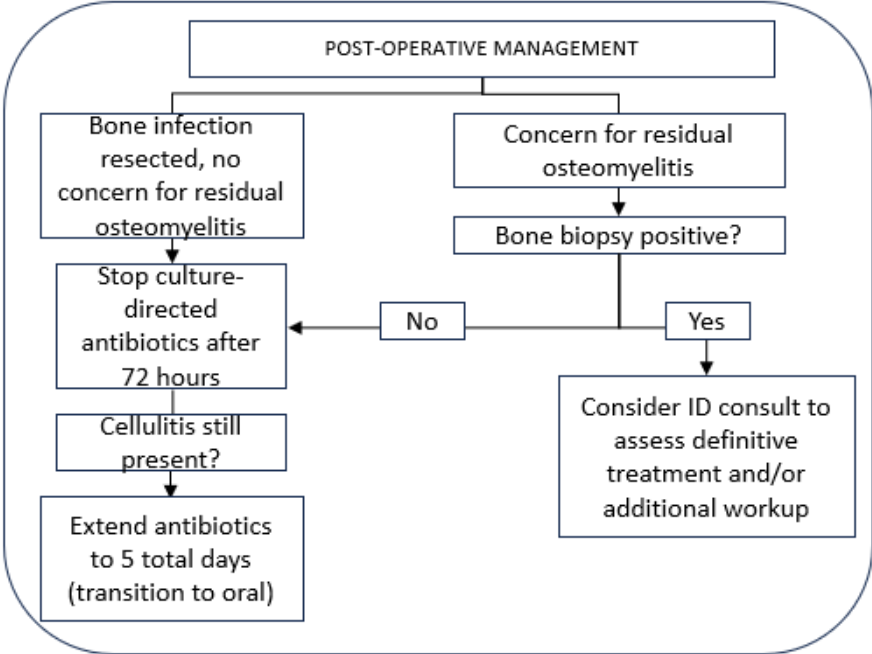
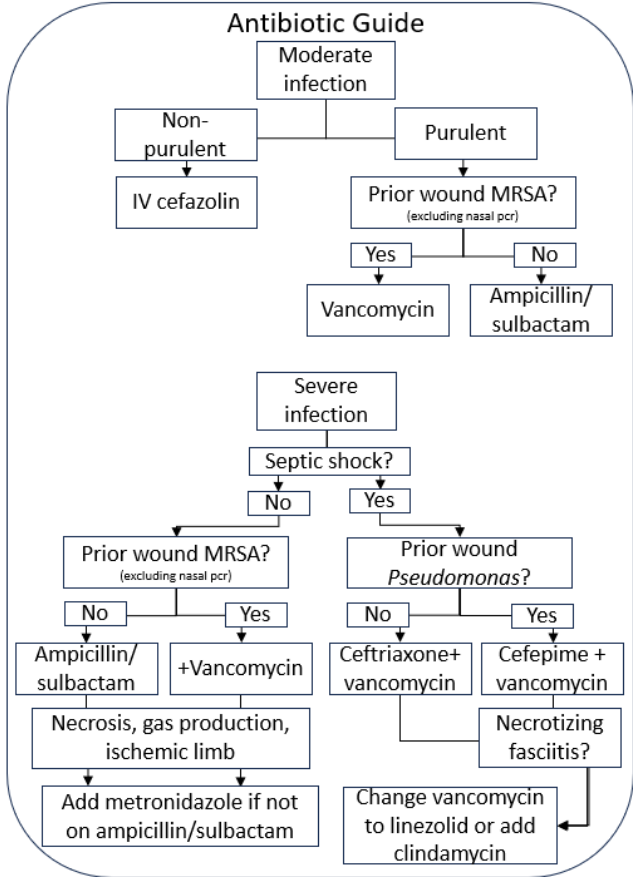
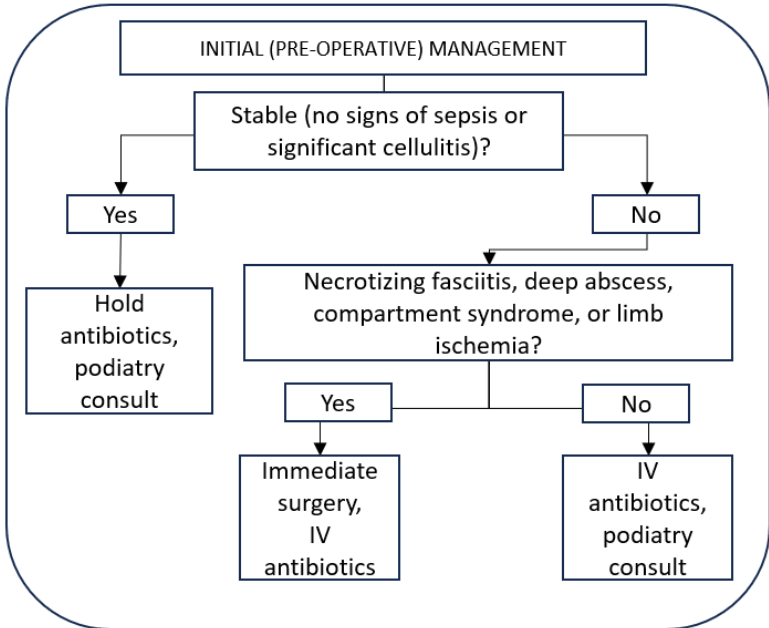
#### Do not

- Culture a clinically uninfected lesion, unless for specific epidemiological purposes
- Obtain a specimen for culture without first cleansing or debriding the wound
- Obtain a specimen for culture by swabbing the wound or wound drainage

**PROCESS SUMMARY FOR PATIENTS ADMITTED WITH DEEP SPACE FOOT INFECTION CONCERNING FOR OSTEOMYELITIS**

Initial orders to consider:  
 Labs: CBC, CMP, CRP  
 Imaging: X-ray, MRI  
 ABI\*/TBI\*/toe pressure  
 Wound care  
 Diabetes educator

\*Ankle-brachial index/toe-brachial index



**References:**

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3. Schechter MC, Ali MK, Risk BB, et al. 2020. Percutaneous Bone Biopsy for Diabetic Foot Osteomyelitis: A Systematic Review and Meta-Analysis. OFID. 7(10). doi: 10.1093/ofid/ofaa393
4. Lipsky BA, Senneville E, Abbas ZG, et al. 2019. Guidelines on the Diagnosis and Treatment of Foot Infection in Persons with Diabetes (IWGDF 2019 Update). Diabetes Metab Res Rev. 2020;36(S1):e3280. https://doi.org/10.1002/dmrr.3280
5. Berthol N, Robineau O, Boucher A, et al. Two-step sequential approach for concomitant skin and soft tissue infection and osteomyelitis complicating the diabetic foot. Diabetes Care. 2017;40:e170-e171.