Cellulitis

Important Notes

- Always elevate affected extremity. Treatment failure is more commonly due to failure to elevate than failure of antibiotics.
- Improvement of erythema can take days, especially in patients with lymphedema, because dead bacteria in the skin continue to induce inflammation.

Diagnosis

Non-suppurative cellulitis

- Defined as cellulitis with intact skin and no evidence of purulent drainage.

Suppurative cellulitis

- Defined as cellulitis with purulent drainage or exudate in the absence of a drainable abscess.

Microbiology

- Non-suppurative cellulitis: beta-hemolytic streptococci (e.g., group A, B, C, G streptococci); less commonly S. aureus
- Suppurative cellulitis: Usually caused by S. aureus (MSSA and MRSA).
- Less common pathogens:
  - Cellulitis with bullae, vesicles, and ulcers after exposure to seawater or raw oysters: Vibrio vulnificus. Rare occurrence, but common in liver disease, and rapidly fatal if left untreated.
  - Neutropenic, solid organ transplant, and cirrhotic patients: Gram-negative organisms.
  - If eschar, consider angioinvasive organisms (Gram-negative organisms, aspergillosis, mold).
  - Animal (cats and dogs) and human bites: Pasteurella multocida, Capnocytophaga spp.

Treatment

Non-suppurative Cellulitis

Mild disease (oral therapy)

- Cefadroxil 500 mg PO Q12H
- Cephalexin 500 mg PO Q6H
- Amoxicillin/clavulinate 875 mg PO Q12H
- PCN allergy: Clindamycin 300 mg PO Q8H

Moderate to severe disease (parenteral therapy)

- Cefazolin 1 g IV Q8H
- Ampicillin/sulbactam 1.5 g IV Q6H
- PCN allergy: Vancomycin

Suppurative Cellulitis

Mild disease (oral therapy)
- **TMP/SMX** 1–2 DS tab PO Q12H
  OR
- **Doxycycline** 100 mg PO Q12H
  OR
- **Minocycline** 100 mg PO Q12H

**Moderate to severe disease (parenteral therapy)**

- **Vancomycin**

**Vibrio vulnificus**

- **Ceftriaxone** 1 g IV Q24H **PLUS** **Doxycycline** 100 mg PO Q12H

**Animal and Human Bites**

- **Amoxicillin/clavulanate** 875 mg PO Q12H
  OR
- **Ampicillin/sulbactam** 1.5 g IV Q6H
  OR
- PCN allergy: **Moxifloxacin** 400 mg PO/IV Q24H

**Treatment Duration**

- Duration: 5–7 days

**Management**

- All beta-hemolytic streptococci are susceptible to Penicillin
- Clindamycin resistance is seen in 16–33% of group B, C, and G strep but remains low in group A strep (4–7%).
- Clindamycin resistance has increased to 43% of MSSA isolates and 64% of MRSA isolates and should **NOT** be given empirically.
- Resistance to fluoroquinolones in *S. aureus* is common and develops quickly; > 95% of MRSA isolates are resistant to fluoroquinolones. Monotherapy with fluoroquinolones for *S. aureus* infections is not recommended.
- There is no evidence that Linezolid is superior to TMP/SMX, Doxycycline, or Clindamycin in the management of skin infection or osteomyelitis. Linezolid should only be considered when the *S. aureus* isolate is resistant to or the patient is intolerant to these agents.

**References**

   **Comment:** Etiology of non-suppurative cellulitis.

   **Comment:** IDSA guidelines for MRSA infections

   **Comment:** TMP/SMX for treatment of MRSA infections

   **Comment:** Addition of therapy directed at MRSA does not increase resolution of non-suppurative cellulitis.