

**VANDERBILT UNIVERSITY MEDICAL CENTER  
DIVISION OF TRAUMA AND SURGICAL CRITICAL CARE**

**ORTHOPEDIC PROPHYLACTIC ANTIBIOTIC PROTOCOLS**

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**Protocol and Order Set:**

Open Fractures:

1. Initial management:
  - Sterile dressing with normal saline-soaked gauze (no Betadine)
  - Irrigation of gross contamination at discretion of the ORTHO attending
2. Antibiotics:
  - Types I and II:
    - a. Cefazolin 2 grams IV now and q8h x 3 doses
    - b. Penicillin allergic: Clindamycin 900 mg IV now and q8h x 3doses
  - Type III (>10cm and/or severe contamination):
    - a. Vancomycin per Wiz/HEO dosing advisor x 24h
    - b. Jan – June: Ceftriaxone 2 grams IV now q24h x1
    - c. Penicillin allergic: Aztreonam 1 gram now and q6h x3
    - d. July – Dec: Levofloxacin 750 mg IV now and q24h x 1
  - Critically ill “SICK” with Open fractures:
    - a. Continue antibiotics x 24 hrs and repeat prior to each debridement
    - b. All will attempt to be closed within 72 hours

Closed Fractures:

1. Pre-op
  - a. Cefazolin 2 grams IV now x 1 dose “to OR with patient”
  - b. Penicillin allergic: Clindamycin 900 mg IV now x 1 dose “to OR with patient”
  - c. If pelvis/acetabulum: Vancomycin (per Wiz/HEO dosing advisor) now x 1 dose “to OR with patient” + Levofloxacin 750 mg IV now x 1 dose “to OR with patient”
2. Post-op **\*\*Please enter orders post-op\*\***
  - a. Cefazolin 2 grams IV q8h x 2 doses
  - b. Penicillin allergy: Clindamycin 900 mg IV q8h x 2 doses
  - c. If pelvis/acetabulum: Vancomycin (per Wiz/HEO dosing advisor) x 1 dose + Levofloxacin 750 mg IV x 1 dose

**Rationale:**

The rate of infections in open fractures is significantly related with the degree of soft tissue injury, contamination, blood supply to the area, and to the management of the wound<sup>1-3</sup>. Most commonly open fractures are classified by the Gustilo classification system:

Type I	wound < 1 cm in length, clean with minimal soft tissue loss or injury
Type II	wound > 1 cm but without extensive soft tissue injury, tissue loss, or contamination
Type III	A: wound with heavy contamination B: soft tissue loss and/or heavy contamination with extensive soft tissue injury C: open fracture with arterial injury and ischemia

Infection rate increases significantly as the grade of the injury increases (0-2% for type I, to 25-50% for type IIIC). As the grade increases, the pathogens shift towards nosocomial pathogens related to wound handling and

colonization of open wounds by hospital bacterial flora. Thus, meticulous wound management greatly reduces infectious complications and has a greater impact than antibiotics delivered after the injury has occurred.

#### References

1. Gosselin RA, Roberts I, Gillespie WJ. Antibiotics for preventing infection in open limb fractures. Cochrane Database Syst Rev 2004;CD003764.
2. Hauser CJ, Adams CA, Jr., Eachempati SR. Surgical Infection Society guideline: prophylactic antibiotic use in open fractures: an evidence-based guideline. Surg Infect (Larchmt ) 2006; 7:379-405.
3. Luchette FA, Bone LB, Born CT, DeLong WG, Hoff WS, Mullins D, Palumbo F, Pasquale MD. EAST Practice Management Guidelines Work Group: Practice management guidelines for prophylactic antibiotic use in open fractures. Eastern Association for the Surgery of Trauma [www.east.org](http://www.east.org), 1-28. 2000.

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