PROPHYLACTIC ANTIBIOTICS FOLLOWING TRAUMA

PURPOSE: Define when prophylactic antibiotics should be used following trauma.

Contributing specialties: Trauma surgery, Orthopedic surgery, Neurosurgery, ENT, Pharmacy

I. Gunshot wound:
   a. None, in the absence of local signs of infection.
   b. Typically, these wounds are not closed.
   c. Irrigate thoroughly and debride as needed.

II. Stab wound (superficial/extremity):
   a. None, in the absence of local signs of infection.
   b. These wounds may be left open or closed.
   c. If closed, do so loosely following thorough irrigation.

III. Chest tube:
   a. Penetrating trauma: Cefazolin x1 dose (peri-procedural)
   b. Blunt trauma: None

IV. Hollow viscus injury (blunt or penetrating, with rapid source control):
   a. Perioperative x24 hours
      i. Cefoxitin
      ii. PNC allergy: Levaquin + metronidazole

V. Animal bites:
   a. Oral (typically no more than 5 days total treatment)
      i. Amoxicillin-clavulanate
      ii. PNC allergy: levaquin + metronidazole
   b. Parenteral (typically no more than 5 days total treatment)
      i. Ampicillin-sulbactam
      ii. PNC allergy: levaquin + metronidazole

VI. Large/destructive/contaminated soft tissue injury without open fracture (including scalp):
   a. Cefazolin x1 dose and thorough irrigation with debridement as needed.

VII. Open extremity fractures:
   a. Treat for 72 hours or 24 hours post-coverage, whichever comes first.
   b. Gustilo-Anderson I-II
      i. No soil contamination: cefazolin (PNC allergy: clindamycin)
      ii. Soil contamination: cefazolin + metronidazole (PNC allergy: clindamycin)
   c. Gustilo-Anderson ≥ III
      i. Piperacillin-tazobactam (PNC allergy: aztreonam + clindamycin)
ii. Fresh water contamination: piperacillin-tazobactam (PNC allergy: meropenem)

iii. Saltwater contamination: piperacillin-tazobactam + doxycycline (PNC allergy: meropenem + doxycycline)

**Gustilo-Anderson open fracture grading**

<table>
<thead>
<tr>
<th>Type</th>
<th>Wound size</th>
<th>Contamination</th>
<th>Fracture</th>
<th>Vascular injury requiring repair</th>
<th>Soft tissue coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Wound &lt;1 cm</td>
<td>Minimal</td>
<td>Minimal comminution; no periosteal stripping</td>
<td>No</td>
<td>Adequate</td>
</tr>
<tr>
<td>II</td>
<td>Wound &gt;1 cm</td>
<td>Moderate</td>
<td>Moderate comminution; minimal periosteal stripping</td>
<td>No</td>
<td>Adequate</td>
</tr>
<tr>
<td>IIIA</td>
<td>Any size</td>
<td>Severe</td>
<td>Severe comminution or segmental fractures; periosteal stripping</td>
<td>No</td>
<td>Adequate; may become inadequate with debridements</td>
</tr>
<tr>
<td>IIIB</td>
<td>Any size</td>
<td>Severe</td>
<td>Severe comminution or segmental fractures; periosteal stripping</td>
<td>No</td>
<td>Inadequate (rotation flap or free flap)</td>
</tr>
<tr>
<td>IIIC</td>
<td>Any size</td>
<td>Severe</td>
<td>Severe comminution or segmental fractures; periosteal stripping</td>
<td>Yes</td>
<td>Inadequate (rotation flap or free flap)</td>
</tr>
</tbody>
</table>

**References:**


2. **Gustilo RB, Gruninger RP, Davis T. Classification of type III (severe) open fractures relative to treatment and results.** Orthopedics 1987; 10:1781.
Facial fractures:

I. Antibiotics of choice:
   a. IV: Ampicillin-sulbactam
   b. PO: Amoxicillin-clavulanate
   c. PNC allergy: Clindamycin

II. Fracture types
   a. Nasal fractures: No antibiotics
   b. Mid-face fractures: No antibiotics
   c. Closed mandible fractures: No antibiotics
   d. Open mandible fractures: Antibiotics until definitive surgical management.
      i. If definitive surgical management is >72 hours, discuss cessation of antibiotics with ENT.
   e. Inferior or medial orbital wall fracture ("blowout"): No consensus reached. There is no evidence available to support antibiotic use.
   f. Non-displaced frontal sinus fractures or displaced anterior table/frontal sinus fractures: No antibiotics
   g. Displaced posterior table/frontal sinus fractures: Antibiotic coverage in coordination with Neurosurgery

Skull fractures:

I. Penetrating brain injuries: ceftriaxone x7 days (PNC allergy: Meropenem)
II. Open depressed fractures: ceftriaxone x7 days (PNC allergy: Meropenem)
III. Basilar skull fractures: No antibiotics
IV. EVD and ICP monitors: No antibiotics (other than pre-procedure)
V. CSF leak: No antibiotics