Pediatric Antibiotic Prophylaxis for Surgical Procedures

This guideline should be for all patients <18 years of age. Pediatric patients weighing more than 40 kg should still receive weight-based doses unless the dose exceeds the recommended adult dose.

**ANTIBIOTIC TIMING:** Antibiotics should be given within the one (1) hour preceding surgical incision. 2 hours are permitted for vancomycin due to longer infusion time.

**ANTIBIOTIC DISCONTINUATION:** Continuing antibiotic prophylaxis after closure of incision does not reduce the risk of infection and is associated with the development of antimicrobial resistance. Organizations such as SCIP allow prophylactic antibiotics for up to 24 hours after surgery end time (48 hours for cardiac) but these antibiotics are unnecessary.

**PATIENTS WITH PENICILLIN/CEPHALOSPORIN (BETA-LACTAM) ALLERGIES:** If a patient has a documented Type 1 penicillin or cephalosporin allergy, verify that it is a true allergy (Type 1 = shortness of breath, hives, anaphylaxis, etc). Cefazolin may be utilized in penicillin allergic patients EXCEPT for patients with confirmed cefazolin allergy, any cephalosporin anaphylaxis, or high-risk PCN/cephalosporin allergy (e.g. severe skin reaction (eg. SJS); history of kidney or liver injury). In the cases of exception, where cefazolin cannot be utilized, vancomycin or clindamycin are appropriate alternatives for Gram positive coverage. For alternative Gram negative coverage, gentamicin is preferred.

**VANCOMYCIN DOCUMENTATION:** Reason for using vancomycin must be documented before surgery start.

**INTRA-OPERATIVE ANTIBIOTIC REDOSING:** Intra-operative re-dosing of antibiotics should occur at the intervals provided in increments after the time of the first (pre-op) dose.

<table>
<thead>
<tr>
<th>Pediatric Dosing Guide</th>
<th>Intra-operative dosing interval for prolonged procedures or major blood loss (&gt;20 mL/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antibiotic</strong></td>
<td><strong>IV Dose</strong></td>
</tr>
<tr>
<td>Ampicillin/</td>
<td>50 mg/kg (dose per ampicillin)</td>
</tr>
<tr>
<td>sulbactam</td>
<td></td>
</tr>
<tr>
<td>Ampicillin</td>
<td>50 mg/kg</td>
</tr>
<tr>
<td>Cefazolin</td>
<td>30 mg/kg</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>50-75 mg/kg</td>
</tr>
<tr>
<td>Cefuroxime</td>
<td>50 mg/kg</td>
</tr>
<tr>
<td>Cefoxitin</td>
<td>40 mg/kg</td>
</tr>
<tr>
<td>Clindamycin</td>
<td>10 mg/kg (20 mg/kg for SBE prophylaxis)</td>
</tr>
<tr>
<td>Ertapenem</td>
<td>15 mg/kg</td>
</tr>
<tr>
<td>Fluconazole</td>
<td>6 mg/kg</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>2.5 mg/kg based on dosing weight†</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>10 mg/kg or 500 mg if 10 mg/kg</td>
</tr>
<tr>
<td></td>
<td>30 mg/kg</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Piperacillin-tazobactam</td>
<td>100 mg/kg of the piperacillin component</td>
</tr>
<tr>
<td>Vancomycin</td>
<td>15 mg/kg</td>
</tr>
</tbody>
</table>

†Determination of Patient’s Dosing Weight for Aminoglycosides

<table>
<thead>
<tr>
<th></th>
<th>Definition</th>
<th>Use this Dosing Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>TBW &lt; IBW</td>
<td>TBW</td>
</tr>
<tr>
<td>Normal Weight</td>
<td>TBW = 100-125% IBW</td>
<td>IBW</td>
</tr>
<tr>
<td>Obese</td>
<td>TBW &gt;125% IBW</td>
<td>AdjBW</td>
</tr>
</tbody>
</table>

**Surgical Procedure Prophylaxis**

<table>
<thead>
<tr>
<th>Procedure/Operation</th>
<th>Recommended Agents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cardiothoracic</strong></td>
</tr>
<tr>
<td></td>
<td><em>Staphylococcus epidermidis</em>, <em>Staphylococcus aureus</em>, <em>Corynebacterium</em> spp</td>
</tr>
<tr>
<td></td>
<td>Cefuroxime</td>
</tr>
<tr>
<td></td>
<td>If MRSA likely, ADD vancomycin</td>
</tr>
<tr>
<td>Vascular</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>S epidermidis, S aureus, Corynebacterium</em> spp, gram-negative enteric bacilli, particularly for procedures in the groin</td>
</tr>
<tr>
<td></td>
<td>Cefazolin</td>
</tr>
<tr>
<td></td>
<td>If MRSA likely, ADD vancomycin</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Gastroduodenal</strong></td>
</tr>
<tr>
<td></td>
<td>Enteric gram-negative bacilli, respiratory tract gram-positive cocci</td>
</tr>
<tr>
<td></td>
<td>Cefazolin</td>
</tr>
<tr>
<td>Biliary Procedure, Open</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enteric gram-negative bacilli, enterococci, <em>Clostridia</em></td>
</tr>
<tr>
<td></td>
<td>Cefazolin, OR</td>
</tr>
<tr>
<td></td>
<td>Cefoxitin</td>
</tr>
<tr>
<td>Appendectomy, non-perforated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cefazolin plus metronidazole</td>
</tr>
<tr>
<td>Complicated appendicitis or other ruptured viscous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cefazolin (or ceftriaxone) plus metronidazole. May utilize metronidazole 30 mg/kg dosing strategy.</td>
</tr>
<tr>
<td>Genitourinary</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Cystoscopy</strong></td>
</tr>
<tr>
<td></td>
<td>(only requires prophylaxis for children with suspected active UTI or those having foreign material placed)</td>
</tr>
<tr>
<td></td>
<td>Enteric gram-negative bacilli, enterococci</td>
</tr>
<tr>
<td></td>
<td>Cefazolin, OR</td>
</tr>
<tr>
<td></td>
<td>TMP/SMX, OR</td>
</tr>
<tr>
<td></td>
<td>Ceftriaxone</td>
</tr>
<tr>
<td></td>
<td><strong>Open or laparoscopic surgery</strong></td>
</tr>
<tr>
<td></td>
<td>Enteric gram-negative bacilli, enterococci</td>
</tr>
<tr>
<td></td>
<td>Cefazolin</td>
</tr>
<tr>
<td>Head and Neck Surgery (if oropharyngeal mucosa is compromised)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Anaerobes, enteric gram-negative bacilli, <em>S aureus</em></td>
</tr>
<tr>
<td></td>
<td>Cefazolin plus metronidazole</td>
</tr>
<tr>
<td>Neurosurgery</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Craniotomy, ventricular shunt placement</strong></td>
</tr>
<tr>
<td></td>
<td><em>S epidermidis, S aureus</em></td>
</tr>
<tr>
<td></td>
<td>Cefazolin</td>
</tr>
<tr>
<td></td>
<td>If MRSA likely, ADD vancomycin</td>
</tr>
<tr>
<td>Orthopedic</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Internal fixation of fractures, spinal rod placement, prosthetic joints</strong></td>
</tr>
<tr>
<td></td>
<td><em>S epidermidis, S aureus</em></td>
</tr>
<tr>
<td></td>
<td>Cefazolin</td>
</tr>
<tr>
<td></td>
<td>If MRSA likely, ADD vancomycin</td>
</tr>
<tr>
<td>Trauma</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Varied; agents should focus on skin flora as well as flora inoculated into the wound (may include gram-negative bacilli, anaerobes, and fungi)</td>
</tr>
<tr>
<td></td>
<td>Cefazolin</td>
</tr>
<tr>
<td></td>
<td>If MRSA likely, ADD vancomycin</td>
</tr>
<tr>
<td></td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td>Piperacillin-tazobactam</td>
</tr>
</tbody>
</table>
Gentamicin and metronidazole (for anaerobes, including Clostridia spp, and non-fermenting gram-negative bacilli)

Approved by: ASET, Children’s P&T, PMMC
Last updated March 2023