

## Guidelines for Treatment of Skin and Soft Tissue Infections

These guidelines are not intended to replace clinical judgment. The antimicrobials are not listed in order of preference, and therapeutic decisions should be based on a number of factors including patient history, comorbidities, suspected etiology, antimicrobial susceptibility patterns, and cost. In certain populations (e.g., intravenous drug abusers, immunosuppressed, travelers), the suspected organisms may include a broader range of organisms. The Infectious Diseases consult services are available for complex patient consultations and should be strongly considered in patients with any severe infections. Cultures should usually be obtained if incision and drainage (I & D) is performed and/or if there is a discrete collection of pus or drainage that would allow an appropriate culture specimen to be obtained.

**Note:** Refer to table on page 4 for pediatric dosing.

Type of Infection	Suspected Organisms	Recommended Treatment
<b>Non-culturable cellulitis</b> (no purulent material or wound present)	<i>β-hemolytic Streptococcus</i> ( <i>Strep pyogenes</i> (group A strep), <i>Strep agalactiae</i> (group B strep or GBS), <i>Strep dysgalactiae</i> (group C strep), <i>G streptococcus</i> (group G strep), Rarely <i>Staphylococcus aureus</i>	- Mild Cephalexin 250-500mg PO q6h <b>OR</b> Dicloxacillin 500mg PO q6h <b>PCN allergy:</b> Clindamycin 300 mg PO q8h - Moderate-severe Cefazolin 1g (if ≥80kg 2g) IV q8h <b>OR</b> Oxacillin 2g IV q4h <b>PCN allergy:</b> Clindamycin 600 mg IV q8h -Severe systemic illness or no response/worsening at 48 hours consider vancomycin 10-15 mg/kg IV q12h <sup>§</sup> - If culture documented streptococcal infection: PCN VK 500 mg PO q6h <b>OR</b> Procaine PCN G 600,000 U IM bid <b>OR</b> Aqueous PCN G 1-2 MU IV q4-6h
<b>Abscess, furuncles, carbuncles</b>	<i>S. aureus</i> , including CA-MRSA and <i>β-hemolytic Streptococcus</i> (less common)	<b>- I &amp; D alone is likely adequate</b> Utility of antibiotics is unclear but are recommended in the following situations (see purulent cellulitis for treatment options): <ul style="list-style-type: none"> <li>• Severe or extensive disease (multiple sites)</li> <li>• Rapid progression of cellulitis</li> <li>• Signs/symptoms of systemic illness</li> <li>• Associated immunosuppression or comorbidities (diabetes, HIV, active neoplasm)</li> <li>• Extremes of age</li> <li>• Associated septic phlebitis</li> <li>• Sensitive area (face, hand, genitals)</li> <li>• Lack of response to I &amp; D</li> </ul>
<b>Purulent cellulitis or abscesses meeting criteria for treatment</b>	<i>S. aureus</i> , including CA-MRSA and <i>β-hemolytic Streptococcus</i>	- I & D - Mild Cephalexin 250-500mg PO q6h <b>PLUS</b> TMP/SMX DS 1 tab PO q12h* <b>OR</b> Minocycline 100 mg PO q12h** <b>OR</b> Doxycycline 100 mg PO q12h** <b>OR</b> Clindamycin 300 mg PO q8h - Moderate-severe Vancomycin 10-15 mg/kg IV q12h <sup>§</sup> Consult pharmacy for patient-specific dosing. - <i>If gangrene, immunocompromised and/or severe systemic symptoms treat as per necrotizing fasciitis guidance below</i>

<b>Folliculitis</b>	<i>S. aureus</i> , <i>P. aeruginosa</i> (hot tub)	<ul style="list-style-type: none"> <li>- Warm compress</li> <li>- No antibiotics</li> </ul>
<b>Impetigo</b>	<i>S. aureus</i> , including CA-MRSA, <i>S. pyogenes</i>	<ul style="list-style-type: none"> <li>- Warm water soak</li> <li>- Cephalexin 250 mg PO q6h <b>PLUS</b> TMP/SMX DS 1 tab PO q12h* OR</li> <li>Minocycline 100 mg PO q12h** OR</li> <li>Doxycycline 100 mg PO q12h** OR</li> <li>Clindamycin 300 mg PO q8h OR</li> <li>Mupirocin ointment TID x 7d OR</li> <li>Retapamulin BID x 5d</li> </ul>
<b>Erysipelas</b>	<i>S. pyogenes</i> , rarely <i>S. aureus</i> , including CA-MRSA, or <i>S. agalactiae</i>	<ul style="list-style-type: none"> <li>- PCN VK 250-500 mg PO q6h OR</li> <li>Procaine PCN G 600,000 U IM q12h OR</li> <li>Aqueous PCN G 0.6-2 MU IV q6h OR</li> <li>Clindamycin 300 mg PO/600 mg IV q8h</li> <li>- If concern for MRSA consider adding: TMP/SMX DS 1 tab* PO q12h</li> </ul>
<b>Diabetic foot ulcers</b>	<p>Diabetics: mixed aerobic and anaerobic flora. <i>S. aureus</i>.</p> <p>Immunocompromised patients or refractory: consider Gram-negative organisms.</p> <p>IVDU: consider anaerobes and fungi.</p>	<p><b>Assess for deep tissue infection/osteomyelitis</b></p> <ul style="list-style-type: none"> <li>- Mild <ul style="list-style-type: none"> <li>TMP/SMX DS 1 tab PO q12h* <b>PLUS</b></li> <li>Amoxicillin/clavulanate 875/125 mg PO q12h OR</li> <li>Moxifloxacin 400 mg PO qday OR</li> <li>Ciprofloxacin 500 mg PO q12h <b>PLUS</b> clindamycin 300 mg PO q8h*</li> </ul> </li> <li>- Moderate-severe<sup>†</sup> <ul style="list-style-type: none"> <li>Vancomycin 10-15 mg/kg IV q12h<sup>§</sup> (Consult pharmacy for patient-specific dosing) <b>PLUS</b></li> <li>Ampicillin/sulbactam 3 g IV q6h OR</li> <li>Ertapenem 1g IV QDAY OR</li> <li>Piperacillin/tazobactam 3.375g IV q8h, over 4 hours OR</li> <li>Meropenem 500 mg IV q6h</li> <li><b>PCN allergy:</b> Consider ciprofloxacin/clindamycin or aztreonam/clindamycin.</li> </ul> </li> </ul>
<b>Necrotizing fasciitis</b>	<p>Type I – mixed aerobic and anaerobic flora<sup>†</sup></p> <p>Type II – <i>S. pyogenes</i></p>	<ul style="list-style-type: none"> <li>- <b>Immediate surgical debridement</b></li> <li>- Consider Infectious Disease consult</li> <li>- Ampicillin/sulbactam 3 g IV q6h OR</li> <li>Piperacillin/tazobactam 3.375g IV q8h, infused over 4 hours OR</li> <li>Meropenem 500 mg IV q6h</li> <li><b>PCN allergy:</b> Consider ciprofloxacin/clindamycin or aztreonam/clindamycin.</li> <li>- MRSA concern consider vancomycin 10-15 mg/kg IV q12h<sup>§</sup> Consult pharmacy for patient-specific dosing</li> <li>- Aqueous PCN G 2-4 MU IV q4h <b>PLUS</b> clindamycin 900 mg IV q8h</li> </ul>
<b>Clostridial myonecrosis (gas gangrene)</b>	<i>C. perfringens</i> , rarely <i>C. septicum</i>	<ul style="list-style-type: none"> <li>- <b>Immediate surgical debridement</b></li> <li>- Aqueous PCN G 2-4 MU IV q4 <b>PLUS</b> clindamycin 900 mg IV q8h</li> </ul>

<p><b>Bite wounds</b></p>	<p>Human: <i>S. viridans</i>, <i>S. aureus</i>, <i>Haemophilus</i> spp., <i>Eikenella corrodens</i>, <i>Peptostreptococcus</i>, <i>Fusobacterium</i>, <i>Porphyromonas</i>, <i>Prevotella</i></p> <p>Dog/cat: <i>Pasteurella multocida</i>, streptococci, staphylococci, <i>Fusobacterium</i>, <i>Bacteroides</i>, <i>Porphyromonas</i>, <i>Prevotella</i> Consider <i>Capnocytophaga canimorsus</i> in splenectomized dog bite patients.</p>	<ul style="list-style-type: none"> <li>- Wound irrigation, evaluate for deep penetration</li> <li>- Prophylaxis for 3-5 days is recommended for non-infected wounds: <ul style="list-style-type: none"> <li>Amoxicillin/clavulanate 875/125 mg PO q12h</li> <li><b>PCN allergy:</b> Consider Clindamycin 300 mg PO q8h <b>PLUS</b> doxycycline 100 mg PO q12h** OR TMP/SMX 1 DS PO q12h OR ciprofloxacin 500mg PO q12h</li> </ul> </li> <li>- Active Infection <ul style="list-style-type: none"> <li>Ampicillin/sulbactam 3 g IV q6h OR</li> <li>Cefoxitin 2g IV q8h OR</li> <li>Clindamycin 900mg IV q8h <b>PLUS</b> [ciprofloxacin 400mg IV q12h <b>OR</b> TMP/SMX DS 1 tab PO q12h]</li> </ul> </li> <li>- Consider tetanus booster and rabies vaccine.</li> <li>- Wound irrigation</li> <li>- Prophylaxis for non-infected bites wounds not recommended but should be considered in the following situations: <ul style="list-style-type: none"> <li>• Deep puncture (especially cats)</li> <li>• Moderate or severe with crush injury</li> <li>• On hand or genitals</li> <li>• Near prosthetic material</li> <li>• Involves bone, joint, or poorly vascularized area</li> <li>• Patient is immunocompromised</li> </ul> </li> <li>- Prophylaxis (3-5 days) and oral therapy:</li> <li>- Amoxicillin/clavulanate 875/125 mg PO q12h <b>OR</b> Clindamycin 300 mg PO q8h <b>PLUS</b> TMP/SMX 1 DS PO q12h* <b>OR</b> Cefuroxime 500 mg PO q12h <b>PLUS</b> Clindamycin 300 mg PO q8h</li> <li>- Severe infection requiring intravenous treatment: <ul style="list-style-type: none"> <li>Ampicillin/sulbactam 3 g IV q6h <b>OR</b></li> <li>Ceftriaxone 1g (2g if &gt;80kg) IV qday <b>PLUS</b> metronidazole 500 mg IV q8h <b>OR</b></li> <li>Ciprofloxacin 400 mg IV q12h <b>PLUS</b> metronidazole 500 mg IV q8h</li> </ul> </li> </ul>
---------------------------	---	---

CA-MRSA – community-associated methicillin-resistant *S. aureus*; I & D – incision and drainage; TMP/SMX – trimethoprim/sulfamethoxazole; PCN – penicillin

\*May consider using TMP/SMX DS 2 tabs PO bid for more severe infections. Monitor for increased adverse effects, such as hyperkalemia and GI upset.

\*\*Should not be used in pregnant women or children under the age of 8 years.

§Alternatives to vancomycin include linezolid 600 mg PO/IV q12h OR daptomycin 4 mg/kg IV q24h.

‡Tigecycline 100 mg IV load, then 50 mg IV q12h\*\* may be considered as an alternative.



### Recommended Dosing for Pediatrics (excluding neonates)

Antimicrobial Agent	Recommended Dosing
Amoxicillin/clavulanate	Amoxicillin:clavulanate 14:1 – 45 mg/kg PO q12h 7:1 – 10-22.5 mg/kg PO q12h Range: 20-45 mg/kg/day 4:1 – 7-13.3 mg/kg PO q8h Range: 20-40 mg/kg/day divided q 8h Maximum daily dose: 2 g (amoxicillin component) - All doses represent the amoxicillin component
Ampicillin/sulbactam	25-100 mg/kg (ampicillin component) IV q6h Maximum daily dose: 8 g (ampicillin component)
Aqueous PCN G	25,000-100,000 U/kg IV q4-6h Range: 100,000-400,000 U/kg/day Maximum daily dose: 24 mU
Cefuroxime	10-15 mg/kg PO q8-12h Maximum daily dose: 1 g
Cephalexin	6.25-37.5 mg/kg PO q6h Maximum daily dose: 4 g
Ciprofloxacin	10-20 mg/kg PO q12h 10-15 mg/kg IV q8-12h Maximum daily dose: 800 mg
Clindamycin	2.5-10 mg/kg PO q6-8h Range: 10-30 mg/kg/day Maximum daily dose: 1.8 g 6.25-10 mg/kg IV q6-8h Range: 25-40 mg/kg/day Maximum daily dose: 4.8 g
Daptomycin	Safety not established in pediatrics.
Doxycycline	Not to be used in children under 8 years old. 1-4 mg/kg PO q12-24h Range: 2-4 mg/kg/day Maximum daily dose: 200 mg
Linezolid	10 mg/kg PO/IV q8-12h Maximum daily dose: 1.2 g
Meropenem	20 mg/kg IV q8h Maximum daily dose: 1.5 g
Minocycline	Not to be used in children under 8 years old. 2 mg/kg PO bid or 4 mg/kg PO qhs Maximum daily dose: 200 mg
Moxifloxacin	Safety not established in pediatrics.
PCN VK	6.25-16.7 mg/kg PO q6-8h Range: 25-50 mg/kg/day Maximum daily dose: 3 g
Piperacillin/tazobactam	100 mg/kg (piperacillin component) IV q6-8h Range: 150-400 mg/kg/day (piperacillin component) Maximum daily dose: 16 g (piperacillin component) <b>NOTE:</b> all doses must be infused over 4 hours, except in NICU patients
Tigecycline	Safety not established in pediatrics.
TMP/SMX	4-6 mg/kg (trimethoprim component) PO bid Maximum daily dose: 160 mg (trimethoprim component)
Vancomycin	10 mg/kg IV q6h Maximum daily dose: 4 g