This guideline is designed to provide guidance in pediatric patients with a primary skin and soft tissue infection (SSTI). Management of skin and soft tissue infections in patients <2 months of age, or presenting with sepsis or septic shock not related to necrotizing fasciitis is beyond the scope of these guidelines. For sepsis or septic shock, refer to the [Pediatric Sepsis Guidelines](#).

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<td><strong>Minor Skin Infections</strong></td>
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<tr>
<td><strong>Topical therapy:</strong> Generally preferred over oral therapy</td>
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<tr>
<td><strong>Oral therapy:</strong> Indicated instead of topical therapy for patients with numerous impetigo lesions or in outbreak settings to reduce transmission</td>
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<tr>
<td><strong>Target Pathogens:</strong>&lt;br&gt;Staphylococcus aureus, group A Streptococcus</td>
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<td><strong>Non-Purulent Cellulitis</strong></td>
<td><strong>Outpatient or Step-down (from IV to PO) Therapy</strong>&lt;br&gt;1st line:&lt;br&gt;• Cephalexin* 25 mg/kg/DOSE PO TID (max: 1000 mg/DOSE)&lt;br&gt;If MRSA coverage needed&lt;sup&gt;2&lt;/sup&gt; ADD TMP-SMX&lt;sup&gt;1&lt;/sup&gt; 6 mg of TMP/kg/DOSE PO BID (max: 320 mg TMP/DOSE)&lt;br&gt;<strong>Alternative to TMP-SMX</strong>&lt;br&gt;• Doxycycline&lt;sup&gt;1&lt;/sup&gt; 2.2 mg/kg/DOSE PO BID (max: 100 mg/DOSE)&lt;br&gt;<strong>Alternative for cephalosporin or moderate/severe PCN allergy</strong>&lt;br&gt;• Clindamycin 13 mg/kg/DOSE PO TID (max: 600 mg/DOSE)</td>
<td>Duration: 5 days&lt;br&gt;• May extend therapy up to 7-10 days if lack of symptom resolution at 5 days.&lt;br&gt;Cephalexin and cefazolin provide coverage for group A Streptococcus and MSSA.&lt;br&gt;If lack of improvement or clinical worsening on &gt;48 hours of initial antibiotic therapy, consider adding or changing to an agent with anti-MRSA activity (i.e., TMP-SMX or doxycycline).</td>
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<td><strong>Target Pathogens:</strong> Group A Streptococcus, Staphylococcus aureus (the role of community-acquired MRSA is unknown)</td>
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Inpatient (IV) Therapy<br>1st Line:<br>• Cefazolin* 33 mg/kg/DOSE IV q8h (max: 2000 mg/DOSE)<br>**Alternative for cephalosporin or severe PCN allergy (in patients without risk for MRSA)**<br>• Clindamycin 13 mg/kg/DOSE IV q8h (max: 900 mg/DOSE)<br>**Alternative if need for MRSA coverage**<br>• Vancomycin IV (click for dosing)*
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| **Purulent Cellulitis or Abscesses including Folliculitis, Furuncles, Carbuncles** | *Incision and drainage (I&D) is recommended as primary management for abscesses. Antibiotics** are (at a minimum) recommended if patient meets one of the following criteria.*  
- Substantial surrounding cellulitis  
- Abscess >2 cm in diameter; >1 cm in infants and young children  
- Inability to adequately drain the abscess  
- Signs or symptoms of systemic illness (e.g., fever ≥38° C)  
- Immunodeficiency  
- Multiple sites | Duration: 5 days  
- May extend therapy up to 7-10 days if lack of symptom resolution at 5 days.  
- Cultures and susceptibilities are recommended when I&D is performed. Blood cultures are also recommended for patients with fever, rapidly progressive cellulitis, and systemic illness.  
- Michigan Medicine *S. aureus* resistance rates are lowest for TMP-SMX (2%) and doxycycline (3%), compared to clindamycin (28% in 2018). Methicillin-susceptible *S. aureus* (MSSA) and methicillin-resistant *S. aureus* (MRSA) exhibit similar rates of clindamycin resistance.  
- Tailor antibiotic therapy to results of Gram stain, culture and sensitivities.  
**Although ~70% of abscesses may resolve with I&D alone, an additional 10% are more likely to resolve with the addition of antibiotics. Clinical context should be taken into account when deciding if antibiotics are appropriate.** |
| **Abscess:** Collection of pus within the dermis and deeper skin tissues |  
| **Furuncle:** Infection of the hair follicle with suppuration extending through the dermis into subcutaneous tissue |  
| **Carbuncle:** Confluence of furuncles with wider infiltration |  
| **Target Pathogen:** *Staphylococcus aureus* (including MRSA) |  
| **Staphylococcal Scalded Skin Syndrome (SSSS)** |  
| Results in loss of keratinocyte cell adhesion and leads to blistering of upper layer of the skin |  
| **Common pathogens:** *Staphylococcus aureus* (MSSA predominantly reported in the literature) |  
| **1st Line:**  
Cefazolin* 33 mg/kg/DOSE IV q8h (max: 2000 mg/DOSE)  
+ Clindamycin 13 mg/kg/DOSE IV q8h (max: 900 mg/DOSE)  
Alternative if need for MRSA coverage* or alternative for cephalosporin or severe PCN allergy:  
**Vancomycin IV (click for dosing)***  
+ Clindamycin 13 mg/kg/DOSE IV q8h (max: 900 mg/DOSE)  
Step-down (from IV to PO) Therapy  
**1st Line:**  
Cephalexin* 25 mg/kg/DOSE PO TID (max: 1000 mg/DOSE)  
Alternative if need for MRSA coverage, or for cephalosporin or moderate/severe PCN allergy:  
**TMP-SMX** 6 mg of TMP/kg/DOSE PO BID (max: 320 mg TMP/DOSE) | Duration: 10 days  
Consider discontinuing clindamycin when patient is clinically stable (e.g. vital signs within normal limits, no vasopressor requirements) for 24-48 hours and rash no longer progressing (usual duration of 3-5 days).  
- Staphylococcal Scalded Skin Syndrome (SSSS) is usually diagnosed in children <5 years of age.  
- Clindamycin is recommended as adjunct therapy in the setting of toxin production associated with SSSS. |
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| Necrotizing Fasciitis         | Early and aggressive surgical exploration and debridement is critical. Emergent surgical consultation and ID consult are strongly recommended. | Duration: Empiric antibiotics should be continued until the following criteria are met:  
  - Debridement no longer needed,  
  - Clinical improvement, and  
  - Minimum of 48-72 hours after completion of surgical debridement  
  Clindamycin is initiated for anti-toxin activity for *Streptococcal* and *Staphylococcal* infections, and can be stopped after 24-72 hours if infection has improved and patient is stable.  
  Tailor antibiotic therapy to results of deep tissue Gram stain, culture and sensitivities.  
  Linezolid has in-vitro data that demonstrates suppression of toxin production with *S. aureus* and group A streptococcus. Clinical success against toxic shock syndrome is reported in case reports. |
|                              | **1st Line:**                                                                 |                                                                                  |
|                               | *Piperacillin-tazobactam* 100 mg of piperacillin/kg/DOSE IV Q6H (max: 4000 mg piperacillin/DOSE) + *Vancomycin IV (click for dosing)* + *Clindamycin* 13 mg/kg/DOSE IV q8h (max: 900 mg/DOSE) |                                                                                  |
|                              | **Alternative for non-severe PCN* allergy**                                                                 |                                                                                  |
|                               | *Cefepime* 50 mg/kg/DOSE IV q8h (max: 2000 mg/DOSE) + *Vancomycin IV (click for dosing)* + *Clindamycin* 13 mg/kg/DOSE IV q8h (max: 900 mg/DOSE) |                                                                                  |
|                              | ADD *Metronidazole* 10 mg/kg/DOSE PO/IV (PO preferred) q8h (max: 500 mg/DOSE) if perineum or groin involved |                                                                                  |
|                              | **Alternative for cephalosporin or severe PCN* allergy**                                                                 |                                                                                  |
|                               | REPLACE cefepime with *Aztreonam* 30 mg/kg/DOSE IV q8h (max: 2000 mg/DOSE) |                                                                                  |
|                              | **Alternative for vancomycin allergy (not Red Man Syndrome)**                                                                 |                                                                                  |
|                               | *Piperacillin-tazobactam* 100 mg of piperacillin/kg/DOSE IV Q6H (max: 4000 mg piperacillin/DOSE) + *Linezolid* PO/IV (PO preferred):  
  ≤11 years: 10 mg/kg/DOSE TID (max: 600 mg/DOSE)  
  ≥12 years: 10 mg/kg/DOSE BID (max: 600 mg/DOSE) |                                                                                  |
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| Traumatic Wound Infections WITHOUT water exposure | Traumatic wounds without evidence of local infection or systemic signs of infection typically do not need antimicrobial therapy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Duration: 7 days  
- May extend to 10-14 days if lack of symptom resolution at 7 days  
Debridement of devitalized tissues and contaminating debris is critical to source control and successful healing.  
Empiric therapy should take into account site of wound and prior cultures and colonization.  
**Tailor antibiotic therapy** to results of deep tissue Gram stain, culture and sensitivities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Outpatient (PO) Therapy                     | **1st Line:** Amoxicillin-clavulanate* 25 mg amoxicillin/kg/DOSE PO BID (max: 875 mg amoxicillin/DOSE)  
If MRSA coverage needed ADD **TMP-SMX** 6 mg of TMP/kg/DOSE PO BID (max: 320 mg TMP/DOSE)  
**Alternative for mild PCN allergy** plus need for MRSA coverage, or for cephalosporin or moderate/severe PCN allergy:  
**TMP-SMX** 6 mg of TMP/kg/DOSE PO BID (max: 320 mg TMP/DOSE)  
+ Metronidazole 10 mg/kg/DOSE PO TID (max: 500 mg/DOSE)  
**Alternative if need for MRSA coverage** or for cephalosporin or severe PCN allergy:  
**Vancomycin IV (click for dosing)**  
+ Metronidazole 10 mg/kg/DOSE PO/IV (PO preferred) Q8H (max: 500 mg/DOSE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Inpatient (IV) Therapy                      | **1st Line:** Ampicillin-sulbactam* 50 mg of ampicillin/kg/DOSE IV Q6H (max: 2000 mg ampicillin/DOSE)  
**Alternative for non-severe PCN allergy:**  
Cefazolin 33 mg/kg/DOSE IV Q8H (max: 2000 mg/DOSE)  
+ Metronidazole 10 mg/kg/DOSE PO/IV (PO preferred) Q8H (max: 500 mg/DOSE)  
**Alternative if need for MRSA coverage** or for cephalosporin or severe PCN allergy:  
**Vancomycin IV (click for dosing)**  
+ Metronidazole 10 mg/kg/DOSE PO/IV (PO preferred) Q8H (max: 500 mg/DOSE)                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**Target pathogens:**  
*Staphylococcus aureus,* *Clostridia* spp., *Bacteroides* spp., *Prevotella* spp., *Porphyromonas* spp., and *Peptostreptococcus* spp.
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| Traumatic Wound Infections WITH water exposure | Outpatient (PO) Therapy for Patients:  
**Levofloxacin** PO:  
≤4 years: 10 mg/kg/DOSE PO BID (max: 375 mg/DOSE)  
≥5 years: 10 mg/kg/DOSE PO daily (max: 750 mg/DOSE)  
+ **Metronidazole** 10 mg/kg/DOSE PO TID (max: 500 mg/dose)  
If MRSA coverage needed:\ Δ **ADD TMP-SMX**\ 6 mg of TMP/kg/DOSE PO BID (max: 320 mg TMP/DOSE)  
Inpatient (IV) Therapy for Patients:  
**1st Line:**  
**Cefepime** 50 mg/kg/DOSE IV q8h (max: 2000 mg/DOSE)  
+ **Metronidazole** 10 mg/kg/DOSE PO/IV (PO preferred) q8h (max: 500 mg/DOSE)  
If MRSA coverage needed:\ Δ **ADD Vancomycin IV (click for dosing)**\  
**Alternative for cephalosporin or severe PCN or allergy:**  
**Levofloxacin** IV/PO (PO preferred):  
≤4 years: 10 mg/kg/DOSE PO BID (max: 375 mg/DOSE)  
≥5 years: 10 mg/kg/DOSE PO daily (max: 750 mg/DOSE)  
+ **Metronidazole** 10 mg/kg/DOSE PO/IV TID (PO preferred) (max: 500 mg/DOSE)  
If MRSA coverage needed:\ Δ **ADD Vancomycin IV (click for dosing)**\  
Duration: 10 days  
- May extend to 14 days if lack of symptom resolution at 10 days  
Debridement of devitalized tissues and contaminating debris is critical to source control and successful healing.  
Empiric therapy should take into account site of wound and prior cultures and colonization.  
*Vibrio vulnificus* wound infections require extensive debridement and mortality can be high. Consider combination therapy with ceftazidime and doxycycline.  
**Tailor antibiotic therapy** to results of deep tissue Gram stain, culture and sensitivities. |
| Target pathogens:  
*Staphylococcus aureus*, *Clostridia* spp., *Bacteroides* spp., *Prevotella* spp., *Porphyromonas* spp., and *Peptostreptococcus* spp.  
Consider *Aeromonas* and *Pseudomonas* spp., other gram negatives if significant water exposure |
Footnotes:
*Renal adjustment may be necessary. See Pediatric Antimicrobial Dosing Guidelines.

2TMP/SMX = trimethoprim/sulfamethoxazole

2Consider MRSA coverage if any of the following are present: severe sepsis or septic shock, immunocompromised status, personal or household contact with MRSA infection or colonization in the past 12 months

3CDC and Indian Health Service (IHS) study demonstrated short courses (7-10 days) of doxycycline can be used in children without causing tooth staining or weakening of tooth enamel. Todd SR et al. J Pediatr. 2015;166(5):1246-1251.

4Moderate allergy is defined by urticaria. Severe allergy is defined by angioedema or anaphylaxis, or severe non-IgE mediated adverse reactions (e.g. Stevens-Johnson syndrome, toxic epidermal necrolysis, or Drug Reaction with Eosinophilia and Systemic Symptoms). PCN = penicillin

5Mild allergy is defined as a reaction not meeting the criteria defined under moderate or severe allergy.


References:

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The recommendations in this guide are meant to serve as treatment guidelines for use at Michigan Medicine facilities. If you are an individual experiencing a medical emergency, call 911 immediately. These guidelines should not replace a provider’s professional medical advice based on clinical judgment, or be used in lieu of an Infectious Diseases consultation when necessary. As a result of ongoing research, practice guidelines may from time to time change. The authors of these guidelines have made all attempts to ensure the accuracy based on current information, however, due to ongoing research, users of these guidelines are strongly encouraged to confirm the information contained within them through an independent source.

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