MICHIGAN MEDICINE
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# TREATMENT OF SKIN AND SOFT TISSUE INFECTIONS IN ADULTS AMBULATORY GUIDELINES

| Clinical Setting | Empiric Therapy | Duration | Comments |
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| **Minor Skin Infections**<br>• Impetigo<br>• Secondarily infected skin lesions such as eczema, ulcers, or lacerations | Mupirocin 2% topical ointment BID | 5 days | |
| **Abscess, Furuncles, and Carbuncles**<br><br>**Abscesses** - collections of pus within the dermis and deeper skin tissues<br><br>**Furuncle** - infection of the hair follicle in which purulent material extends through the dermis into the subcutaneous tissue, where a small abscess forms<br><br>**Carbuncle** - coalescence of several furuncles into a single inflammatory mass | *INCISION AND DRAINAGE (I&D) IS RECOMMENDED AS PRIMARY MANAGEMENT. ANTIBIOTICS* ARE (AT A MINIMUM) INDICATED IF PATIENT MEETS ONE OF THE FOLLOWING CRITERIA:*<br>• Severe, extensive, rapidly progressive cellulitis<br>• Abscess >2 cm<br>• Signs or symptoms of systemic illness<br>• Elderly, immunosuppressed, active neoplasm or diabetes mellitus<br>• Circumstances where abscess is difficult to drain<br>• Associated septic phlebitis<br>• Inadequate response to I&D alone<br><br><u>Preferred:</u><br>**TMP-SMX****: 1-2 DS tabs PO BID<br><u>Alternative:</u><br>**Doxycycline** 200 mg PO x1 dose, then 100 mg PO BID | 5 days<br><br>Therapy may need to be extended based on severity of infection and response to treatment | • Close clinical follow-up is recommended, especially in patients not receiving antibiotic therapy<br><br>• Cultures and susceptibility are recommended when I&D is performed<br><br>• *Staphylococcus aureus* resistance rates are lowest for TMP-SMX (4%) and doxycycline (7%), compared to clindamycin (38%).<br><br>• Empiric therapy should target MRSA until susceptibilities are known, and then therapy may be tailored. For patients with culture positive for MSSA, preferred oral therapy is cephalexin, or TMP-SMX or doxycycline if patient has severe beta-lactam allergy<br><br>• Pregnancy: doxycycline contraindicated throughout pregnancy; TMP-SMX should be avoided in the first 8 weeks.<br><br>* 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.<br><br>** Adjust dose based on renal function. Higher TMP-SMX doses of 2 DS tabs BID are recommended for extensive and moderate disease and for patients >70 kg. |

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| **Non-Purulent Cellulitis**<br><br>(Absence of purulent drainage or exudate, ulceration, and no associated abscess)<br>**Empiric therapy for β-hemolytic *streptococcus* is recommended.**<br>**If there is a concern for necrotizing fasciitis, admit patient to hospital** | Preferred:<br>**Cephalexin**** 1 g PO TID<br><br>Alternative for low/medium-risk allergy[1] to cephalexin[2]:<br>**Amoxicillin-clavulanate**** 875 mg PO BID<br><br>Alternative for high-risk allergy[3]/contraindication[4] to beta-lactams (regardless of risk for MRSA):<br>**Clindamycin** 450 mg PO TID<br><br>*Patients at risk for MRSA:*<br>• Previous cellulitis worse on >48 hours of β-lactam therapy<br>• Known MRSA colonization<br>• Prior history of MRSA infection<br>• Recent intravenous drug use<br><br>If risk factors for MRSA:<br>*Add* **TMP-SMX**** 1-2 DS BID to cephalexin or amoxicillin-clavulanate | 5 days<br><br>Therapy may need to be extended based on severity of infection and response to treatment | • Close clinical follow-up is recommended<br><br>** Adjust dose based on renal function. Higher TMP-SMX doses of 2 DS tabs BID are recommended for extensive and moderate disease and for patients >70 kg. |
| **Purulent Cellulitis**<br><br>(Purulent drainage or exudate without a drainable abscess)<br>**Empiric therapy for CA-MRSA is recommended**<br>**Therapy for β-hemolytic streptococci is likely to be unnecessary** | Preferred:<br>**TMP-SMX**** 1-2 DS tabs PO BID<br><br>Alternative:<br>**Doxycycline** 200 mg x1, then 100 mg PO BID | 5 days<br><br>Therapy may need to be extended based on severity of infection and response to treatment | • Consider inpatient admission for patients with fever, rapidly progressive cellulitis, or signs of systemic illness<br><br>• Consider culture and susceptibility of purulence<br><br>• Staphylococcus aureus resistance rates are lowest for TMP-SMX (4%) and doxycycline (7%), compared to clindamycin (38%).<br><br>• Empiric therapy should target MRSA until susceptibilities are known, and then therapy should be tailored. For patients with culture positive for MSSA, preferred oral therapy is cephalexin, or TMP-SMX or doxycycline if patient has severe beta-lactam allergy<br><br>• Pregnancy: doxycycline contraindicated throughout pregnancy; TMP-SMX should be avoided in the first 8 weeks.<br><br>** Adjust dose based on renal function. Higher TMP-SMX doses of 2 DS tabs BID are recommended for extensive and moderate disease and for patients >70 kg. |

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Footnotes:

[1] Low-risk allergies include: pruritus without rash, remote (>10 years) unknown reaction, patient denies allergy but is on record, mild rash with no other symptoms (mild rash: non-urticarial rash that resolves without medical intervention). Medium-risk allergies include: urticaria/hives with no other symptoms, severe rash with no other symptoms (severe rash: requires medical intervention [corticosteroids, anti-histamines] and/or ER visit or hospitalization). See β-lactam allergy evaluation and empiric guidance for further information.

[2] This also includes allergy to cephalosporins with a similar side-chain to cephalexin, which includes cefaclor, cefadroxil, or cefprozil. See β-lactam allergy evaluation and empiric guidance for further information.

[3] High-risk allergies include: respiratory symptoms (chest tightness, bronchospasm, wheezing, cough), angioedema (swelling, throat tightness), cardiovascular symptoms (hypotension, dizzy/lightheadedness, syncope/passing out, arrhythmia), anaphylaxis. If a patient has a high-risk allergy to penicillins, cephalosporins, or carbapenems, the only beta-lactam antibiotic that can be safely used without Allergy consult is aztreonam (**if the allergy is to ceftazidime or aztreonam, aztreonam should be avoided as well**). See β-lactam allergy evaluation and empiric guidance for further information.

[4] Previous reactions that are contraindications to further beta-lactam use (**except aztreonam, which can be used unless the reaction was to ceftazidime or aztreonam**) unless approved by Allergy: organ damage (kidney, liver), drug-induced immune-mediated anemia/thrombocytopenia/leukopenia, rash with mucosal lesions (Stevens Johnson Syndrome/Toxic Epidermal Necrosis), rash with pustules (acute generalized exanthematous pustulosis), rash with eosinophils and organ injury (DRESS – drug rash eosinophilia and systemic symptoms), rash with joint pain, fever, and myalgia (Serum Sickness). See β-lactam allergy evaluation and empiric guidance for further information.

References:


1. Stevens DL, Bisno AL, ChamberHF, et al. Practice Guidelines for the Diagnosis and Management of Skin and Soft Tissue Infections: 2014 Update by the Infectious Diseases Society of America. Clinical Infectious Diseases 2014;59(2):e10-52.
2. Lipsky BA, Berendt RA, Cornia PB, et al. 2012 Infectious Diseases Society of America Clinical Practice Guideline for the Diagnosis and Treatment of Diabetic Foot Infections. Clinical Infectious Diseases 2012;54(12):132–173.
3. Liu C, Bayer A, Cosgrove SE, et al. Clinical Practice Guidelines by the Infectious Diseases Society of America for the Treatment of Methicillin-Resistant *Staphylococcus Aureus* Infections in Adults and Children. Clin Infect Dis 2011:52;1-38.
4. Daum RS, et al. A Placebo-Controlled Trial of Antibiotics for Smaller Skin Abscesses. NEJM 2017: 376:2545-2555.



Authors:
Lindsay Petty, MD
Jerod Nagel, PharmD


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