MICHIGAN MEDICINE
UNIVERSITY OF MICHIGAN

TREATMENT OF SKIN AND SOFT TISSUE INFECTIONS IN ADULTS
AMBULATORY GUIDELINES

Clinical Setting	Empiric Therapy	Duration	Comments
Minor Skin Infections • Impetigo • Secondarily infected skin lesions such as eczema, ulcers, or lacerations	Mupirocin 2% topical ointment BID	5 days	
Abscess, Furuncles, and Carbuncles **Abscesses** - collections of pus within the dermis and deeper skin tissues **Furuncle** - infection of the hair follicle in which purulent material extends through the dermis into the subcutaneous tissue, where a small abscess forms **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:* • Severe, extensive, rapidly progressive cellulitis • Abscess > 2 cm • Signs or symptoms of systemic illness • Elderly, immunosuppressed, active neoplasm or diabetes mellitus • Circumstances where abscess is difficult to drain • Associated septic phlebitis • Inadequate response to I&D alone Preferred: **TMP-SMX**[α] 1-2 DS tabs PO BID Alternative: **Doxycycline** 200 mg PO x1 dose, then 100 mg PO BID Alternative for patients with extensive or severe disease, OR I&D and oral antibiotics were ineffective, OR patients receiving potassium sparing diuretics: **Linezolid**[2] 600 mg PO BID	5 days 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 • Cultures and susceptibility are recommended when I&D is performed • *Staphylococcus aureus* resistance rates are lowest for TMP-SMX (4%) and doxycycline (7%), compared to clindamycin (29%). • 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 • Pregnancy: ○ Doxycycline contraindicated throughout pregnancy ○ TMP-SMX should be avoided in the first 8 weeks. * 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 considered when deciding if antibiotics are appropriate. [α] Adjust dose based on renal function. Higher TMP-SMX doses of 2 DS tabs BID are recommended for patients > 70 kg.

Clinical Setting	Empiric Therapy	Duration	Comments
Non-Purulent Cellulitis (Absence of purulent drainage or exudate, ulceration, and no associated abscess) **Empiric therapy for β-hemolytic *streptococcus* is recommended.** **If there is a concern for necrotizing fasciitis, admit patient to hospital**	Preferred: **Cephalexin**[α] 1 g PO TID Extensive or severe disease, or if failed initial treatment with cephalexin or TMP-SMX: **Linezolid**[2] 600 mg PO BID Inability to take cephalexin[1]: **TMP-SMX**[α] 1-2 DS tabs PO BID OR **Linezolid**[2] 600 mg PO BID *Patients at risk for MRSA:* • Previous cellulitis worse on > 48 hours of β-lactam therapy • Known MRSA colonization • Prior history of MRSA infection • Recent intravenous drug use If risk factors for MRSA: **TMP-SMX**[α] 1-2 DS BID If allergy to TMP-SMX: **Linezolid**[2] 600 mg PO BID	5 days Therapy may need to be extended based on severity of infection and response to treatment	• Close clinical follow-up is recommended [α] Adjust dose based on renal function. Higher TMP-SMX doses of 2 DS tabs BID are recommended for patients > 70 kg.

Clinical Setting	Empiric Therapy	Duration	Comments
Purulent Cellulitis (Purulent drainage or exudate without a drainable abscess) **Empiric therapy for CA-MRSA is recommended** **Therapy for β-hemolytic streptococci is likely to be unnecessary**	Preferred: **TMP-SMX**[α] 1-2 DS tabs PO BID Alternative for extensive or severe disease, or if failed initial treatment with TMP-SMX or doxycycline: **Linezolid**[2] 600 mg PO BID Alternative if mild infection AND TMP-SMX allergy: **Doxycycline** 200 mg x1, then 100 mg PO BID	5 days 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 • Consider culture and susceptibility of purulence • Staphylococcus aureus resistance rates are lowest for TMP-SMX (4%) and doxycycline (7%), compared to clindamycin (29%). • 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 • Pregnancy: ○ doxycycline contraindicated throughout pregnancy ○ TMP-SMX should be avoided in the first 8 weeks [α] Adjust dose based on renal function. Higher TMP-SMX doses of 2 DS tabs BID are recommended for patients > 70 kg.

Clinical Setting	Empiric Therapy	Duration	Comments
Diabetic Foot Infection ***No concern for underlying osteomyelitis*** Risk factors for Gram negative infection: • Previous tissue culture with GN bacteria • Relapsed or recurrent foot infection • Freshwater exposure (lakes, rivers) • **Patient received broad-spectrum antibiotic therapy in the previous 90 days** • Recent hospitalization with IV antibiotics (previous 90 days)	Mild infection: *Preferred:* **Amoxicillin-clavulanate**[α] 875 mg PO BID *Alternative (history of MRSA):* **TMP-SMX**[α] 1-2 DS tabs PO BID Moderate infection**, or failed treatment of mild infection: *Preferred if current tissue cx with Gram positive bacteria:* **Linezolid**[2] 600 mg PO BID OR **Dalbavancin**[α,β] 1500 mg IV x1 dose *Preferred if current tissue cx with Gram negative bacteria:* **Agent selection should be driven by recent susceptibilities** ---------- If no current tissue cx: *Obtain cx and start:* **Linezolid**[2] 600 mg PO BID OR **Dalbavancin**[α,β] 1500 mg IV x1 dose *If risk factors for Gram negative, also ADD:* **Levofloxacin**[α] 750 mg PO daily OR **Ciprofloxacin**[α] 750 mg PO daily	Mild: 7 days Moderate, or failed: 10-14 days based on timing of clinical follow-up Therapy may need to be extended based on severity of infection and response to treatment	• Diabetic Foot Infection Workflow • Consider inpatient admission for patients with fever, rapidly progressive cellulitis, or signs of systemic illness • Recommend obtaining post-debridement deep tissue culture if possible • Treatment should be directed by susceptibilities when available • In most cases, use of linezolid does not warrant discontinuation of concomitant serotonergic agents, and the risks of discontinuation may outweigh potential benefits. See Serotonin Syndrome and Linezolid for guidance on which medications should be held. **Moderate infection: local infection with erythema > 2 cm or involving deeper structures and no systemic inflammatory response [α] Adjust dose based on renal function. Higher TMP-SMX doses of 2 DS tabs BID are recommended for patients > 70 kg. [β] Refer to Diabetic Foot Infection Workflow for instructions for placement of therapy plan

Footnotes:

[1] See β-lactam allergy evaluation and empiric guidance for further information.

[2] See Serotonin Syndrome and Linezolid: Education and Recommendations

References:

1. Stevens DL, Bisno AL, Chamber HF, 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.
5. Miller LG, Daum RS, Creech CB, et al. Clindamycin versus trimethoprim-sulfamethoxazole for uncomplicated skin infections. N Engl J Med 2015;372(12):1093-103.

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08/2023: Added Diabetic Foot Infection section