Skin and Soft Tissue Infections (SSTIs)

Acute infections of the skin and soft tissue (SSTI) are common and can lead to significant morbidity. Differentiating SSTI from the many other skin conditions that can present with similar symptoms (venous stasis dermatitis, superficial or deep phlebitis, eczema and other causes of dermatitis, etc) is important – up to 30% of diagnoses of cellulitis may be erroneous (in particular "bilateral cellulitis"). These guidelines address acute SSTI *other than* diabetic foot and surgical site infections.

DEFINITIONS

Non-purulent cellulitis: intact skin with no focus of purulence
Purulent cellulitis: presence of purulence, exudate, fluctuance

MOST COMMON BACTERIAL ORGANISMS

Cellulitis (uncomplicated)	*S. pyogenes* (also streptococci groups B, C, F or G) *S. aureus*: associated with open wound or previous penetrating trauma
Cellulitis with cutaneous abscess	*S. aureus*; can also be polymicrobial
Necrotizing fasciitis	Type 1: polymicrobial (streptococci, *Clostridium sp*, *Bacteroides sp*, staphylococci, enterococci) Type 2: monomicrobial, most common group A streptococci
Cellulitis associated with common animal/human bites	Polymicrobial (*Viridans* streptococci, *Fusobacterium*, *Peptostreptococcus sp*) Cat/dog: *Pasteurella multocida;* Human: *Eikenella corrodens*
Cellulitis associated with water immersion injuries	Freshwater injury: *Aeromonas hydrophila;* Saltwater: *Vibrio vulnificus*
Orbital cellulitis	*S. pneumoniae*, *H. influenzae*, *S. aureus*, oral anaerobes if odontogenic source

DIAGNOSTIC CONSIDERATIONS

- Cultures only recommended in cases of cellulitis with purulent discharge
- Obtain blood cultures in patients with systemic illness and/or evidence of deeper infection
- Findings that suggest necrotizing fasciitis require prompt surgical consultation

DATA ON RESISTANCE

- In Quebec, oxacillin (methicillin) resistance in 10% of *S. aureus* isolates from pus. At the MUHC, 3% of all *S. aureus* isolates are oxacillin-resistant.
- In Quebec, resistance to clindamycin noted in 25% of all MSSA isolates, in 17% of CA-MRSA isolates and in 13% of Group A Strep isolates.
- No documented resistance to penicillin for group A streptococcus.

EMPIRIC PHARMACOLOGIC TREATMENT[1]

	Clinically well, hemodynamically stable	Systemically unwell or hemodynamic instability	Duration
Cellulitis (uncomplicated)	**Cefadroxil** 500-1000 mg PO BID *Use the higher doses for cephalosporins and clindamycin in patients with BMI ≥ 30* *If severe β-lactam allergy:* Clindamycin 300-450 mg PO QID	**Cefazolin** 2 g IV q8h Step down to PO after 48-72 hours if improvement *Alternative*: Ceftriaxone 2 g IV q24h if outpatient antibiotic therapy candidate *If severe β-lactam allergy:* Vancomycin[4] 15 mg/kg IV q12h	5 days (can extend to 7-10 days if improvement but no resolution)
Cellulitis with subcutaneous abscess (possible CA-MRSA[2])	**Incision and drainage +** **TMP/SMX**[3] DS 1 tab PO BID **or** Doxycycline 100 mg PO BID	**Incision and drainage +** **Vancomycin**[4] 15 mg/kg IV q12h	7 days (can extend to 10 days if improvement but no resolution)
Cellulitis associated with common animal/human bites[5]	**Amoxicillin/clavulanate** 875/125 mg PO BID *If severe β-lactam allergy:* Moxifloxacin 400 mg PO daily OR Doxycycline 100 mg PO BID	*Exclude tenosinovitis* **Piperacillin-tazobactam** 4.5 g IV q8h extended infusion *If severe β-lactam allergy:* Moxifloxacin 400 mg PO/IV daily	7 days (can extend to 10 days if improvement but no resolution)
Cellulitis associated with water immersion injuries	**Ciprofloxacin** 500 mg PO BID	**Ceftazidime** 2 g IV q8h + **Doxycycline** 100 mg PO BID	Based on clinical response
Orbital cellulitis	**CONSULT OPTHALMOLOGY (urgent debridement) and ID and start**		7 – 14 days Depending on evolution
Periorbital	**Ceftriaxone** 2 g IV q24h *If severe allergy to all β-lactams:* Moxifloxacin 400 mg PO/IV daily If risk factors for MRSA[2], add Vancomycin[4] 15 mg/kg IV q12h		
Orbital	**Ceftriaxone** 2 g IV **q12h** + **Metronidazole** 500 mg IV q8h *If severe allergy to all β-lactams:* Moxifloxacin 400 mg PO/IV daily If risk factors for MRSA[2], add Vancomycin[4] 15 mg/kg IV q12h		
Necrotizing fasciitis	**CONSULT GENERAL SURGERY (urgent debridement) and ID and start** **Piperacillin-tazobactam** 4.5 g IV q8h initial bolus and then extended infusion, AND **Clindamycin** 900 mg IV q8h AND **Vancomycin**[4] loading dose 25 mg/kg then 15 mg/kg IV q12h		Based on clinical response

[1]Dosing of antibiotics assume normal renal function; adjustments are required if presence of renal dysfunction

[2]Risk factors for CA-MRSA: Previous infection with CA-MRSA, recent trip to high-prevalence area, homelessness, injection drug use, First Nations community, crowding
[3]Use caution when combining TMP-SMX with an ACE inhibitor, ARB or potassium sparing diuretics
[4]See Vancomycin Therapeutic Drug Monitoring guideline; consult pharmacy for dosing adjustments
[5]Early antibiotic prophylaxis (for 3-5 days) for cat and dog bites if:

- Lacerations undergoing primary closure and wounds requiring surgical repair
- Wounds on the hand(s), face, or genital area
- Wounds in close proximity to a bone or joint (including prosthetic joints)
- Wounds in areas of underlying venous and/or lymphatic compromise (including vascular grafts)
- Wounds in immunocompromised hosts
- Deep puncture wounds or laceration (especially due to cat bites)
- Wounds with associated crush injury

NON-PHARMACOLOGIC SUPPORTIVE MANAGEMENT

- **Elevation of affected limb to facilitate drainage**
- **Venous compression in cases of lymphedema/venous stasis**
- Pain management with acetaminophen or ibuprofen
- If traumatic wound or animal/human bite:
    - Verify tetanus vaccination status
    - For animal bite, evaluate need for rabies post-exposure prophylaxis
    - For human bite, evaluate need for HBV/HCV/HIV post-exposure prophylaxis

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Approved by ASP committee on August 26, 2020; approved by MUHC P&T committee on October 21, 2020