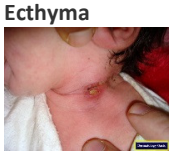
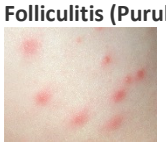
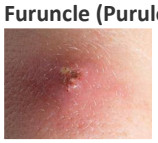
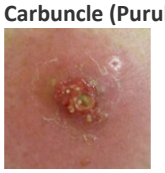
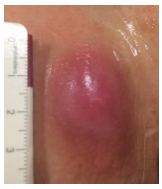
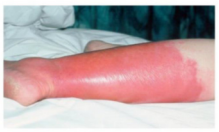
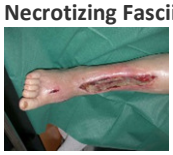
DAYTON CHILDREN'S HOSPITAL

CLINICAL PRACTICE GUIDELINES

DISCLAIMER: This Clinical Practice Guideline (CPG) generally describes a recommended course of treatment for patients with the identified health needs. This CPG is not presented and should not be used as a substitute for the advice of a licensed independent practitioner, as individual patients may require different treatments from those specified, and guidelines cannot address the unique needs of each patient. Dayton Children's shall not be liable for direct, indirect, special, incidental or consequential damages related to the use of this CPG.

MANAGEMENT OF SKIN AND SOFT TISSUE INFECTIONS

SKIN INFECTIONS	DEFINITIONS	ORGANISMS	TREATMENT
Impetigo bullous, non-bullous 	Erythematous papules that rapidly evolve into vesicles/pustules that rupture forming a honey colored crust; or an erythematous erosion surrounded by a collar of the roof's remnant	*Staphylococcus aureus* Beta-hemolytic *Streptococcus*	**Topical** Mupirocin — apply BID for 5 days **Oral** If multiple lesions or in outbreaks affecting several people to decrease transmission Outbreaks of PSGN PO Cephalexin, 7 day course PCN Allergy — Clindamycin
Ecthyma 	Superficial dermal infection, circular, erythematous ulcers with adherent crust, often with surrounding erythematous edema		
Folliculitis (Purulent) 	Superficial infection of the hair follicle, limited to the epidermis	*Staphylococcus aureus* (often MRSA)	I&D is the recommended treatment Warm compresses suffice for small abscesses The addition of systemic antibiotics does not improve cure rates Consider antibiotics as adjunct in patients with significant systemic symptoms (SIRS), concern for inadequate drainage following I&D, multiple sites, immunodeficiency, or young age PO or IV Clindamycin 5 days If hospitalized, IV Clindamycin until clinical response Tailor antibiotics according to culture results
Furuncle (Purulent) 	Deeper infection of the hair follicle Usually caused by *S. aureus* Suppuration extends through the dermis into the subcutaneous tissues, small abscess forms		
Carbuncle (Purulent) 	Infection of several adjacent hair follicles Pus drains from multiple follicle sites Most common on back, neck		
Cutaneous Abscess (Purulent)	Collection of pus in the dermis and deeper tissues, often surmounted with a pustule encircled by rim of		

	erythematous swelling, (not to be confused with cellulitis)		
Erysipelas (Non-purulent) 	Infection limited to the epidermis including the superficial lymphatics, tender, intensely erythematous with a sharply demarcated border	Streptococci (Group A most common, other groups include B, C, F, or G) Infrequently caused by S. *aureus* except in cases of penetrating wounds	Patients without significant systemic symptoms can be treated with oral therapy PO Cephalexin 5 days If admitted, IV cefazolin IV clindamycin if cephalosporin allergy or failed cephalosporin
Cellulitis (Non-purulent) 	Infection involving the deep dermis and subcutaneous fat		
Necrotizing Fasciitis 	Aggressive subcutaneous infection that tracks along the superficial fascia, often extending from the skin lesion producing "wooden-hard induration" of the subcutaneous tissue	*S. pyogenes* Other pathogens include: *S. aureus* *V. vulnificus* *A. hydrophila* anaerobic streptococci	Immediate surgical consultation for debriding Vancomycin + Piperacillin-Tazobactam
Adapted from IDSA Practice Guidelines for the Diagnosis and Management of Skin and Soft Tissue Infections 2014 Refer to Red Book or consult ID for special circumstances, such as animal bites, burns, wounds with water exposure.			

ANTIBIOTIC TREATMENT FOR ADMITTED PATIENTS

	First Line Therapy	Failed After 48 Hour Therapy	Duration of Tx/Comments
Cellulitis (Non-purulent) (See picture above)	**Cefazolin IV** 35 mg/kg/dose q 8 hrs Max 2 g/dose **Cephalosporin Allergy** **Clindamycin IV** 10 mg/kg/dose q 8 hrs Max 600 mg/dose	Reconsider and broaden differential diagnosis Consider possibility of abscess (underlying purulence)	**Pathogen:** *S. pyogenes* **Duration:** 5 days from clinical improvement PMD follow up before completion of antibiotics **No improvement 48 hours** Consider empiric antibiotic change **Rapidly progressive or ill-appearing** Consider ID consult
Purulent Cellulitis, Suspected Abscess or Definite Abscess (See pictures above)	**Clindamycin IV** 10 mg/kg/dose q 8 hrs Max 600 mg/dose Review susceptibility on previous culture results if available to tailor antibiotics	Consider need for US, I&D, or repeat I&D	**Pathogen:** *S. aureus* **Duration:** 5 days from clinical improvement PMD follow up before completion of antibiotics **No improvement 48 hours** Consider empiric antibiotic change **Rapidly progressive or ill-appearing** Consider ID consult Consider change to vancomycin

CONSIDERATION FOR SUBSPECIALTY AND/OR ID CONSULTATION

Possible cellulitis plus additional diagnosis, consider: consequences of delay in consultation with subspecialist, underlying co-morbidities (diabetes), need for surgical intervention, appropriate imaging, empiric coverage for potential organisms

General Surgery	Breast Perianal Perineal – Fournier's Pilonidal Large, complex (Example: Fournier's necrotizing fasciitis) Umbilicus – omphalitis
ENT	Neck – possible Lemierre septic thrombophlebitis
Ophtho/ENT	Orbital Periorbital Nasal septal abscess Sinusitis
Orthopedics	Septic arthritis Tenosynovitis Osteomyelitis
Dental/OMFS	Facial cellulitis due to dental infection

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DAILY RE-EVALUATION

Vital Signs, Fever Curve
Clinical Exam
Pain
PO Intake
Culture Results
Routine laboratory studies are not recommended in healthy children with uncomplicated cellulitis or abscess. For patients with significant systemic symptoms (SIRS), laboratory studies may be helpful in guiding care.
Wound Cultures
Send on all patients who undergo an I&D procedure.

CLINICAL IMPROVEMENT

Decreased: induration, erythema, size, pain, receding from outline
Improving fever curve
Tolerating PO intake

Review Antibiotics/ Culture Sensitivities
Tailor if culture sensitivities are available
Not necessary to wait for sensitivities if adequate clinical improvement
Always use narrowest spectrum available
Conversion to PO antibiotics prior to discharge is not necessary

NO CLINICAL IMPROVEMENT

Increased or no change: induration, erythema, size, pain after 48 hours
Continued fever
New fluctuance
Review Antibiotics/Culture Sensitivities
- Tailor if culture sensitivities are available

Concern for New Fluctuance/Evolving Abscess
- Obtain ultrasound
- Consult General Surgery if drainable collection
- In anticipation of procedure, place NPO orders and a sedation consult

No Improvement after 48 Hours
- Consider empiric antibiotic change
- Consult ID as needed

Rapid Progression, Toxicity
- ID Consult

DISCHARGE CRITERIA

Clinical improvement on empiric antibiotics or known sensitivities
Improving fever curve
Tolerating PO
Pain control
Antibiotic course for 5 days after clinical improvement noted
PMD follow-up assured in 72 hours

REFERENCES

1. Stevens, D et al. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the infectious diseases society of America. CID 2014:59(2); e10-52.
2. Pallin, D. et al. Clinical Trial: Comparative effectiveness of cephalexin plus trimethoprim-sulfamethoxazole versus cephalexin alone for treatment of uncomplicated cellulitis: a randomized controlled trial. CID 2013 56(12);1754-1762
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4. Chen, A. et a l . Randomized controlled trial of cephalexin versus clindamycin for uncomplicated pediatric skin infections. Pediatrics 2011:127(3) e573-580.
5. Malone, J. et al. Blood cultures in the evaluation of uncomplicated skin and soft tissue infections. Pediatrics 2013;132:454-459.

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