

# Abscess: Incision and Drainage

---

Jessica M. Craig, PA-C  
Celia Flores, PA-C  
Pediatric General Surgery  
Texas Children's Hospital



**Texas Children's**<sup>®</sup>

# Objectives

- Recognize clinical manifestations and differential diagnosis of cellulitis vs. abscess
- Comprehend general management of abscess including antimicrobial therapy and operative indications
- Discuss procedural approach to I&D of abscess
- Outline importance of after care and patient education following abscess I&D

# Skin and Soft Tissue Infection (SSTI)

- Collections of pus/debris within the dermis and deeper skin tissues
- Prior abrasion, bug bites, diaper rash, epidermal barrier breakdown
- Inflammatory response
  - Most common manifestation is abscess
- Third-highest, non-cardiac, surgical cost driver at TCH in 2011 behind ECMO and appendicitis
- 2 months- 3 years old



# Diagnosis

- **CLINICAL!!!!**
- Physical examination: erythema, induration/ edema, fluctuance
- Rarely, US: assess for fluid collection
  - Only when diagnosis is equivocal
- Do not routinely obtain blood cultures in children with SSTI



# Clinical Manifestations

- Cellulitis
  - Skin erythema, edema, warmth
- Abscess:
  - Painful, fluctuant, erythematous nodule +/- surrounding cellulitis
  - Fever
  - Active drainage
- Mark wound borders

# Differential Diagnosis

- Contact dermatitis
- Thermal injuries
- Insect bite, snake bites
- Folliculitis
- Hidradenitis suppurativa
- **Necrotizing fasciitis: erythematous, swollen, warm and exquisitely tender; pain out of proportion**

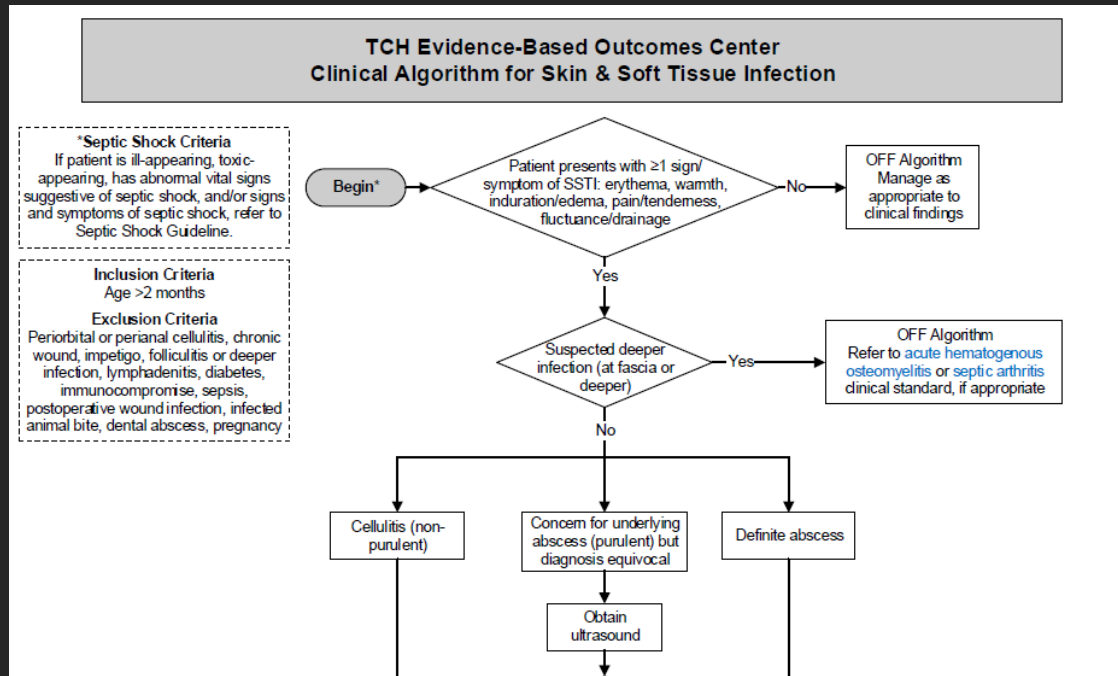
# Microbiology

- Cellulitis:
  - Beta-hemolytic streptococci: group A *streptococcus* or *S. pyogenes*
- Skin abscess:
  - *S. aureus* (MSSA or MRSA): up to 75% of cases
    - *Among S aureus causing SSTI at TCH, approx 50% are MRSA causing SSTI, approx 17% are clinda- resistant*

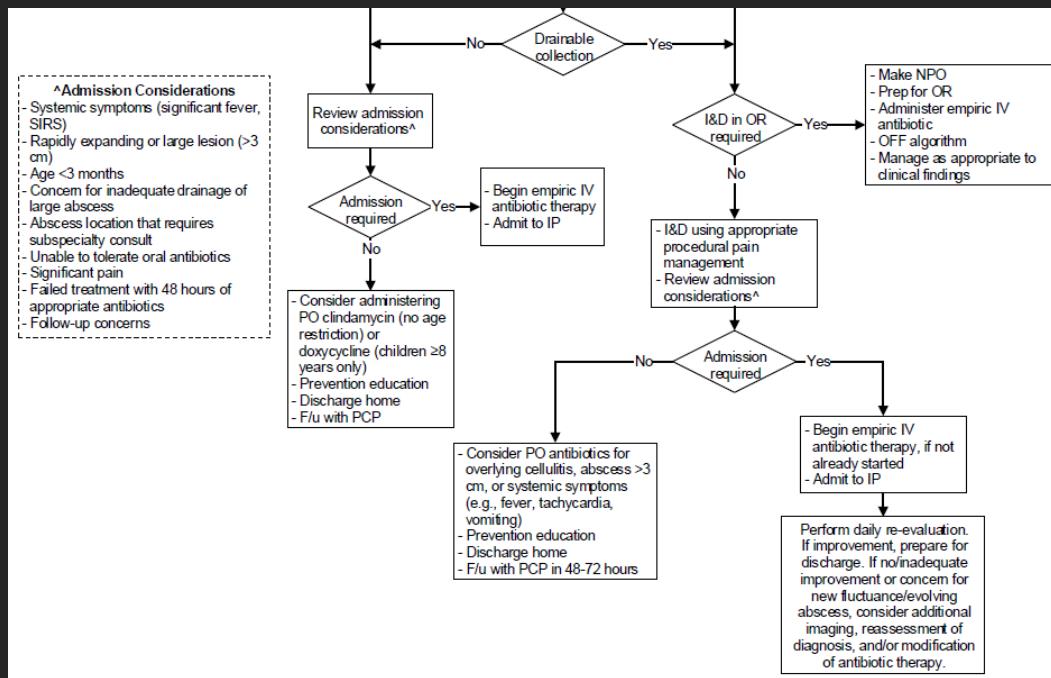
	Antibiotic Table	
	Age restriction	Dose and frequency
<b>Trimethoprim (TMP) and Sulfamethoxazole (SMX)</b> Simple SSTI	Children < 2 months	Oral: 8-12 mg TMP/kg/DAY divided every 12h <b>MAX:</b> 160mg TMP/dose
<b>Doxycycline</b> Simple SSTI if suspect CA-MRSA	Children < 8 years	Oral: 2-4mg/kg/DAY divided every 12-24h; <b>MAX:</b> 100 mg/day
<b>Clindamycin</b>	None	Oral: 5-10mg/kg/dose every 8h IV: 10-13 mg/kg/dose every 8h
<b>Cephalexin</b>	None	IV: 100-150 mg/kg/DAY divided every 6h
<b>Vancomycin</b> (for suspected/ confirmed MRSA requiring IV therapy)	None	IV: 15 mg/kg/dose every 8h; <b>MAX:</b> 1 g/dose



# Clinical Algorithm



# Clinical Algorithm



# Drainable Collection?

- No: Admission vs. Discharge
  - Admission required? → Begin empiric IV abx therapy
  - Safe for discharge? → PO clindamycin, prevention education, f/up with PCP
- Yes: OR vs Mobile Sedation
  - Empiric IV abx therapy

# Incision and Drainage

- Operating Room
  - Incision over affected area
  - Vessel loop
  - Packing open wound with kerlix/ iodoform gauze
- Mobile Sedation

# Sedation and Analgesia

- Local anesthesia (Bedside)
  - 0.25% Marcaine
  - Local infiltration: Children:  $\leq 2.5$  mg/kg of 0.25%; maximum: 2.5 mg/kg/dose not to exceed 175 mg/dose (plain); 225 mg/dose (with epinephrine 1:200,000); up to a maximum of 400 mg/DAY
  - One puncture inserted into dome of abscess with syringe parallel to skin and rotate to distribute circumferentially
- Procedural sedation (OR): young children, pilonidal disease, multiple/large abscesses

# Equipment/ Supplies

- Sterile gloves, surgical drape, multiple 4x4 gauze
- Eye protection: surgical mask with visor
- Povidone- iodine solution
- Local anesthetic: 1 or 2% lido
- Syringe and needle (25,27, or 30 gauge)
- Culture swab
- Number 11 or 15 blade
- Curved hemostats
- Irrigation: isotonic saline solution
- Packing material: iodoform
- Vessel loop
- Dressing of choice

# Procedure

1. Appropriately prep and drape patient using sterile procedure
2. Identify area of maximal fluctuance
3. Using an 11 or 15 blade scalpel make incision over point of max fluctuance (Langers lines)
4. Culture purulent fluid
5. Probe with curved hemostat to break up loculations
6. Vessel loop placement
7. Closure: secondary intention
8. Antibiotic therapy if indicated
9. Tetanus ppx if indicated



# Vessel Loop

- Placed intraoperatively, allows for continued passive drainage postoperatively





# Complications

- Recurrence
- Bacteremia
- Sepsis

# Wound Care and Discharge Instructions

- Sitz baths in warm, soapy water TID, warm compresses
- Continue abx therapy, transition to PO
- F/up in 7-10 days for wound check and f/up cultures
  
- Vessel loop:
  - warm sitz baths TID, especially after BM to prevent contamination
  - Keep area clean and dry
  - F/up in 1 week in drain removal clinic- removed at bedside
- Return/ ER precautions:
  - Fever/chills, re-accumulation of pus, increased pain or redness, swelling, **streaking (!!!)**

# References

- [Raff AB, Kroshinsky D. Cellulitis: A Review. JAMA 2016; 316:325.](#)
- [Adams, C. M., Neuman, M. I., & Levy, J. A. \(2016\). Point-of-care ultrasonography for the diagnosis of pediatric soft tissue infection. \*Journal of Pediatrics\*, 169, 122-127.e1.](#)
- [Stevens DL, Bisno AL, Chambers HF, et al. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the Infectious](#)
- [Duong, M., Markwell, S., Peter, J., & Barenkamp, S. \(2009\). Randomized, controlled trial of antibiotics in the management of community-acquired skin abscesses in the pediatric patient. \*Annals of Emergency Medicine\*, 55\(5\), 401-407.](#)
- [Elliott, D. J., Zautis, T. E., Troxel, A. B., Loh, A., & Keren, R. \(2009\). Empiric antimicrobial therapy for pediatric skin and soft-tissue infections in the era of methicillin-resistant \*Staphylococcus aureus\*. \*Pediatrics\*, 123\(6\), e959-966.](#)
- [Lane, R. D., Sandweiss, D. R., & Corneli, H. M. \(2014\). Treatment of skin and soft tissue infections in a pediatric observation unit. \*Clinical Pediatrics\*, 53\(5\), 439-443.](#)
- [Diseases Society of America. Clin Infect Dis 2014; 59:e10.](#)
- [Squire BT, Fox JC, Anderson C. ABSCESS: applied bedside sonography for convenient evaluation of superficial soft tissue infections. Acad Emerg Med 2005; 12:601.](#)
- [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:e18.](#)
- [Singer AJ, Talan DA. Management of skin abscesses in the era of methicillin-resistant \*Staphylococcus aureus\*. N Engl J Med 2014; 370:1039.](#)
- [Abrahamian FM, Shroff SD. Use of routine wound cultures to evaluate cutaneous abscesses for community-associated methicillin-resistant \*Staphylococcus aureus\*. Ann Emerg Med 2007; 50:66.](#)
- [Korownyk C, Allan GM. Evidence-based approach to abscess management. Can Fam Physician 2007; 53:1680.](#)
- [Leinwand M, Downing M, Slater D, et al. Incision and drainage of subcutaneous abscesses without the use of packing. J Pediatr Surg 2013; 48:1962.](#)