

ED/UC ABSCESS/CELLULITIS

ALGORITHM

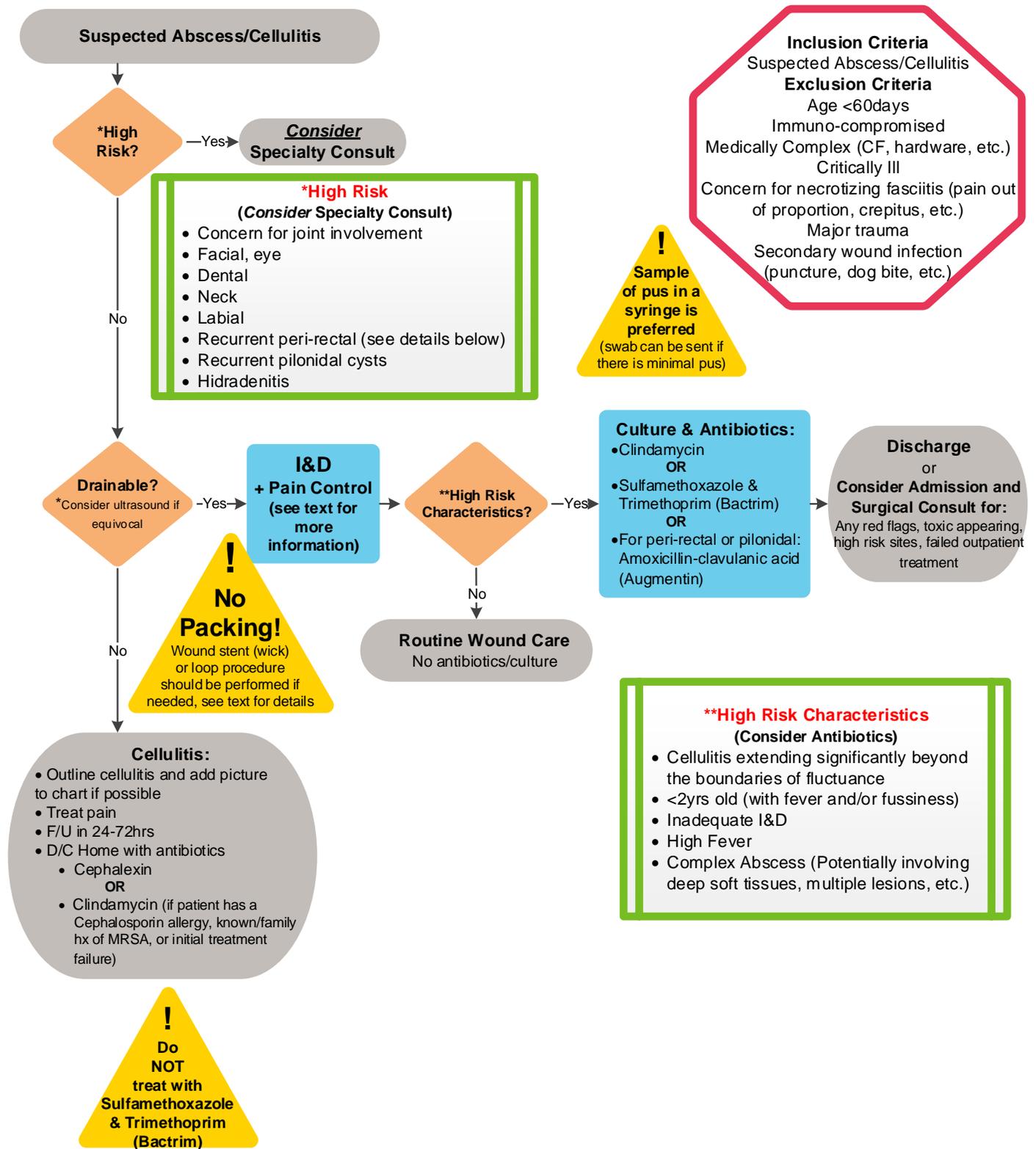


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TARGET POPULATION

Inclusion Criteria

- Suspected Abscess/Cellulitis

Exclusion Criteria

- Age <60 days
- Immuno-compromised
- Medically complex (CF, hardware, etc.)
- Critically ill
- Concern for necrotizing fasciitis (pain out of proportion, crepitus, etc.)
- Trauma activations

BACKGROUND | DEFINITIONS

Cellulitis

A skin and soft tissue infection (SSTI) involving the dermis and subcutaneous fat¹.

Cutaneous Abscess

A SSTI characterized by a collection of pus within the dermis or subcutaneous space. Cutaneous abscesses may or may not be associated with cellulitis¹.

Abscess severity (Infectious Disease Society of America Classification)²:

- Mild infection: abscess requiring incision and drainage, without evidence of or risk factors for systemic infection
- Moderate infection: purulent infection with systemic signs of infection

- Severe infection: patients with systemic signs of infection, or those who have failed incision and drainage plus oral antibiotics

Systemic signs of infection include temperature $>38^{\circ}\text{C}$, tachycardia, tachypnea, or ill appearance, anorexia, vomiting, family concern

INITIAL EVALUATION

History:

Take special note of:

- Location(s) of reported lesions
- Symptoms of systemic or more severe illness
- Personal or family history of recurrent abscesses or MRSA
- Personal history of frequent antibiotic use

Physical exam:

Take special note of:

- Patient's overall appearance
- Vital signs
- Location of lesion, i.e. overlying a joint, areas requiring surgical consult
- Size of swelling and area of fluctuance
- Extent of surrounding cellulitis

CLINICAL MANAGEMENT

Linear Incision and Drainage:

- Using an 11-blade scalpel, make a single linear incision (approximately 1 cm in length) into the most fluctuant region in the center of the abscess cavity.
- Obtain culture (if applicable- see algorithm for details). Pus in a syringe is preferred for culture.
- Perform blunt dissection with forceps to break up internal loculations and evacuate purulent fluid.
- Optional: irrigate wound with normal saline.
- Insert a wick made from sterile packing strip directly into the wound (length equivalent to the depth of the abscess cavity).
- Optional: apply triple antibiotic ointment directly to wound.
- Apply an absorbent dressing over wound and secure with Tegaderm or adhesive tape.

Packing the wound is no longer recommended (a wound stent/wick can still be used)

Loop Incision and Drainage:

- Using an 11-blade scalpel, make a single linear incision (approximately 0.5 cm in length) into the most fluctuant region in the center of the abscess cavity.
- Obtain culture (if applicable- see algorithm for details). Pus in a syringe is preferred for culture.

- Perform blunt dissection with forceps to break up internal loculations and evacuate purulent fluid.
- Use the forceps to tent the skin near the farthest edge or the border of the abscess cavity.
- Make a second small vertical incision with an 11-blade scalpel over the tented skin.
- Push the forceps through the second incision site and grab the end of the vessel loop. Pull the loop through the cavity and out of the primary incision site. Tie the ends together securely (with at least 5 knots), creating a loop without tension that moves easily back and forth. (Tip- tie the loop over a saline flush to create the loop shape without tension, then remove flush).
- Optional: irrigate wound with normal saline.
- Optional- apply triple antibiotic ointment directly to wound.
- Apply an absorbent dressing over wound and secure with Tegaderm or adhesive tape.

Peri-rectal/peri-anal abscess

- If suspected peri-rectal location, proceed with routine abscess care. Surgical consultation indicated for potential complicated drainage procedure or multiple recurrences.

LABORATORY STUDIES | IMAGING

Laboratory Studies

- Aerobic Bacterial Culture- indicated for any patients with an abscess that will be receiving antibiotics. See algorithm for additional guidance on when to send culture. Sending a sample of pus in a syringe is preferred, but a swab can be sent if there is minimal pus.

Imaging

- If there is question about whether there is a drainable fluid collection, consider imaging with bedside ultrasound.
- If you have been certified in the use of bedside ultrasound, you can use your ultrasound to inform decision making. If you are not certified, you can perform an exam, record your images and findings for review, but you should not use the results to inform decision making, so consider ordering ultrasound from radiology.
- Ultrasound findings consistent with cellulitis are cobble-stoning.
- Ultrasound findings consistent with abscess are: hypo-echoic collection in subcutaneous area, “squish sign,” lack of blood flow, posterior acoustic enhancement. If find collection, image in 2 planes.
- Ultrasound findings consistent with lymph node are: hypoechoic, well defined circular structure with blood flow at the stalk, lack of posterior acoustic enhancement.

THERAPEUTICS

Pain Management

It is important to treat pain (anxiolysis alone is NOT sufficient)

- **Oral:** Acetaminophen or ibuprofen
- **Intranasal:** Fentanyl
- **Intravenous:** Morphine, fentanyl
- **Topical:** EMLA (lidocaine/prilocaine) or LMX (lidocaine) cream: consider if there is a pustule and it does not delay further management (this does NOT substitute for other pain control). A local field block with transdermal lidocaine may be sufficient in adolescents depending on the patient and location of abscess.

Sedation

- Intranasal/intravenous fentanyl, intravenous ketamine, or intranasal/intravenous midazolam recommended.

Antibiotics- Abscess

Should be given in patients with cellulitis extending significantly beyond boundaries of fluctuance or if any of the following red flags are present: <2yrs old (with fever and/or fussiness), inadequate I&D, high fever, and/or has a complex abscess (potentially involving deep soft tissues, multiple lesions, etc.). Choose one of the following:

- Clindamycin oral
 - 10 mg/kg/dose, 3 times/day, max 300mg/dose (600mg/dose for undrained abscess), 7-day course
- Sulfamethoxazole & trimethoprim (Bactrim, Septra) oral
 - 5mg trimethoprim/kg/dose, 2 times/day, max 160mg trimethoprim/dose, 7-day course
- For peri-rectal abscess and pilonidal cysts: Amoxicillin-clavulanic acid (Augmentin) oral
 - 30mg amoxicillin/kg/dose, 3 times/day, max 1,000mg amoxicillin/dose, 7-day course (ensure follow-up visit to assess resolution vs. need for extended therapy)

Antibiotics- Cellulitis

- Cephalexin (Keflex) oral:
 - 25mg/kg/dose, 4 times/day, max 500mg/dose, 7-day course

Cephalosporin allergy, known personal/family history of MRSA, or initial treatment failure:

- Clindamycin oral:
 - 10 mg/kg/dose, 3 times/day, max 300mg/dose, 7-day course

PARENT | CAREGIVER EDUCATION

See DC Smartset

REFERENCES

1. Raff, AB, Kroshinsky, D. 2016. Cellulitis: A Review. *JAMA*. 316(3):325.
2. Stevens, DL, Bisno AL et al. 2014. Practice guidelines for the diagnosis and management of skin and soft tissue infections: 2014 update by the infectious diseases society of America. *Clinical Infectious Disease*. 59(2):147.
3. Breen, E. and Bleday, R. Perianal and perirectal abscess. In: UpToDate, Post, TW (Ed), UpToDate, Waltham, MA, 2014.

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Clinical Pathways and Measures Committee – July 11, 2017
 Antimicrobial Stewardship Committee – August 2017
 Pharmacy & Therapeutics Committee – July 6, 2017 and FYI September 7, 2017
 ED/UC Pathways and Policies Committee- August 16, 2017

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REVIEW | REVISION SCHEDULE

Scheduled for full review on August 16, 2021.

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