Cellulitis and Abscess: ED Phase v 1.1

Exclusion Criteria
- Hospital-acquired, surgical site & device-associated infections
- Presumed necrotizing fasciitis
- Orbital/periorbital cellulitis
- Immunodeficiency
- Pressure ulcers
- Solitary dental abscess

Inclusion Criteria
- Suspected skin/soft tissue infection in children > 44 weeks CGA

If referral call from PMD, request perimeter line be drawn and make patient NPO.

Provider Assessment

Concern for:
- Deep extremity infection (e.g., tenosynovitis, septic arthritis, osteomyelitis)
- Deep puncture wound of hand/fingers/feet

Concern for:
- Peri-anal abscess (within 1cm of anal verge)
- Breast abscess
- Perineal abscess
- Pilonidal cyst
- Large or complex abscess

Concern for:
- Neck abscess

Concern for:
- Facial cellulitis of dental origin

Order labs, then
- Involve Orthopedics

Concern for:
- Facial cellulitis of dental origin

Determine with consultant if suitable for pathway

Determine if special situation present.

Order labs, then
- Involve Orthopedics

Concern for:
- Peri-anal abscess (within 1cm of anal verge)
- Breast abscess
- Perineal abscess
- Pilonidal cyst
- Large or complex abscess

Concern for:
- Neck abscess

Concern for:
- Facial cellulitis of dental origin

Determine with consultant if suitable for pathway

Executive Summary

Test Your Knowledge

Explanation of Evidence Ratings

Summary of Version Changes

For questions concerning this pathway, contact: CellulitisAndAbscess@seattlechildrens.org
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Last Updated: 08/15/2013
Valid until: 08/15/2016
Cellulitis and Abscess: ED simple cellulitis / abscess v.1

**PHASE I (E.D.)**

**Inclusion Criteria**
- Suspected skin/soft tissue infection in children > 44 weeks CGA

**Exclusion Criteria**
- Hospital-acquired, surgical site & device-associated infections
- Presumed necrotizing fasciitis
- Orbital/periorbital cellulitis
- Immunodeficiency
- Pressure ulcers
- Solitary dental abscess

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**Simple cellulitis / abscess**

Perform bedside ultrasound unless clearly fluctuant or draining

- Non-purulent
- Purulent

Determine Disposition

**Low Risk Criteria**
- Simple abscess
- Adequate I&D
- Age ≥ 1 year
- No fever
- Well-appearing
- No significant comorbidities
- Follow up assured

**Inpatient Admit Criteria** (any one of the following)
- Systemic illness
- Not tolerating PO
- Treatment failure on >48h of appropriate antibiotics
- Rapidly progressive lesion
- Pain control / wound care
- All < 2 mo; consider if <6 mo
- Inadequate F/U

**Purulent**
- Actively draining pus
- History of drainage
- Abscess present

**Discharged patients**
- Non-purulent
- Purulent

**Medical Treatment**
- Oral cephalexin
- Clindamycin if failed outpatient treatment, cephalosporin allergic or if MRSA risks

**Medical Treatment**
- No systemic antibiotics after I&D if low risk
- Oral clinda if not low risk
- TMP/SMX (or doxycycline if >8 years) if presumed clindamycin-resistant MRSA

**Discharge Instructions**
- 7-10 days total treatment
- PMD f/u within 24-48 hours

**Admitted patients**
- Non-purulent
- Purulent

**Medical Treatment**
- IV cefazolin
- Clindamycin if failed outpatient treatment, cephalosporin allergic or if MRSA risks
- Consider vancomycin if systemic toxicity

**Medical Treatment**
- IV clindamycin
- Vancomycin if presumed clindamycin-resistant MRSA
- Consider vancomycin if systemic toxicity, failed outpatient clindamycin

**Go to Inpatient Phase**
**Inclusion Criteria**
Suspected skin/soft tissue infection in children > 44 weeks CGA

**INPATIENT Exclusion Criteria**
- Hospital-acquired, surgical site & device-associated infections
- Peri-anal or pilonidal abscesses
- Presumed necrotizing fasciitis
- Orbital/periorbital cellulitis
- Pts admitted to surgical service
- Immunodeficiency
- Deep structure infections
  - Pressure ulcers

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**Daily re-evaluation**
- Clinical exam
- Culture data

**Improving**
- Tailor antibiotics if culture results are available
- Use narrowest-spectrum agent possible

**Not Improving**
- Tailor antibiotics if culture results are available
- If rapid progression at any time or no improvement on empiric antibiotics at 48 hours, **consider empiric change in antibiotics**
- If no improvement on adequate antibiotics, image (U/S preferred) to rule out abscess formation
- If fluctuance develops or abscess ≥1 cm on imaging, consult gen. surgery
- Consult ID as necessary

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**Discharge Criteria (Meets all)**
- Lesion(s) show signs of improvement
- Tolerating PO
- Pain controlled
- Afebrile >24 hours
- F/U assured within 48 hours

**Discharge Instructions**
- 7-10 days total treatment
- PMD f/u within 48 hours

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Last Updated: 08/15/2013
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### Cellulitis and Abscess Antibiotic Table

<table>
<thead>
<tr>
<th>Condition</th>
<th>Non-purulent cellulitis</th>
<th>Purulent SSTI/ abscess</th>
<th>Bite wounds</th>
<th>Facial cellulitis of dental origin</th>
</tr>
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<tbody>
<tr>
<td>IV choice</td>
<td>Cefazolin</td>
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<td>Penicillin OR Ampicillin/sulbactam</td>
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<td>Cefoxitin (transition to clindamycin AND ciprofloxacin at discharge) if penicillin allergic</td>
<td>Clindamycin if penicillin allergic</td>
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<tr>
<td>PO choice</td>
<td>Cephalexin</td>
<td>No antibiotics if low risk criteria* met and abscess adequately drained</td>
<td>Amoxicillin/clavulanate</td>
<td>Penicillin OR Amoxicillin/clavulanate</td>
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<td>PO Alternatives</td>
<td>Clindamycin if cephalosporin allergic</td>
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<td></td>
<td></td>
<td>Doxycycline if age &gt;8 years and prior clindamycin and TMP/SMX resistant MRSA OR presumed clindamycin resistance and sulfa allergy</td>
<td>Clindamycin AND ciprofloxacin for penicillin allergic patients</td>
<td>Call ID for other scenarios</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Call ID if linezolid desired</td>
<td>Call ID if linezolid desired</td>
<td></td>
</tr>
</tbody>
</table>

*Low risk criteria: Age ≥1 year; no fever; well-appearing; adequate I&D; no significant comorbidities

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**Low Risk Criteria**
- Simple abscess
- Adequate I&D
- Age ≥1 year
- No fever
- Well-appearing
- No significant comorbidities
- Follow up assured

* For use in determining the need for PO antibiotics for purulent infection post I&D, outpatient treatment (see above)

**Alternate antibiotic choices**
- If fresh or saltwater contact, or other special circumstance, discuss with ID
### Tetanus prophylaxis in routine wound management

*(Adapted from the Red Book: 2012 report of the Committee on Infectious Diseases, p. 709)*

<table>
<thead>
<tr>
<th>History of tetanus toxoid (doses)</th>
<th>Clean, minor wounds</th>
<th>All other wounds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DTaP, Tdap, or Td</td>
<td>TIG</td>
</tr>
<tr>
<td>Fewer than 3 or unknown</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>No - if &lt; 10 years since last tetanus-containing vaccine dose.</td>
<td>No if &lt; 5 years since last tetanus-containing vaccine dose.</td>
</tr>
<tr>
<td>3 or more</td>
<td>Yes if ≥ 10 years since last tetanus-containing vaccine dose</td>
<td>No if ≥ 5 years since last tetanus-containing vaccine dose.</td>
</tr>
</tbody>
</table>

TIG = Tetanus immune globulin

**Other wounds** = Such as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite

**Note:** DTAP is used for children <7 years of age. Tdap is preferred to Td for underimmunized children 7 years of age or older who have not received Tdap previously.
Studies were identified by searching electronic databases using search strategies developed and executed by a medical librarian, Susan Klawansky. Searches were performed in November 2012 in the following databases – on the Ovid platform: Medline and Cochrane Database of Systematic Reviews; elsewhere: Embase, Clinical Evidence, National Guideline Clearinghouse and TRIP. Retrieval was limited to 2004 to current, humans, and English language. In Medline and Embase, appropriate Medical Subject Headings (MeSH) and Emtree headings were used respectively, along with text words, and the search strategy was adapted for other databases as appropriate. Concepts searched were soft tissue infections, cellulitis and many other related conditions, some of which are skin abscess, bites and stings, impetigo, carbuncle, infectious skin diseases and penetrating wounds. All retrieval was further limited to certain publication types representing high order evidence.

Susan Klawansky, MLS, AHIP     April 9, 2013

Flow diagram adapted from Moher D et al. BMJ 2009;339:bmj.b2535


3) JL Robinson, MI Salvadori; Canadian Paediatric Society Infectious Diseases and Immunization Committee, Management of community associated methicillin-resistant Staphylococcus aureus skin abscesses in children. *Paediatr Child Health* 2011; 16(2):115-6


5) Paydar, K Z, Hansen, SL, Charlebois, ED, Harris, HW, Young, DL. Inappropriate antibiotic use in soft tissue infections. *Archives of Surgery* 2006; 141(9), 850-856.


10) Chen AE et al. Randomized Controlled Trial of Cephalexin Versus Clindamycin for Uncomplicated Pediatric Skin Infections. *Pediatrics* 2011;127(3);e573.


Executive Summary

Objective
To improve the quality and safety of care for uncomplicated community acquired soft tissue infections in children older than 30 days of life, specifically:

- Reduce use of broader spectrum, inappropriate, or more toxic antibiotics for cellulitis and abscess
- Reduce the use of systemic antibiotics for children with simple abscess who meet low risk criteria
- Decrease unnecessary laboratory testing
- Increase the use of laboratory testing that will allow for targeted antimicrobial therapy
- Decrease unnecessary hospital days

Recommendations
1. Use bedside ultrasound where available to improve the accuracy in diagnosis of subcutaneous abscesses.
2. Obtain wound cultures when possible.
3. Do NOT obtain routine blood testing (CBC, CRP, blood culture) for most children with cellulitis or abscess.
4. No incision and drainage is needed for abscesses <1 cm on bedside ultrasound; these patients may be discharged home on antibiotics alone.
5. Do NOT prescribe oral antibiotics for simple abscesses that have been incised and drained completely, if the patient is >1 year of age, afebrile, well-appearing, with no significant comorbidities and adequate follow up assured.
6. Prescribe oral clindamycin for outpatient treatment of abscesses that could not have an adequate I&D, or do not meet low-risk criteria.
7. Prescribe cephalexin for outpatient treatment of simple cellulitis without an abscess, drainage, history of drainage, or failure of outpatient antibiotic course (>48 h on appropriate antibiotics).
8. Prescribe oral clindamycin for outpatient treatment of purulent cellulitis or cellulitis that has not responded to anti-MSSA therapy (beta lactam, >48 hours).
9. Prescribe cefazolin for inpatient treatment of simple cellulitis without an abscess, drainage, history of drainage, or failure of outpatient antibiotic course (>48 h on appropriate antibiotic).
10. Prescribe IV clindamycin for inpatient treatment of purulent cellulitis or cellulitis that has not responded to anti-MSSA therapy (beta lactam, >48 hours).
11. Prescribe IV vancomycin for inpatient treatment of cellulitis in patients who are systemically ill (fever >38, tachycardia, vomiting) or have failed antibiotic therapy that covers MRSA.
12. Obtain general surgery, orthopedics, ENT, or dental consultation for the appropriate special clinical scenarios.

Implementation Items
- Created three care algorithms (two for the Emergency Department, and one for inpatients) as well as an antibiotic table to address common clinical scenarios
- Developed a Learning Center training module for the management of community acquired cellulitis and abscess
- Developed a multi-phase PowerPlan, with ED, inpatient, and discharge phases

Metrics Plan
Cellulitis Process Metrics
- **Antibiotic Change/Vancomycin Rate** AIM: fewer than 10% of eligible population should change from clindamycin or cefazolin to vancomycin.
- **ED Antibiotics for Home Rate** – AIM: reduce antibiotic prescription rate to 15% among patients undergoing I&D for abscess who are discharged from the ED

PDCA Plan
Quarterly Review of Metrics, Literature Review, E-Feedback, and Audit Reports will inform Improvement efforts

Revision History
Date Approved: August, 2013
Next Review Date: August, 2016
Executive Summary

Cellulitis and Abscess
CSW Approval — August, 2013

CSW Owner(s): Dr Lauren Wilson, MD and Dr Derya Caglar, MD

Approved by the Cellulitis and Abscess Clinical Standard Work (CSW) Team August 2013

Cellulitis and Abscess CSW Team:
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James Johnston, Knowledge Management
Mike Leu, MD Informaticist
Asa Herrman, Program Coordinator
Susan Klawansky, Librarian
Cellulitis and Abscess: Test your knowledge!

1. When evaluating a patient for SSTI, blood cultures should be drawn:
   a) From all patients with suspected SSTI
   b) From patients with cellulitis only
   c) From patients with abscess only
   d) From patients with systemic toxicity or suspected necrotizing fasciitis.

2. Abscesses that have been adequately drained may be discharged home without antibiotics if
   a) >1 year old
   b) Well appearing
   c) Reliable followup within 2 days
   d) All of the above
Cellulitis and Abscess: Test your knowledge!

3. A patient has an uncomplicated non-suppurative cellulitis. The patient should be discharged home with:
   a) Cephalexin
   b) Trimethoprim-Sulfamethoxazole
   c) Clindamycin
   d) No antibiotics.

4. A patient presents to the ED for evaluation of a suspected pilonidal abscess. You should consult:
   a) Plastic surgery
   b) General surgery
   c) Orthopedic surgery
   d) All of the above
Cellulitis and Abscess: Test your knowledge!

5. A patient is admitted after an I&D of a buttock abscess with significant surrounding cellulitis. You would treat initially start treatment with:

   a) Vancomycin
   b) Clindamycin
   c) Cefazolin
   d) Trimethoprim-sulfamethoxazole
   e) Cephalexin
Cellulitis and Abscess: Answer Key!

Answers:
1. d
2. d
3. a
4. b
5. b
We used the GRADE method of rating evidence quality. Evidence is first assessed as to whether it is from randomized trial, or observational studies. The rating is then adjusted in the following manner:

Quality ratings are *downgraded* if studies:
- Have serious limitations
- Have inconsistent results
- If evidence does not directly address clinical questions
- If estimates are imprecise OR
- If it is felt that there is substantial publication bias

Quality ratings can be *upgraded* if it is felt that:
- The effect size is large
- If studies are designed in a way that confounding would likely underreport the magnitude of the effect OR
- If a dose-response gradient is evident

**Quality of Evidence:**
- ★★★★ High quality
- ★★★ Moderate quality
- ★★★ Low quality
- ★★★ Very low quality

Expert Opinion (E)

Summary of Version Changes

- **Version 1 (08/15/2013):** Go live
- **Version 1.1 (11/6/2013):** Clarified which patients should receive Orthopedic consultation in the ED; recommended laboratory studies to be performed prior to Orthopedic consultation; excluded patients with solitary dental abscess from the ED phase
Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required.

The authors have checked with sources believed to be reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication.

However, in view of the possibility of human error or changes in medical sciences, neither the authors nor Seattle Children’s Healthcare System nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such information.

Readers should confirm the information contained herein with other sources and are encouraged to consult with their health care provider before making any health care decision.
Background

Many patients present to their health care providers, urgent care clinics, or the emergency department for evaluation and treatment of soft tissue infections. Some have a simple cellulitis that is often easily treated with antibiotics, while others have more complicated infections that require extensive incision and drainage or hospitalization. In addition to *Streptococcus pyogenes* and methicillin-sensitive *Staphylococcus aureus* (MSSA), methicillin-resistant *Staphylococcus aureus* (MRSA) has also become a real consideration in these types of infections.

This pathway’s intent is to standardize – to the extent possible – the diagnosis and management of such soft tissue infections at Seattle Children’s.
Introduction – Cellulitis and Abscess

This clinical standard work pathway is meant to guide the diagnosis and management of patients with cellulitis and/or abscess.

- **Inclusion criteria:** Suspected community-acquired skin and soft tissue infection in a child > 44 weeks CGA
- **Exclusion criteria:**
  - Hospital-acquired, surgical site and device-associated infections
  - Pressure ulcers
  - Orbital/peri orbital cellulitis
  - Immunodeficiency
  - Presumed necrotizing fasciitis
  - Solitary dental abscesses
  - **Note:** For the inpatient phase, we additionally exclude peri-anal abscesses, pilonidal abscesses, deep structure infections, and patients admitted to surgical services. Initial ED management is provided in the ED phase, however.
**Definition: Cellulitis and Abscess**

**Cellulitis** is an infection of the skin and underlying soft tissue. It is characterized by pain, erythema, edema, and warmth.

- **Purulent cellulitis** is cellulitis associated with drainage or exudate, currently or by history. A drainable abscess may or may not be present.

- **Nonpurulent cellulitis** has no drainage, exudate, or abscess present.

An **abscess** is a cavity filled with pus that results from a bacterial infection. An abscess in the subcutaneous tissues can be present with or without surrounding cellulitis.

![Abscess, not yet draining](image)

Purulent cellulitis due to MRSA
http://depts.washington.edu/
Microbiology

- Nonpurulent cellulitis is usually due to group A streptococci (although studies are limited due to the difficulty culturing from these infections)

- Purulent cellulitis may be caused by MSSA, MRSA, or group A streptococci (GAS).
  - Approximately 27% of *S. aureus* isolates from wounds are MRSA at Seattle Children’s (2012-13 data)

S. pyogenes (GAS)  
http://textbookofbacteriology.net/
History in the last 6 months of:
- MRSA in the patient
- MRSA in the family
- Recurrent boils, pustules, “spider bites”, etc. that required antibiotics, in patient or family

Risk factors for MRSA

Inpatient Phase

Initial ED phase  |  ED simple cellulitis/abscess  |  Inpatient Phase
Examining a soft tissue infection

- Erythema, warmth, edema universally present
- Induration or fluctuance (the latter diagnostic of fluid collection) may be present
- Signs of possible necrotizing infection:
  - Very rapid spread
  - Bluish discoloration, blistering, pain out of proportion or beyond the edges of the lesion, skin anesthesia, rapid progression, or gas in the tissue
  - These signs sometimes appear late in course
- When first examining, draw a line (mark date/time) around lesion’s borders, if not already present

Initial ED phase  |  ED simple cellulitis/abscess  |  Inpatient Phase
Use bedside ultrasound where available to improve the accuracy in diagnosis of subcutaneous abscesses (Squire, Tayal)

Obtain wound cultures when possible; i.e., in patients who have spontaneously draining lesions and in patients who undergo I&D procedures (Liu, local consensus [LC])

Routine blood testing (CBC, CRP, blood culture) is not necessary for most children with SSTI (Stevens, LC)

Obtain a CBC, CRP, and blood cultures in children with signs of systemic toxicity, including ill-appearance, rapidly spreading lesions, persistent fevers, and age <1yo (Liu, Stevens, LC)
Specific locations of cellulitis/abscess warrant subspecialist consultation to evaluate for deeper and more serious/complicated extension of infection.

- **Orthopedics:** Infections over joints, infections of hand/fingers/feet
- **General surgery:** Peri-anal abscess (within 1 cm of anal verge), pilonidal abscess, perineal abscess, breast abscess
- **ENT:** Neck abscess
- **Dental:** Facial cellulitis of dental origin
  (LC)

Note: Also consult General Surgery if an inpatient develops any abscess requiring drainage (LC)
Laboratory studies prior to Orthopedic consultation

Prior to consulting Orthopedics, obtain the following:

- **Blood work**: Complete blood count with differential, C-reactive protein, and erythrocyte sedimentation rate. Consider blood culture for ill-appearing or febrile patients.

- **Radiographs**: Obtain appropriate films of the affected area; typically more than one view is required.

(LC)

Note: The above studies will need to be ordered as needed from outside the Cellulitis and Abscess PowerPlan.
Incision and drainage (I& D)

- No drainage is needed for abscesses <1 cm on bedside ultrasound; these patients may be discharged home on antibiotics alone with close PCP follow-up (Tayal ☀️, LC)
- Larger abscesses require thorough I& D of purulent material with adequate sedation and analgesia
  - Ketamine sedation is frequently needed in pediatric patients, though local anesthesia will also provide some pain relief
  - Consider surgical consultation for very large or complicated abscesses that may require extensive exploration or prolonged sedation time
- All patients who have had an I&D procedure should have reliable follow-up for re-evaluation with their PCP in 24 - 48 hours

Incision and drainage (continued)

Correct incision and drainage technique is the cornerstone of treating abscesses. If you perform I&D, the following video is a good reminder of proper techniques:

Correct incision and drainage technique is the cornerstone of treating abscesses. If you perform I&D, the following video is a good reminder of proper techniques:

No oral antibiotics are needed for simple abscesses that have been incised and drained completely, (Duong, Chen, Paydar, and Hankin) unless the patient has one of the following:

- Severe or extensive disease
- Rapid progression in presence of associated cellulitis
- Signs and symptoms of systemic illness
- Associated comorbidities or immunosuppression
- Extremes of age (<1 year old)
- Abscess in area difficult to drain (face, hand, and genitalia)
- Associated septic phlebitis
- Lack of response to I &D alone  (Liu)

**Antibiotics for abscess post I&D**

**Initial ED phase**

**ED simple cellulitis/abscess**

**Inpatient Phase**
Antibiotics for abscess (continued)

• Prescribe oral clindamycin for outpatient treatment of abscesses that could not have an adequate I&D, or do not meet low-risk criteria as summarized below (Liu ★★★★★)

**Low Risk Criteria**
- Age ≥1 year
- No fever
- Well-appearing
- Adequate I&D
- No significant comorbidities

Initial ED phase  ED simple cellulitis/abscess  Inpatient Phase
Antibiotics for nonpurulent cellulitis

• Prescribe an oral beta lactam (cephalexin) for outpatient treatment of simple cellulitis without an abscess, drainage, history of drainage, or failure of outpatient antibiotic course (>48 h on appropriate antibiotics) (Liu ⭕️○○○, Stevens ⭕️○○○, Elliott ⭕️○○○, and Williams ⭕️○○○)

• Prescribe an IV beta lactam (cefazolin) for inpatient treatment of simple cellulitis without an abscess, drainage, history of drainage, or failure of outpatient antibiotic course (>48 h on appropriate antibiotic) (Liu ⭕️○○○ and Stevens ⭕️○○○)

• Prescribe oral clindamycin for cellulitis that has not responded to anti-MSSA therapy (beta lactam, >48 hours) (Liu ●○○○, LC)

• Consider IV vancomycin for inpatient treatment of cellulitis in patients who are systemically ill (fever >38, tachycardia, vomiting) or have failed an outpatient antibiotic course that covers MRSA (Liu ●○○○)

Antibiotics for purulent cellulitis

• Prescribe oral clindamycin for outpatient treatment of purulent cellulitis or cellulitis that has not responded to anti-MSSA therapy (beta lactam, >48 hours) (Liu ●○○○, LC)

• Prescribe IV clindamycin for inpatient treatment of purulent cellulitis or cellulitis that has not responded to anti-MSSA therapy (beta lactam, >48 hours) (Liu ●○○○, LC)

• Prescribe IV vancomycin for inpatient treatment of cellulitis in patients who are systemically ill (fever >38, tachycardia, vomiting) or have failed antibiotic therapy that covers MRSA (Liu ○●●○)
ED Cellulitis / Abscess pathway – Antibiotic selection

**Initial ED phase**
- Oral cephalexin
- Clindamycin if failed outpatient treatment, cephalosporin allergic or if MRSA risks

**Medical Treatment**
- No systemic antibiotics after I&D if low risk
- Oral clindamycin if not low risk
- TMP/SMX (or doxycycline if >8 years) if prior clindamycin-resistant MRSA

**Discharge Instructions**
- 7-10 days total treatment
- PMD if out within 24-48 hours

**Admitted patients**

**Medical Treatment**
- IV cefazolin
- Clindamycin if failed outpatient treatment, cephalosporin allergic or if MRSA risks
- Consider vancomycin if systemic toxicity

**Medical Treatment**
- IV clindamycin
- Vancomycin if prior clindamycin-resistant MRSA
- Consider vancomycin if systemic toxicity, failed outpatient clindamycin

**Go to Inpatient Phase**

**Inpatient Phase**
### Empiric antibiotic selection

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<td>Doxycycline if age &gt;8 years and penicillin allergy</td>
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#### Initial ED phase

- **ED simple cellulitis/abscess**
- **Inpatient Phase**
Admission criteria

Patients who should be admitted:

- Are systemically ill (ill-appearance, persistent fevers, hemodynamic instability etc.)
- Are unable to tolerate oral therapy
- Fail appropriate outpatient therapy (48 hours of treatment and not showing signs of improvement)
- Have rapidly progressive lesions
- Need pain control or wound care
- Consider if < 6 months of age
- Adequate follow up not available (LC)
Reevaluate lesion daily or with significant changes.

Follow microbiology cultures, and change to the narrowest spectrum antibiotic once sensitivities are available.

Consult general surgery if an abscess develops that necessitates drainage.

**Initial ED phase**

**ED simple cellulitis/abscess**

**Inpatient Phase**
Treatment failure occurs if there is:

- **Significant or rapid expansion** of cellulitis at any point in the course of treatment (i.e. more than just one or two centimeters beyond margins), or
- Cellulitis is **not showing improvement after 48 hours** of effective antibiotic treatment (LC)

- The development of a new abscess within an area of previous infection while on antibiotics does not in and of itself constitute treatment failure

**Note:** Referring physicians will be asked to outline lesions with permanent marker if possible before sending patients to the ED and make the patient NPO; lesions will be outlined in ED triage if not already done.
Switching to oral antibiotics

- Conversion from an IV to oral antibiotic prior to discharge is not necessary (LC)
- If worries about palatability or concerns about administration exist, a single oral antibiotic dose may be given prior to discharge (LC)
Discharge criteria

A patient is ready for discharge when:

- Lesion(s) show signs of improvement
- Tolerating PO
- Pain well controlled
- No fever > 24 hours
- Follow up assured within 48 hours

(LC)

**Patients should complete 7-10 total days of antibiotic treatment. (LC, Liu ☀️)***

Antibiotic treatment can be extended by the PCP if the lesion is not completely resolved at the end of this course.