

Inclusion Criteria:

- Patients ≥ 1 month old with suspected community-acquired skin and soft tissue infection

Exclusion Criteria:

- Non-infectious causes of swelling, erythema and pain
- Patients < 1 mos
- Head and neck infections
- Suspect osteomyelitis
- Suspect septic arthritis
- Device related infections
- Surgical site infections
- Pyomyositis
- Necrotizing fasciitis

Consider Surgical Service Consults

Orthopedic Surgery:

- Deep extremity infection (e.g. Tenosynovitis, Presumed necrotizing fasciitis)
- Deep puncture wound of hand/fingers/feet

Pediatric Surgery:

- Breast abscess
- Perianal abscess (within 1cm of anal verge)
- Genital abscess
- Surgical Site Infections
- External neck abscess

ENT:

- Face or deep neck abscess

Initial ED Assessment of Suspected SSTI

Obtain History and Physical including exam of skin infection

Unsure if fluctuant, or in a location of concern?

Cellulitis only
or < 1 cm
fluctuance?

Ultrasound

≥ 1 cm
fluctuance?

Amenable to ED staff
drainage?
[Suture/Ortho Specialist
responsibilities](#)

No

Consult
Relevant
Surgical
Service

Amenable to
Surgery
Drainage in
ED?

Yes

No

I&D by Surgery in
the ED

I&D required by
Surgery in the OR or
after admission

ED staff controls
pain/sedates for
Surgery staff as
needed

Admit
(See
[Admission
Matrix](#))

Meets
[admission
criteria](#)?

No

Yes

Pain control/
sedation as
needed

[I&D](#) with
Penrose Drain
and wound cx

- Discharge abscesses with PCP follow up in 7 days if drain has not fallen out; sooner if symptoms worsen.
- Discharge cellulitis with PCP follow up prn.
- Treat simple cellulitis with oral cephalexin x 5 days. If MRSA within last 12 months, treat simple cellulitis with TMP-SMX or clindamycin for 5 days.
- Treat drained abscesses empirically with oral TMP-SMX or clindamycin for 5 days.
- Treat undrained < 1 cm abscess for 7 days with oral TMP-SMX or clindamycin.
- Prescribe definitive antibiotic therapy for MSSA/ Strep for outpatient treatment of simple cellulitis with known susceptibility.
- [Pilonidal discharge instructions and antibiotics](#)

[Differential Diagnoses](#)

[Treatment Recommendations](#)

[Treatments Not Recommended](#)

Diagnosis & Definition

The diagnosis of SSTI is usually based upon clinical manifestations of cellulitis or a soft-tissue abscess

- Cellulitis is an infection of the skin and underlying soft-tissue
- Soft-tissue abscess is a cavity filled with pus

Treatment of pediatric skin and soft-tissue infections is complex due to concern for antibiotic-resistant organisms. The leading cause of purulent infections is *S. aureus*. The leading cause of cellulitis is group A *Streptococcus* and other hemolytic streptococci, but may also be due to *Staph. aureus*.

Typical Presentation:

- Cellulitis: Manifests as areas of skin erythema, edema, pain and warmth
- Soft-tissue abscess: Manifests as a painful, fluctuant, erythematous nodule, with or without surrounding cellulitis

[Initial Assessment
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Pathway Objective

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

- Increase the use of bacterial cultures that will allow for targeted antimicrobial therapy
- Decrease unnecessary laboratory testing
- Reduce the use of systemic antibiotics for children with simple abscesses who meet low risk criteria
- Reduce the use of inappropriate antibiotics for cellulitis and abscess
- Decrease unnecessary hospital admissions

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Differential Diagnoses

Findings suggestive of another diagnosis include:

- **Erythema migrans** – Erythema migrans is an early manifestation of Lyme disease; it consists of a region of erythema surrounding the site of a tick bite, infrequently with central clearing . The diagnosis is based on clinical findings. A similar lesion may occur in patients with Southern tick–associated rash illness.
- **Herpes zoster** – The rash of herpes zoster begins as erythematous papules that evolve into grouped vesicles. The rash is generally limited to one dermatome but can affect two or three neighboring dermatomes. The diagnosis is established by polymerase chain reaction of vesicular fluid.
- **Septic arthritis** – Cellulitis may overlie a septic joint. Clinical manifestations include joint pain, swelling, warmth, and limited range of motion. The diagnosis of septic arthritis is established based on synovial fluid examination/culture and PCR.
- **Osteomyelitis** – Osteomyelitis may underlie an area of cellulitis. It is prudent to pursue MRI imaging for assessment of bone involvement in the setting of point tenderness and/or limitation of movement in the affected area.
- **Contact dermatitis** – Contact dermatitis may be distinguished from cellulitis in that the contact dermatitis lesions are pruritic. Clinical features include erythema, edema, vesicles, bullae, and oozing. The reaction is generally limited to the site of contact and is associated with burning, stinging; it is not or only mildly painful.
- **Insect bite** – An insect bite triggers an inflammatory reaction at the site of the punctured skin, which appears within minutes and consists of pruritic local erythema and edema. In some cases, a local reaction is followed by a delayed skin reaction consisting of local swelling, itching, and erythema. It is not painful.
- **Vaccination site reaction** – A local reaction to vaccination manifests with erythema, swelling, and tenderness at the injection site; these are typically self-limited.

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Admission Criteria

- Systemic signs of toxicity/bacteremia/sepsis
- Rapid progression of erythema
- Progression of clinical findings following an I&D and 48hrs of oral antibiotic therapy
- All <1mo
- Hospital-acquired and device-associated infections
- Presumed necrotizing fasciitis
- Pre/post-septal cellulitis
- Immunodeficiency
- Pressure ulcers
- Significant abscess due to animal/human bites
- Significant abscess associated with foreign body
- Inability to tolerate oral antibiotic therapy
- **Size alone should not determine need for admission, nor should fever alone**

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Admission Matrix

- Admit patients to the Infectious Disease service if possible.
- If admission to the Infectious Disease Service is not possible, admit to Hospital Pediatrics.

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Testing, Assessment & Monitoring

Testing

- Obtain wound cultures when possible.
Quality of evidence: Moderate, Recommendation: Strong

Assessment & Monitoring

- An Ultrasound is recommended if there is uncertainty in the physical exam of an abscess, or it is in a concerning location, such as the umbilicus, over a joint, peri-anal, or there is uncertainty in the depth of the infection
Quality of evidence: Moderate, Recommendation: Strong

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Treatment Recommendations

Recommended Treatments

- After sedation and pain control, incise and drain any abscess >1 cm and place a straight Penrose drain into the abscess cavity for drainage and suture into place with Fast-absorbing suture. (*Quality of evidence: Low, Recommendation: Strong*)
- Prescribe oral TMP-SMX (8-10 mg/kg/day bid) or clindamycin (30mg/kg/day tid) for outpatient treatment of abscesses. (*Quality of evidence: High, Recommendation: Strong*)
- Prescribe cephalexin (50mg/kg/day divided TID) for outpatient treatment of simple cellulitis. If MRSA within last 12 months, treat simple cellulitis with oral TMP-SMX (8-10 mg/kg/day bid) or clindamycin (30mg/kg/day tid).
- Treat simple cellulitis or an abscess that is fully drained for 5 days and an undrained abscess for a minimum of 7 days with appropriate follow up. (*Quality of evidence: Moderate, Recommendation: Strong*)
- PCP follow up is recommended in all patients and especially if symptoms worsen, persist or the Penrose drain hasn't fallen out after 7 days.

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Treatment Not Recommended

- Do NOT obtain routine blood testing (CBC, CRP, blood culture) for most children with cellulitis or abscess.
Quality of evidence: High, Recommendation: Strong
- No incision and drainage is needed for abscesses <1 cm on ultrasound and/or physical examination; these patients may be discharged home on antibiotics alone based on risk factors.
Quality of evidence: Low, Recommendation: Strong
- Do not unroof or needle aspirate any abscess greater than 1cm, instead perform an I&D.
Quality of evidence: High, Recommendation: Strong

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Deterioration & Escalation of Care

Identification of Deterioration

- It should not be considered failure of oral therapy if there is a progression of clinical findings after oral antibiotic therapy if there is an abscess, and an I&D has not been performed
- If after an I&D, which is followed by 48hrs of oral antibiotic therapy and there is a progression of clinical findings, it should be considered a failure of outpatient management
- If there is progression of clinical findings after 48hrs and an ultrasound shows no abscess, it should be considered a failure of outpatient management

Escalation of Care Protocol

- If there is a failure of outpatient management, the patient will require admission

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Discharge Criteria & Planning

- Discharge if patient can tolerate oral antibiotics and if an abscess was present, it has been adequately drained if needed.
- Treat simple cellulitis or drained abscesses empirically with oral TMP-SMX or clindamycin for 5 days.
- Treat undrained <1cm abscess for 7 days with oral TMP-SMX or clindamycin.
- Prescribe definitive antibiotic therapy for MSSA/Strep for outpatient treatment of simple cellulitis with known susceptibility.
- PCP follow up is recommended in all patients and especially if symptoms worsen, persist, or the drain, if placed, hasn't fallen out after 7 days.

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Patient Education

- Helping Hands [MRSA decolonization](#)
- Helping Hands [MRSA Infection in the Community \(Methicillin Resistant Staphylococcus Aureus\)](#)
- Helping Hands [Pilonidal Disease](#)

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Provider Education

1. Management of Cutaneous Abscess:

- a. Cleanse site with antiseptic solution.
- b. First anesthetize surrounding non-infected skin and subcutaneous tissue with topical anesthetic, or local anesthetic by local infiltration or regional block.
- c. The roof of the abscess should be anesthetized by intradermal injection along the course of the proposed incision.
- d. Culture and gram stain may be indicated for cutaneous abscesses because of increasing risk of antibiotic resistant micro-organisms.
- e. A roof incision is made that is sufficient in length to facilitate drainage and packing if needed.
- f. After the incision, gently probe the abscess with either a pair of hemostats or if possible your finger.
- g. Once the entire abscess cavity has been explored and loculations opened, irrigate with normal saline. Spread open abscess with blunt hemostat or fingers. Irrigation is considered adequate when the saline is free of pus and appears blood-tinged. Consider use of Yankauer suction tip on low suction to facilitate removal of pus and irrigant solution.
- h. If necessary, gently insert a penrose drain into the abscess, and suture in place with fast absorbing gut sutures. The purpose of the penrose drain is to promote continuous drainage from the abscess cavity.
- i. Occlusive dressings should not be applied routinely, as they may cause retention of infectious material in the wound. A partially occlusive dressing, which still promotes wound drainage, may be considered in areas which are likely to become contaminated (such as near the anus).

2. Analgesia

When examining a suspected abscess, palpation does not always reveal fluctuance. I & D's are extremely painful, so local analgesia is paramount.

At times, local analgesia may not be enough, and use of procedural sedation and analgesia may be considered depending on size and location of abscess and the particular patient.

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Suture/Orthopedic Specialist (Suture Tech) I & D Procedural Responsibilities

1. Suture technicians may incise and drain subcutaneous abscesses.
2. Suture technicians should not incise and drain abscesses that are:
 - a. Associated with significant systemic illness.
 - b. The following anatomical locations*:
 - i. Face
 - ii. Neck
 - iii. Perianal: i.e. extension to the anus
 - iv. Genital (labia, penis, scrotum, breast)
 - c. Abscesses that have more complex anatomical concerns such as bone, joint, cartilage, lymph node, deep fascia or muscle layer involvement.
 - d. The incision will cause a significant cosmetic concern to the patient or family.

*Abscess drainage may be performed by the ST/OT or LPN/ST if there is no significant risk of injury to nerves or other underlying structures, or minimal risk of poor cosmetic outcome, AND the ED/Urgent Care Attending and ST/OT both are competent to perform the procedure. This can be determined by the ED/UC Attending.

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Risk Awareness & Zero Hero

Decrease hospital acquired harm by decreasing surgical complication and increasing healthcare value

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Pathway Team & Process

Pathway Development Team

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Origination Date: *December, 2019*

Last Revision Date: *April, 2024*

Next Revision Date: *April, 2027*

Clinical Pathway Development

This clinical pathway was developed using the process described in the NCH Clinical Pathway Development Manual Version 6, 2022. Clinical Pathways at Nationwide Children's Hospital (NCH) are standards which provide general guidance to clinicians. Patient choice, clinician judgment, and other relevant factors in diagnosing and treating patients remain central to the selection of diagnostic tests and therapy. The ordering provider assumes all risks associated with care decisions. NCH assumes no responsibility for any adverse consequences, errors, or omissions that may arise from the use or reliance on these guidelines. NCH's clinical pathways are reviewed periodically for consistency with new evidence; however, new developments may not be represented, and NCH makes no guarantees, representations, or warranties with respect to the information provided in this clinical pathway.

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For more information about our pathways and program please contact:

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Pathway Team Publication:

- Dunn M, Savoie K, Erdem G, et al. Quality improvement methodology can reduce hospitalisation for abscess management. *Emerg Med J*. Published online January 11, 2022. doi:10.1136/emered-2021-211466

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Pilonidal Abscess

Antibiotics:

- **First time pilonidal abscess:** Amoxicillin/clavulanate for 5 days
- **Recurrent pilonidal abscess:** Amoxicillin/clavulanate for 5 days unless wound culture is positive for MRSA (let sensitivities guide antibiotic choice if MRSA positive).

Discharge Information:

- Use Pilonidal Abscess discharge instructions
- Refer to Pilonidal Clinic for follow up; suggest family ask for first available appointment
Located in the Surgery and Burn Clinic
OCC 6D
555 S 18th St
614-722-3900
- Provide Helping Hand on [Pilonidal Disease](#)

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