Care and Treatment Plan: Cellulitis and Localized Abscess – *Adult and Pediatric*

Definition[1–3]

Cellulitis is an acute, diffuse and evolving bacterial skin infection involving the dermal subcutaneous layers of the skin, most commonly occurring on the extremities. A localized abscess is an isolated build up/collection of pus in dermal and subcutaneous tissues and may occur in isolation or in the context of broader inflammation, including cellulitis.

Cellulitis and localized abscesses may exist in isolation or concurrently. In some cases, an area of cellulitis may progress to include an abscess, or a localized abscess may contribute to cellulitis in surrounding tissues. Careful evaluation of every client for each condition, and consideration of all combined treatment needs is required – some cases may require treatment decisions from recommendations in multiple different sections of this document.

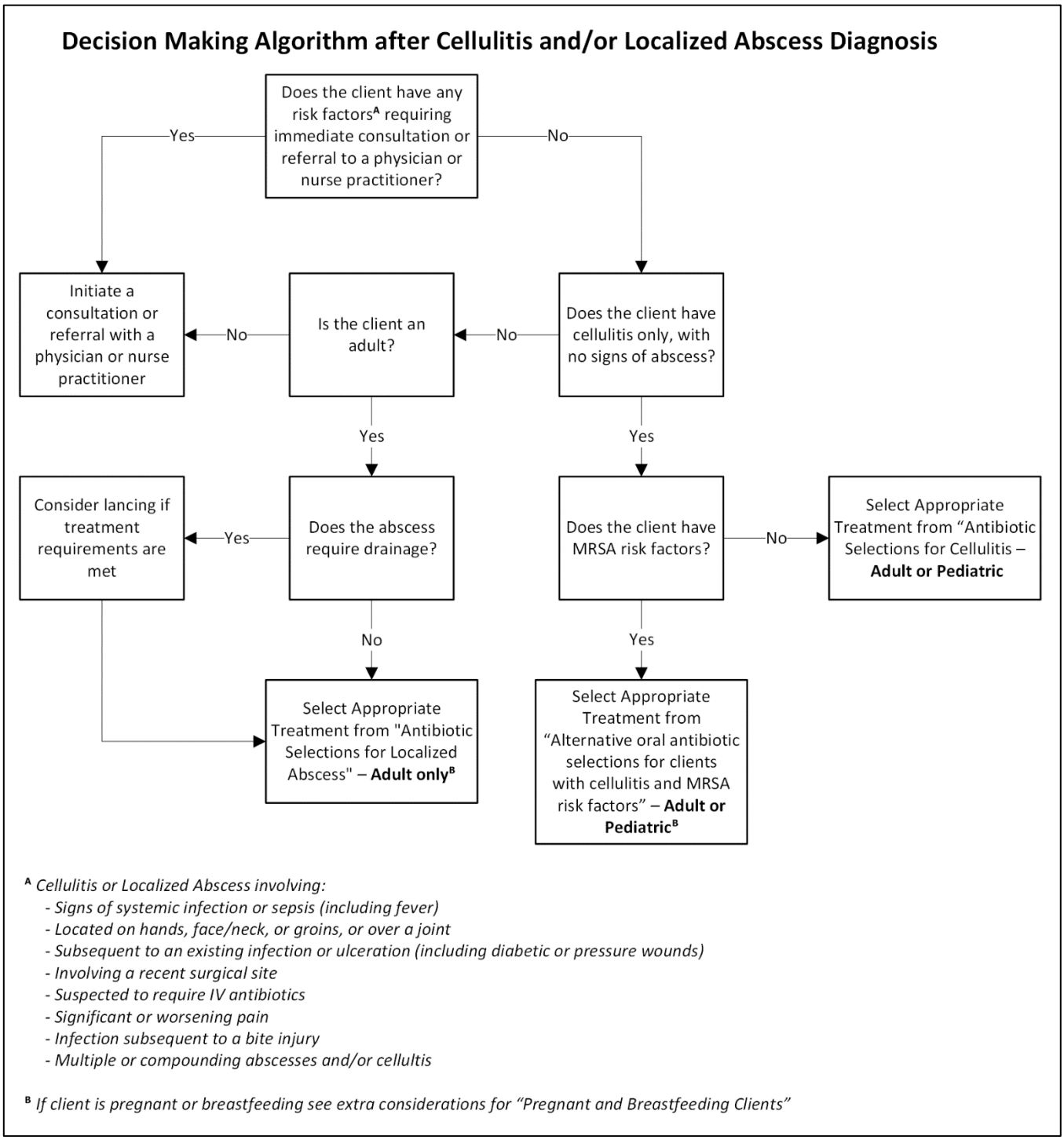
Note: Cellulitis and localized abscesses identified in post-surgical sites, subsequent to a primary infection or ulceration (such as diabetic or pressure wounds), or in highly nervous and vascular areas such as the face/neck, hands and near groins, involve unique risks and complications and always require a consultation or referral to a physician or nurse practitioner.[4,5]

Registered Nurses with **Remote Nursing** Certified Practice designation (RN(C)) are authorized to manage, diagnose, and treat:

- Localized Abscess +/- Cellulitis (adults only)
- Cellulitis only (adults and children **2 years of age and older)**

Note: In BC, the term pediatrics is often defined as an individual under the age of 19.[6] For the purposes of certified practice DSTs, pediatrics refers to individuals under the age of 19 unless otherwise specified.

Note: A consultation refers to the RN(C) collaborating with members of the care team, such as a physician, nurse practitioner, or pharmacist, to support decision-making processes related to the diagnosis, treatment, and management of the diseases, disorders, and conditions that the RN(C) are authorized to diagnose, treat, and manage. A referral is when an RN(C) refers a patient to a medical care provider for further treatment, care, or management. This occurs when patients are presenting with symptoms outside of what is provided in this document, including symptoms that require urgent referral.



[A] *Cellulitis or Localized Abscess involving:*
- *Signs of systemic infection or sepsis (including fever)*
- *Located on hands, face/neck, or groins, or over a joint*
- *Subsequent to an existing infection or ulceration (including diabetic or pressure wounds)*
- *Involving a recent surgical site*
- *Suspected to require IV antibiotics*
- *Significant or worsening pain*
- *Infection subsequent to a bite injury*
- *Multiple or compounding abscesses and/or cellultis*

[B] *If client is pregnant or breastfeeding see extra considerations for "Pregnant and Breastfeeding Clients"*

Management and Intervention[1–3,7]

Goals of Treatment

- Eradicate infection
- Relieve symptoms, including pain
- Prevent complications and spread

Non-Pharmacologic Interventions[1,2,7]

Cellulitis:

- Rest and elevate affected areas, particularly for extremities, to relieve swelling
- Hygiene:
    - Keep the affected area clean and dry, limiting unnecessary contact with the affected area
    - Dispose of or regularly launder any materials that come in contact with the affected area
    - Maintain consistent hand hygiene when dealing with affected areas to reduce the transmission of bacteria
- For significantly purulent or "weeping" cellulitis, cover with a sterile dressing or clean material to prevent contamination of surrounding skin areas or surfaces

Localized Abscess:

- Rest and elevate affected areas, particularly for extremities, to relieve swelling and pressure
- Warm water or saline compresses to the affected area, for 10-15 minutes at least four times daily

Abscess Drainage Interventions (Adult Only)[1,8]

Fluctuant abscesses that do not spontaneously rupture after warm compresses often require **lancing** with a sterile scalpel to encourage pressure relief and discharge of pus contained in the infected area.

- Lancing requires a consultation with a physician or nurse practitioner to discuss risk factors and should not be done independently by RN(C)s
- Lancing may be performed only as an adjunct to antibiotic therapy, when indicated for a localized abscess not located on near the hands, face/neck or groins, and only after the patient specific order is received

If the above requirements are met:

- RN(C)s are authorized to make a small incision through the **epidermis only** to facilitate the release of purulence and pressure, providing pain relief and reducing the burden of bacteria within the infection

Note: Definitive treatment of larger localized abscesses often requires procedural Incision and Drainage (I+D), in addition to other pharmacologic and non-pharmacologic treatments. Procedural I+D, with or without analgesia and sedation, is distinct from lancing described above and does not fall within RN scope of practice. If a more significant intervention than lancing is required for any patient, a consultation or referral with a physician or nurse practitioner is required.

Pharmacologic Interventions: Adult[1,3–5,9,10]

To relieve pain and fever:

- Acetaminophen 325mg 1-2 tabs PO q4-6h PRN
- Ibuprofen 200mg 1-2 tabs PO q 4-6h PRN

Antibiotic Selections for Cellulitis Only: Adult[9]

Preferred oral antibiotic selections:

- Cephalexin (Keflex) 500-1000mg orally four times daily, for 5 days

Alternative oral antibiotic selections for clients with penicillin and/or cephalosporins (ß-lactam) allergy:

- Cloxacillin 500mg PO orally four times daily, for 5 days, **OR**
- Cefuroxime 500mg orally two times daily, for 5 days, **OR**
- Sulfamethoxazole-Trimethoprim (Septra DS) 800/160mg 1-2 tablets orally twice daily, for 5 days, **OR**

[π] *Interdisciplinary Consultation*

- Clindamycin 300mg orally four times daily, for 5 days

Alternative oral antibiotic selections for clients with known MRSA or MRSA risk factors:

- Sulfamethoxazole-Trimethoprim (Septra DS) 800/160mg 1-2 tablets orally twice daily, for 5 days, **OR**
- Amoxicillin 500mg orally three times daily[π]
  PLUS
  Doxycycline 100mg orally twice daily, for 5 days

Note: Specified risk factors for MRSA include known MRSA colonization, puncture wounds (including intravenous drug use), and presence of purulent drainage or abscess (see below if abscess identified)[3,11,12]

Antibiotic Selections for Localized Abscess (+/- Cellulitis)[π]

Note: Due to the prevalence of *Staphyloccocus* bacteria in causing abscesses, antibiotic selections always cover for MRSA.[11]

Preferred oral antibiotic selections:

- Sulfamethoxazole-Trimethoprim (Septra DS) 800/160mg 1-2 tablets orally twice daily, for 5 days, **OR**
- Doxycycline 100mg orally twice daily, for 5 days

Alternative oral antibiotic selections for clients with penicillin and/or cephalosporins (ß-lactam) allergy:

- Clindamycin 300mg orally four times daily, for 5 days

Note: All ß-lactam antibiotics (including cephalosporins) are contraindicated for severe delayed type IV mediated reactions in patients with penicillin allergies. For mild penicillin allergies, cephalosporins are considered safe, as the risk of cross-reactivity is < 3%. RN(C)s are encouraged to consult a pharmacist, physician or nurse practitioner when needed, to determine the most appropriate treatment selection related to each patient's specific risk factors.[π]

Pharmacologic Interventions: Pediatric[9,13,14]

Note: Weight-based pediatric doses should not exceed recommended adult doses, unless otherwise specified by daily maximum dosing parameters.

To relieve pain and fever:

- **Acetaminophen:**
  Max from all sources: Acetaminophen 75mg/kg/**day** or 4,000mg total in 24 hours - whichever is less.
  - Oral Acetaminophen: calculate 10-15mg/kg/**dose** q4-6h PRN
  - Rectal Acetaminophen: calculate 15-20mg/kg/**dose** q4-6h PRN
- **Ibuprofen:**
  Max from all sources: Ibuprofen 40mg/kg/**day** or 2,400mg total in 24 hours - whichever is less
  - Oral Ibuprofen: calculate 5-10 mg/kg/**dose** q6-8h PRN; max 400 mg/**dose**

Antibiotic Selections for Cellulitis[π]

Note: Pediatric patients with known MRSA or MRSA risk factors require a consultation or referral due to the prevalence of *Staphyloccocus* bacteria in causing abscesses, which for pediatrics is not within RN(C) scope of practice.

Preferred oral antibiotic selections:

Cephalexin (Keflex) 10-15mg/kg/**dose** orally four times daily, for 5 days (max 500mg/**dose**)

[π] *Interdisciplinary Consultation*

Alternative oral antibiotic selections for clients with cephalosporins (ß-lactam) allergy:

- Clindamycin 5-10mg/kg/**dose** orally four times daily, for 5 days (max 450mg/**dose**)

Note: All ß-lactam antibiotics (including cefuroxime) are contraindicated for severe delayed type IV mediated reactions in patients with penicillin allergies. For mild penicillin allergies, cephalosporins are considered safe, as the risk of cross-reactivity is < 3%. RN(C)s are encouraged to consult a pharmacist, physician or nurse practitioner when needed to determine the most appropriate treatment selection related to each patient's specific risk factors.[π]

In case of allergies to the above antibiotics, recurrent infection, culture and sensitivity swab results showing resistance to available antibiotics or unavailability of the previously listed antibiotics, consult with or refer to a physician or nurse practitioner.

Pregnant and Breastfeeding Clients[15,16π]

When administering, dispensing, or prescribing a medication to an individual who is pregnant or breastfeeding, RN(C)s are encouraged to consult with interdisciplinary team members such as a pharmacist, physician, or nurse practitioner, as risks and benefits of medication use may vary depending on patient-specific considerations. The considerations noted here are restricted to medications that are directly contraindicated.

- Acetaminophen, Amoxicillin, Cefuroxime, Cloxacillin and Cephalexin (Keflex) may be used as above
- Doxycycline is contraindicated for **pregnant** clients
- Doxycycline may be used for **breastfeeding** clients
- Ibuprofen is not recommended for **pregnancy**, particularly after 20 weeks gestation
- Clindamycin is contraindicated in the first trimester of **pregnancy**
- Sulfamethoxazole-Trimethoprim (Septra DS) should not be used during **pregnancy** or **breastfeeding**

Note: Some cases of cellulitis worsen before improving at the initiation of treatment due to bacterial lysis. Continue with antibiotic therapy unless clinical deterioration continues after initial treatment or until treatment resistant cellulitis is suspected, which then would require a consultation or referral with a physician or nurse practitioner.[π]

Potential Complications[2,3,7]

- Bacteremia or sepsis
- Abscess or cellulitis developing within or around existing condition
- Spread of infection, including endocarditis, lymphangitis, arthritis or osteomyelitis
- Necrotising soft tissue infection
- Recurrent cellulitis or abscess
- Scarring or permanent tissue damage

Client Education and Discharge Information[2,3,7,14]

- Advise on condition, timeline of treatment and expected course of disease process
- Counsel client about appropriate use of medications (dose, frequency, compliance)
- Encourage proper hygiene of all affected skin, including maintaining clean and dry conditions for healing
- Encourage regular hand and skin hygiene for all healthy skin to reduce the risk of new or worsening infection
- Educate to avoid use of creams or other topical treatments unless directed by a prescriber
- Educate clients with cellulitis to elevate the affected area at least 4 times daily to reduce swelling and fluid accumulation
- Schedule or clarify follow up assessment requirements

[π] *Interdisciplinary Consultation*

Monitoring and Follow-up[2,3,7,14]

- If diagnostic swab results show resistance to the initiated anti-microbial selection, clients are to be alerted immediately and changed to a selection that demonstrates susceptibility
- Instruct client to return for reassessment if the affected area continues to spread despite antibiotics, lesions become fluctuant, if pain increases or spreads to joints or other anatomical structures, or a **fever** develops
- Mark border of erythema with pen to monitor spread of inflammation
- Follow up in 24-48 hours to assess for progression and effect of antibiotics

Consultation and/or Referral[2–5,14,17]

Consult with or refer to a physician or nurse practitioner if:

- RN(C)s should consider consultation or referral when they are unable to meet the BCCNM Registered Nurse (Certified Practice): Acting within Autonomous Scope of Practice standard
- Any diagnostic test results are returned showing evidence of an alternative diagnosis other than cellulitis or localized abscess, a consultation or referral with a physician or nurse practitioner is required
- Cellulitis or abscess to the hands, face or groin/perineal area
- Rapid progression of disease or any signs of sepsis/systemic infection, including **fever**
- Multiple or compounding abscesses and/or cellulitis
- Illness began with a bite injury, fresh-water or salt-water exposure
- Requiring incision and drainage (I+D) or intravenous antibiotics
- Diabetic and/or immunocompromised client (including neutropenia)
- Significant or worsening pain
- Infection is over/involves a recent surgical site, existing ulceration, joint or prosthetic device
- Cellulitis or abscess that is recurrent or unresponsive to treatment
- No improvement after 48 hours of antibiotic treatment initiation

Documentation

As per agency policy and according to BCCNM standards.

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