GENERAL INFORMATION

IMPORTANT CONSIDERATIONS

- Cellulitis can be observed on all skin surfaces, but most cases are found on the legs.
- Cellulitis is typically caused by β-hemolytic streptococci or Staphylococcus aureus, although a pathogen is isolated in less than 20% of cases.
- Differential diagnosis is a major issue, since some skin conditions – that do not require antibiotic therapy – can present similar symptoms/signs.

RISK FACTORS FOR DEVELOPING CELLULITIS

<table>
<thead>
<tr>
<th>Portal of entry or potential reservoir</th>
<th>Comorbidities and other factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury, skin problem, toe web abnormalities, hygiene or neglect issues, uncorrected dental problem</td>
<td>Venous or arterial insufficiency, lymphedema, uncontrolled diabetes, immunosuppression, history of cellulitis</td>
</tr>
</tbody>
</table>

DIAGNOSIS

SIGNS AND SYMPTOMS

- Cellulitis diagnosis is generally characterized by the acute appearance of a continuous erythematous area (without an area of healthy skin inside) that’s edematous, warm and painful.
- The patient may also have systemic symptoms (fever, nausea, vomiting, chills, malaise, lack of appetite).
- Cellulitis generally does not cause any epidermal changes (scales, scabs, vesicles, etc.). If such changes are present, suspect a different or related pathology (e.g., eczema).

CLINICAL ASSESSMENT

- Assess the general condition of the patient.
- Palpate the affected area to assess skin sensitivity, the depth of infection, tissue firmness and the presence of a fluctuant area.
- Determine the source of the infection. A dental, sinusal or ophthalmic origin should always be suspected and investigated during the initial diagnosis of cervicofacial cellulitis.
- Look for the presence of special circumstances suggesting different pathogens.
- Make a differential diagnosis before confirming the cellulitis diagnosis.
- Mark the outline or photograph the infected area to follow its evolution.
# DIFFERENTIAL DIAGNOSIS

## General

**Contact dermatitis**: An edema that is often itchy, non-painful and afebrile. Presence of scaling or microvesicles that can merge to form bubbles. The shape of the affected area is very well defined and matches the point of contact.

**Acute eczema**: An erythema that is often edematous, frequently observed in cases of allergic contact dermatitis and interspersed with very tight formations of micropapules and/or superficial microvesicles.

**Insect bite**: Edema and erythema with a central point. Itchy, afebrile, not very painful or painless and sometimes accompanied by a vesicle or a minor subcutaneous ecchymosis.

**Cutaneous herpes or shingles**: Presence of vesicles a few millimetres in size grouped on an erythematous base. Shingles involves dermatomal distribution.

**Stasis dermatitis**: Afebrile edema and erythema, often itchy (may be painful) and bilateral (but not necessarily symmetrical).

**Superficial phlebitis**: An erythema with painful induration along a venous path.

**Articular involvement (septic arthritis, gout or synovitis)**: Localized erythema on a joint with pain occurring during mobilization.

**Acute bursitis**: Localized erythema around a joint.

**Vaccine reaction**: Often occurs within the first 24 hours after vaccination (generally: afebrile; good overall condition of the patient).

## Redness located in the upper and lower limbs

**Stasis dermatitis**: Afebrile edema and erythema, often itchy (may be painful) and bilateral (but not necessarily symmetrical).

**Superficial phlebitis**: An erythema with painful induration along a venous path.

**Articular involvement (septic arthritis, gout or synovitis)**: Localized erythema on a joint with pain occurring during mobilization.

**Acute bursitis**: Localized erythema around a joint.

**Vaccine reaction**: Often occurs within the first 24 hours after vaccination (generally: afebrile; good overall condition of the patient).

## Redness located in the face

**Conjunctivitis**: In some cases, manifests with a slight non-painful and afebrile palpebral or periorbital edema accompanied by purulent secretions. Often bilateral.

**Dacryocystitis**: Localized edema and erythema in the internal angle (between the eye and nose) and often accompanied by tearing.

## Other skin diseases

**Erythema migrans, erythema nodosum, acute febrile neutrophilic dermatosis (Sweet syndrome), etc.**: Erythema separated by areas of healthy skin or ring-shaped erythema.

## SPECIAL CIRCUMSTANCES

### Main pathogens to suspect in addition to β-hemolytic streptococci and S. aureus

<table>
<thead>
<tr>
<th>Animal bite (cat or dog)</th>
<th>Pasturella multocida, Capnocytophaga spp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human bite (including injuries caused by contact with another person's teeth during a fight)</td>
<td>Eikenella corrodens, Viridans streptococci, Buccal anaerobes (Fusobacterium, peptostreptococci)</td>
</tr>
<tr>
<td>Cellulitis of dental origin</td>
<td>Viridans streptococci, Buccal anaerobes (Fusobacterium, peptostreptococci)</td>
</tr>
<tr>
<td>Periorbital/orbital cellulitis of sinusal origin</td>
<td>Streptococcus pneumoniae, Haemophilus influenzae</td>
</tr>
<tr>
<td>Injury while immersed in water</td>
<td>Aeromonas hydrophila (freshwater), Vibrio spp. (saltwater)</td>
</tr>
<tr>
<td>Neutropenic patient</td>
<td>Pseudomonas aeruginosa, Fungal pathogens</td>
</tr>
<tr>
<td>Diabetic foot syndrome</td>
<td>Pseudomonas aeruginosa and enterobacteriaceae, Anaerobes (Peptostreptococcus, Bacteroides, Clostridium)</td>
</tr>
</tbody>
</table>

Cellulitis is rarely caused by methicillin-resistant *S. aureus* (MRSA). Moreover, in Québec, these resistant strains are isolated in only 10% of cases of purulent skin infections caused by *S. aureus* (2015).

Community-associated MRSA should be suspected in the presence of an abscess and one of the following elements:

- Recurrent furunculosis or abscess
- Patient belongs to an Aboriginal community
- Previous infection/colonization (in the patient or their family)
- Recent trip to a high-prevalence area (e.g., medical tourism)

Microbiological tests on skin samples (culture and antibiotic sensitivity) are recommended only in cases of cellulitis with purulent discharge.
SEVERITY

The severity of the infection is assessed by clinical judgment and guides the choice of the antibiotic treatment’s route of administration. If necessary, consult a microbiologist-infectiologist to determine whether the patient is eligible for intravenous treatment at home.

WARNING SIGNS – IN-HOSPITAL CONSULTATION GENERALLY REQUIRED

<table>
<thead>
<tr>
<th>General</th>
<th>Suspected orbital involvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Impairment of general condition (persistent fever)</td>
<td></td>
</tr>
<tr>
<td>• Hemodynamic impairment</td>
<td></td>
</tr>
<tr>
<td>• Pain disproportionate to clinical signs (1)</td>
<td></td>
</tr>
<tr>
<td>• Rapid progression</td>
<td></td>
</tr>
<tr>
<td>• Presence of gas in tissues</td>
<td></td>
</tr>
<tr>
<td>• Vesicles with hemorrhagic content</td>
<td></td>
</tr>
<tr>
<td>• Signs of dyspnea or dysphagia (cervicofacial cellulitis)</td>
<td></td>
</tr>
<tr>
<td>• Centralfacial region involvement</td>
<td></td>
</tr>
<tr>
<td>• Significant edema/erythema of the external auditory canal and auricle</td>
<td></td>
</tr>
<tr>
<td>• Suspected joint involvement</td>
<td></td>
</tr>
<tr>
<td>• Suspected osteomyelitis</td>
<td></td>
</tr>
<tr>
<td>• Failure of antibiotic treatment after 72 hours</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special circumstances</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fever</td>
</tr>
<tr>
<td>• Severe pain</td>
</tr>
<tr>
<td>• Limited or painful extraocular movements</td>
</tr>
<tr>
<td>• Difficulty or inability to open eye</td>
</tr>
<tr>
<td>• Chemosis</td>
</tr>
<tr>
<td>• Proptosis</td>
</tr>
<tr>
<td>• Impaired vision</td>
</tr>
<tr>
<td>• Recent history of dental treatment</td>
</tr>
</tbody>
</table>

(1) Careful; when this symptom is present, suspect necrotizing fasciitis.

TREATMENT PRINCIPLES

▸ Treating the primary source of infection, when it can be identified, is essential in managing cellulitis:
  • Treating the dental problem, wound or sinusitis, excising the foreign body, etc.
  • Treating the associated risk factors (e.g., eczema, tinea pedis, venous insufficiency, etc.)

▸ When there is an abscess, incision and drainage are essential aspects of initial treatment. In such cases, an antibiotic treatment can sometimes be added depending on the clinical context.

▸ Systemic antibiotic treatment is used to treat cellulitis. Topical antibiotic treatment is not indicated for this type of infection and provides no additional benefit.

(2) In case of recurrent cellulitis, consider referring the patient to a specialized setting for a more in-depth assessment (diagnosis, source of infection, treatment).

SUPPORTIVE TREATMENT

▸ Elevating the affected limb promotes the drainage of the edema by gravity.

▸ To relieve pain, you may consider adding an analgesic/antipyretic (acetaminophen or ibuprofen) to the antibiotic treatment.

▸ When a traumatic wound (including bites) is present, it is important to check the patient’s tetanus vaccination schedule and consider rabies vaccination. For more information, refer to the protocole d’immunisation du Québec (PIQ).

HISTORY OF ALLERGIC REACTION TO A PENICILLIN ANTIBIOTIC

▸ True penicillin allergy is uncommon. For 100 people with a history of penicillin allergy, fewer than 10 will be confirmed to have a true diagnosis of allergy.
  • It is therefore important to carefully assess the allergy status of a patient who reports a history of allergic reaction to penicillin, before considering using alternatives to beta-lactams. For help, consult the decision-making tool in cases of allergy to penicillins.
ANTIBIOTIC TREATMENT

- In vitro resistance of methicillin-sensitive *S. aureus* to clindamycin is about 25% in Québec (2015). Response to this treatment should therefore be closely monitored.
- If necessary, adjust the antibiotic treatment based on the results of culture and antibiotic sensitivity tests, when available.
- Persistence or slight progression of redness may be observed within the first 24 to 48 hours despite proper treatment. In that case, decreased pain and a general improvement in the patient’s condition are usually observed.
- During intravenous treatment, oral relay should be considered when:
  - The patient is afebrile after 48 hours of treatment.
  - The infected area does not expand or decreases.
  - The diagnosis is well established and the patient is able to tolerate oral treatment.

### CELLULITIS WITH STRONG SUSPICION OF STREPTOCOCCI OR *S. AUREUS*

**Total recommended duration of treatment**: 5 to 10 days

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefadroxil</td>
<td>500-1000 mg PO BID</td>
</tr>
<tr>
<td>Cephalexin</td>
<td>500-1000 mg PO QID</td>
</tr>
<tr>
<td>Cloxacillin</td>
<td>500 mg PO QID</td>
</tr>
<tr>
<td>Amoxicillin/Clavulanate</td>
<td>875/125 mg PO BID</td>
</tr>
</tbody>
</table>

If history of allergic reaction to a penicillin antibiotic

Click [here](#) to view the cellulitis with strong suspicion of streptococci or *S. aureus* algorithm for help in choosing an oral antibiotic therapy

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefazolin</td>
<td>1000-2000 mg IV TID</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>1000-2000 mg IV daily</td>
</tr>
<tr>
<td>Cloxacillin</td>
<td>2000 mg IV QID</td>
</tr>
</tbody>
</table>

If history of allergic reaction to a penicillin antibiotic

Click [here](#) to view the cellulitis with strong suspicion of streptococci or *S. aureus* algorithm for help in choosing an intravenous antibiotic therapy

- Follow-up should be performed within **24 to 72 hours** depending on the severity of the infection, the clinical evolution and the clinician’s judgment.
- Based on the opinion and clinical experience of the experts consulted, cefazolin can be administered every 24 hours as part of an ambulatory intravenous treatment by adding 1–2 g of probenecid 30 to 60 minutes prior to cefazolin administration, in healthy patients without kidney damage and for a short period only (24–72 hours).

---

1. Antibiotics are usually listed in alphabetical order using their generic name.
2. Amoxicillin/clavulanate is not a good first-line choice in cases of cellulitis with strong suspicion of streptococci or *S. aureus*. However, it can be a valid alternative (e.g., in cases of cefadroxil intolerance) to facilitate patient compliance with the treatment.
3. The 7:1 (875/125 mg) formulation PO BID of amoxicillin/clavulanate is preferred due to its higher digestive tolerance.
4. Because of its broad spectrum and increased risk of *C. difficile* infection and other side effects, ceftriaxone should be prescribed only as an alternative to cefazolin when the latter cannot be used.
**CELLULITIS ASSOCIATED WITH A COMMON ANIMAL BITE (CAT OR DOG) OR A HUMAN BITE**

**Total recommended duration of treatment:** 7 to 10 days

**Antibiotic**

- **Oral administration**
  - **Amoxicillin/Clavulanate**
    - 875/125 mg PO BID

- **If history of allergic reaction to a penicillin antibiotic**
  - Click here to view the cellulitis associated with a common animal bite or a human bite algorithm for help in choosing the antibiotic therapy.

- **It’s important to check for tendon, bone or joint involvement.** If there is, and for any other complicated case, consult a specialist or refer the patient to a hospital.

- **Usually, follow-up should be performed within 24 to 72 hours.** However, follow-up within a maximum of 24 hours should be performed in cases involving a bite to the hand or face.

**CELLULITIS OF DENTAL ORIGIN**

**Total recommended duration of treatment:** 5 to 10 days

**Antibiotic**

- **Adult dosage**
  - **Oral administration**
    - **Amoxicillin**
      - 500 mg PO TID
    - **Amoxicillin/Clavulanate**
      - 875/125 mg PO BID

- **If history of allergic reaction to a penicillin antibiotic**
  - Click here to view the cellulitis of dental origin algorithm for help in choosing an antibiotic therapy.

- **When faced with an uncorrected dental problem, a consultation with a dentist or a maxillofacial specialist should be considered.** It is essential to treat the dental source of these infections.

- **Follow-up on the evolution of these infections should be performed within 24 hours.** In the absence of response to treatment and in more severe cases, consult a specialist or refer the patient to a hospital.

- **Only simple cases of periorbital cellulitis should be treated in the primary care setting.** These are characterized by mild edema and erythema, the absence of severe pain, good yield opening normal and non-painful extraocular movements, normal vision, the absence of proptosis and chemosis, and the patient being in good overall condition.

**SIMPLE PERIORBITAL CELLULITIS OF SINUSAL ORIGIN**

**Total recommended duration of treatment:** 7 to 10 days

**Antibiotic**

- **Adult dosage**
  - **Oral administration**
    - **Amoxicillin/Clavulanate**
      - 875/125 mg PO BID

- **If history of allergic reaction to a penicillin antibiotic**
  - Click here to view the simple periorbital cellulitis of sinusal origin algorithm for help in choosing an antibiotic therapy.

- **Only simple cases of periorbital cellulitis should be treated in the primary care setting.** These are characterized by mild edema and erythema, the absence of severe pain, good yield opening normal and non-painful extraocular movements, normal vision, the absence of proptosis and chemosis, and the patient being in good overall condition.

**CELLULITIS IN ADULTS**

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1. Including injuries caused by contact with another person’s teeth during a fight.
2. Antibiotics are usually listed in alphabetical order using their generic name.
3. The 7:1 (875/125 mg) formulation PO BID of amoxicillin/clavulanate is preferred due to its better digestive tolerance.
4. For the recommended supportive treatments to relieve sinus symptoms, see INESSS’s optimal usage guide on acute rhinosinusitis.

Click here to view the cellulitis associated with a common animal bite or a human bite algorithm for help in choosing the antibiotic therapy.
**MAIN REFERENCES**


Wilson, L. and Caglar, D. Cellulitis and Abscess. Seattle Children’s Hospital 2013.

Please note that other references have been consulted.

---

**CELLULITIS WITH SUSPICION OF CA-MRSA**

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Adult dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oral administration</strong></td>
<td></td>
</tr>
<tr>
<td>Doxycycline$^2$</td>
<td>100 mg PO BID</td>
</tr>
<tr>
<td>Minocycline$^2$</td>
<td>100 mg PO BID</td>
</tr>
<tr>
<td>TMP/SMX$^{2,3}$</td>
<td>1–2 DS tab. PO BID</td>
</tr>
<tr>
<td><strong>Intravenous administration</strong></td>
<td></td>
</tr>
<tr>
<td>Vancomycin$^4$</td>
<td>15–20 mg/kg IV BID or TID</td>
</tr>
</tbody>
</table>

Follow-up should be performed within **24 to 72 hours** depending on the severity of the infection, the clinical evolution and the clinician’s judgment.

---

1. Antibiotics are usually listed in alphabetical order using their generic name.
2. Note that doxycycline, minocycline and TMP/SMX do not offer very good coverage against *group A streptococcus*.
3. TMP/SMX has not been approved by Health Canada for the treatment of cellulitis. However, it is frequently prescribed for this purpose, and experts agree that this antibiotic is an acceptable treatment option when CA-MRSA is suspected.
4. If necessary, consult a microbiologist-infectiologist for alternatives to vancomycin.
CELLULITIS WITH STRONG SUSPICION OF STREPTOCOCCI OR S. AUREUS IN ADULTS → ORAL ADMINISTRATION

SEVERITY OF PREVIOUS ALLERGIC REACTION TO PENICILLIN ANTIBIOTICS

Vague history

Unconvincing history reported by patient or family

Non-severe reaction

Immediate reaction
Isolated cutaneous involvement
(urticaria and/or angioedema)

Delayed reaction
Isolated cutaneous involvement
(Rash and/or urticaria and/or angioedema)

Immediate reaction
Anaphylaxis

Delayed reaction
Severe skin reaction
(desquamation, pustules, vesicles, purpura with fever or joint pain, but no DRESS, SJS/TEN or AGEP)

Serum sickness

Penicillin allergy CONFIRMED
(severe or non-severe reaction only)

Very severe reaction

Immediate reaction
Anaphylactic shock
(with or without intubation)

Delayed reaction
Hemolytic anemia
Renal involvement
Hepatic involvement
DRESS, SJS/TEN, AGEP

THE FOLLOWING CAN BE PRESCRIBED SAFELY

SIMILAR cephalosporins
Cefadroxil OR Cephalexin if history of allergy does not suggest an immediate reaction...

If in doubt about the possibility of an immediate reaction...

A 1-hour observation period after the administration of the 1st dose of Cefadroxil or Cephalexin under the supervision of a health professional may be recommended according to the clinician judgment.

PRESCRIBE THE FOLLOWING WITH CAUTION

Penicillins
Cloxacillin OR Amoxicillin/Clavulanate

The 1st dose should always be administered under medical supervision.

If history of:
- Immediate reactions, a drug provocation test should be performed;
- Delayed reactions, the patient or his/her family should be informed of the possible risk of recurrence in the days following initiation of the antibiotic.

PRESCRIBE THE FOLLOWING WITH CAUTION

SIMILAR cephalosporins
Cefadroxil OR Cephalexin

ONLY if a history of non-severe reactions in adults OR if serum sickness-like reaction occurred in childhood.

The 1st dose should always be administered under medical supervision.

If history of:
- Immediate reactions, a drug provocation test should be performed;
- Delayed reactions, the patient or his/her family should be informed of the possible risk of recurrence in the days following initiation of the antibiotic.

IF A BETA-LACTAM CANNOT BE ADMINISTERED, THE FOLLOWING CAN BE PRESCRIBED...

Clindamycin

AVOID PRESCRIBING

Penicillins
Cloxacillin OR Amoxicillin/Clavulanate

SI\n
AVOID PRESCRIBING

Beta-lactams

Choose another class of antibiotics.

PRESCRIBE THE FOLLOWING

Clindamycin

For further information, see the interactive tool and the decision-making tool.

AGEP : acute generalized exanthematous pustulosis;
DRESS : drug reaction with eosinophilia and systemic symptoms;
SJS : Stevens–Johnson syndrome;
TEN : toxic epidermal necrolysis.
### FIRST-LINE ANTIBIOTIC THERAPY FOR CELLULITIS WITH STRONG SUSPICION OF STREPTOCOCCI OR S. AUREUS IF HISTORY OF ALLERGIC REACTION TO A PENICILLIN ANTIBIOTIC

- **Beta-lactams recommended, according to the clinical judgment support algorithm**
  - **Cefadroxil**
    - Dosage: 500-1000 mg PO BID
  - **Cephalexin**
    - Dosage: 500-1000 mg PO QID
  - **Cloxacillin**
    - Dosage: 500 mg PO QID
  - **Amoxicillin/Clavulanate**
    - Dosage: 875/125 mg PO BID

- **Alternative if a beta-lactam cannot be administered**
  - **Clindamycin**
    - Dosage: 300–450 mg PO QID

---

1. Antibiotics are usually listed in alphabetical order using their generic name.
2. Amoxicillin/clavulanate is not a good first-line choice in cases of cellulitis with strong suspicion of streptococci or S. aureus. However, it can be a valid alternative (e.g., in cases of cefadroxil intolerance) to facilitate patient compliance with the treatment.
3. The 7:1 (875/125 mg) formulation PO BID of amoxicillin/clavulanate is preferred due to its higher digestive tolerance.
4. Taking this antibiotic can cause diarrhea and intestinal symptoms that may worsen and require consultation. It is important to inform the patient of this.
5. If necessary, consult a microbiologist-infectiologist for alternatives to clindamycin.

[Back to the optimal usage guide]
CELLULITIS WITH STRONG SUSPICION OF STREPTOCOCCI OR S. AUREUS IN ADULTS → INTRAVENOUS ADMINISTRATION

SEVERITY OF PREVIOUS ALLERGIC REACTION TO PENICILLIN ANTIBIOTICS

Vague history

Unconvincing history reported by patient or family

Non-severe reaction

Immediate reaction¹
Isolated cutaneous involvement (urticaria and/or angioedema)

Delayed reaction²
Isolated cutaneous involvement (Rash and/or urticaria and/or angioedema)

Severe reaction

Immediate reaction
Anaphylaxis⁴

Delayed reaction
Severe skin reaction (desquamation, pustules, vesicles, purpura with fever or joint pain, but no DRESS, SJS/TEN or AGEP)
Serum sickness³

Very severe reaction

Immediate reaction
Anaphylactic shock (with or without intubation)

Delayed reaction
Hemolytic anemia
Renal involvement
Hepatic involvement
DRESS, SJS/TEN, AGEP

Penicillin allergy CONFIRMED³
(severe or non-severe reaction only)

THE FOLLOWING CAN BE PRESCRIBED SAFELY

DISSIMILAR cephalosporins
Cefazolin OR Ceftriaxone

PRESCRIBE THE FOLLOWING WITH CAUTION

DISSIMILAR cephalosporins
Cefazolin OR Ceftriaxone

The 1st dose should always be administered under medical supervision.

If history of:

- Immediate reactions, a drug provocation test should be performed;
- Delayed reactions, the patient or his/her family should be informed of the possible risk of recurrence in the days following initiation of the antibiotic.

Penicillins
Cloxacillin

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If history of:

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AviD PRESCRIBING

Beta-lactams⁶
Choose another class of antibiotics.

PRESCRIBE THE FOLLOWING

Clindamycin

AVOID PRESCRIBING

Penicillins
Cloxacillin

IF A BETA-LACTAM⁶ CANNOT BE ADMINISTERED, THE FOLLOWING CAN BE PRESCRIBED...

Clindamycin

For further information, see the interactive tool and the decision-making tool.

AGEP: acute generalized exanthematous pustulosis;
DRESS: drug reaction with eosinophilia and systemic symptoms;
SJS: Stevens–Johnson syndrome;
TEN: toxic epidermal necrolysis.

¹ Immediate reaction (type I or IgE-mediated): usually occurs within one hour after taking the first dose of an antibiotic.
² Delayed reaction (types II, III and IV): may occur at any time from one hour after administration of a drug.
³ Delayed skin reactions and serum sickness-like reactions that occur in children on antibiotic therapy are generally non-allergic and may be of viral origin.
⁴ Anaphylaxis without shock or intubation: requires an extra level of vigilance.
⁵ With no recommendations concerning other beta-lactams.
⁶ Penicillins, cephalosporins and carbapenems

ASSESS THE SERIOUSNESS OF THE INITIAL REACTION

If severity of reaction:

- Vague history
- Non-severe reaction
- Severe reaction
- Very severe reaction

and

Recent or

Long time ago (≥ 10 years)

Immediate reaction
Isolated cutaneous involvement (urticaria and/or angioedema)

Delayed reaction
Isolated cutaneous involvement (Rash and/or urticaria and/or angioedema)

Penicillin allergy CONFIRMED
(severe or non-severe reaction only)

AviD PRESCRIBING

Beta-lactams⁶
Choose another class of antibiotics.

PRESCRIBE THE FOLLOWING

Clindamycin

AVOID PRESCRIBING

Penicillins
Cloxacillin

IF A BETA-LACTAM⁶ CANNOT BE ADMINISTERED, THE FOLLOWING CAN BE PRESCRIBED...

Clindamycin

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(severe or non-severe reaction only)

AviD PRESCRIBING

Beta-lactams⁶
Choose another class of antibiotics.

PRESCRIBE THE FOLLOWING

Clindamycin

AVOID PRESCRIBING

Penicillins
Cloxacillin

IF A BETA-LACTAM⁶ CANNOT BE ADMINISTERED, THE FOLLOWING CAN BE PRESCRIBED...

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3. Delayed skin reactions and serum sickness-like reactions that occur in children on antibiotic therapy are generally non-allergic and may be of viral origin.
4. Anaphylaxis without shock or intubation: requires an extra level of vigilance.
5. With no recommendations concerning other beta-lactams.
6. Penicillins, cephalosporins and carbapenems

ASSESS THE SERIOUSNESS OF THE INITIAL REACTION

If severity of reaction:

- Vague history
- Non-severe reaction
- Severe reaction
- Very severe reaction

and

Recent or

Long time ago (≥ 10 years)

Immediate reaction
Isolated cutaneous involvement (urticaria and/or angioedema)

Delayed reaction
Isolated cutaneous involvement (Rash and/or urticaria and/or angioedema)

Penicillin allergy CONFIRMED
(severe or non-severe reaction only)

AviD PRESCRIBING

Beta-lactams⁶
Choose another class of antibiotics.

PRESCRIBE THE FOLLOWING

Clindamycin

AVOID PRESCRIBING

Penicillins
Cloxacillin

IF A BETA-LACTAM⁶ CANNOT BE ADMINISTERED, THE FOLLOWING CAN BE PRESCRIBED...

Clindamycin

For further information, see the interactive tool and the decision-making tool.

AGEP: acute generalized exanthematous pustulosis;
DRESS: drug reaction with eosinophilia and systemic symptoms;
SJS: Stevens–Johnson syndrome;
TEN: toxic epidermal necrolysis.

1. Immediate reaction (type I or IgE-mediated): usually occurs within one hour after taking the first dose of an antibiotic.
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3. Delayed skin reactions and serum sickness-like reactions that occur in children on antibiotic therapy are generally non-allergic and may be of viral origin.
4. Anaphylaxis without shock or intubation: requires an extra level of vigilance.
5. With no recommendations concerning other beta-lactams.
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ASSESS THE SERIOUSNESS OF THE INITIAL REACTION

If severity of reaction:

- Vague history
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and

Recent or

Long time ago (≥ 10 years)

Immediate reaction
Isolated cutaneous involvement (urticaria and/or angioedema)

Delayed reaction
Isolated cutaneous involvement (Rash and/or urticaria and/or angioedema)

Penicillin allergy CONFIRMED
(severe or non-severe reaction only)

AviD PRESCRIBING

Beta-lactams⁶
Choose another class of antibiotics.

PRESCRIBE THE FOLLOWING

Clindamycin

AVOID PRESCRIBING

Penicillins
Cloxacillin

IF A BETA-LACTAM⁶ CANNOT BE ADMINISTERED, THE FOLLOWING CAN BE PRESCRIBED...

Clindamycin

For further information, see the interactive tool and the decision-making tool.

AGEP: acute generalized exanthematous pustulosis;
DRESS: drug reaction with eosinophilia and systemic symptoms;
SJS: Stevens–Johnson syndrome;
TEN: toxic epidermal necrolysis.
### First-Line Antibiotic Therapy for Cellulitis with Strong Suspicions of Streptococci or S. Aureus

**If History of Allergic Reaction to a Penicillin Antibiotic**

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Dosage</th>
<th>Recommended Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefazolin</td>
<td>1000-2000 mg IV TID</td>
<td>5 to 10 days</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>1000-2000 mg IV daily</td>
<td></td>
</tr>
<tr>
<td>Cloxacillin</td>
<td>2000 mg IV QID</td>
<td></td>
</tr>
<tr>
<td>Clindamycin</td>
<td>600 mg IV TID</td>
<td></td>
</tr>
</tbody>
</table>

1. Antibiotics are usually listed in alphabetical order using their generic name.
2. Because of its broad spectrum and increased risk of *C. difficile* infection and other side effects, ceftriaxone should be prescribed only as an alternative to cefazolin when the latter cannot be used.
3. Taking this antibiotic can cause diarrhea and intestinal symptoms that may worsen and require consultation. It is important to inform the patient of this.
4. If necessary, consult a microbiologist-infectiologist for alternatives to clindamycin.

**Back to the optimal usage guide**
CELLULITIS ASSOCIATED WITH A COMMON ANIMAL BITE (CAT OR DOG) OR A HUMAN BITE* IN ADULTS

* Including injuries caused by contact with another person’s teeth during a fight.

SEVERITY OF PREVIOUS ALLERGIC REACTION TO PENICILLIN ANTIBIOTICS

Vague history

Unconvincing history reported by patient or family

Non-severe reaction

Immediate reaction¹
Isolated cutaneous involvement (urticaria and/or angioedema)

Delayed reaction²,³
Isolated cutaneous involvement (Rash and/or urticaria and/or angioedema)

Severe reaction

Immediate reaction
Anaphylaxis⁴

Delayed reaction
Severe skin reaction (desquamation, pustules, vesicles, purpura with fever or joint pain, but no DRESS, SJS/TEN or AGEP)
Serum sickness³

Penicillin allergy CONFIRMED⁵
(severe or non-severe reaction only)

Very severe reaction

Immediate reaction
Anaphylactic shock (with or without intubation)

Delayed reaction
Hemolytic anemia
Renal involvement
Hepatic involvement
DRESS, SJS/TEN, AGEP

SEVERITY OF THE INITIAL REACTION

Decision-making for choosing a beta-lactam and the conditions of administration

For dosages see next page

AVOID PRESCRIBING

Penicillins
Amoxicillin/Clavulanate

Choose another class of antibiotics.

Doxycycline OR Moxifloxacin

PRESCRIBE THE FOLLOWING WITH CAUTION

Penicillins
Amoxicillin/Clavulanate

The 1st dose should always be administered under medical supervision.

If history of:
• Immediate reactions, a drug provocation test should be performed;
• Delayed reactions, the patient or his/her family should be informed of the possible risk of recurrence in the days following initiation of the antibiotic.

1. Immediate reaction (type I or IgE-mediated): usually occurs within one hour after taking the first dose of an antibiotic.
2. Delayed reaction (types II, III and IV): may occur at any time from one hour after administration of a drug.
3. Delayed skin reactions and serum sickness-like reactions that occur in children on antibiotic therapy are generally non-allergic and may be of viral origin.
4. Anaphylaxis without shock or intubation: requires an extra level of vigilance.
5. With no recommendations concerning other beta-lactams (penicillins, cephalosporins and carbapenems).

For further information, see the interactive tool and the decision-making tool.

AGEP: acute generalized exanthematous pustulosis;
DRESS: drug reaction with eosinophilia and systemic symptoms;
SJS: Stevens–Johnson syndrome;
TEN: toxic epidermal necrolysis.
# First-Line Antibiotic Therapy for Cellulitis Associated with a Common Animal Bite (Cat or Dog) or a Human Bite* in Adults

* Including injuries caused by contact with another person's teeth during a fight.

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Dosage</th>
<th>Recommended duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beta-lactams recommended, according to the clinical judgment support algorithm</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amoxicillin/Clavulanate</td>
<td>875/125 mg PO BID</td>
<td></td>
</tr>
<tr>
<td><strong>Alternative if a beta-lactam cannot be administered</strong></td>
<td></td>
<td>7 to 10 days</td>
</tr>
<tr>
<td>Doxycycline</td>
<td>100 mg PO BID</td>
<td></td>
</tr>
<tr>
<td>Moxifloxacin</td>
<td>400 mg PO daily</td>
<td></td>
</tr>
</tbody>
</table>

1. Antibiotics are usually listed in alphabetical order using their generic name.
2. The 7:1 (875/125 mg) formulation PO BID of amoxicillin/clavulanate is preferred due to its higher digestive tolerance.

Back to the optimal usage guide
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**CELLULITIS OF DENTAL ORIGIN IN ADULTS**

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**SEVERITY OF PREVIOUS ALLERGIC REACTION TO PENICILLIN ANTIBIOTICS**

### Vague history

- Unconvincing history reported by patient or family

### Non-severe reaction

- **Immediate reaction**¹
  - Isolated cutaneous involvement
  - (urticaria and/or angioedema)

- **Delayed reaction**²³
  - Isolated cutaneous involvement
  - (Rash and/or urticaria and/or angioedema)

### Severe reaction

- **Immediate reaction**
  - Anaphylaxis⁴

- **Delayed reaction**
  - Severe skin reaction
  - (desquamation, pustules, vesicles, purpura with fever or joint pain, but no DRESS, SJS/TEN or AGEP)

### Very severe reaction

- **Immediate reaction**
  - Anaphylactic shock
  - (with or without intubation)

- **Delayed reaction**
  - Hemolytic anemia
  - Renal involvement
  - Hepatic involvement
  - DRESS, SJS/TEN, AGEP

---

**PRESCRIBE THE FOLLOWING WITH CAUTION**

- **Penicillins**
  - Amoxicillin OR Amoxicillin/Clavulanate

The 1st dose should always be administered under medical supervision.

If history of:

- **Immediate reactions**, a drug provocation test should be performed;
- **Delayed reactions**, the patient or his/her family should be informed of the possible risk of recurrence in the days following initiation of the antibiotic.

---

**AVOID PRESCRIBING**

- **Penicillins**
  - Amoxicillin OR Amoxicillin/Clavulanate

Choose another class of antibiotics.

---

**PRESCRIBE THE FOLLOWING**

- **Clindamycin OR Levofloxacin OR Moxifloxacin**

---

1. Immediate reaction (type I or IgE-mediated): usually occurs within one hour after taking the first dose of an antibiotic.
2. Delayed reaction (types II, III and IV): may occur at any time from one hour after administration of a drug.
3. Delayed skin reactions and serum sickness-like reactions that occur in children on antibiotic therapy are generally non-allergic and may be of viral origin.
4. Anaphylaxis without shock or intubation: requires an extra level of vigilance.
5. With no recommendations concerning other beta-lactams (penicillins, cephalosporins and carbapenems).

---

For further information, see the interactive tool and the decision-making tool.

AGEP: acute generalized exanthematous pustulosis;
DRESS: drug reaction with eosinophilia and systemic symptoms;
SJS: Stevens–Johnson syndrome;
TEN: toxic epidermal necrolysis.
### FIRST-LINE ANTIBIOTIC THERAPY FOR CELLULITIS OF DENTAL ORIGIN IF HISTORY OF ALLERGIC REACTION TO A PENICILLIN ANTIBIOTIC

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Dosage</th>
<th>Recommended duration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beta-lactams</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>500 mg PO TID</td>
<td>5 to 10 days</td>
</tr>
<tr>
<td>Amoxicillin/Clavulanate²</td>
<td>875/125 mg PO BID</td>
<td></td>
</tr>
<tr>
<td><strong>Alternative if a</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clindamycin³</td>
<td>300-450 mg PO QID</td>
<td></td>
</tr>
<tr>
<td>Levofloxacin</td>
<td>750 mg PO daily</td>
<td></td>
</tr>
<tr>
<td>Moxifloxacin</td>
<td>400 mg PO daily</td>
<td></td>
</tr>
</tbody>
</table>

1. Antibiotics are usually listed in alphabetical order using their generic name.
2. The 7:1 (875/125 mg) formulation PO BID of amoxicillin/clavulanate is preferred due to its higher digestive tolerance.
3. Taking this antibiotic can cause diarrhea and intestinal symptoms that may worsen and require consultation. It is important to inform the patient of this.

Back to the optimal usage guide
SIMPLE PERIORBITAL CELLULITIS OF SINUSAL ORIGIN IN ADULTS

SEVERITY OF PREVIOUS ALLERGIC REACTION TO PENICILLIN ANTIBIOTICS

Vague history
- Unconvincing history reported by patient or family

Non-severe reaction
- Immediate reaction
  - Isolated cutaneous involvement
    - (urticaria and/or angioedema)
- Delayed reaction
  - Isolated cutaneous involvement
    - (Rash and/or urticaria and/or angioedema)

Severe reaction
- Immediate reaction
  - Anaphylaxis
- Delayed reaction
  - Severe skin reaction
    - (desquamation, pustules, vesicles, purpura with fever or joint pain, but no DRESS, SJS/TEN or AGEP)
  - Serum sickness

Very severe reaction
- Immediate reaction
  - Anaphylactic shock
    - (with or without intubation)
- Delayed reaction
  - Hemolytic anemia
  - Renal involvement
  - Hepatic involvement
  - DRESS, SJS/TEN, AGEP

PRESCRIBE THE FOLLOWING WITH CAUTION
- Penicillins
  - Amoxicillin/Clavulanate
The 1st dose should always be administered under medical supervision.

If history of:
- Immediate reactions, a drug provocation test should be performed;
- Delayed reactions, the patient or his/her family should be informed of the possible risk of recurrence in the days following initiation of the antibiotic.

CONSULT
- Refer to specialized services to learn about alternative treatment options.

AVOID PRESCRIBING
- Penicillins
  - Amoxicillin/Clavulanate
Choose another class of antibiotics.

DECISION-MAKING FOR CHOOSING A BETA-LACTAM AND THE CONDITIONS OF ADMINISTRATION

1. Immediate reaction (type I or IgE-mediated): usually occurs within one hour after taking the first dose of an antibiotic.
2. Delayed reaction (types II, III and IV): may occur at any time from one hour after administration of a drug.
3. Delayed skin reactions and serum sickness-like reactions that occur in children on antibiotic therapy are generally non-allergic and may be of viral origin.
4. Anaphylaxis without shock or intubation: requires an extra level of vigilance.
5. With no recommendations concerning other beta-lactams (penicillins, cephalosporins and carbapenems).

For further information, see the interactive tool and the decision-making tool.

AGEP: acute generalized exanthematous pustulosis;
DRESS: drug reaction with eosinophilia and systemic symptoms;
SJS: Stevens–Johnson syndrome;
TEN: toxic epidermal necrolysis.
<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Maximum dosage</th>
<th>Recommended duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta-lactams recommended, according to the clinical judgment support algorithm</td>
<td>Amoxicillin/Clavulanate¹</td>
<td>875/125 mg PO BID</td>
</tr>
</tbody>
</table>

1. The 7:1 (875/125 mg) formulation PO BID of amoxicillin/clavulanate is preferred due to its higher digestive tolerance.

Seek a consultation with specialized services to learn about alternative treatment options.

Back to the optimal usage guide