

Cellulitis in adults and children:
Identification, diagnosis, optimal use of
antibiotics, and measures to prevent
complications or recurrences

English summary

Une production de l'Institut national
d'excellence en santé
et en services sociaux (INESSS)

SUMMARY

Cellulitis in adults and children: Identification, diagnosis, optimal use of antibiotics, and measures to prevent complications or recurrences

Introduction

Cellulitis is an infection of the skin and underlying tissues resulting from a breach in the skin barrier. It is usually bacterial in nature and is primarily caused by β -hemolytic streptococci and *Staphylococcus aureus*. A mixed bacterial etiology may also be suspected in cases of animal or human bites or cellulitis of sinus or dental origin. If this infection is not treated promptly, cellulitis can progress to serious complications, such as necrotizing fasciitis or septicemia. In October 2017, the Institut national d'excellence en santé et en services sociaux (INESSS) published recommendations and clinical guidelines to support the diagnosis and management of cellulitis in adults and children, which were presented in two tools. Given the evolving knowledge, INESSS deemed it necessary to update its work to reflect the latest scientific data, its recent related work, and trends in best practices concerning the subject, particularly with regard to antibiotic stewardship.

Methodology

For this *Guides and Standards* project, the assessment questions were drafted in such a way as to mainly cover the populational, clinical and organizational dimensions of INESSS's [Statement of Ethical Principles and Foundations](#). A structured literature search across three bibliographic databases, supplemented by a manual search of the grey literature, was conducted to update the systematic review of clinical practice guides, guidelines, and health technology assessment reports that was carried out in 2017. Items published in French and English from 2020 to 2025 were targeted. A monitoring of emerging scientific literature was conducted up to May 2026. Two scientific professionals contributed to the processes of document selection, data extraction, and methodological quality assessment using the appropriate tools. All of the information gathered was analyzed and synthesized with a view to contextualizing practice in Québec. The perspectives of the different stakeholders were gathered by an advisory committee consisting of health professionals from different specialties and areas of expertise. The key clinical guidelines were identified and the recommendations were drafted in collaboration with the advisory committee's members, based primarily on the assessment of all the available evidence. Lastly, the overall quality of the work, its acceptability and its applicability were assessed by external reviewers who are specialists in the field of interest.

Main findings

Upon completion of the analysis of all the information gathered and of the iterative process with the advisory committee's members, the following findings and key messages were derived from the changes made since the previous version of the work.

Consolidate clinical presentation of cellulitis

In addition to retaining the four cardinal signs of cellulitis – erythema, edema, warmth and tenderness – and other specific features, the update now includes additional suggestive clues, such as the presence of a streak of lymphangitis and a temperature difference between affected and healthy areas. The warning signs have been retained as well, but they are now arranged in order of priority, with necrotizing fasciitis and orbital involvement being major emergencies. Several warning signs from the 2017 version have been moved to the new category of complication risks, which also includes new aspects related to the choice of antibiotic administration route. The remaining warning signs have been grouped according to their unusual location. The differential diagnosis has been enhanced with clinical examples, in addition to the inclusion of, among others, simple abscess and pediatric staphylococcal scalded skin syndrome. The clinical presentation is now further clarified by the inclusion of a description of the severity levels of the infection to distinguish between mild and moderate infections. This description plays a key role in determining the route of administration and the duration of antibiotic therapy.

Treat according to treatment principles and the source of the infection

Antibiotic therapy practice has changed only slightly since the publication of the previous recommendations. Although the choices of antibiotic have changed little, previously, clinicians would choose an antibiotic from a list of oral (PO) and intravenous (IV) options without clear guidance. In the update, priority is given to the PO antibiotic with the narrowest spectrum, while IV antibiotics are reserved for cases of moderate infection with a risk of complications. In addition, the treatment durations are shorter, generally being 5 to 7 days, with a preference for 5 days for mild or moderate cellulitis, except in dental cellulitis, for which a 3-day duration may be appropriate, depending on the choice of antibiotic.

Among the changes concerning the different antibiotics, cefadroxil, which is no longer recommended for pediatric use by Health Canada, has been removed from the list of treatment options for typical infectious cellulitis in children. Also for this condition, the complexity of preparing IV cloxacillin and its QID administration make its use less desirable, with the result that it has been removed from the treatment options for both adults and children. Additionally, amoxicillin/clavulanate is no longer an option for typical cellulitis in adults and children, as its spectrum is too broad. It still is, however, an option for cellulitis due to unusual causes (human or animal bites, infection of dental or sinus origin). Note that the pediatric amoxicillin-clavulanate dosage has been revised downward for cellulitis of dental origin (45 mg/kg/day PO divided into BID; max. 1,500 mg/day), in line with the new recommended dental practices. Furthermore, in both populations, it is reserved for more extensive moderate infections of dental origin. The

preferred alternatives for this type of infection are amoxicillin alone and penicillin V, the latter being an alternative in adults only if amoxicillin cannot be used. For atraumatic preseptal (periorbital) cellulitis of sinus origin, amoxicillin-clavulanate, recommended in the 2017 version, has been retained and cefuroxime and high-dose amoxicillin have been added.

For cases of allergy to *penicillins* or another beta-lactam antibiotic in typical cellulitis (with strong suspicion of streptococci or *S. aureus*), other antibiotics have been added to clindamycin, which was previously the only option recommended. Clear guidelines for using fluoroquinolones as a last resort in adults in this context have also been added. However, fluoroquinolones are no longer options for cellulitis of dental origin in either population. A macrolide, among other options, is recommended for this type of infection. Lastly, for atraumatic preseptal cellulitis of sinus origin in adults and children with a true *penicillin* allergy, antibiotic alternatives are included in the update, unlike in the previous version.

Lastly, certain supportive treatments to accompany antibiotic therapy, and measures to promote healing and reduce recurrences have been added. In this regard, reminders for the patient and their family have been included, along with a reminder to return any unused antibiotics to the pharmacy for responsible disposal, a measure that helps reduce their environmental impact.

Refer based on severity, complexity and areas of expertise

Since 2017, the *Professional Code* has been constantly undergoing changes, especially the expansion of the practice autonomy of nurses and pharmacists. In addition, new pathways for accessing specialized services have been created for primary care providers (e.g., digital consults and clinical access services). The update takes into account the recent changes in the healthcare system. In addition to improvements to the warning signs that warrant referring a patient to emergency services, the clinical situations calling for a consultation with an experienced colleague, a physician from another medical specialty, or a dental specialist have been enhanced. These include, among others, complex cases and suspected uncertain etiology.

Recommendations and clinical tools

Following the completion of the work and the iterative process with the advisory committee's members, the clinical guidelines and previous recommendations were retained, deleted or modified, and recommendations and new information were added. The new content in this report has also been incorporated into the two accompanying clinical tools, which were updated after completion of the work and which are intended primarily for front-line clinicians.

Conclusions

While not intended as a substitute for clinical judgment, this update and the ensuing recommendations will promote harmonized practice across the province by reducing treatment durations and offering a wider range of antibiotics for patients with *penicillin* allergies. In particular, this work is expected to:

- Help improve the quality of care by reducing suboptimal practices, such as the inappropriate use of systemic antibiotics that promote antibiotic resistance or of a topical antibiotic treatment;
- Help reduce healthcare costs by decreasing hospitalizations, infectious complications, and recurrences through the use of appropriate antibiotic therapies;
- Contribute to the positive environmental impacts associated with a shorter treatment duration, which reduces environmental releases, curbs antimicrobial resistance, and reduces pharmaceutical waste.

However, the potential impact will depend on the dissemination of the clinical tools accompanying this report, and on their uptake by the health professionals concerned. In this regard, different approaches are suggested to support the implementation of the recommendations in practice, namely, that:

- Healthcare institutions:
 - Update their relevant protocols and tools, and include a link to the clinical tools or ensure that the most up-to-date version of the INESSS tools is hosted within the healthcare and pharmaceutical software programs;
 - Implement INESSS's recommendations in their clinical access services;
- Educational institutions:
 - Update the basic training provided to future clinicians who will have to identify and diagnose these infections;
- Associations, federations and professional orders:
 - Update the existing training to enhance knowledge of the optimal therapeutic approach based on the severity of the infection;
- The Ministère de la Santé et des Services sociaux and Santé Québec:
 - Foster the creation of clinical access services for cellulitis in all healthcare facilities across Quebec, including remote areas;
 - Assess the feasibility of implementing certain measures to facilitate access to decompression devices.

Key monitoring indicators

The success of implementing the recommendations could be measured by the reduction in:

- The antibiotic spectrum for treating typical cellulitis;
- The duration of treatment for cellulitis;
- Recurrences, an indication of optimal clinical management.

**Institut national
d'excellence en santé
et en services sociaux**

Québec



Siège social

2535, boulevard Laurier, 5^e étage
Québec (Québec) G1V 4M3
418 643-1339

Bureau de Montréal

2021, avenue Union, 12^e étage, bureau 1200
Montréal (Québec) H3A 2S9
514 873-2563

inesss.qc.ca

