

1. Introduction

This document sets out the University Hospitals of Leicester (UHL) NHS Trust's Policy and Procedures for the diagnosis, investigations and treatment of dental abscess for adults in secondary care.

This guideline does not apply to the management of chronic infections such as infected osteonecrosis or osteomyelitis of the jaw. Such patients should be discussed with microbiology and maxillofacial surgeons. The management of deep neck space infection and Ludwig's angina are discussed in the trust ENT guidelines available on INsite.

For surgical prophylaxis see separate guidelines available on INsite.

The antibiotic doses in this guideline are intended for adult patients with normal renal and liver function, and are not applicable to pregnant or breast feeding patients unless otherwise stated. Refer to Microbiologist/ Pharmacist for further advice in these patients.

Related Documents:

- Guidelines for the Treatment of Ear Nose and Throat Infections in Adults [\[link\]](#)
- Antibiotic Guide for Surgical Prophylaxis in Adults [\[link\]](#)

1.1. Definitions used in this guideline ^{1,2,4}:

Dental abscess: collection of pus in the teeth, supporting structures of the teeth, or gums. A periapical abscess (dentoalveolar abscess) originates in the centre of the tooth, a periodontal abscess originates in the supporting structures of the teeth.

Deep neck space infection: infection extending into submandibular space, parapharyngeal space, or retropharyngeal space.

Ludwig's angina: an aggressive, rapidly spreading cellulitis arising from the sublingual space.

1.2. Background:

Dental abscess requires prompt recognition and treatment. Untreated abscesses can spread to deeper structures resulting in systemic sepsis, particularly if the patient is immunocompromised. The mainstay of treatment is source control (i.e. removal of the tooth and drainage of the abscess). Antibiotics are an adjunct to, not a replacement of, surgical intervention and are not usually required in the absence of systemic illness. Unnecessary antibiotic use increases the risk of antibiotic resistance, side effects, and *C.difficile* infection so should be avoided wherever possible. ^{1,2}

The human mouth contains a wide range of bacteria, even in healthy people. However, many of the organisms normally present in the mouth can also cause abscesses. As such it can be difficult to determine whether a positive culture result represents colonisation or infection.

Penicillin based regimens are the treatment of choice for dental abscesses and as such, accurate documentation of penicillin allergies and intolerances is imperative. When a patient reports a beta-lactam allergy it must be accurately characterised, and common intolerances of specific beta-lactams (e.g. nausea with flucloxacillin) should not be incorrectly labelled as an allergy to the entire class.

2. Scope

All medical staff/prescribers assessing and treating adult patients with dental abscesses.

3. Recommendations, Standards and Procedural Statements

Assessment of the patient should include enquiring about risk factors for dental abscess, signs and symptoms associated with dental abscess, and an assessment of severity (outlined below).

3.1. Risk factors include ^{1,2,3}:

- Poor Dental hygiene - infrequent brushing/flossing
- Diet - high intake of sugary/acidic food/drinks
- Previous dental procedures
- Comorbidities e.g. diabetes/immunosuppression
- Medications causing dry mouth (for example antihistamines, anticholinergics, antidepressants)
- Alcohol or drug misuse
- Malnutrition

3.2. Symptoms of dental abscess include ^{1,2,3}:

- Pain - usually sudden onset worsening over hours to days
- Tenderness of the tooth to percussion and mobility, or pressure from biting
- Unpleasant taste in the mouth.
- Fever, malaise
- Trismus

3.3. Signs include ^{1,2,3}:

- Swelling (localised or spreading)
- Regional lymphadenopathy
- Altered tooth appearance: the affected tooth may be elevated, broken, or show signs of decay
- Gum swelling
- Purulent drainage

3.4. Assessment of severity ^{1,2,3}:

Initial assessment should include a screen for sepsis. If sepsis is suspected, please refer to the trust sepsis guidelines on InSite

Other markers of severe disease indicating a need for hospital admission include:

- Diffuse swelling, particularly if it may compromise the airway, cause difficulty in swallowing or closure of the eye
- Cellulitis of the face or neck
- Trismus
- Dehydration characterised by lethargy, dizziness and headache

- Failure of resolution of infection following previous treatment
- 'Floor of mouth' swelling
- Neurological signs (e.g. decreased level of consciousness, headache, and eye signs such as diplopia, papilloedema, pupil dilation, proptosis).

3.5. Investigations:

Biochemistry:

- Inflammatory markers (e.g. CRP and white cell count) are usually elevated, but this does not distinguish dental abscess from other infections, and there is conflicting evidence whether inflammatory markers correlate with length of stay in dental abscess ^{5,6}.

Imaging:

- An Orthopantomogram radiograph is recommended to screen for more advanced pathology, fractures, and assess impacted teeth ³
- CT head and neck may be required if there is concern regarding collections in the deeper neck spaces or uncertainty as to cause of infection. ³

Microbiological sampling ³:

- Blood cultures should be obtained if the patient is febrile or reports a history of fever
- Superficial swabs of the abscess are unlikely to be useful, as any organism grown may reflect the normal commensal bacteria of the mouth.
- An aspirate of pus directly from the abscess may yield more reliable culture results, but these are not usually required and should not delay treatment.
- Pus obtained at the time of tooth removal is the most reliable specimen. Organisms grown directly from the pus are most likely to represent the causative pathogen. However, identification of a resistant organism does not necessarily mean the patient needs additional/alternative antibiotic if they have already responded to surgical treatment. Therefore culture results are unlikely to alter management for the majority of patients with dental abscess, but may be useful in cases unresponsive to initial treatment.

3.6. Treatment ^{1,2,3}:

All cases of dental abscess requiring inpatient treatment should be referred to a maxillofacial surgeon for tooth removal +/- incision and drainage. If not requiring hospital admission, they may be treated with extraction by a Dentist within the community.

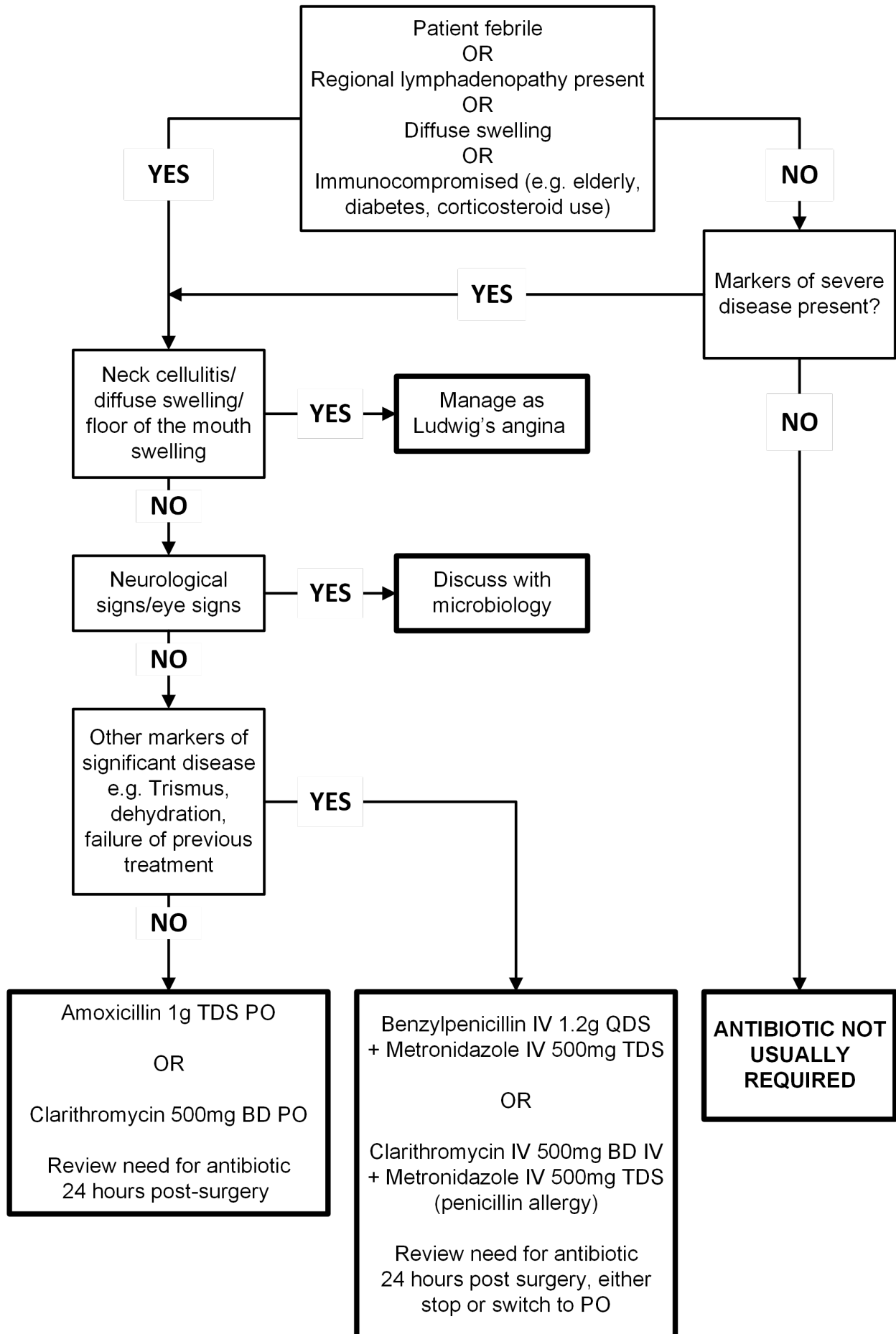
Advice on how to locate an NHS Dentist can be found on the NHS website: <https://www.nhs.uk/nhs-services/dentists/how-can-i-access-an-nhs-dentist-in-an-emergency-or-out-of-hours/> or by telephoning 111.

Whilst awaiting surgical treatment, patients should be offered analgesia and self-care advice (avoid flossing affected tooth, chew on other side of mouth, avoid hot or cold food).

Patients who are systemically well, with no markers of severity, and who are not immunocompromised, do not usually require antibiotics.

Where antibiotics are indicated, they should be initiated immediately whilst waiting for definitive management (follow flow chart below). It must be emphasised that antibiotic alone will not resolve an abscess, and their role before surgery is just to delay further deterioration. The initial choice of agent and route of administration is guided by the severity of the patient's illness, their comorbidities, and allergies (see flow chart below).

Figure 1: Flow chart for the antibiotic management of inpatients with dental abscess, whilst awaiting tooth extraction



3.7. Ongoing therapy

The need for ongoing antibiotics should be reviewed 24 hours post-operatively, and then daily whilst the patient remains in hospital. Up to 5 days of antibiotic can be given without an authorisation code but clinicians should consider stopping antibiotics earlier than this if there has been resolution of swelling and fever. If there is failure of resolution or deterioration, check whether there has been adequate drainage. If there is ongoing fever despite adequate drainage, or if more than 5 days of antibiotic are required, discuss with microbiology.

4. Education and Training

None additional

5. Monitoring and Audit Criteria

All guidelines should include key performance indicators or audit criteria for auditing compliance, if this template is being used for associated documents (such as procedures or processes) that support a Policy then this section is not required as all audit and monitoring arrangements will be documented in section 8 of the Policy.

Key Performance Indicator	Method of Assessment	Frequency	Lead
Adherence to guideline in terms of choice and duration of antimicrobial therapy	Annual Trust Wide Antimicrobial Prescribing Audit	Annual	Antimicrobial Pharmacists

6. Supporting Documents and Key References

1. Palmer, N. (Ed). 'Antimicrobial Prescribing in Dentistry: Good Practice Guidelines. 3rd Edition'. London, UK: Faculty of General Dental Practice (UK) and Faculty of Dental Surgery; 2020.
2. National Institute of Clinical Excellence Clinical Knowledge Summaries: Dental Abscess <https://cks.nice.org.uk/topics/dental-abscess/>
3. BMJ best practice: Dental Abscess. <https://bestpractice.bmj.com/topics/en-gb/1206>
4. Chow, A. 'Epidemiology, pathogenesis, and clinical manifestations of odontogenic infections' (Uptodate)
5. Mair et al 'Comparative analysis of paediatric and adult surgically drained dental infections at a university teaching hospital', *The British Association of Oral and Maxillofacial Surgeons*, 2020; 58 (10): e307-e311
6. Heim N, Wiedemeyer V, Reich RH, et al. 'The role of C-reactive protein and white blood cell count in the prediction of length of stay in hospital and severity of odontogenic abscess', *J Craniomaxillofac Surg*, 2018;46(12):2220–6

7. Key Words

Dental abscess

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This table is used to track the development and approval and dissemination of the document and any changes made on revised / reviewed versions

DEVELOPMENT AND APPROVAL RECORD FOR THIS DOCUMENT			
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Reviewed by:	Mr Christopher Avery		
Approved by:	Policy and Guideline Committee		Date Approved: 16/09/2022
REVIEW RECORD			
Date	Issue Number	Reviewed By	Description Of Changes (If Any)
DISTRIBUTION RECORD:			
Date	Name	Dept	Received