



Management of oral-dental foci of infection

Recommendations

French Society of Oral Surgery

Introduction

The oral cavity specialist frequently receives patients referred by practitioners from different specialties to look for oral-dental foci of infection (ODFI).

Screening for ODFI is requested by the correspondent in several circumstances:

- In light of a specific general condition, to prevent the occurrence of secondary infection or to stabilise a general disorder;
- To look for the starting point of a secondary infection;
- Before initiating medical therapy (chemotherapy, immunosuppressant therapy) or physical therapy (radiotherapy) that may promote or worsen an infectious process;
- To prepare the patient for surgery.

Only bacterial foci of infection are discussed in these recommendations. Moreover, infectious disorders of the mucosa and salivary glands are excluded from this presentation.

We can define the following:

- ODFI (active or latent): Effective existence of bacterial foci, whether it involves confirmed infection or if there is no clinical impact at time of the observation;
- Potential infectious risk situations (PIRS): that may become foci of infection in the future as the result of conditions satisfied on a local level.

Bacteraemia, infectious virulence (see diagram)

There are many more cases of bacteraemia caused by action of daily life (tooth brushing, mastication) than by dental care (level of evidence 2).

A viable tooth which has caries whose treatment does not involve the risk of a break in the pulp does not represent a focus of infection that may lead to dissemination (HPA).

By comparison with endodontic treatment of a viable tooth,

- Endodontic treatment of a necrotic tooth
- Repetition of endodontic treatment

represent an enhanced risk of causing bacteraemia (HPA).

A necrotic tooth represents an ODFI or a PIRS (HPA).

Dis-impacted teeth represent active or latent focus of infection (HPA).

Abbreviations:

ODFI: oral-dental focus of infection

PIRS: potential infectious risk situation

Level of evidence 1: established scientific evidence

Level of evidence 2: scientific presumption

Level of evidence 3: low level of scientific evidence

HPA: high professional agreement

RC: professional agreement with relative consensus

General population

For the entire population, independently of notion of disorder:

1. It is recommended that ODFI (HPA) as well as PIRS be eliminated (RC).
2. Discovery of ODFI must be mentioned in the information given to the patient, specifying possible effects of this infection (HPA).
3. Discovery of PIRS must be mentioned in the information given to the patient (HPA), containing evaluation of risk of development of infection (RC) and specifying possible effects of such infection (HPA).

Conduct of screening to detect foci of infection

4. An oral-dental evaluation must necessarily consist of a clinical examination (interview, periodontal probing, test of viability, percussion, palpation of lymph node chains, etc.) (HPA). *See also recommendation #28.*
5. An initial assessment must necessarily consist of a panoramic radiographic examination (HPA).
6. In the event of doubt in reading of a panoramic x-ray, the radiographic examination must be supplemented by other examinations: retro-alveolar views, conical ray volume tomography (cone-beam), CT-scan (HPA).

General approach in patients with specific risk of infection (other than dental):

7. Prior contact with the doctor responsible for follow-up of the patient is recommended to evaluate medical risk (HPA).
8. In the event of occurrence of an oral-dental infection, the general medical context (radiotherapy, chemotherapy, cardiac surgery, etc.) must not delay the surgical and/or medical management of the infectious emergency. In particular, an abscess must be drained (HPA).

Therapeutic decision in patients presenting with a specific risk of infection:

9. In the event of ODFI, as in PIRS, choice of oral-dental treatment must incorporate multiple notions, in particular (HPA):
 - the vital prognosis of the patient related to the general disorder,
 - the risk related to abstention from therapy, in particular depending on the assumed virulence of the focus of infection ,
 - morbidity inherent in each therapeutic solution,
 - the expected benefit of each therapeutic proposal for the patient's comfort,
 - foreseeable patient compliance with measures of hygiene and repeat visits.
10. In all cases, the different treatments must be explained to the patient and his or her informed consent must be obtained (HPA).

Control of healing in patients with a specific risk of infection

11. Healing of the mucosa after a tooth extraction requires a minimum duration of one week. It must be evaluated by a repeat clinical examination (HPA).

Cervical-facial radiotherapy

Before radiation

12. Before any cervico-facial radiation (HPA):
 - An oral-dental evaluation must be undertaken as soon as possible.
 - It is imperative to rule out ODFI located in the fields of radiation.
13. Surgical procedures designed to treat the oral cavity must be undertaken as soon as possible so that healing of the mucosa is acquired before start of radiotherapy (HPA).

After radiation (and whatever the time period):

14. It is not necessary to implement specific measures if the dose of radiation received by the maxilla and/or the mandible is less than 30 Gy (RC).
15. In order to decrease the risk of osteo- radionecrosis, tooth extractions that may be necessary must be performed:
 - After information on the dose of radiation received and the fields of radiation (HPA),
 - In a surgical technical platform appropriate for the case and which provides a guarantee of quality and safety (HPA).
16. In light of the risk of osteo-radionecrosis, antibiotic treatment must be initiated in the event of an invasive procedure (tooth extraction, curettage, etc.) (HPA). It is necessary to start this prescription at least 1h before the procedure (HPA) (no consensus on a longer time period) and to continue it until healing of the mucosa (HPA).
17. After radiation greater than 30 Gy, oral-dental follow-up is recommended at a frequency of every 4 to 6 months (RC).

Steroid therapy

18. Systemic steroid therapy does not justify specific management solely as the result of its existence:
 - If prescribed at a dosage less than 10 mg/d prednisone-equivalent,
 - or
 - If duration of less than 8 days with dosage less than 1 mg/Kg/d prednisone-equivalent (HPA).

Transplantation, immunocompromised status

19. Before transplantation or initiation of immunosuppressant therapy, and insofar as the emergency to initiate treatment so authorises:
 - An oral-dental evaluation must be performed as soon as possible (HPA).
 - It is imperative to eliminate ODFI (HPA).
 - Surgical procedures intended to restore the oral cavity must be undertaken as soon as possible so that healing of the mucosa is acquired before transplantation or initiation of immunosuppressant therapy (HPA).
20. In patients who undergo transplantation, oral-dental follow-up is recommended at a frequency of every 4 to 6 months (RC).
21. In the event of discovery of HIV seropositive status, it is desirable to carry out oral-dental evaluation to screen for ODFI (HPA).
22. In patients with AIDS, oral-dental follow-up is recommended at a frequency of every 4 to 6 months (RC).

Chemotherapy

Before chemotherapy

23. Before cancer chemotherapy and insofar as the emergency to initiate treatment so authorises:
 - An oral-dental evaluation must be undertaken as soon as possible (HPA).
 - Before **non-aplastic anaemia-inducing** chemotherapy, it is recommended in particular (*) that ODFI be ruled out (HPA).
 - Before **aplastic anaemia-inducing chemotherapy**, it is imperative to rule out ODFI (HPA).
24. Surgical procedures intended to restore the oral-cavity must be undertaken as soon as possible so that the healing of the mucosa is acquired before start of chemotherapy (HPA).

During chemotherapy

25. Therapeutic procedures (dental extraction, etc.) must be performed:
 - With knowledge of laboratory test data (CBC, coagulation test) (HPA),
 - Only if they are urgent (RC),
 - Under antibiotic prophylaxis continued until healing of the mucosa of the wound and if the neutrophil count is lower than 500/mm³ of blood (HPA). There is no consensus on antibiotic prophylaxis for a neutrophil count greater than 500/mm³ (PC).
26. Outside of emergency cases, surgical procedures can be performed during a phase of a normal neutrophil count (HPA).

Patient at risk for infectious endocarditis

27. An oral-dental evaluation must be performed as soon as possible before valvular surgery (HPA).
28. During a clinical examination in patients with a high risk of infectious endocarditis, periodontal probing must be performed under antibiotic prophylaxis (HPA).
29. It is especially (*) recommended that ODFI be ruled out in patients with a moderate risk of infectious endocarditis (HPA).
30. It is imperative to rule out ODFI in subjects at high risk of infectious endocarditis (HPA).
31. Surgical procedures intended to restore the oral cavity must be undertaken as soon as possible so that healing of the mucosa is acquired before valvular surgery (HPA).
32. In patients at high risk of infectious endocarditis, oral-dental follow-up is recommended at a frequency of 4 to 6 months (RC).

Situations at high risk of infectious endocarditis
Cardiac prosthetic valve
History of endocarditis
Congenital heart disease: <ul style="list-style-type: none">• Cyanogenic not repaired, including shunts and palliative conduct• Completely repaired with prosthetic material, placed by catheterisation or surgically during the 6 months following the procedure• Repaired with residual defects on the site or adjacent to the site of the prosthetic patch

(*) Compared to a healthy patient, in whom it is recommended that focal infection be ruled out.

33. In subjects with moderate risk of infectious endocarditis, frequency of follow-up can be identical to that recommended for the general population (annual) (RC).

Prosthetic joints

34. Before placement of a prosthetic joint:
- It is recommended that an oral-dental evaluation be performed (HPA).
 - It is imperative to rule out ODFI (RC).
35. Surgical procedures intended to restore the healthy the oral cavity must be undertaken at the earliest so that healing of the mucosa is acquired before placement of the prosthetic joint (HPA).
36. In a subject with a prosthetic joint, the frequency of oral-dental follow-up can be identical to that recommended for the general population (annual) (RC).

Targeted biological therapies for immunosuppressant purposes (monoclonal antibodies: anti-TNF alpha, anti-lymphocyte, etc.)

37. It is imperative to rule out ODFI before initiation of targeted biological therapy for immunosuppressant purpose (RC).
38. If intensive care (tooth extraction, placement of implants, etc.) is undertaken during treatment, special attention must be given to the potential occurrence of post-operative infection: vigilance, information for the patient. A decision on treatment will be taken on a case by case basis by weighing the benefit/risk ratio with the prescribing doctor, who possibly will propose a conditioning of the patient (who can understand the suspension of treatment) (HPA).

Treatment with bisphosphonates

39. At time of initiation of treatment with a bisphosphonate (whatever the indication), it is recommended that an oral-dental evaluation be performed (RC).
40. It is recommended in particular (*) that ODFI be ruled out before treatment with a bisphosphonate (whatever the indication) (HPA).
41. In patients who are or who have been treated with a bisphosphonate in the context of a malignancy:
- It is recommended that tooth extraction be performed with a surgical technical platform appropriate for the case and providing guarantee of quality and safety (HPA).
 - Oral-dental follow-up is recommended at a frequency of every 4 to 6 months (RC).
42. In patients who are or who have been treated with a bisphosphonate outside of the context of a malignancy:
- Tooth extractions can be the subject of management in a general dental office in compliance with rules on management (RC).
 - The frequency of dental follow-up must be identical to that recommended for the general population (RC).

Chronic respiratory disorders

43. It is especially (*) recommended that ODFI be ruled out in patients presenting with chronic respiratory disorders (chronic obstructive pulmonary disease, asthma, etc.) (HPA).

Diabetic patients

The eradication of ODFI improves control of blood glucose in diabetic patients (level of evidence 1).

44. As soon as the diagnosis of diabetes is established, it is recommended that an oral-dental evaluation be performed (HPA).
45. Diabetic patients can be subject to management in a general dental office, after verification of control of diabetes (HPA).
46. It is especially (*) recommended that ODFI be ruled out in diabetic patients whose diabetes is **controlled** (HPA).
47. In diabetic patients **not controlled** (glycosylated haemoglobin > 7%):
- It is imperative to rule out ODFI (RC).
 - In the event of an invasive procedure, it is necessary to start antibiotic prophylaxis within the hour prior to the procedure and to continue it up until healing of the mucosa of the wound (RC).
 - Oral-dental follow-up is recommended at a frequency of 4 to 6 months (RC).

Pregnancy

Periodontal treatment can be performed during pregnancy (preferably during the 2nd trimester) but would not enable a decrease in preterm births or of low birth infants (level of evidence 2).

48. In pregnant women or those who intend to become pregnant, it is recommended that an oral-dental evaluation be performed (HPA).
49. It is especially (*) recommended that ODFI be ruled out in a woman who intends to become pregnant (HPA).

Situations with no level of evidence

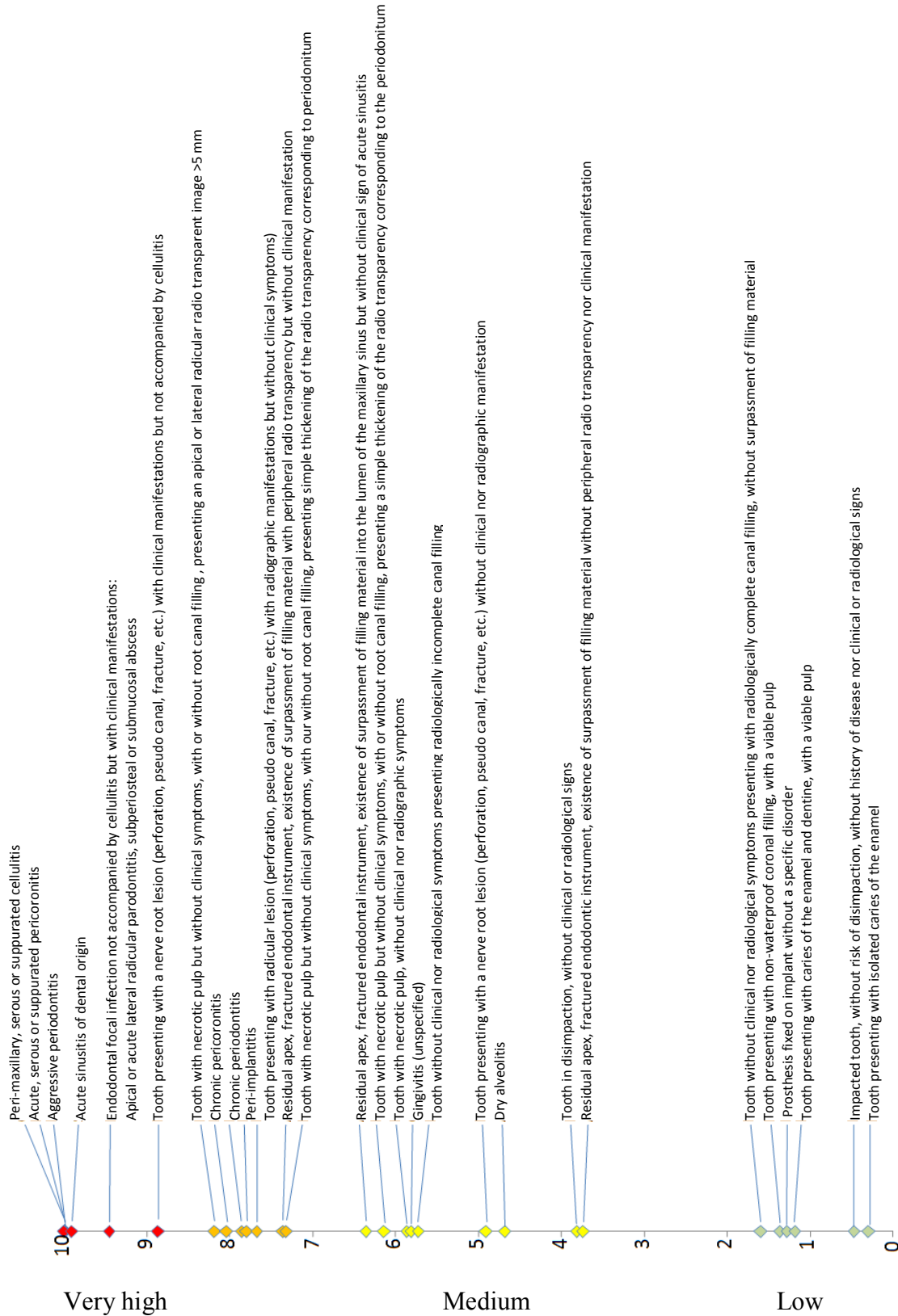
There is no evidence to confirm that ODFI can cause tendonitis.

Similarly, a consensus has emerged to consider that it is not necessary to look for an oral-dental origin in the event of uveitis.

(*) Compared to healthy patients, in whom it is recommended that a focal infection be ruled out

Presumed virulence of different clinical situations

In the absence of data from the literature, the experts on the pilot group and for grading proposed this diagram intended to clarify the practitioner in his choice of therapy



A guideline for additional risk of infection compared to a healthy tooth in a dental arch, from 0 to 10

Synthesis of recommendations

The risk of infection related to dental procedures performed in the dentist's office must be placed in perspective. In fact, far more bacteraemia is induced by actions of daily life (tooth brushing, mastication) than by dental care.

An oral cavity specialist frequently receives patients referred by practitioners for different specialities to look for and eradicate oral dental focal infection before transplantation, initiation of immunosuppressant therapy, chemotherapy, radiotherapy or cardiac valvular surgery.

An oral-dental evaluation must necessarily consist of a **complete clinical examination** (interview, periodontal probing, tests of viability, percussion, palpation of the lymph node chains, etc.) as well as a **panoramic radiographic examination**, which must be supplemented in the event of suspicion by other examinations (retro-alveolar views, cone-beam, CT-scan).

In all cases, **surgical procedures intended to restore the oral cavity must be undertaken as early as possible**, so that healing of the mucosa is complete before the presence of an additional risk of infection occurs.

In patients with a specific risk of infection, **healing of the mucosa** after tooth extraction requires a **minimum duration of one week**. It must be evaluated by a **clinical repeat examination**.

Some cases may enhance the risk of infection for as long as a wound has not closed. This is the case with patients presenting with a risk of osteoradionecrosis, diabetics whose diabetes is not under control (glycosylated haemoglobin > 7%), or subjects in whom the neutrophil count is lower than 500/mm³ of blood. In these cases, antibiotic treatment must of course be initiated before the invasive procedure, but also **continued until healing of the mucosa**.

In the event of an oral-dental infection occurring in a patient who otherwise is frail (radiotherapy, chemotherapy, risk of cardiac valvular infection, etc.), the **general medical context must never be a pretext to delay management of the infectious emergency** (in particular, an abscess must be drained).

Systemic steroid therapy does not justify special management as the result solely of its presence if at a dosage of less than 10 mg/d prednisone equivalent or if the duration is of less than 8 days for a dosage of less than or equal to 1 mg/Kg/d prednisone-equivalent.

Similarly, it is not necessary to take special measures of the dose of radiation received by the maxilla and/or the mandible is less than 30 Gy.

During the clinical examination in patients **with a high risk of infectious endocarditis, periodontal probing must be performed under antibiotic prophylaxis**.

In patients who are or who have been treated with bisphosphonates outside of the context of a malignancy, tooth extraction can be managed in the general dentist's office, in compliance with rules for management. Similarly, diabetic patients can be managed in the general dentist's office, after

verification that the diabetes is under control. On the contrary, in patients who are or who have been treated with **bisphosphonates in the context of a malignancy**, as well as in patients with **risk of osteoradionecrosis**, it is recommended that tooth extraction be performed in a **surgical technical platform appropriate for such a situation and with provision of guarantees on quality and safety** (for example, in hospital setting).

In the event of a specific risk of infection (other than dental), different options for the treatment of an oral-dental focal infection must be explained to the patient, and his or her informed consent must be collected.

Choice of treatment chosen must incorporate in particular the following:

- the patient's **vital prognosis** related to the general disorder
- the risk related to **abstention from therapy**
- **morbidity** inherent in each therapeutic solution
- the expected benefit of each therapeutic proposal on the patient's **comfort**
- **foreseeable compliance** with measures of hygiene and repeat visits

In order to provide clarity to the practitioner in his or her choice of treatment and in the absence of data from the literature, the experts have expressed in a diagram their **estimate of risk of infection** in the most common situations. The highest risk corresponds to peri-maxillary cellulitis, acute pericoronitis and aggressive periodontitis.

Text of the argument of this work is accessible at
http://www.societechirorale.com/documents/Recommandations/foyers_infectieux_argument-EN.pdf