

# ORTHOPRACTICE SECTION

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## Managing high risk orthodontic patients

Sylvie LEGRIS

### 1 – INTRODUCTION

Medical progress along with technical and scientific advances have made it possible to reduce the prevalence of many diseases, to treat certain pathologies, to improve their prognosis and to increase life expectancy. *Ipsa facto*, the number of patients classified as “at risk” is constantly growing.

However, orthodontic treatment is above all a medical treatment. It is used more and more for adult patients who often require pluridisciplinary treatments that are complicated to execute from a maxillo-facial standpoint as well as in general. Because of this, practitioners, who are responsible for the care of their patients, must have the know-how and expertise to provide appropriate and quality care within the framework of orthodontic treatment for all patients in need, regardless of their age, their economic,

social or medical status<sup>6</sup>. It follows that medical risk must be identified and anticipated.

Anticipation is premised on taking precautions, performing appropriate procedures or, if necessary, refusing to administer orthodontic treatment.

It must be clearly understood that our care has an impact on the general pathologies of patients and conversely, their pathologies have an affect on our procedures<sup>2</sup>. The publication of new recommendations for good practice by the French Health Products Safety Agency (AFSSAPS)<sup>1</sup> in September 2011 falls into this category. Most importantly, these rules redefine the notion of patients at risk of infection and updates the prescription of antibiotics for dental practice.

### 2 – MEDICAL HISTORY

Taking the patient’s medical history is imperative at the beginning of an initial consultation office visit. This essential complementary data helps the orthodontist

make a diagnosis, choose a treatment plan and gather information on the general health of the patient.

Address for correspondence:

S. Legris,  
47, rue des Jacobins,  
6000 Beauvais.  
syllegris@orange.fr

**The patient's medical history** is taken by the practitioner who must then verify all the information. For any pathology that is recorded, it is important to note:

- the exact nature of the pathology, how serious it is and what treatment is being followed (medical prescriptions and dosage,...),
- the contact details of the other doctors and if necessary, what hospital services the patient is getting for treatment.

Health records can provide additional information about children.

Before making any decision regarding orthodontic treatment, particularly if a pathology has been declared or observed, practitioners must get in contact with the general physician or specialist who is treating the patient, even more so if unclear or incomplete information has been recorded in the patient's medical history.

These measures are fundamental prerequisites for managing high-risk patients.

### 3 – THE NOTION OF A HIGH-RISK PATIENT

According to Afssaps<sup>1</sup>, all patients have their own degree of risk for infection. According to the literature and expert opinion high risk groups have been identified depending on the patient, the stomatological or dental procedures to be employed or the risk of becoming infected.

- **The "general population"** which comprises most patients whom dentists can "consider healthy", while being ever mindful that there is no such thing as zero risk.
- **"Patients at high-risk for infection"** are known to have a risk factor for infection and are classified into two categories:
  - "immuno-depressed patients": at risk for local infection and its possible spread taking into consideration all factors responsible for

immune-depression whether congenital or acquired;

- "patients at high risk for infectious endocarditis" which replaces the concept of patients at risk of a remote infection. Infectious endocarditis continues to have a poor prognosis and a very high rate of mortality. It is preceded by bacteriemia ou fungemia which is either oral, ENT, gastro-intestinal or genito-uterine in origin. Endocarditis can show up in patients with no known cardiac pathology: type 1 diabetics, drug addicts and individuals with percings...

Outside of the "general population", orthodontic treatment, especially since it is pluridisciplinary, should take into account the potential of patients to contract bacteriemia or any other complication.

## 4 – CLASSIFICATION OF MEDICAL INTERVENTION

In France, recommendations for stomatological or dental treatment fall into two categories: invasive and non-invasive.

Studies have shown that daily activities (mastication, chewing gum, oral hygiene,...) are associated with bacteriemia that are as severe as those caused by dental procedures such as the positioning of brackets, removing braces, adjusting orthodontic wires and taking alginate impressions. These interventions are classified as non-invasive.

The term – invasive act – has just been redefined (AFSSAPS)<sup>1</sup> as a procedure which results in a lesion of an organism susceptible to bacteriemia judged to be serious and thus likely to cause a local, remote or general infection. Invasive acts are listed by AFSSAPS and repeated in table I with the recommended treatment.

In addition, recommendations from (SFAR)<sup>7</sup>, the French Society of Anesthesia and Reanimation deal with various domains such as ENT, stomatological and maxillo-facial surgery.

## 5 – MANAGING THE CARE OF A HIGH-RISK PATIENT

### 5 – 1 – Oral hygiene

Good hygiene practices are of the utmost importance. They significantly reduce the risk of bacteriemia regardless of where it originates. These hygiene practices include prevention and control of infection with good dental hygiene as well as rigorous and sustained cutaneous hygiene in order to avoid breaching the skin barrier and mucus membranes. Dentists have to monitor the oral status of their patients systematically. When patients undergo an orthodontic procedure, practitioners must ensure that dental devices do not harm their mucus membranes by using non-irritating ligations, buffered brackets, and smooth arch wires. Patients should routinely rinse their mouths with a chlorhexidine mouthwash for at least 30 seconds before office visits<sup>5,6,8</sup>.

Moreover, universal measures of hygiene and asepsis must be respected to reduce to a minimum the risk of cross-transmission of infectious pathologies, either bacterial or viral.

Patients with poor oral conditions and/or inadequate oral hygiene are not suitable subjects for orthodontic procedures<sup>3</sup>.

### 5 – 2 – Reducing stress, anxiety

This should be one of the major preoccupations of practitioners<sup>6</sup>. They and their medical team must:

- build a relationship of trust with their patients and give them their full attention;
- discuss any apprehensions patients have;
- avoid long and stressful office visits.

Invasive dental procedures	Patient		
	General population	Immuno-depressed	High risk for infectious endocarditis
Orthodontic procedures with bleeding risks	-	R	RB
Placement of orthodontic bands	-	R	RB
Implants/micro pins	-	R*	Counter indicated
Surgery for impacted or trapped teeth	R	R	Counter indicated
Frenectomy	-	R#	RB
Extrusion of a tooth onto the arch	-	R	RB
Impacted wisdom tooth in mandible	RA	R	RB
Impacted tooth (except lower 3rd molar), no open bite, removal of tooth bud	R	R	RB
Bone surgery (except ODF or maxilla-facial)	R	R*	RB

- : No prescriptions.

R : Prescriptions. On a scale, recommended accordingly: A = established scientific proof, B = scientific presumption.

\* : If the antibiotic is not indicated, then it is understood that there must be a professional consensus to approve it.

\* : When the patient is immuno-depressed, practitioners must take the benefits and the risks of the procedure into account.

# : When the patient is immune-depressed, practitioners must decide whether the benefit of prophylactic antibiotic treatment is greater than the risk of infection.

Table I

*Invasive procedures in ODF and recommendations for prescriptions of prophylactic antibiotics according to AFSSAPS.*

Single dose take an hour before the intervention			
Situation	Antibiotics	Adult Daily dosage for adult with normal kidney function	Child Normal daily dosage for children with normal kidney function not to exceed adult dosage.
No allergies to penicillin	Amoxicilin	2 g orally or i-v	50 mg/kg-orally* or i.v.
Allergic to penicillin	Cindamycine	600 mg orally or i.v.	20 mg/kg orally* or i.v.

orally : by mouth.

i.v. intravenously, when not possibly orally.

\* : since it is pharmaceutically manufactured for administration by mouth, clindamycine is preferred for children 6 years or older (since it comes in gel form, it is not recommended for children under 6 because of the risk of choking). Clindamycine can be administered i.v. for children 3 years and older.

Table II

*Directions and dosing chart for prophylactic administration of antibiotics (AFSSAPS).*

### 5 – 3 – Adapting office visits

Long office visits, at the end of the afternoon or in the evening when stress and fatigue are more significant should be avoided. Depending upon the pathologies, it would be preferable to make the appointment for the morning (ex: diabetics, thyroid disorders) or the afternoon (ex. hypertension, given that blood pressure is elevated in the hours after awakening).

### 5 – 4 – Prophylactic antibiotic therapy

During invasive procedures, it is recommended (table I) in order to limit the risk of infectious endocarditis and the possibility of the infection spread-

ing. The patient takes a single dose an hour before the procedure, according to table II<sup>1,4</sup>.

### 5 – 5 – Managing orthodontic pain

Prescribing analgesics should be done depending upon the pathology presented by the patient.

Some examples of counterindication<sup>8</sup>:

- AINS: asthma, liver disease, hemostasis disorders, cardiac.
- Pathologies requiring anticoagulants, osteoarticular prostheses, chronic kidney disease;
- Paracetamol: diseases of the liver.

## CONCLUSION

When attending to patients at high risk for infection, the dialogue between these patients and practitioners is a fundamental step in managing their case. It will result in modifications of the treatment plan so that it is compatible with the overall health of the patient and it will determine what precautions to take, or even to refuse treatment. The therapeutic value of orthodontic treatment (benefits/risks) will be re-evaluated in light of all the

facts of the case. Orthodontists are liable for their patients regardless of the choices of medical practitioners. Being informed about the main pathologies is therefore essential.

And if the patient in the dentist's chair appears to be suffering from one of the listed diseases (hypoglycemia, asthma attack, epileptic seizure,...), orthodontists must know the appropriate protocol.

## REFERENCES

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