

## Perio and General Health

**This MANIFESTO calls upon all dental and health professionals to act in the prevention, early diagnosis, and effective treatment of periodontal disease in order to combat the devastating oral and general health effects for the individual and society.**

The views and intentions herein expressed are informed by the rigorous scientific analysis of the evidence base for reported links between periodontal and systemic diseases, as carried out at the 9th European Workshop in Periodontology, an event jointly organised by the European Federation of Periodontology and the American Academy of Periodontology, and held at La Granja de San Ildefonso, Segovia, Spain.

Consensual agreement was reached by the experts at this meeting (in November 2012) that periodontal disease should be acknowledged as a major public health issue, that all dental and medical professionals should be provided with relevant treatment guidelines, and that recommendations be given for future research to help clarify these associations and their consequences in terms of primary prevention.

**The outcomes of the Workshop, therefore, are represented by the following information and objectives:**



### Periodontal Disease

**Periodontitis is a chronic multifactorial inflammatory disease initiated by bacterial microorganisms and characterised by a severe chronic inflammation that leads to progressive destruction of the tooth supporting apparatus, tooth loss and eventually to masticatory dysfunction. It:**

- is common.
- reduces chewing function.
- impairs aesthetics.
- causes tooth loss.
- causes disability.

- leads to social inequality.
- reduces quality of life.
- has a significant impact upon escalating public health costs.

In addition, periodontitis is a chronic inflammatory disease with potentially negative consequences for general health. Cross-sectional and prospective epidemiological studies have shown that periodontitis increases the risk of poor glycemic control in patients with diabetes mellitus as well as diabetes complications and associated morbidity. Successful periodontal interventions also improve glycemic control in type 2 diabetes patients. Periodontitis is also independently associated with cardiovascular diseases and adverse pregnancy outcomes in some populations. Additional emerging evidence also appears to link periodontitis with nosocomial pulmonary infections, certain types of cancer and rheumatoid arthritis.

## 2<sup>nd</sup> Diabetes

### The evidence for an association between Diabetes and Periodontitis is as follows:

- Plausibility - Type-2 diabetes is preceded by systemic inflammation, leading to reduced pancreatic  $\beta$ -cell function, apoptosis and insulin resistance. Increasing evidence supports elevated systemic inflammation (acute-phase and oxidative stress biomarkers), resulting from the entry of periodontal organisms and their virulence factors into the circulation, thus providing biologically plausible mechanisms underpinning the adverse impact of periodontitis upon diabetes and its complications.
- Epidemiological data. Consistent and robust evidence is available which demonstrates that severe periodontitis adversely affects glycemic control in diabetes and glycemia in non-diabetes patients. In addition, in patients with diabetes, there is a direct and dose-dependent relationship between periodontitis severity and diabetes complications. Emerging evidence indicates an increased risk for diabetes onset in patients with severe periodontitis.
- Intervention studies. Randomised clinical trials consistently demonstrate that mechanical periodontal therapy associates with approximately a 0.4% reduction in HbA1C at 3-months, a clinical impact equivalent to adding a second drug to a pharmacological regime for diabetes.

## 3<sup>rd</sup> Cardiovascular Disease

### The evidence for an association between Cardiovascular diseases and Periodontitis is as follows:

- Plausibility - Periodontitis leads to entry of bacteria into the blood stream. The bacteria activate the host's inflammatory-immune response by multiple mechanisms. Several animal models have demonstrated that the host's inflammatory response favours atheroma formation, maturation and exacerbation.

- Epidemiological data. There is consistent epidemiological evidence that periodontitis imparts increased risk for future cardiovascular disease, independently of other confounding factors.
- Intervention studies. There is moderate evidence that periodontal treatment reduces systemic inflammation as evidenced by reductions in C-reactive protein (CRP) and oxidative stress, and leads to improvements of surrogate clinical and biochemical measures of vascular endothelial function.



## Adverse Pregnancy Outcomes

**The evidence for an association between adverse pregnancy outcomes and Periodontitis is as follows:**

- Plausibility: Current evidence supports the idea that oral microorganisms and their products enter the blood circulation and travel directly to the foetal environment where they cause inflammatory and immune responses affecting the fetoplacental unit. These bacteria in the circulation may also circulate to the liver, where inflammatory agents are produced, which in turn then circulate to the developing foetus.
- Epidemiology. In clinical studies, low birth weight, pre-term birth and pre-eclampsia have all been associated with the presence of periodontitis in the mother, when all other risk factors have been accounted for. However, the strength of the connection found between periodontitis and these pregnancy outcomes varies between studies, and some show no association. The heterogeneity of data is likely due to differences in the study designs, study populations and different methods used for assessing and classifying periodontal disease.
- Intervention Studies. Results from clinical trials have shown that, in general, scaling and root planning carried out during the second trimester of pregnancy, with or without antibiotic therapy, does not significantly improve adverse pregnancy outcomes, such as preterm birth and low birth weight. However, some clinical trials did report a favourable effect overall and it is possible that certain populations of pregnant women may benefit from periodontal therapy, even though others will not. One reason for negative study results may be that the interaction between periodontitis and pregnancy outcomes is more complex than our current understanding and the study results may have been affected by the type and timing of treatment employed and by the types of patients selected.



## Other Diseases

**There is emerging evidence for associations between periodontal diseases and chronic obstructive airways disease, chronic kidney disease, rheumatoid arthritis, cognitive impairment, obesity, metabolic syndrome and some cancers. To date, the only evidence for causality is in relation to respiratory microorganisms that colonize the oral/periodontal biofilm and may subsequently cause a hospital-acquired pneumonia (nosocomial pneumonia) in ventilated patients.**

- Plausibility – respiratory pathogens arising from oral/periodontal biofilm reservoirs may be aspirated in certain risk patients within hospital environments and result in a nosocomial pneumonia.
- Epidemiological data – supports a role for the oral/periodontal biofilm acting as a reservoir for respiratory pathogens in patients with poor oral hygiene and periodontitis, which may cause nosocomial pneumonia.
- Intervention studies - randomized controlled trials strongly support a role for improving oral hygiene in the prevention of nosocomial pneumonias in acute care hospital environments and nursing homes.



## Recommendations

**This MANIFESTO calls for a fundamental change in the perception of dental professionals' responsibilities with regard to achieving the general health of patients and affirms that patients' needs will best be met through collaborative development between the dental and medical communities in applying multidisciplinary approaches and guidelines for patient care, independently of a patient's presenting location.**

### Diabetes.

**Given the current evidence, it is timely to provide the following guidelines for periodontal care in diabetes patients for medical and dental professionals and recommendations for patients/the public.**

- Patients with diabetes should be told that periodontal disease risk is increased by poorly controlled diabetes. They should also be advised that if they suffer from periodontal disease, their glycaemic control may be more difficult to manage, and they are at higher risk for diabetic complications such as cardiovascular and kidney disease.
- As part of their initial evaluation, patients with type 1, type 2 and gestational diabetes (GDM) should receive a thorough oral examination, which includes a comprehensive periodontal examination.
- For all newly diagnosed type 1 and type 2 diabetes patients, subsequent periodontal examinations should occur (as directed by the dental professionals) as part of the ongoing management of their diabetes. Even if no periodontitis is diagnosed initially, annual periodontal review is recommended.
- Diabetes patients presenting with any overt signs and symptoms of periodontitis, including loose teeth not associated with trauma – spacing or spreading of the teeth – and/or gingival abscesses or gingival suppuration, require prompt periodontal evaluation.

- Patients with diabetes who have extensive tooth loss should be encouraged to pursue dental rehabilitation to restore adequate mastication for proper nutrition. Oral health education should be provided to all patients with diabetes.
- For children and adolescents diagnosed with diabetes, annual oral screening is recommended from the age of 6–7 years by referral to a dental professional. Patients with diabetes should be advised that other oral conditions such as dry mouth and burning mouth may occur, and if so, they should seek advice from their dental practitioner. Also, patients with diabetes are at increased risk of oral fungal infections and experience poorer wound healing than those who do not have diabetes.
- Patients who present without a diabetes diagnosis, but with obvious risk factors for type 2 diabetes and signs of periodontitis should be informed about their risk for having diabetes, assessed using a chairside HbA1C test, and/or referred to a physician for appropriate laboratory-based diagnostic testing and follow-up care.

## Cardiovascular disease.

### Clear recommendations can be made:

- Practitioners should be aware of the emerging and strengthening evidence that periodontitis is a risk factor for developing atherosclerotic cardiovascular disease, advising patients of the risk of periodontal inflammation to general as well as oral health.
- Based on the weight of evidence, periodontitis patients with other risk factors for atherosclerotic cardiovascular disease, such as hypertension, overweight/obesity, smoking, etc. who have not seen a physician within the last year, should be referred for medical examination.
- Modifiable lifestyle associated risk factors for periodontitis (and atherosclerotic cardiovascular disease) should be addressed in the dental surgery/office and within the context of comprehensive periodontal therapy, i.e. smoking cessation programs and advice on lifestyle modifications (diet and exercise). This may be better achieved in collaboration with appropriate specialists and may bring health gains beyond the oral cavity.
- Treatment of periodontitis in patients with a history of cardiovascular events needs to follow American Heart Association (AHA) guidelines for elective procedures.

## Adverse Pregnancy Outcomes.

Pregnancy is a time of profound physiological change. These can affect the oral health of the expectant mother as a result of the increase in gingival blood supply and a tendency towards gingival swelling and periodontitis. At the same time, research evidence shows that we need to be mindful of the potential impact of poor periodontal

health on the overall health of the mother and developing foetus. So, whilst periodontitis does not currently appear to be a true risk factor for adverse pregnancy outcomes in most populations, it may be in some specific groups, and for these reasons special attention should be given to a woman's periodontal health prior to (if possible) and throughout pregnancy.

## Nosocomial Pneumonia.

**Based upon data from 5 randomised controlled trials (4 hospital-based and 1 in an elderly care home), the following is recommended:**

- Care home staff responsible for elderly and/or frail patients should be trained in the provision of basic oral hygiene for those patients incapable of self care, and in implementing twice daily oral hygiene in those capable for self care.
- Hospital staff within acute care environments should be trained in the use of antiseptic and manual methods of reducing the oral microbial load in ventilated patients.



## Future Research

**Future research should focus upon specific aspects, in order to provide solid scientific information in several different areas:**

- **Diabetes.**

Randomised clinical trials, evaluating the effects of periodontal therapy on glycemic control, are needed, with larger numbers of subjects and longer-term follow up. If results are substantiated; adjunctive periodontal therapies (including antimicrobial drugs) subsequently need to be evaluated.

- **Cardiovascular diseases.**

Well-designed intervention trials on the impact of periodontal treatment on prevention of atherosclerotic cardiovascular diseases, using hard clinical outcomes, such as reductions in myocardial infarction rates and re-vascularisation procedures are needed.

- **Adverse pregnancy outcomes.**

Well-designed intervention trials on the impact of periodontal treatment on prevention of adverse pregnancy outcomes should be carried out in specific risk populations, using well defined measures of exposure and effective periodontal interventions, which should be rendered in adequate time frames during pregnancy.

- **Other systemic conditions.**

Large prospective epidemiological studies on diverse populations are needed to substantiate emerging data that associates periodontal disease with systemic diseases and conditions other than diabetes, atherogenic vascular diseases and adverse pregnancy outcomes. When substantiated there is a need for well-designed intervention studies to ascertain any putative benefits from periodontal interventions upon quality of life and true endpoints for the relevant systemic condition.



## Co-operation

**This MANIFESTO calls upon the collaboration of all groups of interest and stakeholders:**

- Periodontal and Dental Community: Periodontists, Dentists, Hygienists, all other Dental Care Professionals (e.g. nurses, therapists), Scientific Societies and Dental Associations.
- Other Health Professionals: Cardiologists, Endocrinologists, Gynaecologists, General Medical Practitioners and Pharmacists.
- Universities and research centres, Institutions and oral care policy makers.
- Companies and funders.
- Patients, Social bodies and the Media.



## The Health Benefits

**This MANIFESTO calls upon its adherents to appeal to the utmost scientific rigour in the issuing of ALL information, recommendations, guidelines, and statements pertaining to periodontal disease as a major public health issue, and to always hold the health benefits to the patient and to society as the ultimate purpose of all activity in achieving the aforesaid objectives.**

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