CLINICAL PRACTICE GUIDELINES

Oral Health Division
Ministry of Health Malaysia

MANAGEMENT OF CHRONIC PERIODONTITIS

2nd Edition
November 2012

MOH/P/PAK/260.12 (GU)

Oral Health Division
Ministry of Health Malaysia

MANAGEMENT OF CHRONIC PERIODONTITIS

2nd Edition
November 2012

STATEMENT OF INTENT

These guidelines update and supplant the original guidelines developed in 2005 and are based on the best available contemporary evidence. They are intended as a guide for the best clinical practice in the management of chronic periodontitis presently. However, it must be noted that adherence to these guidelines do not necessarily lead to the best clinical outcome in individual patient care, as every health care provider is responsible for the management of his/her unique patient based on the clinical presentation and management options available locally.

REVIEW OF THE GUIDELINES

These guidelines were issued in 2012 and will be reviewed in 2016 or earlier if important new evidence becomes available.

CPG Secretariat
Health Technology Assessment Section
Medical Development Division
Level 4, Block EI, Parcel E
Government Offices Complex
62590 Putrajaya, Malaysia

Electronic version available on the following websites:
http://www.moh.gov.my
http://www.ohd.gov.my
http://www.acadmed.org.my

LEVELS OF EVIDENCE AND GRADES OF RECOMMENDATIONS

LEVEL	STUDY DESIGN
I	Evidence obtained from at least one properly designed randomised controlled trial
II-1	Evidence obtained from well-designed controlled trials without randomization
II-2	Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one centre or research group
II-3	Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940s) could also be regarded as this type of evidence
III	Opinions or respected authorities, based on clinical experience; descriptive studies and case reports; or reports of expert committees

Source: Adapted from U.S./Canadian Preventive Services Task Force

GRADES OF RECOMMENDATION

A	At least one meta-analysis, systematic review or RCT or evidence rated as good or directly applicable to the target population
B	Evidence from well conducted clinical trials, directly applicable to the target population and demonstrating overall consistency of results; or evidence extrapolated from meta-analysis, systematic reviews or RCT
C	Evidence from expert committee reports, or opinions and or clinical experiences of respected authorities; indicates absence of directly applicable clinical studies of good quality

Source: Modified from the Scottish Intercollegiate Guidelines Network (SIGN)

Note: The grades of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

GUIDELINES DEVELOPMENT

The Development Group for these Clinical Practice Guidelines (CPG) consisted of Periodontists, Dental Public Health Specialists and general dentists. The Review Committee was actively involved in the development process of these guidelines.

The previous edition of the CPG on Management of Chronic Periodontitis (2005) was used as the basis for the development of these guidelines.

The recommendations were adapted taking into consideration local practices.

Several improvements have been introduced in this edition. In addition to the general text and photographic updates, new and updated information has been included in the management such as basic periodontal examination, periodontal risk assessment, use of antimicrobials, key messages and recommendations. Besides this, clinical audit indicators have also been identified for the purpose of monitoring and evaluating outcomes.

Evidences were retrieved from publications from year January 2004 to January 2011. Literature search was carried out using the following electronic databases: PUBMED/MEDLINE; Cochrane Database of Systemic Reviews (CDSR); ISI Web of Knowledge; Health Technology Assessment (HTA) and full text journal articles via OVID search engine. In addition, the reference lists of all relevant articles retrieved were searched to identify further studies. The following free text terms or MeSH terms were used either singly or in combination to retrieve the articles: “Periodontal Screening”, “Periodontal screening index”, “Basic Periodontal Examination”, “Periodontal screening and recording”, “Oral Hygiene”, “Prevention”, “Smoking”, “Diabetes Mellitus”, “Nutrition”, “Periodontal Risk Assessment”, “Periodontal Risk Management”, “Periodontal surgery”, “Periodontal Scaling Root Planing”,

"Debridement Chronic Periodontitis", "Non-surgical Periodontal", "Laser Chronic Periodontitis Treatment", "Power Driven Instruments Chronic Periodontitis", "Ultrasonic Scaler, Photodynamic Therapy", "Extraction", "Dental Implants", "Rehabilitation of periodontal patients" and "Supportive Periodontal Therapy". Only literatures in English were retrieved.

There were ten clinical questions which were assigned to members of the development group. The group members met a total of 10 times throughout the development of this guideline. All literatures retrieved were appraised by at least two members and presented in the form of evidence tables and discussed during group meetings. All statements and recommendations formulated were agreed upon by both the development group and review committee. These CPGs are based largely on the findings of randomized controlled trials and adapted according to local practices. However, where there was lack of evidence, recommendations were based on consensus of group members. Although, ideally patients view and preferences need to be considered in the development of CPGs, in this instance, it was not feasible. Nevertheless, patient information leaflets would be developed to facilitate the dissemination of important information to the public.

The levels of evidence of the literature were graded using the modified version from the United States (U.S) / Canadian Preventive Services Task Force, while the grading of recommendations was based on the modified version of the Scottish Intercollegiate Guidelines Network (SIGN).

The draft guidelines were reviewed by a team of external reviewers and were also posted on the Ministry of Health, Malaysia and Academy of Medicine, Malaysia websites for comments and feedbacks. These guidelines were presented to the Technical Advisory Committee for CPGs, and finally to the HTA and CPG Council, Ministry of Health, Malaysia for approval.

OBJECTIVES

To provide evidence-based guidance in the management of chronic periodontitis.

SPECIFIC OBJECTIVES

i. To disseminate and reinforce knowledge on the management of chronic periodontitis among healthcare professionals.

ii. To provide timely and appropriate management of chronic periodontitis by healthcare professionals.

CLINICAL QUESTIONS

The clinical questions addressed by these guidelines are:

i. How can chronic periodontitis be prevented?
ii. How is screening of chronic periodontitis carried out?
iii. How is chronic periodontitis diagnosed?
iv. Why is Periodontal Risk Assessment necessary?
v. How can patients with chronic periodontitis be managed non-surgically?
vi. When is periodontal surgery indicated?
vii. When will antimicrobials agents be needed in periodontal therapy?
viii. When is extraction indicated?
ix. Can dental implants be placed in periodontally compromised patients?
x. What is Supportive Periodontal Therapy?

TARGET POPULATION

These guidelines are applicable to patients diagnosed with chronic periodontitis.

TARGET GROUP/USER

This guideline is meant for all oral healthcare providers who provide clinical management of chronic periodontitis.

HEALTHCARE SETTINGS

Primary and Specialist Oral Health care settings.

ORGANISATIONAL BARRIERS AND COST IMPLICATIONS

Recognition of periodontal health and disease by a person, the knowledge of what to do when a problem occurs, and the appropriate response from the health professional are major factors in prevention and control of chronic periodontitis. This professional awareness is influenced by factors such as maintaining an up-to-date understanding of the nature of periodontal diseases, the routine use of appropriate screening and examination techniques, factors influencing assessment of treatment needs, patient records, continuing professional education and an understanding of patient expectations.

A national oral health survey on 2000 (10,891 Malaysian adults (15-65+years) by the Ministry of Health Malaysia using the Community Periodontal Index of Treatment Needs (CPITN) found that 90.2% of dentate Malaysian subjects presented with periodontal conditions. Of these subjects, 5.5% had deep pockets of 6 mm or more[1] level II-3.

As the outcomes of periodontal therapy is mostly dependent on the timely and appropriate management of the condition, it is important to disseminate the knowledge among healthcare providers, as well as to lay people, in order to bridge the gap. This can be facilitated through the development of appropriate training modules and quick references.

Cost implications on management of chronic periodontitis vary depending on several factors, such as patient's age, patient's expectation, patient's compliance and severity of the disease. Successful treatment would require meticulous periodontal therapy and long term supportive therapy; thus affecting the cost involved. Severe periodontal diseases also often result in loss of teeth requiring complex rehabilitation often involving dental implants. Early detection of the disease and appropriate risk assessment during treatment would enable long term maintenance of most of dentition.

PROPOSED CLINICAL AUDIT INDICATORS FOR QUALITY MANAGEMENT

% of Patients With Reduction of PPD* after 6 months of treatment	=	No. of patients with reduction** of PPD after 6 months of treatment / No. of patients with pockets > 6mm at baseline	x 100

* Probable Pocket Depths (PPD)
** 50% reduction of sites with > 6mm ppd at baseline

MEMBERS OF THE GUIDELINE DEVELOPMENT GROUP

Chairperson	Secretary
Dr. Chan Yoong Kian Consultant Periodontist Dental Clinic Mahmoodiah Health Clinic Johor Bahru	**Dr. Rajeswary Raman** Periodontist Periodontic Unit Health Clinic Jalan Perak, Pulau Pinang
Members	
Dr. Sorayah Sidek Consultant Periodontist Paya Besar Health Clinic Kuantan	**Dr. Noorlin Ishak** Periodontist Community Polyclinic Klang
Dr. Uma Subramaniam Periodontist Seremban Dental, Specialist Centre Seremban	**Dr. Noordin Kasan** Periodontist Dental Clinic, Jalan Datuk Kumbar Alor Star, Kedah
Dr. Sabariah Abdullah Periodontist Cahaya Suria Dental Clinic Kuala Lumpur	**Dr. Badiah Baharin** Senior Lecturer Periodontology Department Dental Faculty, UKM
Datin Dr. Nooral Zeila bt. Junid Deputy Director Oral Health Division Ministry of Health Level 5, Block E 10, Parcel E Federal Government Administrative Centre, Putrajaya	**Dr. Zainab bt. Shamdol** Deputy Director Oral Health Division Ministry of Health Level 5, Block E 10, Parcel E Federal Government Administrative Centre, Putrajaya
Dr. Azizah bt. Mat Senior Principal Assistant Director Oral Health Division Ministry of Health Level 5, Block E 10, Parcel E, Federal Government Administrative Centre, Putrajaya	**Zabidah bt. Othman** Dental Nurse Oral Health Division Ministry of Health Malaysia

MEMBERS OF THE REVIEW COMMITTEE

These guidelines were reviewed by a panel of independent reviewers from both public and private sectors who were asked to comment primarily on the comprehensiveness and accuracy of interpretation of the evidence supporting the recommendations in the guideline.

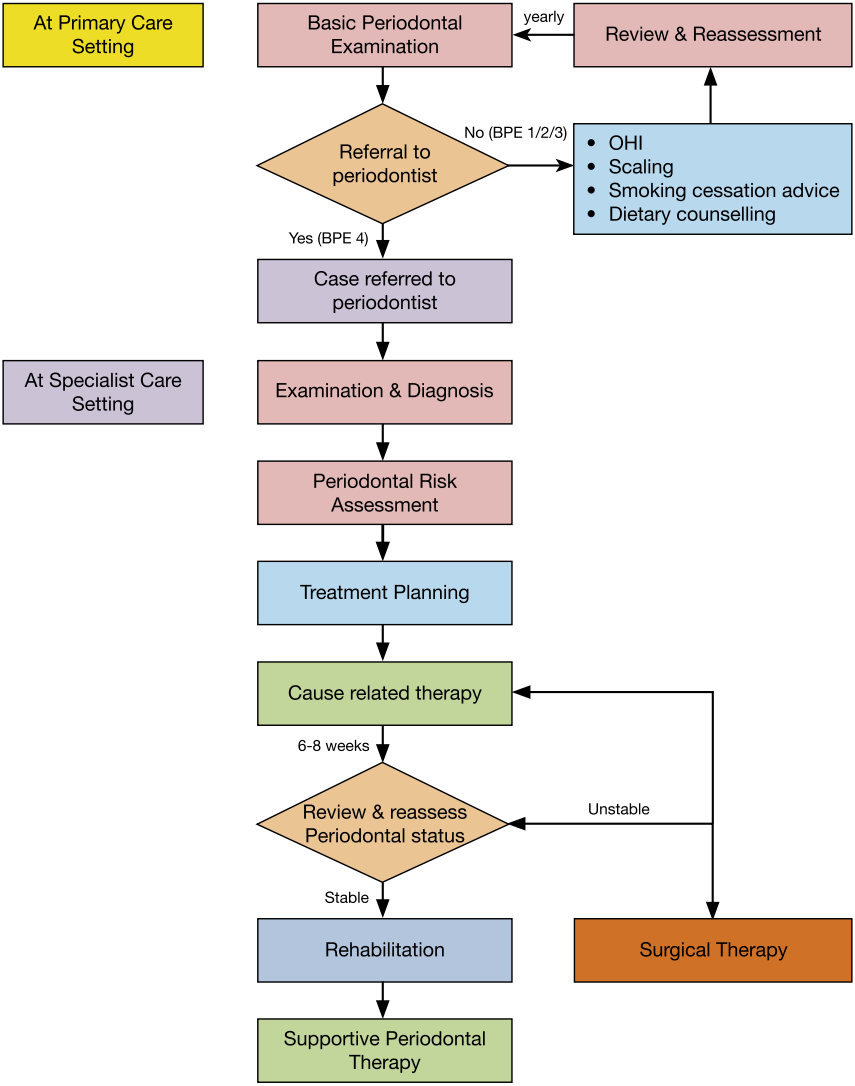
Datin Dr. Mahyunah Dato' Masud Deputy Dean Faculty of Dentistry Universiti Teknologi MARA	**Dr. Masfue bt. Razali** Senior Lecturer Periodontology Department Dental Faculty, UKM
Dr. Siti Zaleha bt. Hamzah Specialist In Special Needs Dentistry Oral Surgery Department Hospital Serdang Kajang	**Dr. Henny Zaliyana bt. Ahmad Kamal** Dental Officer In-Charge Dental Clinic Beserah Community Polyclinic 26100 Kuantan, Pahang
Dr. Jeanette Chua Encia Dental Specialist Suite 01-01, Menara See Hoy Chan 374 Jalan Tun Razak 50400 Kuala Lumpur	**Wong Ching Mui** Clinical Sister Periodontic Unit Community Polyclinic Klang, Selangor
Dr. Chu Geok Theng Deputy Director Oral Health Division Ministry of Health Level 5, Block E 10, Parcel E Federal Government Administrative Centre, Putrajaya	**Dr. Dayang Mariam Meriam bt. Abang Abdul Rahman** Senior Principal Assistant Director Federal Territory Kuala Lumpur Health Department Level 1, Block C, Chenderasari Road Kuala Lumpur

EXTERNAL REVIEWERS

The following external reviewers provided comments and feedbacks on the proposed draft.

Professor Richard Palmer Head of Restorative Department King's College London Dental Institute	**Dr. Salmah Kamin** KPJ Selangor Specialist Hospital Lot 1, Singa/1 Road Section 29, Shah Alam, Selangor

ALGORITHM FOR MANAGEMENT OF CHRONIC PERIODONTITIS



1. INTRODUCTION

Chronic periodontitis has been described as inflammation of the periodontium with slow to moderate progressive loss of the tooth supporting tissues. It is caused by an imbalance between the commensal flora and the defence mechanisms of the host. When these microorganisms accumulate in the dental biofilms it results in inflammation of the gingivae (gingivitis) which may lead to destruction of the supporting tissues.[2 level II-3] Chronic periodontitis affects up to 40% of the adult population in developed or developing countries [1-3,level II-3] but is preventable.[4 level II-3] The disease presentation varies and the prognosis of the dentition will depend on the health status of the patient, as well as the stage at which the patient presents. Early detection aids in retaining the dentition.

2. PREVENTION

2.1 Oral Hygiene

The common dental problems of caries and periodontal disease can be controlled by patients who are prepared to adopt appropriate oral hygiene and dietary behavior.[5 level II-3]

Gingival inflammation can be prevented by weekly dental visits, but this is neither practical nor cost-effective. Patients need to be aware that plaque control must be a lifelong commitment, depending totally on the active participation of the patient, with the clinician acting as mentor and adviser. The clinician can determine the level of plaque control that each individual patient needs to employ to ensure periodontal health, demonstrate effective oral hygiene techniques, and encourage patients to continue to maintain appropriate levels of cleaning. Providing effective oral hygiene advice and counselling is crucial in the management of patients susceptible to periodontal disease. [6-7,level II-3] Patient motivation continues to be a key area in the promotion of dental health [8,level II-3]

KEY MESSAGE

Outcome of periodontal therapy is dependent upon active participation of patient in appropriate oral hygiene measures.

2.2 Preventive Programmes

Daily oral hygiene practices and periodic professional care are the cornerstones of any prevention and treatment programme of periodontal disease. [9,level II-3] Careful preventive dental treatment has been shown to be effective in reducing the incidence of periodontal disease, attachment loss and tooth mortality while preventive programmes improve gingival health in children and prevent the progression of periodontal disease in adults.[7 level II-3, 10-11, level II-1]

2.3 Smoking

An association has been shown between smoking and chronic periodontitis.[7 level II-3, 12, 13 and 14, level III,] with disease progression slowing in patients who quit smoking[15, level II-3.] Dental professionals thus play an important role in supporting smokers who desire to quit [16, level II-3] and counseling on cessation of smoking is an integral part of periodontal therapy.[17, level II-3, 18,19-20, level III]

2.4 Diabetes Mellitus

Periodontitis is a common problem in patients with diabetes mellitus, and the presence of one condition tends to promote the other, so that meticulous management of both is important.[20, level III] Education and motivation of periodontal patients with diabetes mellitus should be part of the treatment plan.[18,level III]

2.5 Diet

Nutrition can impact the host's immune response and the integrity of the hard and soft tissues of the oral cavity.[21 level II-3,] so that good dietary practices and optimal nutritional status are important in mitigating the severity of inflammatory periodontal lesions.[22-23,level II-3] Education and motivation of periodontal patients on proper nutrition is needed as part of the treatment plan.[23, level III] In patients with metabolic syndrome, wholesome nutrition might reduce inflammatory variables of periodontal disease and promote periodontal health.[24, level II-2]

RECOMMENDATION

The oral healthcare providers should offer patients with chronic periodontitis;

- Oral hygiene instruction.
- Oral health education.
- Smoking cessation counseling.

Grade C

3. SCREENING

The early detection of chronic periodontitis at a stage of mild to moderate severity enables simpler and more effective treatment of the disease. Thus, screening for chronic periodontitis would enable the clinicians to initiate treatment at an earlier stage.

The British Society of Periodontology uses the Basic Periodontal Examination Index (BPE) based on a modification of the Community Periodontal Index for Treatment Need (CPITN) as an index for periodontal screening,[25,level III] while the American Dental Association uses the Periodontal Screening and Recording Index (PSR).[26,level III] The PSR as a screening tool has gained wide acceptance among adults and even

pregnant mothers as an index.[27,level II-2; 28,level III; 29,level II-2] The BPE scores between general dental practitioners and specialist periodontists were found to have a good level of equivalence.[30,level II-2] Full mouth periodontal screening has a better predictive value as compared to partial examination.[31,level II-2]

The use of panoramic radiographs in screening for chronic periodontitis is not recommended due to under diagnosis of periodontal disease as compared to clinical examination.[32,33,34,level II-2]

RECOMMENDATION

BPE should be used as a screening tool for all new patients.

Grade C

4. DIAGNOSIS

KEY MESSAGE

Evaluation of periodontal status requires relevant information on:

- Medical and dental history.
- General Examination.
- Examination of extra-oral structures and intra-oral tissues.

4.1 Medical History

- To identify pre-disposing conditions like diabetes mellitus, hypertension, smoking, uses of specific medication and other conditions that impact traditional dental therapy.
- Appropriate health care providers should be consulted in situations where additional evaluation may be required. [35-38 Level III]

4.2 Dental history

- chief complaint, history of complaint or reason for the visit.
- Information regarding past dental and periodontal care and records like radiographs of previous treatment may be useful. [39, 40, level III]

4.3 General examination

Routine general examination should be carried out.

4.4 Examination of extra-oral structures and intra-oral tissues

- the temporo-mandibular apparatus and associated structures may also be of significance.[37,39 level III]

- the teeth and its replacements such as dentures, crowns, bridges and implants should be examined and evaluated for missing teeth, abnormal tooth morphology [41level III] condition of restorations, caries, tooth position, tooth mobility, furcation involvement, occlusal and inter-dental relationships, signs of para-functional habits and, when applicable, pulpal status. [37,39 level III]

- periodontal soft tissue should be examined for recession, probing pocket depth, and occurrence of bleeding on probing, with a calibrated periodontal probe. This examination should also focus on signs of suppuration, swelling, presence and distribution of calculus and plaque. [37-39,42 level III]

- radiograph like periapical views or orthopanthomograms can be utilized for the proper evaluation and interpretation of the status of the periodontium based on the diagnostic needs of the patients.[39,43 level III] Conventional radiographic examination tends to underestimate alveolar bone loss[44, level III.] However, digital radiographs with image analyzer tool replacing conventional method can measures alveolar bone loss. [45 level III]

In addition to the above more current clinical methods can include computer-aided systems in radiography, to assess potential biomarkers of periodontal disease activity although these have not proven to be of significant clinical value, and potential microbiological markers[42, level III] and alkaline phosphatase as a periodontal markers.[46, level III]

5. CLINICAL FEATURES

Some of the clinical features and characteristics of chronic periodontitis are as follows:

- occurs usually in adults, rarely in children and adolescents
- amount of destruction of periodontal tissue is consistent with the presence of local factors
- microbial pattern varies and frequently sub-gingival calculus found
- slow to moderate rate of progression, although some cases may progress rapidly
- sub-classified according to the extent and severity:
- associated with local predisposing factors such as tooth related or iatrogenic factors
- modified by and/or associated with systemic diseases such as diabetes mellitus
- modified by behavioral factors such as smoking and emotional stress[47 level III]

6. MANAGEMENT

6.1 Risk assessment

KEY MESSAGE

Periodontal risk assessment helps in identifying high risk individual in a clinical setting for periodontal disease development and progression.

Assessing risk factor suggests a way to investigate host susceptibility to periodontal disease and should be part of every comprehensive dental and periodontal evaluation.[48 level III] The ability to predict if a patient has a high risk of developing periodontal disease, will help in the clinical decision making and treatment planning for Supportive Periodontal Therapy.[49-50, level III] Various multi-factorial risk assessment models and tools have been proposed to identify low, moderate and high risk for disease progression of a patient [51-53, level III.] The Lang and Tonetti model has been assessed for their effectiveness in predicting future loss of attachment and tooth loss during Supportive Periodontal therapy,[54-55, level II] which is based on the following parameters: bleeding on probing, number of sites with probing pocket depth (PPD) > 5mm, bone loss, tooth loss, systemic factor and environmental factors (see appendix 4 for coding system).

RECOMMENDATION

Periodontal risk assessment should be performed as part of clinical evaluation of patient with chronic periodontitis.

Grade C

6.2 Non-Surgical Therapy

Non-surgical therapy remains an essential component of a successful periodontal treatment.[56,level III] The goal of therapy is to establish and maintain healthy periodontal tissues by removing irritants from the surface and root of the tooth that promote plaque retention, through mechanical means (scaling and root planing/root debridement). The reduction of pockets and improving level of attachment are better achieved in moderate to deep periodontal pockets after scaling and root planing [57, level I]

6.2.1 Instrumentation

The type of instrumentation used depends on operator preference as well as the condition of the patient. Ultrasonic or manual debridement can be carried out in patients with chronic periodontitis.[58, level III, 59, level I, 60, level III, 61, level I, 62, level III.] While similar results were obtained for both of these in the removal of plaque and calculi, there was less root surface damage with ultrasonic scalers used at medium power than hand or sonic scalers. In addition powered sub-gingival debridement requires less time than manual instrumentation. Furcation regions may also be more accessible with ultrasonic or sonic scalers than manual scalers due to less instrument width in the former.[56 level III, 63 level III]

Er:YAG laser application in nonsurgical periodontal therapy compared with mechanical debridement resulted in similar clinical outcomes, both in the short and the long term (up to 24 months), in patients with chronic periodontitis. [64, level I]

Although preliminary data shows the potential of some laser applications (Er:YAG) in the treatment of chronic periodontitis, stronger evidence is needed before a clinical recommendation can be given. [60 level I]

6.2.2 Approaches to Instrumentation

Conventional quadrant-wise staged debridement (CSD) at usually 1-2 weeks interval is the common practice of treating chronic periodontitis patients. Nevertheless, some approaches were also being adopted by clinicians in order to avoid intra-oral transmission of periodontal pathogens from periodontal pockets to recently instrumented and healing periodontal sites.

The full mouth debridement (FMD) concept typically included the disinfection of the entire oral cavity within a period of 24 hours, depletion

of the supragingival plaque deposits and prevention of biofilm formation by means chlorhexidine mouth rinses twice daily for 1 minute for 2 weeks and disinfection of bacterial reservoirs of the tongue, tonsils and periodontal pockets.[60, level I]

Derived from the above, another clinical protocol has emerged, full mouth scaling and root planing (FMSRP) without the use of antiseptics.[60, level I]

Full-mouth debridement (FMD), full mouth scaling and root planing (FMSRP) as well as conventional quadrant to quadrant root planing give good clinical improvement. The choice of treatment should be based on patient preference and clinical workload since there is insufficient evidence of the superiority of either method. [65 level I]

RECOMMENDATION

For debridement of patients with chronic periodontitis, any of the following procedures can be performed:

- Full mouth disinfection.
- Full mouth scaling and root planing.
- Conventional staged debridement

Grade A

KEY MESSAGE

Periodontal surgery reduces or eliminates periodontal pockets and creates an acceptable gingival form that will facilitate effective oral hygiene and periodontal maintenance.

6.3 SURGICAL THERAPY

Periodontal surgery should be considered in compliant patients with advanced loss of periodontal support, or in those where non-surgical therapy has failed to adequately resolve the condition. [66 -67, level III, 68, level I;69 - 73, level III]

Periodontal surgery reduces or eliminates periodontal pockets and creates an acceptable gingival form that will facilitate effective oral hygiene and periodontal maintenance. [66,71,73 - 76, level III]

It also improves access and facilitates root debridement in areas of deep probing depths and roots that present elusive anatomic features such as flutings, grooves, concavities and furcations [77, 78 level III] where scaling and root-planing alone has been found to be inadequate.[75, 79, 80 level III]

In general, periodontal surgery resulting in pocket elimination is more effective in combating periodontal pathogens than procedures that allow residual pocket depth to remain.[78, level III]

6.3.1 Surgical procedure

The following are the common periodontal surgical procedures:

- Open debridement
- Gingival augmentation therapy
- Regenerative therapy
  - Bone replacement graft
  - Guided tissue regeneration
  - Combined regenerative techniques[81, level III; 82 level I]

- Resective therapy
  - Flaps with or without osseous surgery
  - Root resective surgery
  - Gingivectomy [69,70,83, level III]

6.3.2 Postoperative health education

Health education on the following areas should be provided to postoperative patients:

- discomfort and the potential complications; including bruising, soreness,
- limitation in mouth opening and hypersensitivity. [84, level III]
- all medication, especially analgesics and antibiotics.
- diet modification including avoidance of hot(/heat) or spicy food and liquids.
- smoking reduction, especially during the healing period.
- home care instruction. [72,85, level III]

RECOMMENDATION

Periodontal surgery should be considered in compliant patient where adequate non-surgical therapy has failed.

Grade A

6.4 Others

KEY MESSAGE

The use of antimicrobials can suppress periodontal pathogens in periodontal patients and improve the result of periodontal therapy.

6.4.1 Antimicrobials

The microbial aetiology and infectious nature of chronic periodontitis provides a rationale for use of adjunctive antimicrobial agents in the prevention and treatment of periodontal diseases.[70,82 level III,86 level 11] Some patients may benefit from the use of systemic or topical antimicrobial agents since conventional periodontal therapy alone may fail to eradicate certain periodonto-pathogenic organisms like Aggregatibacter (Actinobacillus) actinomycetemcomitans, Prevotella intermedia, Porphyronomas gingivalis, located in sub-epithelial gingival tissues, collagenous strata, altered cementum and radicular dentinal tubules, furcation involvement or other anatomic features complicating adequate instrumentation. [87,88, level III] Antibiotic therapy should not be considered as routine - a conservative and highly selective approach is recommended, and if antibiotic is needed, it should be given as an adjunct to periodontal therapy. [89, level I,82, level III]

Adjunctive antibiotic therapy may be considered for the following patients:

- not responding to conventional mechanical therapy.
- acute periodontal infection associated with systemic manifestations.
- medically compromised.
- supplement in selected patients undergoing non-surgical and surgical periodontal therapy.[87,90,91, level III]

Please refer to Appendix 3 for recommended antibiotic regimes.

6.4.2 Extraction

Teeth with poor prognosis requiring extraction may be identified upon patient evaluation and during the course of treatment. Extraction provides treatment advantages to the patient, dentist and periodontist.[92, level III]

Extractions may be performed in the following situations:
during the initial non-surgical treatment

- during the surgical phase to eliminate pain, infection or periodontal defects

- selective extraction of teeth or retained roots may also be done to
  - facilitate periodontal therapy,
  - implant therapy - implant site development or implant
  - restorative and/or prosthetic treatment plans

- During maintenance therapy,
  - teeth with advanced loss of bone
  - periodontal attachment [70, level III]

- Other reasons
  - tooth mobility,
  - degree of furcation involvement
  - lack of occlusal antagonist
  - occlusal trauma [93,94, level III]

Refer to appendix 4 on decision making process for tooth retention or extraction [95 level III]

RECOMMENDATION

Antimicrobials should only be used when indicated and as an adjunct to mechanical periodontal therapy.

Grade A

7. REHABILITATION

KEY MESSAGE

Rehabilitation of patients with chronic periodontitis involves multidisciplinary approach.

Rehabilitation of patients with chronic periodontitis requires the integration of treatment methods of other dental disciplines such as orthodontics, restorative/occlusal, prosthodontics and implant dentistry.[96, level III]

Definitive treatment to reinstate function, speech and aesthetics usually starts after conclusion of initial or surgical corrective therapy, to allow time for consolidation of periodontal tissue. By this time, level of home care and prognosis of individual teeth is known.

Extensive destruction of periodontal tissue requires a systematic approach to determine the possibilities and expectations of the patient, since the long term results of treatment will depend on the full cooperation of the patient and consistent periodontal maintenance care.[97, level III]

Oral rehabilitation is important to:

- stop progression of the disease,
- correct deformities created by dental disease
- restore therapeutic occlusion, form and function of the masticatory system.[98, level III]

Some of the major problems encountered after management of active periodontal disease in periodontally compromised chronic periodontitis patients are drifted and missing teeth.[96-99, level III] elongated and spaced incisors, drifted or tilted incisors, edentulous spaces, and teeth that need prosthodontic rehabilitation.[100-102, level III]

7.1 Implantation

KEY MESSAGE

Dental implants can be placed in periodontally compromised patients who have successfully undergone periodontal therapy.

Patients with combination of a history of treated periodontitis and smoking must be warned of the increased risk of implant failure.

Rehabilitation with implants in periodontally compromised patients is not contraindicated.[103,104 level II] Implants replacing teeth lost due to chronic periodontitis have been found to have lower survival rates and more biological complications than those replacing teeth lost due to other reasons,[105, level III;106,level II] although the 5 year survival rate was similar.[107, level III;108 level II] Periodontally compromised patients were also found to have a higher prevalence of implants failure due to peri-implantitis,[109, level III] The combination of a history of treated periodontitis and smoking increases the risk of implant failure and peri-implant bone loss.[110, level II]

8. SUPPORTIVE PERIODONTAL THERAPY

KEY MESSAGE

Supportive periodontal therapy should include:
- an update of the medical and dental history,
- dental examination,
- radiographic review,
- evaluation of the patient's oral hygiene performance,
- periodontal evaluation and risk assessment.

Supportive periodontal treatment is a crucial phase of periodontal therapy, but is often overlooked and frequently not appreciated.[111, level III] Long-term maintenance has been shown to be attainable for most periodontal patients and is consistent with a variety of treatment approaches.[112,113, level II-1]

Supportive periodontal therapy should include an update of the medical and dental histories, examination of extra and intraoral soft tissues, dental examination, radiographic review, evaluation of the patient's oral hygiene performance, periodontal evaluation and risk assessment, with supra and subgingival removal of bacterial plaque and calculus, and retreatment of disease when so indicated.[114, level III]

Parameters of care for periodontal therapy have been established.[114, level III] The ultimate aims of supportive periodontal therapy are as follows:

- Prevention of the progression and recurrence of periodontal disease in patients who have been treated for gingivitis and periodontitis.
- Reduction of tooth loss by monitoring the dentition and rehabilitation of lost dentition.
- Diagnosis and management of other diseases or conditions found within or related to the oral cavity.[111,114, level III]

Supportive treatment visits should be performed every 3-6 months.[115-119, level II-1] although it may be determined by the periodontal condition of the patient, effectiveness of supragingival oral hygiene and patient risk factors for periodontal disease progression.[120-122, level II-1] Regular supportive periodontal treatment intervals have been shown to reduce the likelihood of attachment loss or loss of teeth.[111 level III ,115-116 level II-1 ,118 level II-1, 120-122 level II-1]

RECOMMENDATION

Supportive treatment visits should be performed every 3-6 months and be tailored to patients' risk factors for periodontal disease progression.

Grade B

REFERENCES

1. Oral Health Division, Ministry of Health, Malaysia. Oral Health Status, Impacts and Treatment Needs of Malaysian Adults, 2001.

2. SBU (The Swedish Council on Technology Assessment in Health Care) Chronic Peridontitis – prevention, diagnosis and treatment. The Swedish Council on Technology Assessment in Health Care, 2004.

3. US Department of Health and Human Services. Oral health of United States adults: the national survey of oral health in U.S. employed adults and seniors, 1985-1986. NIH Publication No 87–2868. Bethesda, Maryland: National Institute of Dental Research, 1987.

4. Lindhe J, Axelsson P, Tollskog G.. Effect of proper oral hygiene on gingivitis and dental caries in Swedish schoolchildren. Community Dent Oral Epidemiol, 1975;3(4):Aug, pp 150-155.

5. Blinkhorn A. factors affecting the compliance of patients with preventive dental regimens. International Dental Journal, 1993;43:294-298.

6. Ower P. The Role of Self-Administered Plaque Control in the management of periodontal diseases: A review of the evidence. Dental Update, 2003;30:60-68.

7. Axelsson P, Lindhe J. Effect of controlled oral hygiene procedures on caries and periodontal disease in adults. Results after 6 years. Journal of Clinical Periodontology, 1981;8:239-248.

8. Barker T. Patient motivation. Dental Update, 1999; 26: 453-456.

9. Greenstein G. Periodontal response to mechanical non-surgical therapy: A review. Journal of Periodontology, 1992; 63:118-130.

10. Axelsson P, Nystrom B, Lindhe J. The long-term effect of a plaque control program on tooth mortality, caries and periodontal disease in adults. Results after 30 years of maintenance. Journal of Clinical Periodontology, 2004; 31(9):749.

11. Freitas-Fernandes LB, Novaes Jr AB, Feitosa ACR, Novaes AB, Effectiveness of an oral hygiene program for Brazilian orphans. Brazilian Denatl Journal, 2002;13(1):44-48.

12. Grossi SG, Zambon JL, Ho AW, Koch G, Dunford RG, Machtei EE, and others. Assessment of risk for periodontal disease. I. Risk indicators for attachment loss. J Periodontol, 1994;65(3):260-7.

13. Grossi SG, Genco RJ, Machtei EE, Ho AW, Kock G, Dunford R, and others. Assessment of risk for periodontal disease. II. Risk indicators for alveolar bone loss. J Periodontol, 1995; 66(1):23-9.

14. Bergstrom J. Cigarette smoking as risk factor in chronic periodontal disease. Community Dent. Oral Epidemilogy, 1989;17(5):245-7.

15. Gelskey SC, Young TK, Singer DL. Factors associated with adult periodontitis in a dental teaching clinic population. Community Dent Oral Epidemiol, 1998;26(4):226-32.

16. Johnson GK, Slach NA. Impact of Tobacco Use on Periodontal Status. Journal of Dental Education, 2001; Vol. 65;4:313-321.

17. Watt RG, Daly B. Prevention. Part 1. Smoking cessation advice within the general dental practice. British Dental Journal, 2003; Volume 194; No. 12 June 28.

18. Johnson GK, Hill M. Cigarette smoking and the Periodontal patient. J Periodontol, 2004;75:196-209.

19. American Academy of Periodontology. Parameter on Systemic Conditions Affected by Periodontal Diseases. Journal of Periodontology, 2000;71:880-883.

20. Macgregor ID. Efficacy of dental health advice as an aid to reducing cigarette smoking. Br Dent J, 1996;180(8):292-6.

21. Mealey BL, Rethman MP. Periodontal disease and diabetes mellitus. Bidirectional relationship. Dent Today, 2003; Apr; 22(4):107-13.

22. Boyd LD, Lampi KJ. Importance of Nutrition for Optimum Health of the Periodontium. Journal of Contemporary Dental Practice, 2001; Vol 2(2):1-14.

23. Enwonwu CO. Interface of malnutrition and periodontal diseases. Am J Clin Nutr, 1995;61(suppl):430S-436S.

24. Jenzsch A, Eick S, Rassoul F, Purschwitz R, Jentsch H. Nutritional intervention in patients with periodontal disease: clinical, immunological and microbiological variables during 12 months. Br J Nutr, 2009 Mar;101(6):879-85.

25. Dowell P, Chapple IL; British Society of Periodontology. The Brisitsh Society of Periodontology referral policy and parameter of care.Dent Update, 2002 Sep;29(7):352-353.

26. Landry RG, Jean M.Periodontal Screening and Recording (PSR) Index: precurs utility and limitations in a clinical setting.Int Dent J, 2002 Feb;52(1):35-40.

27. Khocht A, Zohn H, Deasy M, Chang KM.Screening for periodontal disease: radiographs vs. PSR.J Am Dent Assoc, 1996 Jun;127(6):749-56.

28. Corbet EF. Practical periodontal screening and diagnosis. Int Dent J, 1998 Jun;48(3 Suppl 1):268-74.

29. Rosell FL, Montandon-Pompeu AA, Valsecki Junior A. [Simplified periodontal record for pregnant women] Rev Saude Publica, 1999 Apr;33(2):157-62.

30. Galgut PN, Calabrese N.A comparison of diagnostic screening data derived from general dental practitioners and periodontist used for initial treatment planning in periodontitis patients. J Int Acad Periodontol, 2007; Oct 9(4):106-11.

31. Bassani DG, da Silva CM, Oppermann RV.Validity of the "Community Periodontal Index of Treatment Needs" (CPITN) for population periodontitis screening. Cad Saude Publica, 2006; Feb 22(2):277-83. Epub 2006 Feb 20.

32. Khocht A, Zohn H, Deasy M, Chang KM.Assessment of periodontal status with PSR and traditional clinical periodontal examination.J Am Dent Assoc, 1995; Dec126(12):1658-65.

33. Rushton VE, Horner K, Worthington HV.Screening panoramic radiology of adults in general dental practice: radiological findings. Br Dent J, 2001; May 12;190(9):495-501.

34. Dirk Ziebolz, Ivette Szabadi, Sven Rinke, Else Hornecker,Rainer F Mausberg. Initial periodontal screening and radiographic findings - A comparison of two methods to evaluate the periodontal situation.BMC Oral Health, 2011;11: 3.

35. Garcia RI, Henshaw MM, Krall EA. Relationship between Periodontal Disease and systemic health. Periodontol, 2000; 25,pp 21-36.

36. Wactawski-Wende J. Periodontal Disease and osteoporosis: association and mechanism. Ann Periodontal, 2001;6(1):Dec, pp 197-208.

37. American Academy of Periodontology. Parameter on Chronic Periodontitis With Advanced Loss of Periodontal Support, J. Period, 2000); 71(5 Suppl), May, pp 856-858.

38. Philstrom BI. Periodontal risk assessment, diagnosis and treatment planning. Periodontal 2000, 25;pp 37-58.

39. Genco RJ. Current view of risk factors for periodontal disease. J Periodontal,1996; 67, pp 1041-1046.

40. Madden IM. Practical Periodontal care in general practice. Dental Asia, 2001; Jan, pp 18-25.

41. Brunsvold MA, Nair P, Oates TW. Chief complaint of patient seeking treatment for Periodontal Disease. J. Am. Dent. Assoc, 1999; 130 (3): Mac, pp 359-64.

42. Hou GL,Tsai CC. Clinical significance of tooth morphology correlation with periodontal disease. Kaaohsiung J Med Sci, 1997;13(4): Apr, pp 200-12.

43. Eley BM & Cox SW. Advances in periodontal diagnosis 1. Traditional clinical methods of diagnosis. British Dental J, 1998; 184 (1): Jan 10, pp 12-16.

44. Hung HC, Douglass CW. Meta-analysis of the effect of scaling and root planning, surgical treatment and antibiotic therapies on periodontal probing depth and attachment loss. J. Clin Periodontol, 2002; 29(11): Nov, pp 975-986.

45. Teeuw WJ, Coelho L, Silva A, van der Palen, van der Velden U, Lessmann FG, Loos BG. Validation of a dental image analyser tool to measure alveolar bone loss in periodontitis patients. J. Periodontal Res., 2009; Feb 44 (1):94-102. Epub 2008 Oct 7.

46. Malholtra R, Grover V, Kapoor R, Kapur R. Alkaline Phosphatase (ALP) as a periodontal marker. Indian J Dent Res, 2010; 21:531-6.

47. American Academy of Periodontology. Guidelines for the management of patients with periodontal diseases. J Periodontol, 2006;77:1607-1611.

48. Lang NP,Tonetti MS Periodontal risk assessment (PRA) for patients in supportive periodontal therapy (SPT) Oral Health Prev Dent, 2003;1(1):7-16.

49. Douglass CW Risk Assessment and management of periodontal disease J Am Dent Assoc, 2006 ;vol 137 Suppl:27-32.

50. Page RC, Krall EA, Martin J, Mancl L, Gracia RI Validity and accuracy of a risk calculator in predicting periodontal disease J Am Dent Assoc, 2002; vol 133 (50):569-76.

51. Lang NP,Tonetti MS Periodontal risk assessment (PRA) for patients in supportive periodontal therapy (SPT) Oral Health Prev Dent, 2003;1(1):7-16.

52. Heitz-Mayfield LJ. A., Disease progression: identification of high-risk groups and individuals for periodontitis Journal Clinical of Periodontology, 2005; vol 32 issue supplement s6, 196-209.

53. Matulience G, Struder R, Lang NP, Schmidlin K, Pjetursson BE, Salvi GE, Bragger U, Zwahlen M. Significance of Periodontal Risk Assessment in the recurrence of periodontitis and tooth loss Journal Clinical of Periodontology, 2010; 37(3) : 191-199.

54. Costa FO, Miranda Cota LO, Pereira Lages EJ, Lima Oliveira AP, Cirtelli JR, Medeiros Lorentz TC,Costa JE Periodontal Risk Assessment (PRA) Model in a Sample of Regular and Irregular Compliers Under Maintenance Therapy: A 3-Year Prospective Study J Periodontol, 2011; Jun 21.

55. Consensus Report during 1999 International Workshop for a Classification of Periodontal diseases and conditions. J Periodontol, 4(1): Dec, pp 38.

56. Cobb CM. Clinical significant of non-surgical periodontal therapy: An evidence based perspective of scaling and root planing, J Clin Periodontol, 2002; May 29, Suppl 2, pp 6-16.

57. Hung HC, Douglass CW. Meta-analysis of the effect of scaling and root planing, surgical treatment and antibiotic therapies on periodontal probing depth and attachment loss. J Clin Periodontol, 2002; 29(11): Nov, pp 975-986.

58. Greenstein G. Periodontal response to mechanical non-surgical therapy: A review. J of Periodontal,1992:63,pp 118-130.

59. Tunkel J, Heinecke A, Flemming TF. A systematic review of efficacy of machine-driven and manual subgingival debridement in the treatment of chronic periodontitis.J Clin Periodontol, 2002; 29 Suppl 3: 72-81; discussion 90-1.

60. Sanz M, Teughels W. Innovations in non-surgical periodontal therapy: Consensus Report of the Sixth European Workshop on Periodontology. J Clin Periodontol, 2008;35 (Suppl.8):3-7.

61. Ioannou I, Dimitriadis N, Papadimitriou K, Sakellari D, Vouros I, Konstantinidis A. Hand instrumentation versus ultrasonic debridement in the treatment of chronic periodontitis. A randomized clinical and microbiological trial. J Clin Periodontol, 2009; 36: 132–141.

62. Walmsley AD, Lea SC, Landini G, Moses AJ. Advances in power driven pocket/root instrumentation. J Clin Periodontol, 2008; 35 (Suppl. 8): 22–28.

63. Drisko, CH. Nonsurgical Periodontal Therapy. J Periodontol, 2000; 25, pp 77–88.

64. Schwarz F, Aoki A, Becker J, Sculean A. Laser application in non-surgical periodontal therapy: A systematic review. J Clin Periodontol, 2008; 35 (Suppl. 8): 29–44.

65. Apatzidou DA, Kinane DF. Quadrant root planing versus same-day full-mouth root planing. I. Clinical findings. J Clin Periodontol, 2004; Feb;31(2):132-40.

66. Allen E, Irwin C, Ziada H, Mullally B, and Byrne PJ. Periodontics: 6. Periodontal Problems Associated with Compromised Posterior Teeth.Dental Update, 2007;34:534-542.

67. Heitz-Mayfield LJ. A disease progression: identification of high-risk groups and individuals for periodontitis Journal Clinical of Periodontology, 2005; vol 32: issue supplement s6, 196-209.

68. Hung HC, Douglass CW. Meta-analysis of the effect of scaling and root planing, surgical treatment and antibiotic therapies on periodontal probing depth and attachment loss.J. Clin Periodontol, 2002;29(11):Nov pp 975-986.

69. American Academy of Periodontology. Parameter on Chronic Periodontitis With Advanced Loss of Periodontal Support, J. Periodontol, 2000; 71 (5 Suppl): May, pp 856–858).

70. American Academy of Periodontology Parameter on Chronic Periodontitis with Slight to Moderate Loss of Periodontal Support. J. Periodontol, 2000; 71 (5 Suppl): May, pp 853-855).

71. Bateman GJ, Saha S. and Pearson D. Contemporary Periodontal Surgery: 2. Surgical Practice. Dental Update, 2008; 35: 470–478.

72. Wang HL, Greenwell H Surgical periodontal therapy. Periodontol, 2000; 25: pp 89–99.

73. Ziada H, Irwin C, Mullally B, Byrne PJ and Allen E. Periodontics: 4. Surgical Management of Gingival and Periodontal Diseases. Dental Update, 2007;34:390-396.

74. American Academy of Periodontology. Treatment of Plaque-induced Gingivitis, Chronic Periodontitis, and other clinical conditions - Position Paper, J. Periodontol, 2001;72(12): Dec pp 1790–1800.

75. Byrne PJ, Irwin C, Mullally B, Allen E and Ziada H. Periodontics : 8. Periodontal Problems Associated with Compromised Anterior Teeth. Dental Update, 2007; 35:607–610.

76. Mullally B, Ziada H, Irwin C, Allen E and Byrne PJ. Periodontics : 7. Periodontal Problems Associated with Compromised Posterior Teeth. Dental Update 2007; 35:607–610.

77. Claffey N, Ioannis P, Ziaka P An overview of nonsurgical and surgical therapy. J Periodontol, 2004;36:pp 35-44.

78. Slots J, Jorgensen MG. Effective, safe, practical and affordable periodontal antimicrobial therapy: Where are we going, and are we there yet? Periodontol, 2000; 28:pp 298-312.

79. Dowell P. and McLaughlin WS. Management of Molar Teeth with Periodontal Disease Dental Update, 2000; 27: 25–34.

80. Wylam JM, Mealey BL, Mills MP, Waldrop TC. Moskowicz DC. The clinical effectiveness of open versus closed scaling and root planing on multi-rooted teeth. J. Periodontol,1993; 64(11):Nov, pp 1023-1028.

81. King G. New Regenerative Technologies: Rationale and Potential for Periodontal Regeneration: 1. New Advances in Established Regenerative Strategies Dental Update, 2001; 28: 7–12.

82. Patel RA, Wilson RF, Palmer R. The Effect of Smoking on Periodontal bone Regeneration: A Systematic Review Journal of Periodontology, 2011; posted online on May 31.

83. American Academy of Periodontology. Position Paper.Guidelines for Periodontal Therapy.J. Periodontol, 2001;72 (11):Nov, pp 1626 -1628.

84. Al – Sabbagh M, Beneduce C, Andreana S, Ciancio SG. Incidence and time course of dentinal hypersensitivity after periodontal surgery. General Dentistry, 2010;Jan-Feb:58(1); e14-9.

85. Griffin TJ, Cheung WS, Zavras AI and Damoulis DPPostoperative Complications Following Gingival Augmentation Procedures. Journal of Periodontology; Dec 2006; 77, No. 12 Pgs. 2070-2079.

86. Slots, J; Ting, M. Systemic Antibiotics in the Treatment of Periodontal Disease, Periodontol, 2002; 28:pp 106-176.

87. American Academy of Periodontology. Systemic Antibiotics in Periodontics - Position Paper, J. Periodontol, 2004;75(11): pp 1553-1565.

88. Quirynen M; Teughels W; De Soete M, van Steenberghe D. Topical Antiseptics And Antibiotics in the Initial Therapy Of Chronic Adult Periodontitis: Microbiological Aspects Periodontol, 2002;28:pp 72-90.

89. Herrera D, Alonso B, Leon R, Roldan S, Sanz M. Antimicrobial therapy in periodontitis: the use of systemic antimicrobials against the subgingival biofilm J Clin Periodontol, 2008; 35 (Suppl. 8) 45-66.

90. Hafajjee A, Socransky S, Gunsolley Systemic anti–infective periodontal therapy. A systematic review. Annals of Periodontology, 2003; Vol 8(1):115-181.

91. Drisko, CH. Nonsurgical Periodontal Therapy. J Periodontol, 2000;25:pp 77-88.

92. American Academy of Periodontology. Academy Statement. Tooth Extraction during the Course of Periodontal Therapy.J. Periodontol, 2003;74 (6):June, pp 933.

93. Svardstrom G, Wennstrom JL). Periodontal treatment decisions for molars: an analysis of influencing factors and long-term outcome. J Periodontol, 2000; 71(4): Apr, pp:579-585.

94. Ong G. Periodontal reasons for tooth loss in an Asian population. J Clin Periodontol,1996; 23(4):Apr pp 307-9.

95. Gustavo Avila, Pablo Galindo-Moreno, Stephen Soehren, Carl E. Misch, Thiago Morelli and Hom-Lay Wang. A Novel Decision-Making Process for Tooth Retention or Extraction J Periodontol, 2009;80:476-491.

96. Palmer RM, Floyd PD. Periodontology: a clinical approach. 7. Intergrated treatment planing. Br. Dent. J, 1995; 178(11):Jun 10 pp 423-428.

97. Hofer D, Hammerle CH, Lang NP. Comprehensive treatment concepts in a young adult patient with severe periodontal disease: a case report. Quintessence Int, 2002; 33(8):Sep pp 567-78.

98. Cheng YM. Dynamics of dental implants and orthodontics in today's periodontal prosthesis. Compend Contin Edu Dent, 2000;21(3):Mar pp 191-206.

99. Rabie AB, Deng YM, Jin LJ. Adjunctive orthodontics treatment of periodontally involved teeth: Case report. Quintessence Int.,1998;29(1):Jan pp 13-9.

100. Nevins ML, Gartner-Sekler JL. Periodontal, implant and prosthetic treatment for advanced periodontal disease. Compend Contin Educ Dent,1997;18(5):May pp 469-74,476,478-9.

101. Duncan, WJ. Realignment of periodontally affected maxillary teeth - a periodontist perspective. Part I Treatment rationale and methodology. NZ Dent J, 1997;413: Sept pp 79-83.

102. Romano R, Landsberg CJ. Reconstruction of function and aesthetics of the maxillary anterior region: a combined periodontal/ orthodontic therapy. Pract Periodontics Aesthet Dent, 1996;8(4): May pp 353-61.

103. Klokkevold, Perry R. Han, Thomas How do smoking, diabetes, and periodontitis affect outcomes of implant treatment:International Journal of Oral & Maxillofacial Implant, 2007;22 Suppl:173-202.

104. Schou, S Implant treatment in periodontitis-susceptible patients: a systematic review. Journal of Oral Rehabilitation,2008;35 Suppl 1:9-22.

105. Evian CI, Emling R, Rosenberg ES, Waasdorp JA, Halpern W, Shah S, Garcia M. Retrospective analysis of implant survival and the influence of periodontal disease and immediate placement on long-term results. Int J Oral Maxillofac Implants,2004;19(3): May-Jun pp 393-8.

106. Karoussis IK, Salvi GE, Heitz-Mayfield LJ, Bagger U. Hammerle CH, Lang NP. Long term implant prognosis in patient with and without a history of chronic periodontitis: a 10 year prospective cohort study of dental implant system. Clin Oral Implants Res.,2003; 14(3):Jun pp 329-39.

107. Baelum V, Ellegaard B. Implant survival in periodontally compromised patients. J Periodontol, 2004;75(10):Oct pp1404-12.

108. Wennstrom JL, Ekestubbe A, Gondahl K, Karisson S, Lindhe J. Oral rehabilitation with implants-supported fixed partial dentures in periodontitis-susceptible subjects. A 5-year prospective study. J Clin Periodontal, 2004;31(9):Sep pp 713-24.

109. Rosenberg ES, Cho SC, Elian N, Jalbout ZN, Froun S, Evian CI. A comparison of characteristics of implant failure and survival in periodontally healthy patients: a clinical report. Int. J Oral Maxillofac Implants, 2004;19(6):Nov–Dec pp 873-9.

110. Heitz-Mayfield, Lisa J A. Huynh-Ba, Guy. History of treated periodontitis and smoking as risks for implant therapy International Journal of Oral & Maxillofacial Implants, 2009; 24:Suppl:39-68.

111. McFall WT Jr. Supportive periodontal treatment. Introduction – definition, extent of need, therapeutic objectives, frequency and efficacy. J Periodontol, 1996;12: pp 11-15.

112. Cortellini P, Tonetti MS. Long-term tooth survival following regenerative treatment of Infrabony defects. J Periodontol, 2004;75(5):May pp 672-8.

113. Pearlman BA. Long-term periodontal care: a comparative retrospective study, J Periodontol, 1993;64(8):Aug pp 723-9.

114. American Academy of Periodontology. Parameter on periodontal maintenance. J Periodontol, 2000;71(5 Suppl): May pp 849-50.

115. Axelsson P, Nystrom B, Lindhe J. The long-term effect of a plaque control program on tooth mortality, caries and periodontal disease in adults. Result after 30 years of maintenance. J Clin Periodontol, 2004;31(9):pp 749-54.

116. Caton J, Proye M, Polson A. Maintenance of healed periodontal pockets after a single episode of root planing. J Periodontol,1982;53(7):Jul pp 420-424.

117. Kamma JJ, Baehni PC. Five-year maintenance follow-up of early-onset periodontitis patients.J Clin Periodontol, 2003;30(6):Jun pp 562-72.

118. Lindhe J, Nyman S. Long-term maintenance of patients for advanced periodontal disease. J Clin Periodontol,1984;11(8):Sep pp 504-14.

119. Ramfjord SP, Morrison EC, Burgett FG, Nissle RR, Shick RA, Zann GJ, Knowles JW. Oral hygiene and maintenance of periodontal support. J Periodontol,1982;53(1):Jan pp 26-30.

120. Renvert, S. and Persson, GR. Supportive periodontal therapy. Periodontology, 2004;36: pp 179–195.

121. Soskolne WA, Proskin HM, Stabholz A. Probing depth changes following 2 years of periodontal maintenance therapy including adjunctive controlled release of chlorhexidine. J Periodontol, 2003;74(4):Apr pp 420-7.

122. Listgarten MA, Slots J, Rosenberg J, Nitkin L, Sullivan P, Oler J. Clinical and microbiological characteristics of treated periodontitis patients on maintenance care.J Periodontol, 1989;60(8):Aug pp 452-9.

123. Fardal O, Johannessen AC, Linden GJ. Tooth loss during maintenance following periodontal treatment in a periodontal practice in Norway. J Clin Periodontol, 2004; 31(7):Jul pp 550-5.

124. Cheechi L, Montevecchi M, Gatto MR, Trombelli L. Retrospective study of tooth loss in 92 treated periodontal patients. J Clin Periodontol, 2002;29(7):Jul pp 651-656.

125. Wood WR, Greco GW, McFall WT Jr. Tooth loss in patients with moderate periodontitis after treatment and Long-term maintenance care. J Periodontol, 1989;60(9):Sep pp 516-20.

126. Wilson TG Jr., Glover ME, Malik AK, Schoen JA, Dorsett D. Tooth loss in maintenance patients in a private periodontic practice. J Periodontol, 1987;58(4):Apr pp 231-235.

Appendix 1

(adapted from British Society of Periodontology, 2000)

The Basic Periodontal Examination (BPE) requires that the periodontium be examined with a standardized periodontal probe (WHO probe) using light pressure to examine for bleeding on probing, plaque retentive factors and pocket depth.

All the teeth present are to be examined in six sextants, four posterior sextants and two anterior sextants. The worst score of each sextant is scored.

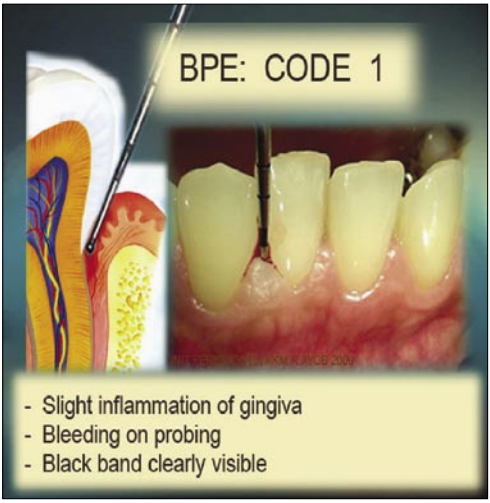
Code:

0 – no bleeding or pocketing detected
1 – bleeding on probing but no pocketing more than 3.5mm
2 – plaque retentive factors present but no pocketing more than 3.5mm
3 – pockets more than 3.5mm but less than 5.5mm in depth
4 – pockets more than 5.5mm in depth
* - furcation involvement

BASIC PERIODONTAL EXAMINATION

No bleeding or pocketing detected

Management: Maintain good oral hygiene



Coloured area of the probe remains completely visible in the deepest pocket in the sextant.

No calculus or defective restoration margins.

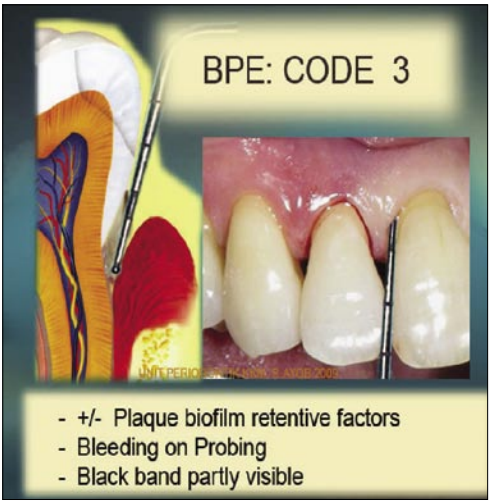
There is bleeding after gentle bleeding after probing.

Management: OHI

Coloured area of probe remains completely visible in the deepest pocket in the sextant.

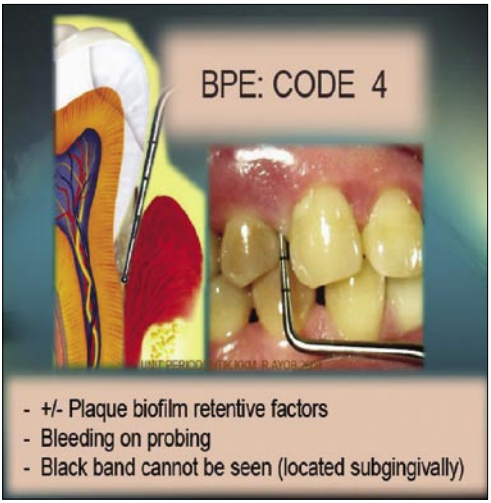
Supra or subgingival calculus detected or defective margin(s) of crown/restoration.

Management: OHI and removal of plaque retentive factors.



Coloured area of probe remains partly visible in the deepest pocket in the sextant indicating deep pockets of > than 4mm and < than 6 mm.

Management: OHI and debridement



Coloured area of probe completely disappears into the pocket indicating probing depths of at least 6mm.

Management: OHI, gross scaling and refer to specialist.

Furcation involvement

Management: Refer to Specialist

Appendix 2
RECOMMENDED ADJUNCT ANTIBIOTIC OF PERIODONTAL THERAPY

(adult dosage with normal renal function)

Antibiotic	Dosage	Duration
Metronidazole + Amoxicillin	Metronidazole = 400mg tds + Amoxicillin = 500mg tds	7 days
Clindamycin	300mg tds	7 days
Azithromycin	500mg od	3 days
Metronidazole	400mg tds	7 days

Appendix 3
PERIODONTAL RISK ASSESSMENT

Table 1. Coding system for the PRA (Lang & Tonetti 2003)

Risk	Bleeding on Probing	N of sites PPD >5mm	Tooth loss	Boneloss /age*	Smoking	Genetic/ Systemic
Low	0-9%	0-4	0-4	0-0.5	Non-smoker/ Former smoker	Negative
Moderate	10-25%	5-8	5-8	>0.5-1.0	10-19 cig/day	Negative
High	>25%	>8	>8	>1.0	>19 cig/day	Positive

** Bone loss, estimation of bone loss in percent of the root length at the worst site in the posterior periapical/bitewings radiographs, where 1mm is 10% bone loss.*

Table 2. Calculation of PRA

Low-risk individual	All low- risk categories and one in moderate-risk category
Moderate-risk individual	At least two in moderate-risk categories and one in high-risk category
High-risk individual	At least two high-risk categories

Table 3. Recommended SPT visit intervals according to PRA (Lang & Tonetti 2003)

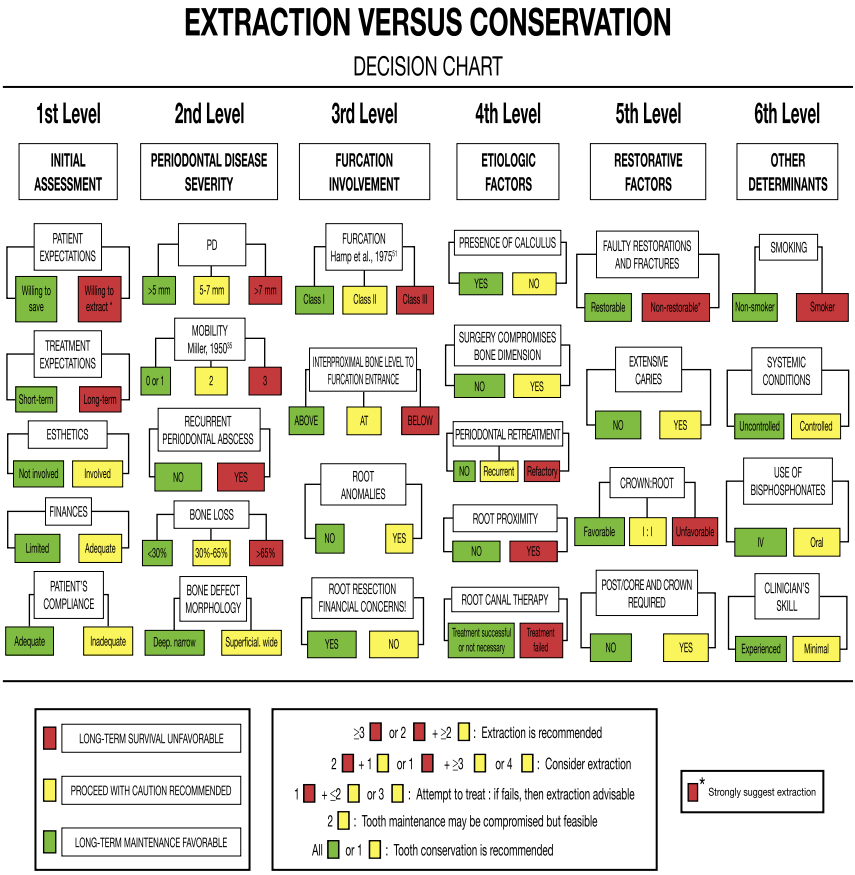
Risk	Recall interval
Low	1/year
Moderate	2/year
High	3-4/year

Appendix 4

Decision making chart for tooth extraction or conservation

Source: A Novel Decision – Making Process for Tooth Retention or Extraction

Avila et al: J.Periodontol March 2009 Vol 80 No:3



ACKNOWLEDGEMENT

The members of the development group of these guidelines would like to express their gratitude and appreciation to the following for their contributions:

- Panel of external reviewers
- Technical Advisory Committee for CPG for their valuable input and feedback
- All those who have contributed directly or indirectly to the development of the CPG

DISCLOSURE STATEMENT

The panel members had completed disclosure forms. None held shares in pharmaceutical firms or acts as consultants to such firms. (Details are available upon request from the CPG Secretariat)

SOURCES OF FUNDING

The development of the CPG on "MANAGEMENT OF CHRONIC PERIODONTITIS" was supported financially in its entirety by the Ministry of Health Malaysia and was developed without any involvement of the pharmaceutical industry.