"Advanced Hygiene Therapy- Developing a Comprehensive Approach"

A Continuing Education Course for Dental Professionals

Presented by

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Course Description

In treating today's periodontal patient successfully, the clinician must customize a treatment plan that goes beyond the removal of plaque and calculus. Achieving excellent clinical outcomes involves assessing for systemic issues, communicating and customizing home care according to the patient's level of understanding and ability to perform home care procedures, and choosing appropriate adjuncts to care. In this course, we will explore the multi-faceted treatment planning approach, including scheduling and coding. We will also discuss case classification, a step-by-step treatment protocol, and various adjuncts to control aerosols. We will also explore strategies for dealing with informed consent and refusal of definitive care.

Course Objectives

Upon completion of this course, the participant will be able to:

- Understand the factors involved in periodontal breakdown
- Discuss the pathogenesis of periodontitis
- Explore the most prominent systemic disease interrelationships to periodontal disease
- Choose adjuncts to care based on severity and appropriateness
- Understand the role of the host in disease progression
- Define a sequence of care
- Examine various coding issues
- Discuss informed consent and refusal of care

Pre-Test
Facts about Plaque and Periodontal Disease

True or False

(1) Supragingival plaque causes gingivitis but does NOT cause periodontitis. T F

(2) Calculus deposits cause periodontitis. T F

(3) Once the dental papilla recedes, dental floss becomes increasingly ineffective. T F

(4) Toothbrushes do not reach more than 1-2mm and rarely 3mm into a pocket. T F

(5) Mouthwashes are effective in reducing gingivitis and periodontitis. T F

(6) Periodontal infection begins in shallow sulci. T F

(7) Periodontal disease occurs in episodes of activity and quiescence. T F

(8) Supragingival plaque control is the most important factor in stopping established periodontal disease. T F

(9) Periodontal pockets have been shown to re-populate to previously scaled levels within nine to eleven weeks following treatment. T F

(10) Plaque can be removed only by the use of floss, picks, or interdental brushes using mechanical friction. T F

(11) Pre-procedural rinsing has been shown to reduce airborne pathogens by 94%. T F

(12) The top risk factor for periodontal disease is substandard oral hygiene. T F

(13) Tissue destruction associated with periodontal disease is caused solely by the action of pathogenic microbes. T F

(14) Probing depth cannot reveal a pathogenic infection or predict future attachment loss. T F

(15) Microbes known to be associated with periodontal disease include viruses, yeasts, and fungi. T F

(16) The microbes that initiate periodontal disease prefer calculus over cementum. T F

(17) The goal of periodontal therapy is to have no pockets over 3mm and no bleeding on probing. T F

(18) Bleeding on probing is an absolute sign of active periodontal disease. T F

(19) Hand scaling is superior to power scaling. T F

(20) Individual host factors are not related to the progression of periodontitis. T F

Patient Factors to Consider with *Comprehensive* Therapy

- Medical history (systemic disease, medications)
- Home care level/lifestyle factors
- Oral condition
- Patient dexterity/patient motivation
- Treatment plan
- Diet

Understanding Periodontitis

1. Infectious, chronic, inflammatory disease that results in destruction of the periodontal ligament and alveolar bone.
2. Three types – (1) chronic, (2) aggressive, and (3) periodontitis due to systemic condition.
    - Chronic – most common
    - Aggressive – rapid loss of bone. Gingiva can appear healthy with no signs of inflammation and minimal calculus/plaque. Can be localized or generalized. Most common in individuals under age 30.
3. Calculus – an inert material from calcification of plaque. Full of lacunae.
4. Published research 1982-1991
    - Paradigm shift from definitive root planing to periodontal debridement
    - Cementum contains cell-activating proteins that stimulate attachment
    - Phrases to use instead of “deep cleaning”
        - Advanced Hygiene Care

- Advanced Periodontal Care
- Definitive Periodontal Therapy
- Gum Infection Therapy

5. Polymicrobial – more than 500 species with about 13 being the most pathogenic. Clonal types, especially with *Pg*

Pathogens most often associated with periodontal disease – *Socransky's Red Complex*

- *Porphrymonas gingivalis*
- *Treponema denticola*
- *Tannerella forsythensis*

Also yeasts, viruses, fungi, especially herpesviruses (Slots, et al). To establish the existence of high viral load, patient would need to see physician for a blood test. May be appropriate for non-responsive patients following traditional therapy.

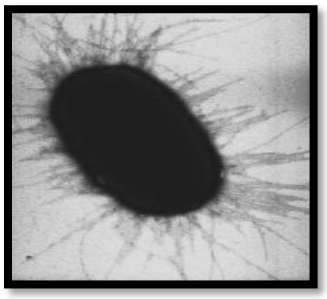
Slots Recommended Sequence of Periodontal Therapy When Considering the Use of Antivirals

1. Microbiologic sampling
2. Pre- and post-subgingival irrigation with povidone iodine
3. Ultrasonic scaling
4. Valacyclovir (500 mg two times/day for 10 days)
5. On day 10, pre-and post-irrigation with povidone iodine
6. Additional scaling with ultrasonic instrumentation
7. Amoxicillin-metronidazole (250 mg of each, three times/day for 8 days) for young and middle age patients
8. Ciprofloxacin-metronidazole (500 mg of each two time/days for 8 days) for older patients or patients in developing countries.

4. Shift in the balance of species from gram positive, facultative to gram negative, anaerobic species.

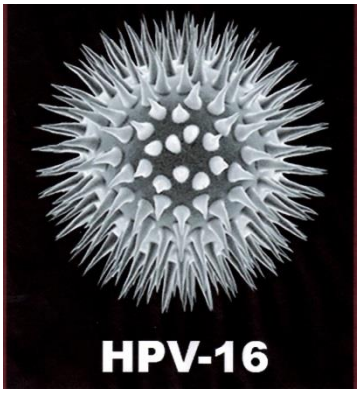
5. Bacterial fimbriae, the arms and legs of the bacteria, allow the microorganisms to adhere to other bacteria, epithelial cells, salivary proteins and other substances.

6. Fimbriae are also a major factor in bacterial virulence (the ability of a bacterium to cause disease), since these structures enable some bacteria to colonize human epithelial cells.



7. Bacteria that are able to stick to each other and to surfaces can form biofilms.

8. Viruses have appendages but not fimbriae. Spikes on the outer surface of a virus help it attach itself to a cell. Viruses are well-organized molecular parasites. Unlike a bacterium or a cell of an animal, a virus lacks the ability to replicate on its own.



9. Where microorganisms congregate: (1) tooth attached plaque, (2) unattached plaque, (3) epithelial associated plaque, (4) bacteria within connective tissue, and (5) bacteria on the bone surface.

10. Shift in microbes unfavorable to the host → signaling proteins called cytokines → send WBC to remove offending organism.

Pathogenesis of Periodontitis

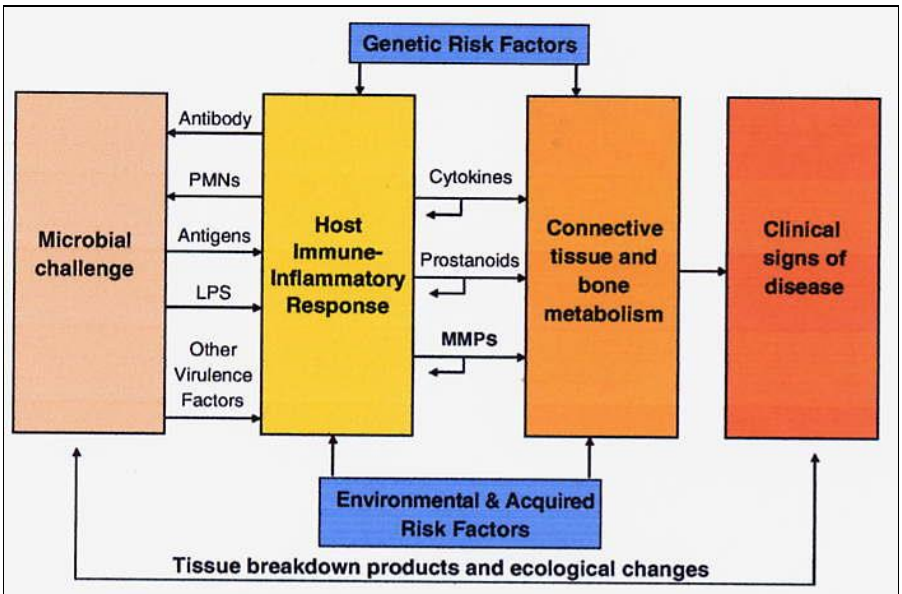


Fig. 1. The pathogenesis of periodontitis. LPS, lipopolysaccharide; PMNs, polymorphonuclear neutrophils. (*Adapted from* Page RC, Kornman KS. The pathogenesis of human periodontitis: an introduction. Periodontol 2000 1997;14:10; with permission.)

Pathogenic subgingival microbiota + Susceptible host → Biochemical changes → Attachment loss and bone resorption = PERIODONTITIS

Inflammation

1. Inflammation is a process initiated by tissue irritation, injury, or infection.

2. The aim of the inflammatory cascade is to remove foreign organisms, remove and replace necrotic cells, and restore tissue health.

3. The non-specific aspect of inflammation often destroys important host tissues while attempting to restore health, such as the periodontal ligament in periodontitis and pancreatic islet cells in type I diabetes.

4. Bone loss in periodontitis is a function of **increased** osteoclastic activity and a **decrease** in osteoblastic activity, spurred by production of pro-inflammatory cytokines, such as TNF-*a* and *IL*-6.

5. Both the **microbes** and the **host inflammatory response** are responsible for tissue destruction.

6. Classic signs of inflammation – heat, pain, redness, swelling.

7. The host changes associated with inflammation may be responsible for facilitating a more pathological flora.

8. Therapeutic modulation of inflammation is showing promise, i.e., resolvins and protectins (pro-resolving lipid-based agonists, Van Dyke & Suzuki research).

9. **Chronic inflammation** results from the body's failure to turn off its inflammatory response.

10. Host immunity response is initiated by neutrophils, a type of white blood cell crucially important in eliminating infectious organisms by engulfing them through a process called phagocytosis – which literally means "cell eating."

11. Neutrophils secrete proinflammatory chemicals that cause the acute phase of inflammation. Normally, at the end of this cycle, neutrophils would cease their secretions, and inflammation would subside. But in periodontal disease, the neutrophils continue churning out their proinflammatory chemicals that result in chronic destruction of bone and ligament.

12. Susceptibility to periodontal disease is genetically influenced.

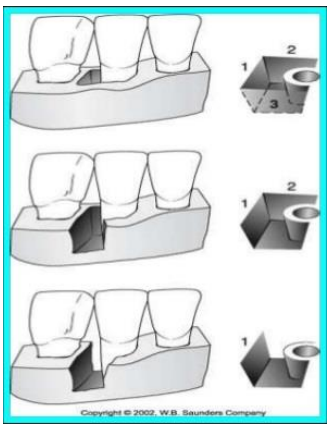
13. Bleeding and inflammation foster increased numbers of periodontal pathogens, as pathogens are nourished by sulcular fluids and increased warmth.

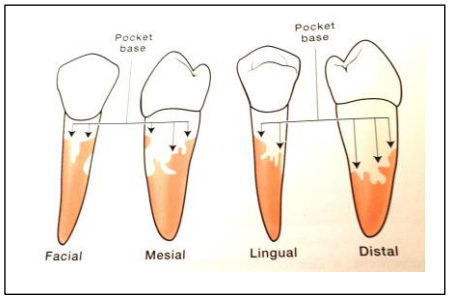
14. Infrabony defects.

Three-wall

Two-wall

One-wall





Biofilm Considerations

1. For unexplained reasons, some microbes are able to survive in suboptimal environments.

2. Microbes within the biofilm matrix can communicate through quorum sensing.

3. Six hours after scaling, biofilms are fully mature with all major pathogens established in their most virulent form. (*Biofilms, a new approach to the microbiology of dental plaque Jacob M. ten Cate, Review Article: Odontology, (2006) 94:1)*

4. Non-specific plaque hypothesis (NSPH) – "elaboration of noxious products by the entire plaque flora…" (Developed in the 50s and 60s) Control of periodontal disease depends on control of plaque accumulation. Treatment consists of plaque removal by debridement (surgical and non-surgical) and oral hygiene measures.

5. Specific plaque hypothesis (SPH) – states that plaque pathogenicity depends on the presence of or increase in certain pathogens. Periodontal disease happens when these organisms mediate the destruction of host tissues. Treatment aimed at causative agent (early 90s to present)

13. Updated NSPH – entire plaque flora is involved in disease, but some species are more virulent.

14. Ecological plaque hypothesis (EPH) - which proposes that disease is the result of an imbalance in the microflora by ecological stress resulting in an enrichment of certain disease-related microorganisms.
15. Keystone-Pathogen Hypothesis (KPH) (2012) proposes that certain low-abundance microbial pathogens can cause inflammatory disease by interfering with the host immune system and remodeling the microbiota.

Oral Irrigation Efficacy

1. The efficacy of any oral irrigant depends on several factors:
    a) Delivery efficiency
    b) Concentration
    c) Duration
    d) Substantivity
    e) Dilution
    f) Compliance

2. **Povidone iodine**
    a) Betadine® or generic equivalent) is a 10% solution in water, yielding 1% (10,000 ppm)
    b) According to Greenstein et al, 10% povidone iodine should be diluted with 3 parts water and 1 part povidone iodine. This makes the solution 0.25% which is the minimum dilution to kill *P.gingivalis* in 5 minutes.
    c) Use of povidone iodine does not induce bacterial resistance.
    d) Allergic reactions, including itching, burning, and reddening and blistering in the area of application, so a patient's history of allergy to iodine or shellfish must be evaluated.
    e) Prolonged iodide intake can inhibit thyroid hormone synthesis and cause goiter, myxedema, or hyperthyroidism; therefore, povidone-iodine should not be used in patients with thyroid dysfunction, pregnant woman, infants, or in routine patient self-care.
    f) Povidone-iodine **kills in vitro all major periodontopathic bacteria** within 15 to 30 seconds and exhibits a wide viricidal spectrum, covering both enveloped (eg, herpesviruses) and non-enveloped viruses.
    g) Hoang, et al. "At 5 weeks post-treatment, subgingival irrigation with PVP-iodine together with scaling and root planing caused a 95% or greater reduction in total pathogen counts in 44% of pockets having ≥ 6 mm depth whereas scaling and root planing alone, povidone-iodine irrigation alone and water irrigation alone caused 95% reduction of total pathogens only in 6–13% of similar study sites ($P = 0.02$)."
    h) Povidone-iodine used in periodontal treatment is applied subgingivally using, for example, a 3-mL endodontic syringe with a 23-gauge cannula that has a blunt end and side ports. The cannula is inserted into the base of the periodontal pocket to ensure maximum drug delivery. A single course of subgingival irrigation of the entire dentition takes about 1.5 minutes and is repeated at least 3 times for a total application time of 5-10 minutes.
    i) New product – IoTech Molecular Iodine - Molecular iodine is the only **biocidal** species of iodine • All other species of iodine do not kill microbes, but contribute to staining and/or toxicity. Molecular iodine is only present in Betadine at less than 3 ppm. Only 2-3 molecules out of 31,600 iodine molecules actually kill microbes. The other iodine molecules contribute to staining and toxicity, but have no antiseptic properties. ioTech's patented technology shifts that equilibrium to provide water-based solutions of iodine that have up to 200 times the concentration of Molecular iodine (up to 600 ppm). Because of much lower non-active iodine levels, ioRinse does not stain. So, ioRinse RTU, at 100 ppm Molecular iodine contains 35-50 times the active ingredients than is present in povidone iodine.
    j) https://iotechinternational.com/ phone 1.561.509.0205

3. **Sodium hypochlorite (NaOCl**) Among the most potent antiseptic and disinfectant agents against bacteria, fungi, and viruses.
    a) Sodium hypochlorite occurs naturally in human neutrophils and monocytes/macrophages, therefore, it does not evoke allergic reactions.
    b) It is not a mutagen, carcinogen or teratogen.
    c) It has a century-long safety record. Dilute sodium hypochlorite has no contraindications.
    d) Sodium hypochlorite rinsing exerts broad antimicrobial activity against experimental oral biofilms and reduces biofilm by 80-fold compared with water.
    e) Dilute sodium hypochlorite rinse (0.5%) has produced a 47% greater reduction in dental plaque mass compared with water rinsing.
    f) The lowest concentration of sodium hypochlorite solution that reliably inactivates bacteria in vitro is 0.01%.
    g) Galvan et al reported a highly significant (14.5-fold) difference in the number of teeth with no bleeding on probing after having participants rinse twice-weekly for 30 seconds with a .25% solution of sodium hypochlorite and water (3 parts water, 1 part NaOCl).
    h) Patients are also advised to rinse orally with 0.2% sodium hypochlorite for 30 seconds, 2 or 3 times per week. This is equivalent to 8 mL (3/4 teaspoon) of 8.25% household bleach in 8 oz. of water.
    i) More frequent rinsing may produce a brown-black extrinsic discoloration of the teeth.
    j) Diluted hypochlorite solutions gradually lose strength, so fresh solutions should be prepared for each use.
    k) How much Clorox to a cup of water should we recommend for home use?
    The endpoint needed is 1,240 parts/million sodium hypochlorite (NaClO); the minimum inhibitory concentration (MIC).
    l) Given the small number of studies, claims on efficacy have been questioned. (Muller et al.)

De Nardo R, Chiappe V, Gómez M, Romanelli H, Slots J. " Effects of 0.05% sodium hypochlorite oral rinse on supragingival biofilm and gingival inflammation." Int Dent J. 2012 Aug;62(4):208-12. doi: 10.1111/j.1875-595X.2011.00111.x. Epub 2012 May 11.

Slots J. "Low-cost periodontal therapy" *Periodonto*l 2000. 2012 Oct;60(1):110-37.

4. **Chlorhexidine.** Numerous studies and meta-reviews have confirmed its antiplaque and antigingivitis effects. The ability of chlorhexidine to adhere to the dental pellicle and oral mucosa prolongs its antiplaque effect.
    a) Is absorbed into hydroxyapatite and is believed to inhibit bacterial colonization. After binding, the agent is slowly released in active form over 12 hours to 24 hours (substantivity).
    b) Chlorhexidine is inactivated by organic serum compounds in the gingival crevice fluid, and subgingival placement produces little change in microbial and clinical variables.
    c) As the antimicrobial action of the cationic chlorhexidine is neutralized by anionic compound surfactants in toothpastes, chlorhexidine should not be used in conjunction with tooth brushing with toothpaste.
    d) A major disadvantage of chlorhexidine is its propensity to dark stain tooth surfaces.
    e) It has been shown to increase calculus formation and alter taste over time. Benefit is dependent upon the frequency of use and ability to deliver into deep pockets.
    f) Latest meta-analysis (da Costa et al, May 2017, *JADA)* showed "slight clinical benefit" with PD reduction of **.33mm** at 60 days and **.24mm** at 180 days)

5. **TheraSol –** Ethoxylated tertiary amine, capryl/capramidopropyl betaine – potent antimicrobial, non-staining, does not contribute to calculus formation, 6 hour substantivity, pleasant tasting,
   low alcohol

6. **Hydrogen peroxide (H2O2) There** is good evidence for the safety of hydrogen peroxide when used at low concentrations on a daily basis over extended periods of time in self-administered oral health care products such as dentifrices and mouth rinses. These low concentrations neither damage oral hard or soft tissues, nor do they pose a significant risk of adverse long-term effects. However, it does **not** kill anaerobes and is a weak antiseptic.

7. **Essential oils (Listerine) –** anti-plaque and semi-bactericidal activity (Charles, CA et al. Gen Dent.Jan-Feb;(61)
   Listerine ZERO and Listerine Antiseptic Mouthwashes – 4 essential oils: eucalyptol, menthol, salicylate, thymol
   Listerine Total Care and Total Care Zero – sodium fluoride 0.02%

8. **Salt water** – may only be bacteriostatic, but is soothing to sore tissues.

9. **Metformin gel** – common antidiabetic drug that has recently shown to stimulate osteoblasts and reduce alveolar bone loss. No commercially available formulation available currently. Must be mixed by a compounding pharmacy. Pradeep et al studied 0.5%, 1% and 1.5%

   formulations and got the same results with 1% & 1.5%. Ingredients include gellan gum, mannitol, sucralose, citric acid, preservatives, and sodium citrate with distilled water. (www.abbottscompounding.com)

10. **Locally delivered statins –** Statins, commonly known as cholesterol-lowering drugs, have been reported to also possess anti-inflammatory properties, antioxidative features, antibacterial activities, and pleiotropic features, such as inhibiting release of proinflammatory mediators and matrix metalloproteinases (MMPs).

Comparison of PD and CAL - Antimicrobials vs. Locally Delivered Statins

PD improvement antimicrobials				**PD improvement statins**				
CHX	0.35			SMV	2.09			
DOX gel	0.51			ATV	0.44			
MET	0.06			RSV	2.15			
Arestin	0.26							
TCN fibers	0.21							
CAL gain antimicrobials				**CAL gain statins**				
CHX	0.16			SMV	1.71			
DOX gel	0.34			ATV	0.67			
MET	0.07			RSV	2.16			
Arestin	-0.4							
TCN fibers	-0.17							
SMV - simvastatin ATV - atorvastatin RSV - rosuvastatin								
Sinjab, K. et al. JOP, April, 2017								

Factors that Can Influence Disease Progression

1. Home care

   a. Is the patient apathetic?
   b. Is the patient financially strapped?
   c. Is the patient uneducated about oral hygiene?

2. Susceptibility - Good oral hygiene slows progression of disease. However OH plays less of a role for individuals NOT susceptible to the disease.

   a. Salivary pH
   b. Genetic predisposition

3. Systemic Disease, Conditions, and Drugs

   a. Diabetes
   b. Cardiovascular disease (AHA Scientific Statement, Apr. 2012 "Periodontal Disease and Atherosclerotic Vascular Disease: Does the Evidence Support an Independent Association?" "*A link between oral health and cardiovascular disease has been proposed for more than a century…Observational studies to date support an association between PD and ASVD independent of known confounders. They do not, however, support a causative relationship. Although periodontal interventions result in a reduction in systemic inflammation and endothelial dysfunction in short-term studies, there is no evidence that they prevent ASVD or modify its outcomes."*
   c. Respiratory disease
   d. HIV/autoimmune disease
   e. Osteoporosis
   f. Pregnancy and low birthweight outcomes
   g. Prescription drug use

4. Fear

   a. of the unknown
   b. previous unpleasant dental experience
   c. injection
   - DENTSPLY™ survey of 700 patients - results 1 of 10 cancelled an appointment due to fear of injection.

5. Lifestyle factors
   a. Alcohol –
   b. Recreational drug use
   c. Tobacco
   - Feb. 2004 position paper, *J. Periodontol*, "Cigarette Smoking and Periodontitis." **Half** as much improvement in both surgical and non-surgical modalities.
   - Smoking has toxic effect on bone development and reduces calcium absorption. According to NIH study published in 2000, 78.4% of perio is due to smoking.

- All tobacco products, including e-cigarettes and hookahs, have nicotine. And its nicotine's highly addictive properties that make these products harmful.

6. Local Oral Factors
   a. Overhanging restoration
   b. Poor margins
   c. Calculus
   d. Malpositioning
   e. Oral piercings

SOME PATIENTS HAVE NO IDENTIFIABLE RISK FACTORS

Review Questions

1. It has been established that all people are not equally _____ to periodontal disease, regardless of the level of home care.

a) Accepting
b) Equal
c) Susceptible
d) Loving

2. The process by which neutrophils engulf and digest pathogens is called _____.

a. Food intake
b. Phagocytosis
c. Kreb's cycle
d. Maturation

3. The one intraoral medicament that has been shown to kill all major periodontopathic microbes <u>without</u> staining or toxicity issues is _____ _____.

a. Molecular iodine
b. Listerine
c. Salt water
d. Hydrogen peroxide

4. The infrabony defect with the MOST bone loss is the _____ - walled defect.

a. Five
b. Three
c. One
d. Eight

5. The top two risk factors for periodontitis are _____ and _____.

a. Obesity and drug use
b. Smoking and diabetes
c. Gambling and pornography
d. Cancer and opioids

Limitations of BOP

1. Aspirin – Commonly taken for headaches and by many adults to protect against coronary disease. A single 325 mg tablet taken 7 days increases BOP by 12.4% Compared to placebo studies, aspirin takers are 5X more likely to exhibit BOP.
2. Hypertension Drugs – Estimated to be taken by 25% of adults. All increase BOP.
3. Menstruation – Bleeding varies with serum levels of estradiol, which peaks and drops during ovulation and premenstruation
4. Oral contraceptives. Women who were on oral contraceptive pills had more extensive gingivitis and gingival bleeding than their matched controls not taking them. (*JCDP*, May, 2010)
5. Local Trauma – Recent food impaction and heroic hygiene before a visit to the dentist increase capillary fragility.
6. Probing Force – BOP varies directly with probing force and dramatically affects BOP. In clinical studies, probing forces vary from 5-125 g of force (20-30 g is considered ideal). For comparison, the weight of metal probe = 20 g.
7. Medications – Coumadin, Plavix, Pradaxa, Brilinta, Lovenox, Eliquis, Xarelto, Pletal, Aggrenox; other medications associated with increased gingival bleeding - antithrombotics (67.8%), particularly fluindione (Previscan); furosemide (Lasix); paracetamol (Tylenol), amiodarone (Cordarone, heart beat irregularities) amoxicillin, paroxetine (Paxil, depression and anxiety disorders), ketoprofen (Ibuprofen), zolpidem (Ambien), enalapril (Vasotec, high blood pressure) and ramipril (Altace, high blood pressure, congestive heart failure). (Bondon-Guitton, 2017)
8. Dietary supplements – the five G'S; Ginkgo, Ginseng, Garlic, Glucosamine, Ginger; Feverfew; Fish oils; St. John's wort, Vitamin E
9. Stress
10. Mouth breathing
11. Post-partum adjustment
12. Smoking cessation
13. Bruxism
14. Dietary anomalies
15. Systemic diseases
16. Vitamin deficiencies

Innovations in Probing

In the future, periodontal probing could be performed by photoacoustic imaging. Squid ink naturally contains melanin nanoparticles, which absorb light. During the oral rinse, the melanin nanoparticles get trapped in the pockets between the teeth and gums. When researchers shine a laser light onto the area, the squid ink heats up and quickly swells, creating pressure differences in the gum pockets that can be detected using ultrasound. This method enables researchers to create a full map of the pocket depth around each tooth — a significant improvement over the conventional method. (Jokerst, J. V. et al. Photoacoustic Imaging for Noninvasive Periodontal Probing Depth Measurements. *Journal of Dental Research.* Vol 97, Issue 1, pp. 23 – 30. First Published September 7, 2017. https://doi.org/10.1177/0022034517729820)

ADASRI develops probe for detecting temperature, pH changes associated with gum disease

Technology could lead to earlier diagnoses

This graphic shows how dentists could use a probe developed by scientists with the ADA Science & Research Institute to measure the temperature, pH and depth of periodontal pockets, transmit the measured values wirelessly, and store and analyze the data. The graphic appears with "Multifunctional Periodontal Probes and Their Handheld Electronic System for Simultaneous Temperature, pH, and Depth Measurements" in the Journal of The Electrochemical Society.

Common Antibiotic Therapies in the Treatment of Chronic Periodontitis

Antibiotic	Adult Dosage
Metronidazole	500 mg/t.i.d./8 days
Clindamycin	300 mg/t.i.d./8 days
Doxycycline or minocycline	100-200 mg/q.d./21 days
Ciprofloxacin	500 mg/b.i.d./8 days
Azithromycin	500 mg/q.d./4-7 days
Metronidazole 375mg + amoxicillin 250mg	t.i.d./ 8 days of each drug*
Metronidazole + ciprofloxacin	500 mg/b.i.d./8 days of each drug
Tinidazole	2 g q.d. 3-5 days

*For periodontal disease, a dose of 250 mg amox/375 mg metro, Q8h, 7 days for is sufficient for both metronidazole and amoxicillin, *IF* the patient is compliant. The rationale for the 500mg, Q12h was to improve patient compliance on the theory that fewer doses per day improves compliance. For some dosages, that's true. For instance, compliance with a 1/day regimen vs. 4/day goes up 28% (79% vs. 51%). But the difference between 2/day and 3/d is slight (69% vs. 65%).

Similarly, some clinicians recommend taking the combo for 10 days on the theory that extending the time will compensate for poor compliance. Not so. If the MIC of the drug in the bloodstream drops because the patient missed a dose, the patient might as well start over. Oral microbes grow *very* quickly.

Amoxicillin-metronidazole (250 mg amoxicillin-375 mg metronidazole, 3 times daily for 8 days) is the most common antibiotic combination in periodontics. Ciprofloxacin-metronidazole (500 mg of each, twice daily for 8 days) is indicated for periodontitis involving a mixture of enteric gram-negative facultative rods and anaerobic bacteria. (Slots, J. Anti-Infective Agents in Periodontal Treatment, 2011)

Antibiotic Considerations as an Adjunct to Periodontal Therapy

1. Haffajee study published in 2007 conclusions - This study, demonstrated that periodontal therapy provides clinical benefits and that antibiotics provide a clinical benefit over SRP alone, particularly at initially deeper periodontal pockets.
2. Do **not** use clindamycin when *E. coli* is present in the pocket. Can cause pseudomembranous colitis.
3. Azithromycin has been shown to be very beneficial with smokers (Mascarenhas, 2005) and in juvenile periodontitis where *Aa* is the offending pathogen.
4. Do **not** use azithromycin with calcium supplements, as calcium binds azithromycin.
5. Amoxicillin and metronidazole are synergistic against *Aa* at a dose of 250-500 mg of each TID/5 days (low weight patient, low dose; high weight, higher dose).
6. Metronidazole is a central nervous system stimulant – do **not** use if the patient has a central nervous system disorder.
7. Ciprofloxacin is reserved for unusual infections, such as enteric rods, pseudomonads.
8. Timing of antibiotics is an unresolved issue. (Rams says scale first, then prescribe antibiotic.)
9. There appears to be a consensus that systemic antimicrobial therapy should be reserved for situations that cannot be managed with mechanical therapy alone (with or without locally applied antimicrobials or antiseptics), such as severe or acute infections, early-onset periodontal diseases, aggressive types of periodontitis, and recurrent or refractory cases (Dent Clin N Am 49 (2005) 611–636).
10. Reasons antibiotics may not help:
    A. Patient did not take correctly.
    B. Patient did not finish.
    C. Wrong antibiotic given.

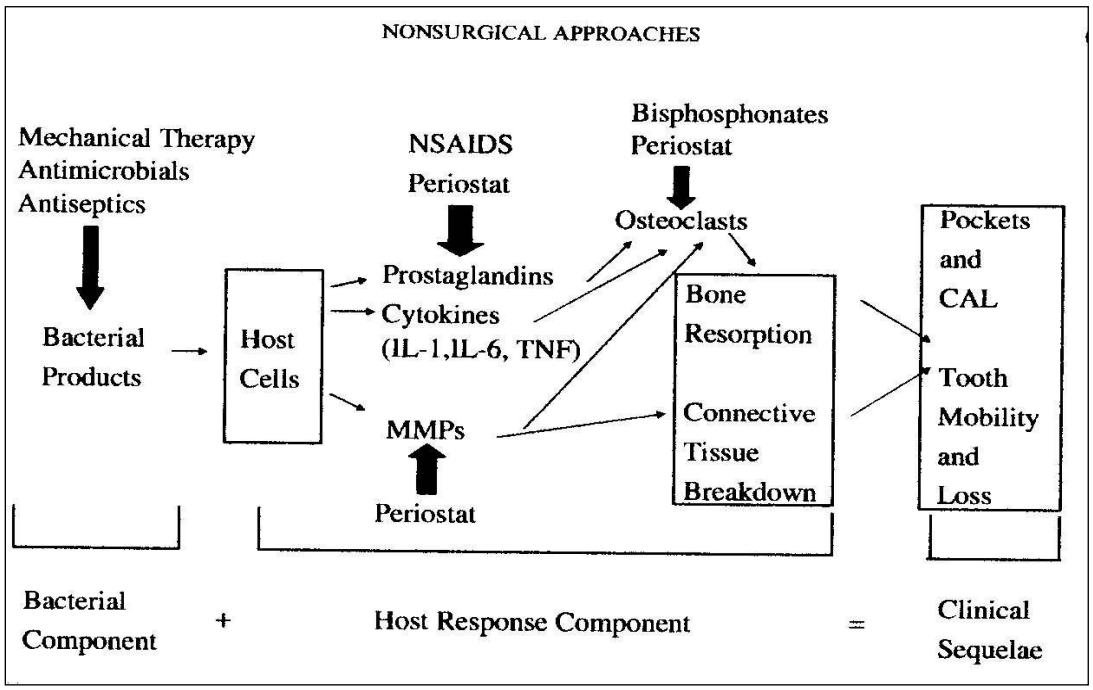
Periodontal Antibiotic Therapy Essential Elements for Success (Rams, et al)

1. Obtain comprehensive microbiological analysis.
2. Review patient medical status.
3. Consider potential adverse side-effects and drug interactions.
4. Complete whole-mouth mechanical root scaling *before antibiotics are instituted*.
5. Train patient in home plaque control regimen.
6. Check patient compliance with taking prescribed antibiotic drug regimen.

When Is Microbiological Testing Indicated?

- When pocket depth > 5mm with BOP after definitive therapy (despite excellent oral hygiene)
- Therapy-resistant, refractory adult periodontitis
- Acute and progressive infections
- Infections of osseointegrated implants
- MicrobeLinkDx (www.MicrobeLinkDx.com) $109 for microbial analysis

Host Modulation Therapy



(Used with permission, Dr. Maria Ryan, SUNY)

1. SDD is a 20-mg dose of doxycycline (Periostat) that is FDA approved and ADA accepted. It is indicated as an adjunct to SRP in the treatment of chronic periodontitis.

2. It is a collagenase inhibitor.

3. It should be taken twice/day one hour before meals.

4. It has been evaluated as taken twice daily for up to 9 months of continuous dosing in clinical trials. The duration of use may vary from patient to patient.

5. A minimum of 3 months of host modulatory therapy is suggested, as studies show a 3-month regimen produced a prolonged drug effect without a rebound in collagenase levels to baseline during the nontreatment phase of the study.

6. The 20-mg twice per day dose exerts its therapeutic effect by enzyme, cytokine, and osteoclast inhibition, rather than by any antibiotic effect. Research studies have found no evidence of any detectable antimicrobial effect on the oral flora or the bacterial flora in other regions of the body and have identified clinical benefit when SDD is used as an adjunct to SRP.

7. At the present time, SDD is the only FDA-approved, ADA-accepted host modulatory therapy specifically indicated for the treatment of chronic periodontitis.

8. In multiple clinical studies conducted using SDD, there has not been a difference in the composition or resistance level of the oral flora and recent studies demonstrate no appreciable differences in fecal or vaginal microflora samples. In addition, these studies have demonstrated no overgrowth of opportunistic pathogens such as Candida in the oral cavity, gastrointestinal, or genitourinary systems.

9. SDD is contraindicated in anyone with a history of allergy or hypersensitivity to tetracyclines. It should not be given to pregnant or lactating females or children less than 12 years old (because of the potential for discoloration of the developing dentition). Doxycycline may reduce the efficacy of oral contraceptives, so advice should be given to use alternative forms of birth control, if necessary. There is a risk of increased sensitivity to sunlight (manifested by an exaggerated sunburn) seen with higher doses of doxycycline, but this has not been reported in any of the clinical trials at the subantimicrobial dose.

10. Oraxyl, (doxycycline) - 20mg, 180 tabs, 1 tab BID on empty stomach, no dairy or vitamins in stomach as it will bind it and make it inactive.

11. SDD has been shown to inhibit the activity of collagenase but have no significant effect on microbes.

12. Research by Van Dyke and Suzuki is studying the use of lipoxins and resolvins (lipid molecules known to promote the resolution of inflammation). They have demonstrated that "experimental Pg-induced periodontitis in rabbits can be arrested by the topical application of synthetic lipoxins on the gingiva."

Premedication for Patients with Prosthetic Joints

Management of patients with prosthetic joints undergoing dental procedures

Clinical Recommendation:

In general, for patients with prosthetic joint implants, prophylactic antibiotics are *not* recommended prior to dental procedures to prevent prosthetic joint infection.

For patients with a history of complications associated with their joint replacement surgery who are undergoing dental procedures that include gingival manipulation or mucosal incision, prophylactic antibiotics should only be considered after consultation with the patient and orthopedic surgeon.* To assess a patient's medical status, a complete health history is always recommended when making final decisions regarding the need for antibiotic prophylaxis.

Clinical Reasoning for the Recommendation:

- There is evidence that dental procedures are not associated with prosthetic joint implant infections.
- There is evidence that antibiotics provided before oral care do not prevent prosthetic joint implant infections.
- There are potential harms of antibiotics including risk for anaphylaxis, antibiotic resistance, and opportunistic infections like *Clostridium difficile*.
- The benefits of antibiotic prophylaxis may not exceed the harms for most patients.
- The individual patient's circumstances and preferences should be considered when deciding whether to prescribe prophylactic antibiotics prior to dental procedures.

ADA Center for Evidence-Based Dentistry™

* In cases where antibiotics are deemed necessary, it is most appropriate that the orthopedic surgeon recommend the appropriate antibiotic regimen and when reasonable write the prescription.

Sollecito T, Abt E, Lockhart P, et al. The use of prophylactic antibiotics prior to dental procedures in patients with prosthetic joints: Evidence-based clinical practice guideline for dental practitioners — a report of the American Dental Association Council on Scientific Affairs. JADA. 2015;146(1):11-16.

Special considerations that may indicate AP for patients with prosthetic joints:

- If the patient has a history of a previous medical condition(s) or,
- If the patient had a complication(s) associated with the joint replacement surgery

In cases where AP is deemed necessary, it is recommended that the orthopedic surgeon write the prescription.

Since 2015, the ADA has not recommended AP prior to dental procedures for patients with prosthetic joints. A recent cohort study was performed between May 2018 and June 2021 to determine if there is an association between invasive dental procedures (IDP) and late prosthetic joint infection (LPJI). The study used a population in England where AP is not recommended prior to IDP for patients with prosthetic joints and therefore the association would be fully exposed. It was concluded that there was no evidence of an association between IDP and LPJI, confirming there is no rationale for administering AP before IDP in patients with prosthetic joints. (Thornhill MH, Crum A, Rex S, et al. Analysis of Prosthetic Joint Infections Following Invasive Dental Procedures in England. *JAMA Netw Open.* 2022;5(1):e2142987. doi:10.1001/jamanetworkopen.2021.42987)

Premedication for Patients with Heart Conditions

Table 1 – Indications for Antimicrobial Prophylaxis - 2021

Indications for prophylaxis	
Prosthetic cardiac valves/material	• Transcatheter implanted prosthetic valves • Annuloplasty, rings, or clips • Left ventricular assist devices or implantable heart
Congenital heart disease (CHD)	• Unrepaired cyanotic congenital, including palliative shunts and conduits • Completely repaired defect with prosthetic material or device within 6 months after the procedure • Repaired CHD with residual defects at or adjacent to the site of prosthetic material • Surgical or transcatheter pulmonary artery valve or conduit placement
Previous, relapse, or recurrent infective endocarditis	
Cardiac transplant recipients who develop cardiac valvulopathy	

(*excerpted from* - https://www.contagionlive.com/view/new-recommendations-for-antibiotic-prophylaxis-prior-to-dental-procedures)

Clindamycin no longer recommended

The 2021 AHA scientific statement no longer recommends the use of clindamycin for patients who are allergic to penicillin or ampicillin. This is because clindamycin is known to cause more severe adverse reactions such as *C. diff*. In fact, one dose of clindamycin has an equivalent risk of *C. diff* compared with a prolonged course. Additionally, the AHA states that cephalosporins should not be used in an individual with a history of anaphylaxis, angioedema, or urticaria with penicillin or ampicillin. The AHA recommends cephalexin, azithromycin, clarithromycin, or doxycycline for patients who can take oral medication, and cefazolin or ceftriaxone for patients who cannot take oral medication.

TABLE 1: Current antibiotic regimens prior to a dental procedure*

Patient status	Medication	Adults	Children
Can take oral medication	amoxicillin	2 g	50 mg/kg
Unable to take oral medication	ampicillin **or** cefazolin **or** ceftriaxone	2 g IM or IV	50 mg/kg IM or IV
		1 g IM or IV	50 mg/kg IM or IV
Can take oral medication and allergic to penicillin or ampicillin	cephalexin **or** azithromycin **or** clarithromycin **or** doxycycline	2 g	50 mg/kg IM or IV
		500 mg 100 mg	15 mg/kg <45 kg, 4.4 mg/kg >45 kg, 100 mg
Cannot take oral medication and allergic to penicillin or ampicillin	cefazolin or ceftriaxone	1 g IM or IV	50 mg/kg IM or IV

* Single dose should be taken or administered 30–60 minutes before a dental procedure.

References for Antibiotic Premedication

1. Suda KJ, Calip GS, Zhou J, et al. Assessment of the appropriateness of antibiotic prescriptions for infection prophylaxis before dental procedures, 2011 to 2015. *JAMA Netw Open*. 2019;2(5):e193909. doi:10.1001/jamanetworkopen.2019.3909

2. Antibiotic stewardship. American Dental Association. Updated September 29, 2020. https://www.ada.org/en/member-center/oral-health-topics/antibiotic-stewardship

3. Wilson WR, Gewitz M, Lockhart PB, et al. Prevention of viridans group streptococcal infective endocarditis: a scientific statement from the American Heart Association. *Circulation*. 2021;143(20):e963-e978. doi:10.1161/CIR.0000000000000969

4. Sollecito TP, Abt E, Lockhart PB, et al. The use of prophylactic antibiotics prior to dental procedures in patients with prosthetic joints: evidence-based clinical practice guideline for dental practitioners—a report of the American Dental Association Council on Scientific Affairs. *J Am Dent Assoc.* 2015;146(1):11-16.e8. doi:10.1016/j.adaj.2014.11.012

5. American Academy of Orthopaedic Surgeons/American Dental Association. Prevention of Orthopaedic implant infection in patients undergoing dental procedures evidence-based clinical practice guideline. December 12, 2012. https://www.aaos.org/globalassets/quality-and-practice-resources/dental/pudp_guideline.pdf
6. Management of patients with prosthetic joints undergoing dental procedures. Chairside guide for prosthetics. American Dental Association. 2015. https://www.ada.org/-/media/project/ada-organization/ada/ada-org/files/resources/research/ada_chairside_guide_prosthetics.pdf

Homecare Modalities and Customization

1. Different randomized studies have proven that interdental cleaning with devices *other* than floss are more efficient and thorough at plaque removal. (Jackson, 2006).

2. The interdental brush can be turned vertically to reach deeper pocket areas.

3. Vigorous horizontal interdental brushing can cause excessive wearing of root surfaces.

4. While flossing has been shown to reduce bleeding in gingivitis cases over tooth brushing alone, behavior modification of patients through education has not been successful in improving floss use. (Bagley, 1992).

5. A study by Hujoel, et al, (2006) stated: “No evidence on the effectiveness of floss in adults or under real-world clinical conditions could be identified. In particular, there was no evidence that flossing is
effective in the presence of topical fluorides.”

6. From a Cochrane Review published in 2012: “There is some evidence from twelve studies that flossing in addition to toothbrushing reduces gingivitis compared to toothbrushing alone. There is weak, very unreliable evidence from 10 studies that flossing plus toothbrushing may be associated with a small reduction in plaque at 1 and 3 months. No studies reported the effectiveness of flossing plus toothbrushing for preventing dental caries.” (Sambunjak, et al)

7. On August 3, 2016, an Associated Press review found little evidence flossing prevents cavities or other dental maladies. The government began recommending flossing in 1979 but cut the guideline in 2016 without notice. The AP looked at the most rigorous research. The findings? The evidence for flossing is "weak, very unreliable," and of "very low" quality.

8. Alternative forms of interdental plaque removal have been preferred by patients, suggesting improved compliance. (Spolsky, 1993).

9. Power brushes have been shown to more effectively remove plaque than manual brushes. (Dentino, et al, 2002)

10. Terezhalmy,et al, published superior cleaning capability (42%) of oscillating-rotating power brushes over manual brushes.

11. In an evaluation of the efficacy of four floss types (woven, waxed, unwaxed, and shred resistant), Carr et al. allowed plaque to accumulate over 3 days, scored the plaque using O’Leary’s plaque

index, and analyzed reductions in interproximal plaque after flossing. Plaque removal did not differ significantly among floss types.

12. Dentifrice is not necessary for plaque removal. (Paraskevas, 2007) However, dentifrice does provide benefits beyond plaque removal, i.e. reducing caries through fluorides, whitening, sensitivity reduction, fresh breath, calculus reduction, xerostomia relief. Colgate Total® reduces gingivitis through triclosan copolymer.

13. The use of baking soda as a dentifrice or toothpastes containing baking soda has been shown to be better at reducing plaque than non-soda toothpastes. (Putt, et al, 2008) In high concentrations, sodium bicarbonate is bacteriocidal against most periodontal pathogens. (Newbrun, E., 1997)

14. Non-floss options include interdental brushes, Soft-Picks by Sunstar Butler, Scrub Betweens by Dentek, RotaPoints by DenMat.

15. An ideal interdental cleaning device should be user-friendly, remove plaque effectively, and have no deleterious soft-tissue or hard-tissue effects. However, not all interdental cleaning devices suit all patients, all types of dentitions and even not every interdental space. The dental professional should, therefore, navigate patients to the optimal devices tailored to their specific needs.

16. A systematic review by The Cochrane Collaboration found triclosan containing toothpastes:
    - 22% reduction in plaque compared with control (1.70 vs 2.17; 20 studies, 2675 participants, moderate-quality evidence).
    - 41% reduction in plaque severity compared with control (0.22 vs 0.37; 13 studies, 1850 participants, moderate-quality evidence).
    - 22% reduction in gingivitis compared with control (0.95 vs 1.22; 20 studies, 2743 participants, moderate-quality evidence).
    - 48% reduction in gingival bleeding compared with control (0.14 vs 0.27; 15 studies, 1998 participants, moderate-quality evidence).

17. FDA 2015 published updated on safety/efficacy of triclosan: http://www.fda.gov/forconsumers/consumerupdates/ucm205999.htm

18. Case report of 4 cases of successful treatment of generalized refractory chronic periodontitis through discontinuation of waxed or coated dental floss (JADA, Dec. 2016).

19. Meta-analysis by Salzar et al: “Evidence suggests that inter-dental cleaning with IDBs is the most effective method for inter-dental plaque removal. The majority of available studies **fail** to demonstrate that flossing is generally effective in plaque removal. All investigated devices for inter-dental self-care seem to support the management of gingivitis, however, to a varying extent.”

Dianne’s Six Rules on Homecare

1. Nobody will ever change anything about their homecare routine without first developing

   _____.

2. If the patient cannot or will not floss, _____ _____.

3. People do not brush or floss their teeth while _____ _____ _____ _____.

4. Do not use _____ _____ _____, such as,

   "You might want to think about flossing."

5. Proper use of a good _____ _____ makes a good

   communicator become a GREAT communicator.

6. Please do not wait until the _____ of the appointment to teach home care instructions.

Patient Case Classification System

Healthy – Healthy tissue, light stain and/or calculus. Deposits primarily supragingival. Code 1110. Code descriptor – **"Removal of plaque, calculus and stains from the tooth structures *and implants* in the permanent and transitional dentition. It is intended to control local irritational factors."**

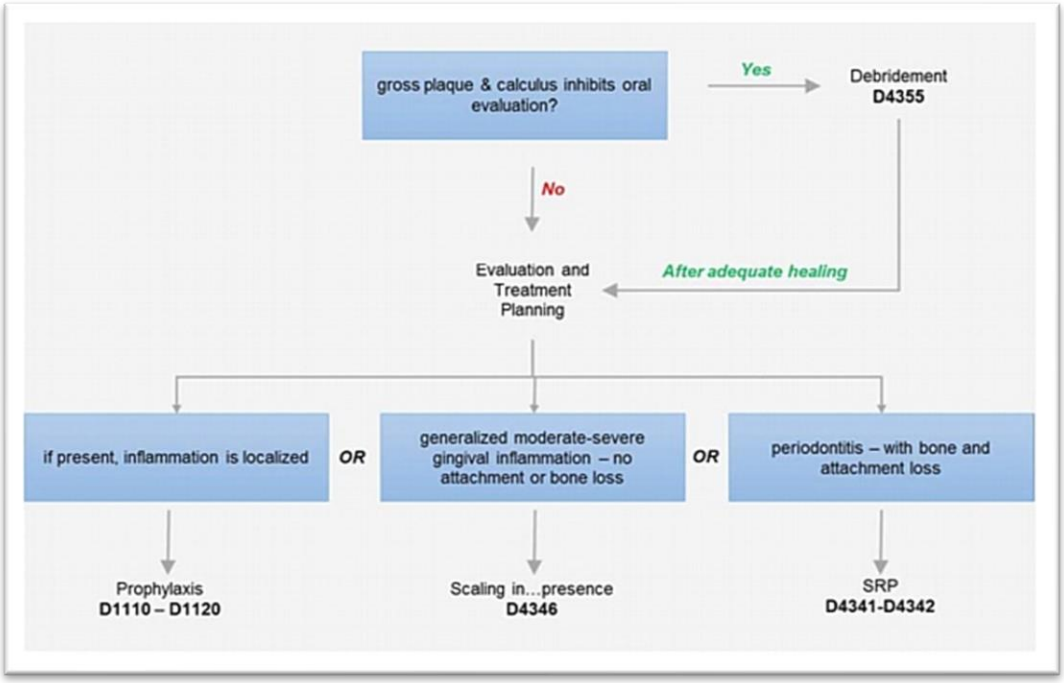
Type I – Gingivitis. Gingivitis can vary from slight to severe. These patients will exhibit heavier debris than a healthy patient, but will **not** have bone loss. However, bleeding is the primary sign of bacterial activity. Shallow pockets have been shown to contain reservoirs of volatile sulfur compounds that are implicated in periodontal disease. Therefore, a two-stage treatment protocol is often necessary for thorough debridement.

D4346 scaling in presence of generalized moderate or severe gingival inflammation – full mouth, after oral evaluation
The removal of plaque, calculus and stains from supra- and sub-gingival tooth surfaces when there is *generalized moderate or severe gingival inflammation* in the absence of periodontitis. It is indicated for patients who have swollen, inflamed gingiva, generalized suprabony pockets, and moderate to severe bleeding on probing. Should not be reported in conjunction with prophylaxis, scaling and root planing, or debridement procedures.

The definition of **"…generalized moderate to severe gingival inflammation…"** when 30% or more of the patient's teeth at one or more sites are involved.

If gingivitis is localized, the correct code is D1110.

D4346 is a therapeutic procedure to improve the patient's oral health, and a reasonable amount of time (typically two to six weeks) should be allowed for healing before the patient can resume a regular preventive regimen that may include oral prophylaxis.



D4346 is expected to be completed on a single date of service, but patient comfort and acceptance may require delivery over more than one visit. Should more than one day be required the date of completion is the date of service.

Type II – Early Periodontitis. Slight bone loss is detected with some pockets in the 4-6mm range. Some areas may need anesthesia to scale thoroughly. However, the disease has not progressed to the point of furcal involvement or mobility. Also, recession must be charted, not only because it shows previous disease, but because it is a more accurate representation of the patient's periodontal status. Many insurance companies do not pay benefits for root planing unless there is at least 4 mm of attachment loss (not just probing depth). Attachment loss is the addition of the pocket measurement plus recession. *The early periodontitis patient will have 3 or less teeth in the quadrant that are periodontally involved. They will require site specific periodontal treatment. The remainder of the dentition is appropriately treated with a prophylaxis – D1110.*

1st visit – prophylaxis for non-periodontally involved teeth	Code 1110
2nd visit – UR/LR periodontal scaling	Code 4342 (specify teeth)
3rd visit – UL/LL periodontal scaling	Code 4342 (specify teeth)

Subsequent recare visits can be coded 4910, periodontal maintenance. Please note that for just a few isolated teeth with 4342, the patient may be maintained with prophylaxis in limited circumstances, in the clinical judgment of the dentist. Some insurance payors will not reimburse 4910 after a single or dual 4342 visit. It is *highly* variable among companies. Also, please note that some payors will allow 4342 on the same day as 1110 and some will not. Again, highly variable.

Type III – Moderate Periodontitis. Bone loss is in the 6-7mm range. There is moderately heavy calculus, both supra and subgingival. There can be furcation involvement and Class I mobility. Depending on the severity and number of teeth present, this type may need anesthesia throughout.

4 visits of quadrant scaling or 2 extended length visits Code 4341 X 4

Subsequent visits should be coded 4910, typically after 90 days of completion. Please note that many insurance carriers will pay 4910 for a limited time – 2-3 years – and then require code 1110. If the patient continues to exhibit signs of active disease, the patient will be appropriately coded 4910, which is periodontal maintenance. If the patient has no signs of active disease after a period of maintenance, the patient may be maintained with prophylaxis with the consent of the treating dentist.

Type IV – Advanced Periodontitis. Heavy bleeding, suppuration, and pockets in the 7mm or greater range. Mobility and very tenacious calculus (often ethnic) Will need anesthesia throughout the entire process. Heavy emphasis on ultrasonics and revisiting each previous quadrant scaled on subsequent visits.

4 visits of quadrant scaling with anesthesia Code 4341 X 4

All subsequent recare visits will be coded 4910, periodontal maintenance. The fee should reflect the degree of difficulty exhibited by the patient's oral condition. Please note that many insurance carriers will pay 4910 for a limited time – 2-3 years – and then require code 1110. If the patient continues to exhibit signs of active disease, the patient will be appropriately coded 4910, which is periodontal maintenance. If the patient has no signs of active disease after a period of maintenance, the patient may be maintained with prophylaxis with the consent of the treating dentist.

Classification at-a-Glance

2018 Classification of Periodontal and Peri-Implant Diseases and Conditions

Periodontal Health, Gingival Diseases and Conditions

- Periodontal Health and Gingival Health
- Gingivitis: Dental Biofilm-Induced
- Gingival Diseases: Non-Dental Biofilm-Induced

Periodontitis

- Necrotizing Periodontal Diseases
- Periodontitis
- Periodontitis as a Manifestation of Systemic Disease
- Periodontal Abscesses and Endodontic-Periodontal Lesions

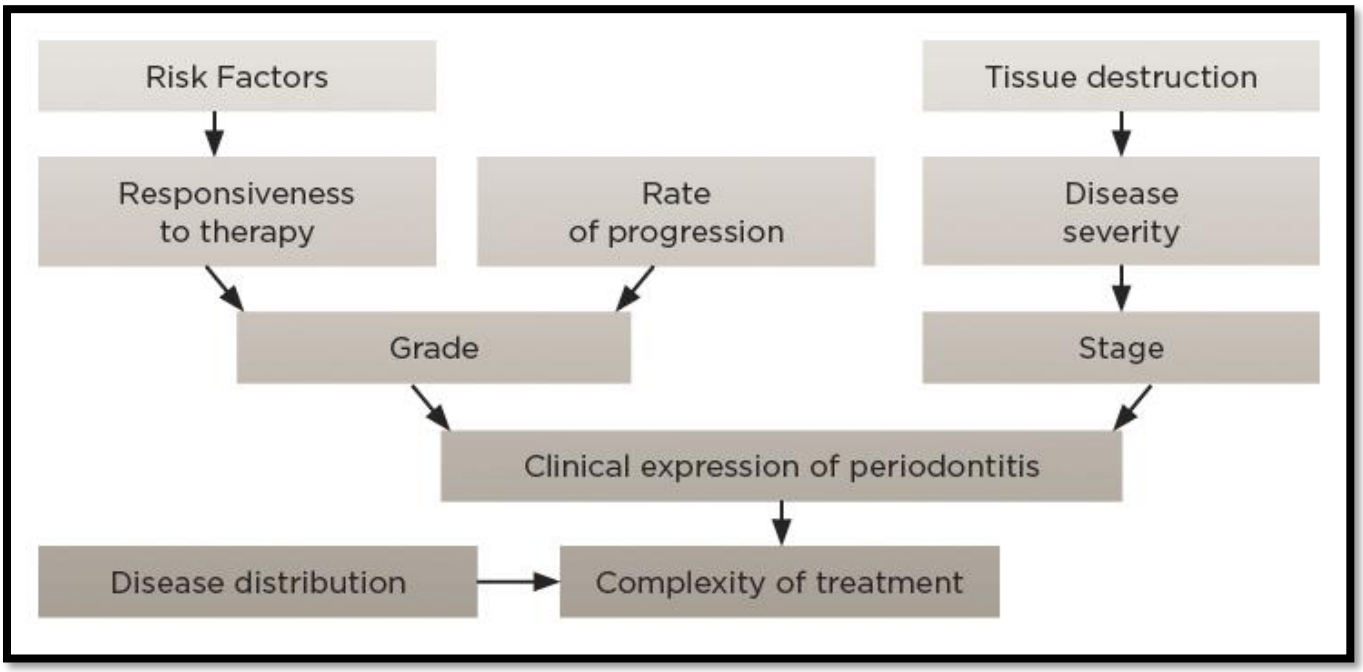
Periodontal Manifestations of Systemic Diseases and Developmental and Acquired Conditions

- Systemic Diseases or Conditions Affecting Periodontal Supporting Tissues
- Mucogingival Deformities and Conditions
- Traumatic Occlusal Forces
- Tooth- and Prosthesis-Related Factors

Peri-Implant Diseases and Conditions

- Peri-Implant Health
- Peri-Implant Mucositis
- Peri-Implantitis
- Peri-Implant Soft and Hard Tissue Deficiencies

Determining Stage



(Excerpted from *Compendium*, March 2022)

Determining Grade

TABLE 2

Grade Evaluation of the Periodontal Patient

Parameter	Grade A	Grade B	Grade C
Progression Rate Over 5 Years	No loss	<2 mm	≥2 mm
% Bone Loss/Age	<0.25%	0.25% to 1%	>1%
Diabetes	Normoglycemic	HbA1c <7%	HbA1c >7%
Smoking	Nonsmoker	Smoker <10 cigarettes/day	Smoker ≥10 cigarettes/day

(Excerpted from *Compendium*, March 2022)

Staging and Grading Periodontitis

A quick-reference guide to clear and consistent diagnoses

STEP 1 | SCREEN + ASSESS **STEP 2 | ESTABLISH STAGE** **STEP 3 | ESTABLISH GRADE**

STAGING

The process of *classifying the severity* of a patient's disease. The primary determinant = clinical attachment loss (CAL) at the point of greatest loss (the worst tooth). If CAL not available, radiographic bone loss (RBL) can be used.

	STAGING FACTOR	STAGE I	STAGE II	STAGE III	STAGE IV
SEVERITY	Interdental CAL	1 - 2 mm	3 - 4 mm	≥5 mm	≥5 mm
		MILD > MODERATE		MODERATE > SEVERE	
					
	RBL	Coronal third (<15%)	Coronal third (15-33%)	Extends beyond 33% of root	Extends beyond 33% of root
	Tooth loss	None	None	≤4 teeth	≥5 teeth
COMPLEXITY	Local	• Max probing depth: ≤4 mm • Mostly horizontal bone loss	• Max probing depth: ≤5 mm • Mostly horizontal bone loss	• Max probing depth: ≥6 mm • Vertical bone loss: >3 mm • Furcation involvement • Moderate ridge defects	Additional dysfunction, occlusal trauma, defects, bite collapse. *Requires further assessment.*
EXTENT	For each stage describe the extent as localized, generalized, or molar/incisor pattern				

Stage I or II = treat in general practice. Stage III or IV = refer.

GRADING

Identifies the *rate of disease progression* based on client characteristics and risk factors. Grading helps establish responsiveness to therapy, and potential impact on systemic health. Best practice: Assume a grade B disease and seek evidence to shift to A or C.

	PROGRESSION	GRADE A	GRADE B	GRADE C
PRIMARY CRITERIA	Direct Evidence	No CAL or RBL over 5 years	<2mm loss over 5 years	≥2mm loss over 5 years
		SLOW	MODERATE	RAPID
	Indirect Evidence	• <0.25% bone loss/age • Heavy biofilm deposits with low levels of destruction	• 0.25-1.0% bone loss/age • Destruction consistent with biofilm deposits	• >1.0% bone loss/age • Destruction exceeds expectations, suggests rapid progression
MODIFIERS	Smoking	Non-smoker	<10 cigarettes/day	≥10 cigarettes/day
	Diabetes	No diagnosis	HbA1c <7%	HbA1c ≥7%

Information on this guide is an overview of the new classification of periodontitis staging and grading system that resulted from the 2017 World Workshop on the Classification of Periodontal and Peri-Implant Diseases and Conditions.

Want to learn more? Visit perio.org/2017wwdc

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Decision Guide for Treatment

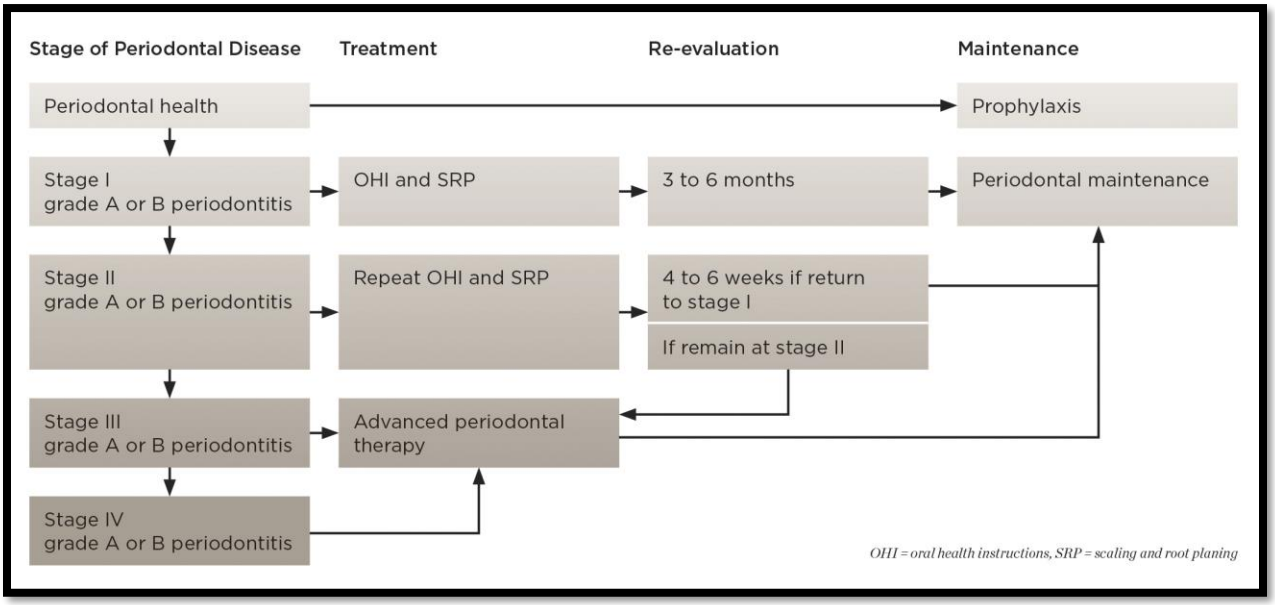
TABLE 1

Simplified Diagnostic and Treatment Summary

	Pocket Probing Depth	Interproximal CAL	Type of Bone Loss	Percent Bone Loss	Number of Teeth Lost	Other Factors	Probable Treatment Needs
Stage I	≤4 mm	1–2 mm	Mostly horizontal	Up to 15%	None	None	SRP
Stage II	≤5 mm	4–5 mm	Mostly horizontal	15%–33%	None	None	SRP or advanced periodontal care
Stage III	≥6 mm	≥5 mm	Vertical and horizontal	>33%	Four or less	Many	SRP and advanced periodontal care
Stage IV	≥6 mm	≥5 mm	Vertical and horizontal	>33%	Five or less	Many and complex	SRP and advanced periodontal care

This summary is drawn from the staging criteria from the 2018 Classification of Periodontal and Peri-implant Diseases and Conditions.[4] Full details of the staging criteria are available at perio.org/2017wwdc. The treatment recommendations are the authors' clinical opinion, and the rationale is discussed in the article.

CAL = clinical attachment loss, SRP = scaling and root planing



(Excerpted from "Clinical Decisions Based on the 2018 Classification of Periodontal Diseases, " Compendium, 2022)

Insurance Coding Recommendations

1. It is improper to report a periodic oral evaluation (D0120) or any other evaluation **without the doctor actually examining the patient.** A hygienist can screen but not diagnose unless specifically permitted by law.

2. It is improper to charge insurance patients for a periodic oral evaluation while the evaluation is 'free' for non-insurance patients. Treatment and fee protocols should be identical for both insured and non-insured patients.

3. CDT 2018 periodontal maintenance (D4910) **does not** include any type of periodontal oral evaluation. The code (D0180), comprehensive periodontal evaluation can be used with the established periodontal patient in conjunction with (D4910).

4. The periodic oral evaluation (D0120) currently includes "periodontal screening, where indicated." A periodontal screening, at the minimum should be performed and recorded at each D0120 visit. This does not mean periodontal probing and full charting is required at each periodic oral evaluation in order to report the periodic oral evaluation code.

5. Many offices erroneously report a periodic oral exam (D0120) instead of a comprehensive oral evaluation (D0150) in an effort to hold down the initial comprehensive oral evaluation fee for children. Doctors should establish two consistent fees (adult and child) for code D0150. To distinguish between the two, use D0150A (child) and D0150B (adult), or similar coding to distinguish the fee structure between the two. The computer software will strip the "A" or "B" for reporting purposes. With this approach, the reimbursement UCR will be higher for the child comprehensive evaluation (D0150) while the proper code is reported.

6. For an oral evaluation for a child less than three years of age, use code D0145.

7. It may be appropriate to also apply fluoride varnish for moderate to high caries risk patients at the under-three oral evaluation appointment. Use code D1206 in addition to D0145.

8. The comprehensive periodontal code (D0180) is **not** specialty-specific. The general practitioner can use it, as with any CDT code. However, the general practitioner would generally report the more comprehensive, extensive, and an all-encompassing comprehensive oral evaluation (D0150) for the **new** patient, rather than D0180.

9. Some payors reimburse D0180 every 24 months, others every five years or "lifetime." Reimbursement for D0180 is highly variable. D0180 may be reimbursed only "once" per lifetime (like D0150) per doctor by some payors.

10. It is misleading to report extraoral panoramic film (D0330) and bitewing films (D0272/D0273/D0274) by the dental office simply 'converting' and reporting the two separate procedure codes as one code, intraoral complete series (D0210). A panoramic film is extraoral, not intraoral. NOTE: It is not illegal or improper for an insurance company to "remap" a submitted code to another code for payment purposes, according to the contract language. Payors routinely convert separately coded extraoral panoramic film and intraoral bitewing films to the lower, complete series (D0210).

11. Some insurance companies are now only allowing one prophy/year, depending on the patient's risk factors. Pregnant patients can sometimes get benefits for four prophys/year.

12. It is improper to *routinely* use the D4355 code on new patients. (There is no such thing as an "exploratory prophy.") The language for this code is very specific for those situations where there is so much bulky calculus that it is impossible to perform an examination. Many plans do not recognize this code. Some will pay only if submitted as D4999. Either way, it recommended that a narrative be included. (Code descriptor for D4355 – "The gross removal of plaque and calculus that interfere with the ability of the dentist to perform a comprehensive oral evaluation. This preliminary procedure does not preclude the need for additional procedures.")

13. Use code **D4921** for subgingival irrigation. (Code introduced in 2014 – not usually a covered benefit)

14. Some policies provide reimbursements for two – D4910 and D1110 – during a 12 month period. If the patient requires 3-month maintenance appointments, it is possible to bill the D4910 each time but **request an alternate benefit of D1110 every other time** since four distinct procedures are part of the plan. The narrative would read: "If D4910 is denied, please provide the alternative benefit of a prophylaxis. The ongoing periodontal maintenance visit included prophylaxis (D1110)." The D1110 is considered part of the D4910 by payers. The clinical record should reflect the fact that a "prophylaxis" was completed as part of the overall D4910 procedure.

15. Additional codes:
    D0414 - Laboratory processing of microbial specimen to include culture and sensitivity studies, preparation and transmission of written report

    D0600 - Nonionizing diagnostic procedure capable of quantifying, monitoring, and recording changes in structure of enamel, dentin, and cementum

    D6081 - Scaling and debridement in the presence of inflammation or mucositis of a single implant, including cleaning of the implant surface, without flap entry and closure. Descriptor: This procedure is not performed in conjunction with D1110, D4910, or D4346.

Coding With Confidence: the "Go To" Guide for CDT 2021 by Charles Blair, DDS
www.practicebooster.com $129 + $10 shipping

Can a patient ever go back to 1110 'prophy' after going through RPS?

From the ADA quoting from the CDT-17 concerning coding for a prophylaxis after periodontal therapy, "This is a matter of clinical judgment by the treating dentist. Follow-up patients who have received active periodontal therapy (surgical or non-surgical) are appropriately reported using the periodontal maintenance code D4910. However, if the treating dentist determines that a patient's oral condition can be treated with a routine prophylaxis, delivery of this service and reporting with code D1110 may be appropriate."

From the AAP "Frequently Asked Questions:" What is meant by the consensus statement, "a periodontitis patient is a periodontitis patient for life"? A patient who has periodontitis remains at risk for further periodontal destruction even with treatment. It is important to define a periodontitis patient as an "at-risk" individual because this patient requires a more intensive level of maintenance and evaluation than a patient who has not had periodontitis. Thus, a periodontitis patient who has been treated and is now stable should not return to a level of evaluation and maintenance identical to a patient who has never had periodontitis (i.e., annual or semi-annual exam/prophylaxis).

Pain Control

Patients often exhibit a rise in blood pressure when they experience **PAIN**.

1. Local anesthesia

2. Nitrous oxide

3. Topicals

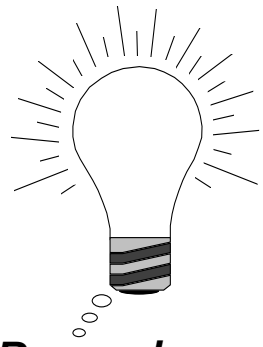
   a. Oraqix® (Dentsply)
      The U.S. Food and Drug Administration (FDA) has approved Oraqix®, a non-injectable anesthetic for periodontal applications. The anesthetic is delivered to the treatment site without the use of a needle and anesthetizes the site within 30 seconds for a period of approximately 20 minutes. Generic Name: Lidocaine & Prilocaine Periodontal Gel 2.5%/2.5%
   b. Cetacaine - Cetylite Industries Inc. (800-257-7740) Benzocaine 14.0%, Butamben 2.0%, Tetracaine Hydrochloride 2.0% (30-60 minute duration)
   c. TAC 20 - TAC Alternate Gel (TAC 20) Lidocaine 20%, Tetracaine 4%, Phenylephrine 2%
      TAC 20 is used as a pre-injection topical anesthetic for soft tissue and palatal procedures. (www.woodlandhillspharmacy.com)

4. Stereo headphones

5. Warm blanket

6. Frequent breaks

7. Evening telephone call



Remember:
Patients do not care how much you know,
but they know how much you care!

Blood Pressure Guidelines

Blood pressure categories			
Category	**Systolic (mmHg)**		**Diastolic (mmHg)**
Normal	Less than 120	and	Less than 80
Elevated	120-129	and	Less than 80
Hypertension stage 1	130-139	or	80-89
Hypertension stage 2	140+	or	90+
Hypertension crisis	180+	and/or	120+

- Systolic pressure is measured when the vessel wall contracts
- Diastolic pressure is measured when the vessel wall relaxes between beats
- In people over 50, systolic pressure is more important than diastolic pressure

In people aged up to 50, both diastolic blood pressure and systolic blood pressure are independently associated with cardiovascular risk. At age 50 systolic blood pressure is far more important than the level of diastolic blood pressure in predicting the risk of coronary heart disease, left ventricular hypertrophy, congestive heart failure, renal failure, and mortality in people with hypertension. At age 60 years, however, as vascular compliance is reduced, an increasing systolic blood pressure and a lower diastolic blood pressure increase cardiovascular risk.

Age related physiological changes explain the frequent development of isolated systolic hypertension in older people. Younger people have a highly distensible aorta, which expands during systole and minimizes any subsequent rise in blood pressure. Most older people, however, develop progressive stiffening of their arterial tree as they age, which leads to a continuous elevation in systolic blood pressure (*British Medical Journal* 2002;325:917-918, 26 October)

Determining Risk / Providing Dental Treatment

The following guidelines should be followed when determining whether to proceed with a dental appointment. These guidelines are also intended to inform the patient of concerns regarding their hypertension that is evident when vitals are taken at the start of the visit.

Normal/: Systolic < 120 and Diastolic < 80

Elevated: Systolic 120-129 and Diastolic < 80
1. No contraindications to elective dental treatment, but inform patient

Stage 1 HTN: Systolic 130-139 or Diastolic 80-89
1. Retake and confirm blood pressure.
2. Proceed with elective dental treatment.
3. Monitor blood pressure during appointment.

Stage 2 HTN: Systolic 140 + or Diastolic 90+
1. Retake and confirm blood pressure.
2. Monitor blood pressure during appointment.
3. Refer patient to physician for medical evaluation.

Hypertension crisis: Systolic 180+ and/or Diastolic 120+
1. Retake and confirm blood pressure with alternate device, such as mercury-manometer type sphygmomanometer.
2. If blood pressure is unchanged, consider immediate referral of the patient to a physician or emergency room for evaluation.
3. No treatment of any type should be undertaken.
4. **Medical consult required prior to any dental treatment.**

Guidelines based on 2017 AHA reporting of updated BP guidelines

- ❑ Blood pressure screening (**Omron** Model BP652 $around $50 at amazon.com)

Step-By-Step Scaling and Debridement

- ❑ Seat patient and inquire about possible medical history changes
- ❑ Blood pressure screening
- ❑ Pre-procedural rinse
- ❑ Prepare for anesthetic and/or nitrous if needed and summon doctor
- ❑ Topical anesthetic
- ❑ Local anesthetic
- ❑ Disclosing solution. Demonstrate homecare procedures as needed
- ❑ Ultrasonic scaling, high power, large insert for gross debridement
- ❑ Ultrasonic scaling with fine insert at medium power
- ❑ Hand instruments
- ❑ Ultrasonic wash
- ❑ Hand instruments
- ❑ Ultrasonic wash
- ❑ Subgingival irrigation as necessary
- ❑ Apply fluoride varnish to newly exposed root surfaces in patients with severe attachment loss
- ❑ Instructions in home rinsing with chlorhexidine, salt water, fluoride, etc.

Fluoride Varnish Ordering Information

PreviDent Varnish (5% NaF) Colgate www.colgateprofessional.com or your local Colgate rep

Iris (5% NaF) Benco Dental 1-800-462-3626

VarnishAmerica Original (5% NaF) **VarnishAmerica White** Medical Products Labs
800-523-0191

Waterpik Ultra-Thin Varnish 800-525-2774

Colgate Anywhere, Anytime (arginine gel for use at home and office)

(For more information on fluoride varnish evaluations, see September/October, 2008 issue of “Clinicians Report” by Gordon Christensen, 801-226-2121, www.cliniciansreport.org)

Scaling Considerations

1. All types of instrumentation, either curettes or ultrasonics, produce trauma.

2. Aggressive scaling can cause damage to dentinal tubules.

3. Calculus is an inert material filled with lacunae that are often inhabited with microorganisms, both live and dead.

4. Burnished calculus provides a nidus for mature biofilms. Where there is subgingival calculus, there will be bacteria. Poorly contoured restorations and subgingival decay harbor biofilms.

5. Bacterial invasion of dentinal tubules commonly occurs when dentin is exposed following a breach in the integrity of the overlying enamel or cementum. Bacterial products diffuse through the dentinal tubule toward the pulp and evoke inflammatory changes in the pulpo-dentin complex. Unchecked, invasion results in pulpitis and pulp necrosis, infection of the root canal system, and periapical disease. (Love, et al.)

6. Mittal, et al conducted a study to compare the effectiveness of different ultrasonic scalers and a periodontal curette on the root surfaces for calculus removal and root surface roughness. The group reported the most damage to root surfaces was caused by hand instrumentation. Piezoelectric devices produced minimum root surface roughness but caused more root substance removal and more cracks than Magnetostrictive ultrasonic devices.

Laser Usage in Microbial Control

- Still controversial – majority of studies show no long-term benefit
- Curettage is not taught or recommended by the AAP
- State practice acts differ on dental hygienist usage
- Still no CDT code for laser usage (offices increase their fee for SRP, often by 50%)
- So many different types of lasers
- Lasers can cause damage if not used appropriately (charred bone, melted cementum, fried tissue)
- Cost of laser
- Antimicrobial through heat and photoacoustic action
- Debridement of root surfaces through displacing the sulcular wall or “troughing”
- Biophotostimulation or wound healing through increasing energy at the ATP level (adenosine triphosphate, the power source of cells) and decreasing inflammation

Review Questions

1. Patients often exhibit a rise in blood pressure when they experience _____.

2. One of the most efficacious ways to stop root surface sensitivity after scaling is by using _____

_____ post scaling.

3. Pre-procedural rinsing has been shown to reduce airborne microbes by as much as _____%.

4. The interdental brush can be turned _____ to reach deep pocket areas.

5. The most common systemic antibiotic combination being used today for treating periodontitis is

_____ and _____.

Are Ultrasonic Aerosols an Infection Control Risk?

1. The numbers of bacteria in the air are greatest after ultrasonic scaling.
2. Aerosols are measured in microns. One millimeter equals 1,000 microns. If an aerosolized particle is 0.5 microns, there will be 2,000 particles in the space of 1mm. Particles this small can pass through a standard face mask
3. Pathogens come from two sources – (1) the patient, and (2) dental unit water lines.
4. The relatively benign aerobic bacteria cultured from the air are an indicator or surrogate marker for the presence of other, more dangerous organisms that may be present in saliva and crevicular fluid.
5. Viruses and anaerobic bacteria are very difficult to culture and to date no studies have tested for them.
6. In a study conducted by Harrell, et al, which looked at blood in aerosol and splatter, they found 100% of samples collected during ultrasonic scaling contained blood.
7. Blood in aerosol and splatter may represent a surrogate marker for pathogenic organisms and thus create an infection control risk.
8. Viruses of the herpes simplex group, hepatitis viruses, and MRSA can be present in the mouth.
9. It is reasonable and logical that these organisms will be forced into the resulting aerosols resulting from the use of an ultrasonic scaler.
10. Aerosols should be controlled to the greatest extent possible. A **high-volume evacuation device** should be routinely used to control splatter. A saliva ejector alone is not adequate to control aerosol and splatter. Harrell, et al, found that HVE reduced aerosols by 90%.
11. Study published Jan., 2015 in JADA compared a saliva ejector to Isolite for aerosol reduction during ultrasonic scaling. Neither the Isolite device nor the saliva ejector effectively reduced aerosols and spatter during ultrasonic scaling, indicating that additional measures should be taken to reduce the likelihood of disease transmission.

Isolite Systems – www.isolitesystems.com

Kona Adapter - http://konaadapter.wordpress.com/(Mark Frias kona26@hotmail.com)

DryShield – dryshield.com

Nu-bird Suction Mirror – www.nu-bird.com (mirror - $199; adapter hose - $86; rhodium mirror front replacements - $5 each, box of 12)

ReLeaf Universal Suction – www.releafdental.com 1-800-431-1785 (Kulzer)

Extraoral positioning of HVE

A-flexx Assist Arm – www.aflexxassistarm.com

ADS Extraoral suction - www.adsequip.com/Extraoral-Suction-System

Sentry Air Systems - www.sentryair.com/dental-aerosols.htm

Ho Dental Company – www.hodentalcompany.com

Re-evaluation of Periodontal Therapy

1. After scaling and root planing, there is reestablishment of the junctional epithelium to the tooth surface in 1-2 weeks. Reevaluation before 2 weeks is too early.

2. After scaling and root planing, the repair of connective tissue continues for 4-8 weeks.

3. Subgingival microbial repopulation occurs within a few weeks (9 - 11 weeks) after instrumentation of periodontal pockets in the absence of improved plaque control.

4. Longer than 2 months may be too long to wait for the reevaluation because pathogenic bacteria have already repopulated periodontal pockets.

5. Based on literature, it is proposed that the ideal time for reevaluation is between 4-8 weeks.

6. When a periodontal probe is inserted into the sulcus of a diseased and inflamed pocket, the probe penetrates past the pocket epithelium into the connective tissue, resulting in inaccurate probing depth readings.

7. There is evidence to suggest that debridement should occur *before* probing to avoid forcing pathogens residing in the pocket further into the epithelium.

8. Confounding factors associated with bleeding on probing include aspirin therapy, hypertension drugs, local trauma (heroic hygiene), menstruation, probing force, certain dietary supplements.

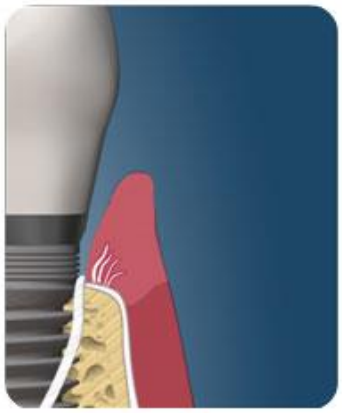
9. It is important to record recession at each full mouth probing.

Preventive Care for Implants

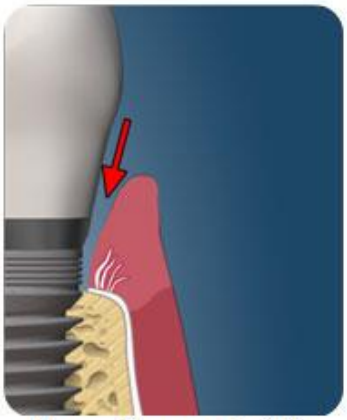
1. Implants differ from natural teeth in that implants have a fragile peri-implant soft tissue seal instead of an epithelial attachment. In this seal, the junctional epithelium still attaches to the implant surface via hemidesmosomes, but the gingival fibers do not insert into the implant as they do with natural teeth. Dental floss can damage the soft tissue seal, leading to implant failure.

Gingiva attched to implant with weak bond. Peri implant seal

Floss with slight pressure starting to sever attachment



Floss fully severing the attachment from the gingiva to the implant



Access for opportunistic bacteria to enter pocket and bone.

Bacterial toxins destroying bone

Horizontal bone loss apearing on radiographs.

2. An article by Dr. Boris Pulec, Dean of Students at the Toronto College of Dental Hygiene, titled “Tell Your Patients to Stop Flossing and Your Hygienist to Stop Checking Pocketing” is an interesting read. (http://www.dentalimplantlife.com/articles/dentalimplantlife.com_Non-Flossing-article.pdf) Dr. Pulec has

placed thousands of implants. He states that there are several causes of peri-implantitis, including traumatic oral self-care. This same article also recommends against probing dental implants, as the probe can penetrate the fragile soft tissue seal and create pathways “through which opportunistic bacteria can gain access to bone and propagate its loss.”

3. An article published in Clinical Oral Implants Research suggests that small shards of floss that are inadvertently left after flossing implants is a possible cause of peri-implantitis. In the study, ten cases of peri-implantitis were presented. Nine of the case completely resolved with the cessation of flossing. (van Velzen FJJ et al.)

4. Another question that emerges is whether it is permissible to use ultrasonic scalers on implants. Some believe that the vibration created by power scalers have the potential to loosen implant screws, which can cause implant failure. Other periodontists feel that the power scaler if permissible if used very gently and carefully.

5. The design of the denture may make daily home cleansing nearly impossible, ie convex vs. concave intaglio.

6. There are several causes of peri-implantitis. The major ones are overload, marginal gap, poor fitting prosthetics, the health of the patient, and traumatic oral self-care.

<u>Tips for Preventive Care for Fixed Implant Dentures (with input from Dr. John A. Hodges, Covington, WA)</u>

1. The denture can be scaled with titanium or stainless steel instruments if there are deposits that need to be removed.

2. Use titanium scalers to scale around implants.

3. You can use the side of a power scaler tip to break up calculus on the outside of a denture, but you must exercise extreme caution. Never use the tip; you may create stress fractures in the acrylic or porcelain.

4. Use intraoral polishing burs or stones to remove tenacious calculus on the denture, and then use porcelain or acrylic polishers intraorally to polish the adjusted areas.

5. Polish the denture with a non-abrasive acrylic polishing paste, such as diatomaceous earth or silica paste. For heavy stain on acrylic, Dr. Hodges recommends using slow speed intraoral porcelain polishers or even slow speed Brownies and Greenies. (https://www.shofu.com/en/products/abrasives/stones)

6. Homecare instructions for patients should include items designed to facilitate cleaning around implants. Soft toothbrushes, sulcabrushes and rubber tip stimulators are excellent choices. Teaching Water Pik® usage on medium to low power is also a good method for removing food debris and keeping the tissue healthy.

7. There are several good medicaments that implant patients can use at home to help control microbial activity. Rinsing daily with Peroxyl (Colgate) to debride smaller particles from under the bridge is one option. Some clinicians recommend using chlorhexidine, but staining of the denture can occur with prolonged use. The newest and arguably the most effective antimicrobial is a molecular iodine product called ioRinse, which has superb antifungal and antibacterial properties and does not stain. (iotechinternational.com)

8. Flossing under fixed bridges has been recommended for several years, but there appears to be a growing body of evidence against flossing because of the possibility of shredding. It would be most prudent to ask the doctor what he or she recommends.

Verbal Skills Regarding Supportive Maintenance

Fact: Patients with periodontitis <u>cannot</u> maintain dentition with personal home care alone.

Fact: Tooth loss in periodontal patients is inversely related to frequency of supportive periodontal therapy (SPT).

Clinician: "Mrs. Jones, we have made great progress in bringing your periodontal disease under control. However, we know from treating many other patients with this same problem that your supportive therapy is vitally important to maintaining this improvement and continuing healing. Your gums need time, professional care, and close monitoring to make sure we do not regress or lose ground. And we certainly do not want the disease to start up again. Therefore, for the first year, we will need to see you every three months for supportive therapy in an effort to control the disease. At that point, we will re-evaluate your supportive therapy appointment interval."

Patient: "But my insurance will only cover it twice a year…."

Clinician: "I understand your dilemma. And while you are fortunate to have some dental benefits through an employer, please understand it is only a very basic plan that is not meant to cover extensive therapy associated with periodontal disease. Our other patients who have benefits cover the costs of supportive therapy at alternating visits."

Dealing with Difficult Patients

X-ray Objectors: Try to determine *why* the patient objects.

(1) **fear of radiation exposure** – dispel fear by talking about fast speed film, extremely low levels of exposure. Digital is even better.

(2) **cost** – offer to take films now and let the patient pay later, or make an agreement with the patient that radiographs must be taken at the *next* recare visit.

(3) **discomfort** – use the most comfortable technique for your patient. Quell gagging by using topical anesthetic or salt.

(4) **obstinance** – attempt to explain why radiographs are necessary for thorough diagnosis, as they allow us to see under the gums, under fillings, and in between the teeth.

Doctors cannot provide care for patients based on an incomplete diagnosis without becoming subject to liability for failure to diagnose or treat existing conditions. This is a serious matter for the doctor.

When the doctor decides that a patient should be dismissed from the practice for refusing radiographs, it is recommended by some risk management courses that the dismissal letter contain the phrase that failure to treat could result in "**permanent irreversible damage to your dental health."**

When patients understand how taking radiographs will result in some benefit directly to them, there is less likelihood for an objection.

For the regular recare patient:

"Mrs. Jones, in order to check the areas I cannot see in between your teeth and under fillings, I am going to take some necessary x-rays."
For those procedures that you feel are necessary, it is best not to ask the patient's permission. Do not say, *"Mrs. Jones, I'd like to update your x-rays today. Will that be OK?"* Questions like this show hesitancy on the part of the clinician and make it easy for the patient to refuse.
"Mrs. Jones, ***as the doctor has requested****, I'm going to take some necessary x-rays. Let's do that first so the pictures will be ready when the doctor comes in."*

For the periodontal recare patient:

"Mrs. Jones, in order to check the bone around your teeth and to make sure things are remaining stable, I am going to take some necessary x-rays."

For the new patient who needs a full mouth series:

"Mrs. Jones, in order for us to properly treat you, some x-rays are needed. These pictures provide us with valuable information and help us see things we cannot see otherwise."

For the patient who adamantly refuses to have any radiographs taken, maybe the doctor should put on a blindfold and then pick up his/her drill. When the patient asks the doctor what s/he is doing, the doctor would reply that doing dentistry without x-rays is just like doing dentistry with a blindfold!

Script for person who refuses diagnostically necessary radiographs:

1. Patient states s/he cannot afford them. "*Mrs. Jones, I understand your concerns. Without an x-ray, I cannot make a clear diagnosis, so we forego the fee today for the service."*

2. Patient is unreasonably resistant. Ask the patient to share why s/he does not want radiographs. Then proceed with this verbiage: *"I understand your concerns. However, the state of _____mandates that I treat you in a competent manner, and I cannot do that without the necessary radiographs. Please be prepared on your next visit for radiographs."* On the subsequent visit, if the patient still resists, use this verbiage: *"The state of _____mandates that I treat you in a competent manner, and* ***I cannot do that without the necessary x-rays.*** *Therefore, I will be unable to continue to provide your care. I will be available to you for the next thirty days if you have a dental emergency."* If the doctor does not desire to have this conversation face to face with the patient, a similarly worded letter sent by certified mail will suffice.

Radiographic Frequency

How frequently should we be taking BW x-rays on our patients? The answer to that question should be dictated by the needs of the patient.

The bottom line is that we should use sound judgment and common sense in deciding when patients need x-rays and not abide by some arbitrary standard that says everyone gets them every year or six month recare interval. The average time interval in most offices is 18 – 24 months, but can vary depending on the needs of the patient. (Open a web browser and search "radiographic frequency")

https://www.ada.org/en/member-center/oral-health-topics/x-rays

https://www.ada.org/~/media/ADA/Publications/ADA%20News/Files/Dental_Radiographic_Examinations_2012.pdf?la=en

The Resistant Periodontal Patient

1. Patients resist care for a variety of reasons including inconvenience, fear, or finances.

2. Patients have a right to say 'no.'

3. Clinicians should record all conversations regarding diagnoses, treatment recommendations, consequences of non-treatment and patient refusals in the chart narrative. It is recommended that patients sign the narrative or a separate 'refusal of treatment' form.

4. An alternate treatment for the short term would be a debridement. This is not meant to be a definitive treatment, and the patient should be fully informed.

5. Depending on the situation, resistant patients are better served by referral to a periodontist.

Documentation of Periodontal Care

"[A clinician is] under a duty to use that degree of care and skill which is expected of a reasonably competent [clinician] acting in the same or similar circumstances" (Blair v. Eblen).

State Boards of Dentistry are mandated to investigate claims made by the public regarding care issues involving the standards of care of dentistry.

Elements of good documentation

1. Make all entries factual.
2. It is recommended that the date and time be recorded.
3. Make sure all handwritten entries are legible.
4. Use standardized abbreviations.

5. When using electronic records, do not skimp on chart notes.
6. Make all entries thorough and complete.

What NOT to Include in Patient Records

1. Do not use correction fluid to correct errors.
2. Do not skip lines between entries or write in margins.
3. Do not write disparaging or subjective comments or abbreviations about the patient, such as "patient is a jerk," "patient is nuts," or "PITA."
4. Do not write disparaging comments about previous providers.
5. Do not record the patient's daily fees in the progress notes. Fee amounts are not considered part of a clinical treatment record.
6. Do not use words that are ambiguous or vague. "Periodontal diagnosis: poor" does not adequately describe the clinical findings or the true diagnoses
7. Do not record information that requires follow-up action on your part if you are not going to take that action. For example, writing "Patient to be seen in 3 days for re-evaluation" places the onus for evaluating the patient's subsequent status on the clinician.
8. Do not use language that suggests carelessness or negligence. Example – "I hadn't noticed the ulceration at any of the previous appointments."
9. Do not erase previously charted restorations to show them completed. This is considered record adulteration.
10. Do not record telephone conversations with attorneys, risk managers, claims specialists, or insurance agents.
11. It is recommended that patient financial information be included in the progress notes only when the financial issue directly relates to the delivery of patient care or a patient's treatment decision. An example of a recommended financial reference would be when a patient declines your recommended treatment or opts for a less expensive alternative due to financial reasons.

Determining How Much to Write – the _____ _____

If you were to forget everything you ever knew about each and every one of your patients, but you remembered everything you know about how to practice dentistry/dental hygiene, you would be able to read any one of your patient charts and quickly be able to:

- *know what treatment the patient has had and why, and*
- *perform whatever treatment is next for that individual and know why it is necessary.*

Two criteria should dictate how much to write:

(1) Write sufficient information that would allow you or any other clinician to determine exactly what treatment was performed at each appointment, why that treatment was necessary, and what treatment is next – based solely on your documentation.

(2) Meet all the record keeping requirements of your state board.

Informed Consent and Informed Refusal

A. Principles of Informed Consent

1. **Informed consent** is about a patient's understanding and willingness to voluntarily agree to proposed treatment after the recommended treatment, alternate treatment options, and the benefits and risks of treatment have been thoroughly described to the patient in language understood by the patient. Informed consent must be voluntary. Informed consent originates from the legal right the patient has to direct what happens to his or her body and from the ethical duty of the healthcare provider to involve that patient in his or her own health care.

2. **Informed refusal** is about a patient's refusal of all or a portion of the proposed treatment after the recommended treatment, alternate treatment options, and the likely consequences of declining treatment have been explained to the patient in language understood by the patient. A patient has a legal right to refuse proposed medical or dental care.

B. Scope of Information. The most important goal of informed consent is that the patient has an opportunity to be an informed participant in his or her health care decisions. It is generally accepted that complete informed consent includes a discussion of the following elements:

1. A diagnosis and an explanation of the medical or dental condition that warrants the proposed treatment.

2. An explanation of the purpose of the proposed treatment.

3. A description of the proposed treatment and the individual patient's role and responsibilities during and after treatment.

4. A discussion of the known risks and benefits of the proposed treatment.

5. An assessment of the likelihood that the proposed treatment will accomplish the desired objectives. When discussing treatment outcomes it is important not to appear to guarantee treatment outcomes to the patient. Remember that individual patients will respond differently to treatment.

6. A presentation of alternative treatment options, if any, and the known risks and benefits of these options.

7. A discussion of the prognosis if no treatment is provided.

8. A discussion of the actual costs associated with the proposed treatment.

9. Reinforcement of the individual's right to refuse consent to the proposed treatment. Patients often feel powerless. To encourage the patient's voluntary consent, the healthcare provider can make it clear to the patient that he or she is participating in a decision, not merely signing a consent form.

C. Ethics and Informed Consent. The doctrine of informed consent reminds us to respect patients by fully and accurately providing information relevant to their healthcare decisions. In deciding how much information is adequate, it will be helpful for the healthcare provider to ask herself, "*What would this patient need to know and understand in order to make an informed decision?*" It is generally accepted that informed consent include:

1. Information that is provided in understandable language. It is the healthcare provider's responsibility to present all information necessary for informed consent to the individual in a way that is understood by him or her.

    a. Use simple, straightforward sentences.

b. Use commonly recognizable terms. Avoid the use of jargon or technical terms, and explain terms that may not be easily understood.

c, Use a family member or a staff member as a translator if the patient does not speak English or speaks with little understanding.

2. An opportunity for the patient to answer and ask questions. Foster an open exchange of information and encourage the patient to ask questions.

3. Assessment of the patient's understanding of information provided. Use open-ended and nondirective questions.

   a. "*What more would you like to know?*"

   b. "*What are your concerns?*"

   c. "*What is your next question?*"

D. Format for Consent Process. Informed consent may be either verbal or written.

1. Many dental healthcare providers prefer to have the patient sign and date a written consent form for documentation of the consent process. In addition, the written consent document should be signed and dated by the dentist and a witness (generally, the dental assistant).

2. Once signed, a written consent document becomes part of the individual's permanent dental record.

3. If a written consent document is not used, the patient's verbal consent should be documented in the patient chart. An example of documentation of verbal consent is: "*Discussed the diagnosis; purpose, description, benefits and risks of the proposed treatment; alternative treatment options; the prognosis of no treatment; and costs. The patient asked questions and demonstrates that he understands all information presented during the discussion. Informed consent was obtained for the attached treatment plan.*

4. If a patient refuses recommended treatment and further refuses to sign an informed refusal form or the chart notes, this notation should be made: *Patient refused recommendations for treatment of periodontal disease and also refused to sign documentation of refusal. (Your name) (Witness name)* The witness should be another staff member and/or the doctor.

5. Signatures never expire.

Refusal of Treatment Recommendation

Patient Name_____ Date of birth _____
Last First M.I.

I am being provided with this information and refusal form so I may better understand the treatment recommended for me and the consequences of my refusal. I understand that I may ask any questions I wish regarding the recommended treatment.

It has been recommended that I have the following treatment: _____
_____

This recommendation is based on visual examination, on any X-rays, models, photos and other diagnostic tests taken, and on my doctor's knowledge of my medical and dental history. The treatment is necessary because of:

□Decay □Broken tooth/teeth □Infection □Periodontal disease □Pain □Other

Note: _____
_____

_____ I have had an opportunity to ask questions about the recommended treatment.
Patient's Initials

I understand that complications to my teeth, mouth, and /or general health may occur if I do not proceed with the recommended treatment. These complications include: _____
_____

Acknowledgement

I, _____, have received information about the proposed treatment. I have discussed my treatment with Dr. _____ and have been given an opportunity to ask questions and have them fully answered. I understand the nature of the recommended treatment, alternate treatment options, the risks of the recommended treatment, and my refusal of care.

I personally assume the risks and consequences of my refusal. I have read this document in its entirety.

I do NOT wish to proceed with the recommended treatment.

Signed: _____ Date _____
Patient or Guardian

Signed: _____ Date _____
Treating Dentist

Signed: _____ Date _____
Witness

Informed Consent

Periodontal Scaling and Root Planing

I understand that I have periodontal (gum and/or bone) disease. The disease process has been explained to me and I understand that it is caused by bacterial toxins (poisons) and my host response to these toxins. I realize that this disease may be painless and without symptoms, but that usually symptoms such as bleeding, swelling or recession of gum tissue, loosened teeth, elongated teeth, bad breath, or sensitivity and soreness may be noticed. Treatment of periodontal disease may include periodontal scaling and root planing, either as a therapeutic procedure, or preliminary to more extensive treatment.

Periodontal scaling and root planing involves the removal of calculus, bacterial plaque, bacterial toxins, diseased cementum (the outer covering of the root surface) and diseased tissue from the inner lining of the crevice surrounding the teeth. The purpose of this procedure is to reduce some of the causes of periodontal disease to a level more manageable by my individual immune system. I understand that my own efforts with home care are just as important as my professional treatment.

Consequences of doing nothing about my periodontal condition may be, but are not limited to:

- Increased recession of gum tissue and exposure of root surfaces (as tissue heals, swelling decreases).
- Increased sensitivity to hot, cold, or sweets; this may require further treatment, may fade with time, or may persist no matter what is done.
- Exposed roots that may acquire stain more readily.
- Food may collect between teeth. Proper cleaning techniques will be explained in detail.
- If teeth were loose prior to the procedure, they may seem looser immediately after. Usually after healing, teeth “tighten.”
- Some pain, swelling or bruising may be experienced after treatment.
- Infection of the gums and other supporting structures.

I understand the recommended treatment, the risks of such treatment, and any alternative treatment and risks have been explained to me. I understand the fee(s) involved in the treatment as well as consequences of doing nothing.

I give permission for the use of local anesthetic and any anxiolytic and/or sedative medications that may become necessary. The possible side effects of local anesthetics are prolonged or permanent numbness of the lips, cheeks or gums, rapid heart rate, allergic reactions, and reactions with other drugs that you are taking.

If there are any problems, contact the dental office immediately.

Patient Signature _____ Date _____

Dentist Signature _____ Date _____

The Goals of Therapy

What causes periodontal disease?

Periodontal disease results from a combination of microbial effects and non-specific host responses acting at the only site in the body that is not protected by an intact epithelium covering.

What is the goal of periodontal therapy?

To stop the progression of the disease

How do we know when we have stopped the progress of the disease?

1. No continuing loss of periodontal attachment
2. No continuing loss of supporting bone

Inserts and Equipment

Burnett Power Tip by Parkell – 1-800-243-7446 www.parkell.com

SLI 1000 Dentsply® www.dentsply.com

Oral Microbial Testing – MicrobeLinkDx – (615)587-2558 www.MicrobeLinkDx.com

Colorvue™ Probe by Hu-Friedy www.hu-friedy.com

Face Drapes by Practicon – www.practicon.com 1-800-959-9505

PropGard by Ultradent – www.ultradent.com 1-800-552-5512

Magnification by Designs for Vision - www.designsforvision.com 800-345-4009

Retipping service for instruments - Goldman Retipping Service – (708) 526-1166

Ultrasonic insert re-building service and ultrathin inserts – Madultrasonics www.madultrasonics.com 914-844-6313

Anti-microbial rinse – ioRinse and ioGel - www.iotechinternational.com (561)509-0205

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