WHITE PAPER

Redefining the Management and Prevention of Periodontal Disease:

Practical Guidance for the Practicing Hygienist in Navigating Clinical Decision-Making and Patient Engagement

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Table of Contents

Objective

This white paper is a tangible, expert-led resource that supports and elevates the role of practicing dental hygienists in making informed clinical decisions. In alignment with evidence-based guidelines, this resource aims to enhance patient engagement for the effective management and prevention of periodontal diseases.

The Case for Prevention

The global burden of oral disease is considerable

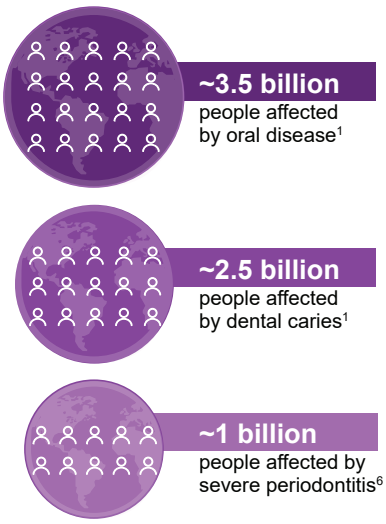
Oral diseases represent a significant global public health challenge.[1] The World Health Organization estimated that in 2019, up to 3.5 billion people may have been affected by oral disease, with an associated economic burden exceeding $380 billion USD.[2] Despite being largely preventable, conditions such as dental caries, gingivitis, and periodontitis continue to impose substantial health, social, and economic burdens. A primary etiological factor in the development of these diseases is dental biofilm (plaque). When not removed through mechanical oral hygiene practices, biofilm contributes to the demineralization of enamel, leading to dental caries.[3] An estimated 2.5 billion people worldwide are affected by untreated dental caries.[2]

Simultaneously, gingivitis—a reversible biofilm-induced inflammation of the gingival tissues—affects up to 90% of adults globally.[4, 5] Gingivitis, an early indicator of periodontal disease, can be managed through professional mechanical biofilm removal along with consistent at-home oral hygiene practices.[6] Although gingivitis (a condition that impacts more than 1 billion people)[7] is reversible with appropriate oral hygiene and professional care, it may advance to severe periodontitis if left untreated.[4] Despite advancements in oral health services and increased awareness of the importance of oral hygiene, the prevalence of periodontal disease in the Americas has increased by 25%,[8] underscoring the need for early intervention and sustained oral health maintenance.

Biofilm-retentive factors in the oral cavity, such as misaligned teeth, dental implants, extensive restorations, and orthodontic appliances, can complicate biofilm removal and make routine oral hygiene challenging, necessitating specialized care to prevent disease development and progression. The progression from gingivitis to periodontitis has systemic implications—periodontitis is associated with a range of chronic diseases, cardiovascular disease, respiratory disease, kidney disease, diabetes mellitus, neurodegenerative disease, rheumatoid arthritis, cancer, and obesity.[1,9–11] Periodontal disease in pregnant women has also been shown to be associated with low birth weight, preterm birth, and preeclampsia.[12] Good oral health, and, consequently, the ability to masticate and swallow effectively, is also critical to facilitate proper diet and nutrition.[13, 14] Further, improved oral health and adherence to preventive dental care are associated with reduced healthcare expenditures, benefiting healthcare systems and individual patients. A study estimating savings using published data found that screening for chronic diseases in a dental office could save the healthcare system more than $65 million USD, including labor costs.[15] Proactive outreach with integrated dental and medical coverage could save an estimated $6000 USD over 3 years per engaged member.[16] Additionally, improved oral health contributes to enhanced employability and sustained workforce participation, mitigating economic burdens on healthcare systems and society.[1, 10, 17]

Given the high prevalence and health impact of periodontal disease, there is an urgent need for evidence-based, accessible resources to guide oral health professionals in prevention and management strategies. This white paper aims to bridge this gap by providing a scientifically grounded, expert-led resource tailored for the practicing dental hygienist.

The global burden of oral diseases



In the Americas,
over the last 3 decades, the prevalence of periodontal disease has increased by[7]

The roles of dental hygienists have evolved

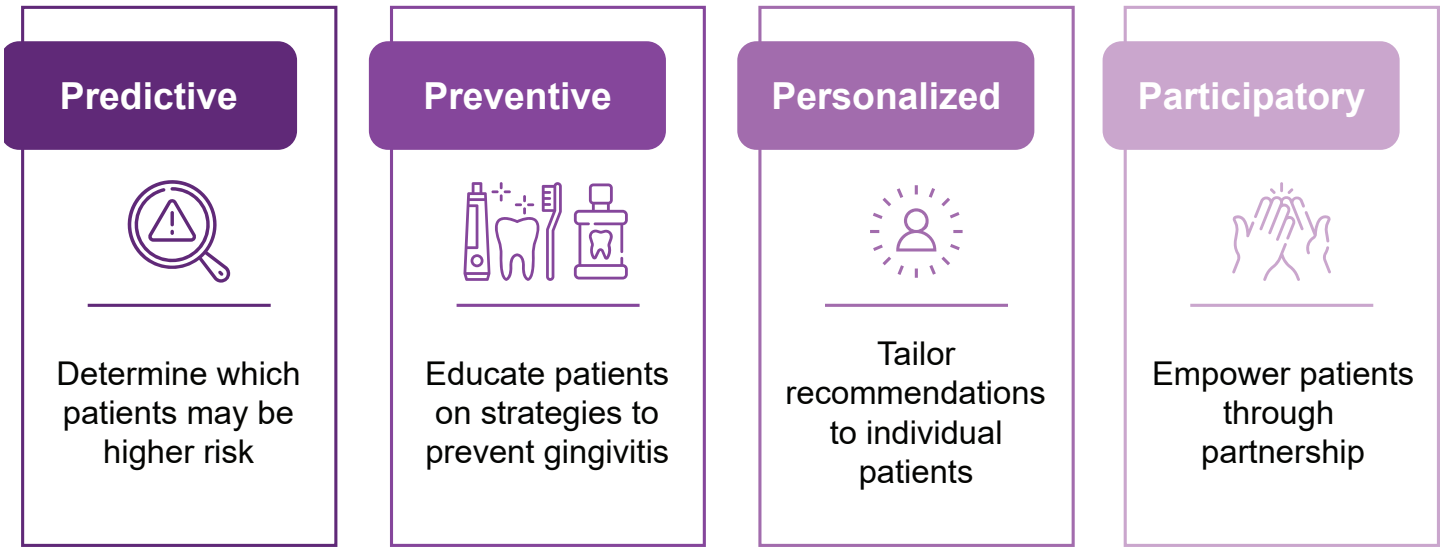
Today's dental hygienists are recognized as integral clinical leaders in oral healthcare, extending well beyond their traditional roles. They serve as health educators, patient advocates, and prevention specialists, actively influencing patient outcomes through evidence-based practices and personalized care. In the face of a growing global burden of oral diseases, hygienists play a pivotal role in early detection and prevention of oral diseases, as well as in promoting health, while contributing to improved systemic health and quality of life.

As the scope of dental hygiene continues to evolve, so too must the nature of patient engagement. Effective periodontal disease management relies on a collaborative, person-centered approach. Key elements of this approach include patient education and alignment between patients and dental hygienists regarding best practices for achieving and sustaining optimal oral health outcomes. This evolution in the role of dental hygienists aligns seamlessly with the P4 model of healthcare,[18] which enables hygienists to deliver predictive insights, implement preventive strategies, personalize patient care, and foster participatory engagement in oral health management.

The P4 model

P4 is a holistic and integrated care model that emphasizes proactive preventive care and patient empowerment to optimize overall health outcomes.[18] Grounded in the principles of Predictive, Preventive, Personalized, and Participatory care, the P4 framework guides comprehensive patient management strategies[18] and empowers the hygienist to guide patients from prevention through participation in their personalized treatment plan. This white paper leverages the P4 framework, showing how it may be applied in a clinical practice setting.

The P4 framework[18]



Predicting Patients at Risk of Periodontal Disease

Categorizing risk factors

Periodontal disease is a chronic, immune-mediated inflammatory condition triggered by host response to bacterial biofilm.[10, 19] Although gingivitis shares the immune-mediated, inflammatory nature of periodontitis, it is less severe and reversible when appropriate clinician intervention occurs.[6] Clinical indicators of disease activity, such as bleeding on probing, gingival erythema, and tissue edema,[4] are readily identifiable by dental hygienists during routine assessments, enabling early intervention.

The pathogenesis of periodontal disease is influenced by a complex interplay of systemic, local, and general risk factors, which can aid in predicting periodontal disease risk. Systemic risk factors typically include hormonal fluctuations, medication use, and immunosuppressive and metabolic conditions that compromise host defense and disrupt the host-bacterial interaction.[4] For example, patients who are immunocompromised due to chronic diseases such as diabetes mellitus or HIV infection, or due to immunosuppressive treatments such as chemotherapy, are at a higher risk of developing periodontal disease.[10, 20] Local risk factors such as malocclusion and presence of biofilm-retentive prosthetic elements (e.g., implants, full-arch restorations, splinted crowns, and pontic designs) facilitate biofilm accumulation and impede effective oral hygiene.[21] Additionally, occlusal overload resulting from functional imbalances, prosthetic or orthodontic design deficiencies, or parafunctional habits can exacerbate periodontal inflammation by introducing mechanical stress into an already active inflammatory environment, thereby contributing to synergistic periodontal tissue breakdown.[22] General risk factors such as stress, diet, smoking and vaping, advanced age or frailty, and limited manual dexterity further contribute to disease susceptibility and progression.[10, 23] Other considerations that may impact the development of periodontal disease could include socioeconomic status or education level.[24]

In addition to recognizing clinical presentations of patients at risk, dental hygienists are increasingly supported by emerging diagnostic technologies such as salivary biomarker testing, which enhance early detection, enabling more personalized and proactive periodontal care.[25, 26] Ongoing research is examining the value of such technologies for early detection and risk stratification, and the future role technology will play in personalized and proactive oral healthcare.

Risk factors for periodontal disease

Systemic

- Medications
- Hormonal changes
- Immunocompromise and immunosuppression

Local

- Poor oral hygiene
- Biofilm-retentive restorations and extensive prosthetic work
- Dentures or implants

General Risk Factors

- Other health conditions (e.g., diabetes)
- Stress
- Smoking
- Diet
- Frailty
- Limited dexterity
- Low motivation

Prevention of Periodontal Disease

Guidelines and recommendations

To ensure optimal patient outcomes, the practicing dental hygienist must remain current with evolving clinical guidelines and evidence-based recommendations:

- Effective at-home oral hygiene regimens serve as a crucial adjunct to professional prophylaxis
- Recommendations should encompass both standardized oral care preventive measures and personalized strategies to meet individuals' unique oral health needs and behavioral patterns[27]
- A recurring recommendation in the American Dental Association (ADA) home oral care, American Academy of Periodontology (AAP), and European Federation of Periodontology (EFP) guidelines is the use of an antiseptic mouthrinse as a safe and efficacious adjunctive measure for mitigating gingival inflammation[27–30]

Guidelines and recommendations regarding the adjunctive use of mouthrinse

American Dental Association Home Oral Care Recommendations[27]

- Recommend twice-daily brushing with a fluoride toothpaste and daily interdental cleaning for all patients, and adjunctive mouthrinse for patients who may be at elevated risk for caries and/or gingivitis
- Specifically recognize the benefit of antimicrobial mouthrinses with essential oils or cetylpyridinium chloride in reducing the risk of gingivitis and periodontal disease
- Advocate using products with the ADA Seal of Acceptance as these products have undergone rigorous evaluation for safety and efficacy

American Academy of Periodontology Guidelines[28]

- Support the use of adjunctive chemotherapeutic agents as part of periodontal therapy, to reduce, eliminate, or change the quality of microbial pathogens
- Recommend mechanical toothcleaning to disrupt/remove dental plaque and biofilms, with local or systemic chemotherapeutic agents used as adjunctive treatment for recurrent or refractory disease
- Emphasize the importance of integrating adjunctive rinses into a structured periodontal treatment protocol, tailored to individual patient risk profiles and disease severity

European Federation of Periodontology S3-level Clinical Practice Guidelines[29]

- Emphasize personalized oral hygiene strategies and highlight the role of chemical plaque control in reducing inflammation and disease progression
- Support the adjunctive use of antiseptic mouthrinses, such as those containing essential oils, chlorhexidine, or cetylpyridinium chloride for the control of gingival inflammation in patients with periodontitis in supportive periodontal care
- Mouthrinses are particularly recommended for patients with periodontitis or who have compromised manual dexterity or other barriers to ensure mechanical plaque control

Current evidence for adjunctive mouthrinse use

Mouthrinses containing a fixed combination of essential oils are among the most studied over-the-counter options for supragingival dental biofilm and gingivitis control, supported by decades of peer-reviewed clinical research and multiple systematic reviews.[31] Essential oils penetrate the deepest layers of dental biofilms, perforate bacterial cell membranes, denature bacterial proteins, and inactivate bacterial enzymes to disrupt and reduce inflammation-causing bacteria. In a randomized clinical trial, a mouthrinse containing a fixed combination of 4 essential oils and combined with brushing and flossing significantly reduced whole-mouth supragingival plaque (by 32.8%), gingivitis (by 49.5%), and whole-mouth bleeding (by 71.5%) compared with brushing only.[32]

- Findings from other studies have also demonstrated that a 3-step regimen, which includes the addition of a mouthrinse containing essential oils to regular brushing and flossing, is more effective in reducing supragingival plaque and gingivitis than brushing and flossing alone[33]
- Similarly, findings in systematic reviews and meta-analyses have found that antiseptic mouthrinses are clinically efficacious in reducing gingival index, bleeding, plaque index, and overall plaque levels[31, 34, 35]

As mouthrinses are easy to incorporate into a routine, affordable, and widely available, they may be a simple addition to patients' home oral hygiene regimens to improve their gingival health. Dental hygienists should educate patients about the differences between mouthwashes designed to freshen breath, and therapeutic mouthrinses with antiseptic properties for improving gingival health and preventing the development of periodontal disease.

To promote patient adherence, adjunctive mouthrinse recommendations should be incorporated into personalized care plans. Offering mouthrinses with varied flavor profiles and intensities can accommodate diverse sensorial preferences and promote patient adherence. Making personalized mouthrinse recommendations enables oral health practitioners to align evidence-based interventions with patients' unique clinical presentations, behavioral patterns, and social determinants of health, thereby enhancing therapeutic efficacy and patient compliance. Depending on individual patient needs, other adjunctive tools such as interdental brushes, water flossers, super floss, or specialized devices/products for implant maintenance may be recommended.

Personalization and Participation

Empowering hygienists to personalize care

In addition to maintaining a consistent at-home oral hygiene regimen, regular professional dental evaluations and prophylaxis are essential components of comprehensive oral healthcare. Hygienists therefore play a crucial role in fostering healthy behavior change among participants through direct care and recommendations. The Current Dental Terminology (CDT) codes developed by the ADA provide a standardized framework that enables dental hygienists to accurately document clinical care and enhance communication among oral healthcare professionals, and with patients. Precise documentation is essential for monitoring clinical parameters. For example, CDT code D4346 is designated appropriate for scaling in cases of full-mouth generalized, moderate-to-severe gingival inflammation without attachment loss after an oral evaluation.[36] This code distinctly identifies patients with gingival inflammation who require more than routine prophylaxis but do not meet the criteria for periodontal therapy, thereby supporting appropriate treatment planning. The code D1330 is designated for oral hygiene instruction and could be used for a structured, documented session to educate patients on proper oral hygiene techniques tailored to their individual needs.[37] Other codes, such as D1310 for nutritional counseling, D1320 for tobacco counseling, and D1321 for counseling for the control and prevention of adverse oral, behavioral, and systemic health effects associated with high-risk substance use, can be integrated into preventive

CDT Code	Designation
D4346	Scaling in the presence of gingival inflammation
D1330	Oral hygiene instruction
D1310	Nutritional counseling
D1320	Tobacco counseling
D1321	Substance use counseling

therapeutic care strategies allowing oral healthcare professionals to address dietary factors and habits that influence oral health. These interactions reinforce the hygienist's role in preventive care and patient education, enabling the development of customized treatment plans that promote patient engagement and support behavioral modifications conducive to improved oral health outcomes, whether or not the service is covered under the patient's insurance.

Education through case presentations and diverse patient case discussions are instrumental in developing dental hygienists' competencies and guiding evidence-based treatment recommendations.[38] Exposure to a broad range of case presentations across varied demographic characteristics may equip dental hygienists to recognize atypical manifestations and distinguish healthy and pathological conditions, including the nuanced presentations of periodontal disease. A structured discussion around each case encourages peer-to-peer learning, promotes the use of current scientific evidence, and reinforces clinical reasoning. Point-of-care digital tools such as mobile applications and web-based platforms may also be helpful, enabling real-time access to up-to-date, relevant information for patient education.

Engaging patients through improved care access and fostering behavioral change

Promotion of sustainable behavioral changes in patients requires a multifaceted approach that includes education on improving access to oral care. One effective strategy is to raise patient awareness of financial tools such as health savings accounts (HSAs) and dental insurance benefits, as many patients remain unaware of the extent of their coverage. Empowering patients to explore their benefits allows for informed decision-making and supports responsible financial planning for oral health services. Reaching populations with limited access to care who seldom seek professional care is essential for early intervention and prevention of disease progression. For these individuals, targeted messaging that highlights the importance of preventive and medically necessary care could encourage timely engagement, especially during the reversible stages of gingivitis. Communication about opportunities some clinics may have for a "free service day" could also encourage these populations to seek care.

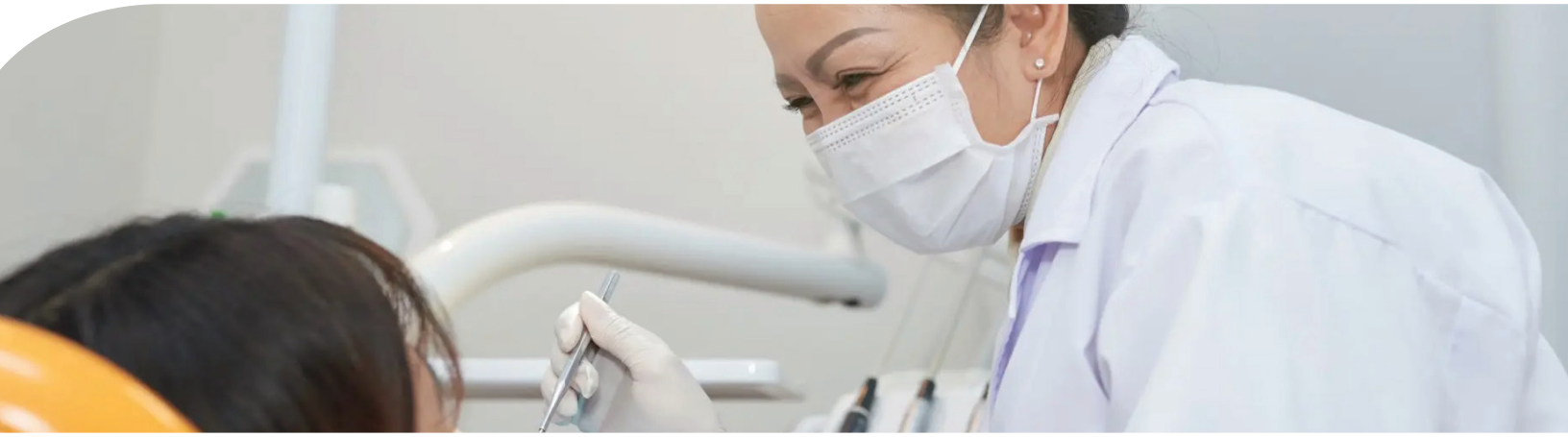
In addition to financial education, various behavioral change models can be used to support patient adherence. One of the most well-established models for influencing patient behavior is the transtheoretical model of change, which outlines 5 consecutive stages of behavioral transformation: precontemplation, contemplation, preparation, action, and maintenance, that people go through when intentionally making a behavioral change.[39] Dental hygienists can help patients self-reflect about their understanding of their own oral health status as well as assess their interest in and willingness to change their behavior.

Providing education to improve knowledge about oral health is typically not enough to change behavior. Patients must be motivated to follow recommendations and be prepared to change their behavior. Motivational interviewing is a patient-centered, technique-sensitive approach that requires advanced training for optimal effectiveness. The more trained and experienced the provider, the

Transtheoretical model of change[39]

more effective the approach at changing behavior. Therefore, while it may be highly effective for some providers, others may derive greater benefits from a different method. The teach-back method reinforces understanding by having patients articulate learned concepts back to the provider to ensure the concepts were communicated clearly and adequately. The teach-back method has been shown to be practical and effective in oral hygiene education.[40]

Additional emerging behavioral change strategies, such as gamification, use principles of behavioral psychology to motivate and engage patients with game-like elements. Well-designed games can be enjoyable, entertaining, and motivating for patients and are widely accessible via smartphones or other digital devices.[41] Techniques such as rewards, goal-setting, and social connection can improve treatment adherence, support compliance, and encourage healthy habits.[42] With a variety of models available to encourage behavioral changes in patients, hygienists should determine the appropriate behavioral intervention model to optimize individual patient outcomes.



Conclusion

CALL TO ACTION

Advancing oral health outcomes through care strategies led by hygienists

The burden of periodontal disease continues to rise worldwide, threatening not only oral health but also overall well-being, quality of life, and economic stability. To address the growing burden of periodontal disease and disrupt its rising trajectory, there is a need to recognize and support the role of dental hygienists in leading the implementation of personalized, evidence-based home-care strategies. This white paper outlines a transformative path forward and provides a practical, evidence-based framework that empowers hygienists to lead in prevention, education, and personalized care.

Hygienists can strengthen their patient partnerships, reinforce interdisciplinary collaboration, and elevate their role from caregivers to catalysts of change by integrating the strategies outlined in this white paper.

These practices include:

- **Employing risk-based approaches**
- **Leveraging the P4 model**
- **Utilizing adjunctive therapies such as antiseptic mouthrinses**
- **Applying CDT codes effectively**
- **Adopting validated behavioral frameworks**

This proactive, patient-centered approach should enhance periodontal outcomes, help improve systemic health, and reduce healthcare costs. Now is the time to recognize and support the dental hygienist's pivotal role in transforming oral healthcare delivery and advancing whole-person health. This white paper is a call to reimagine the role of the dental hygienist in prevention and as a driver of health equity and economic resilience.

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