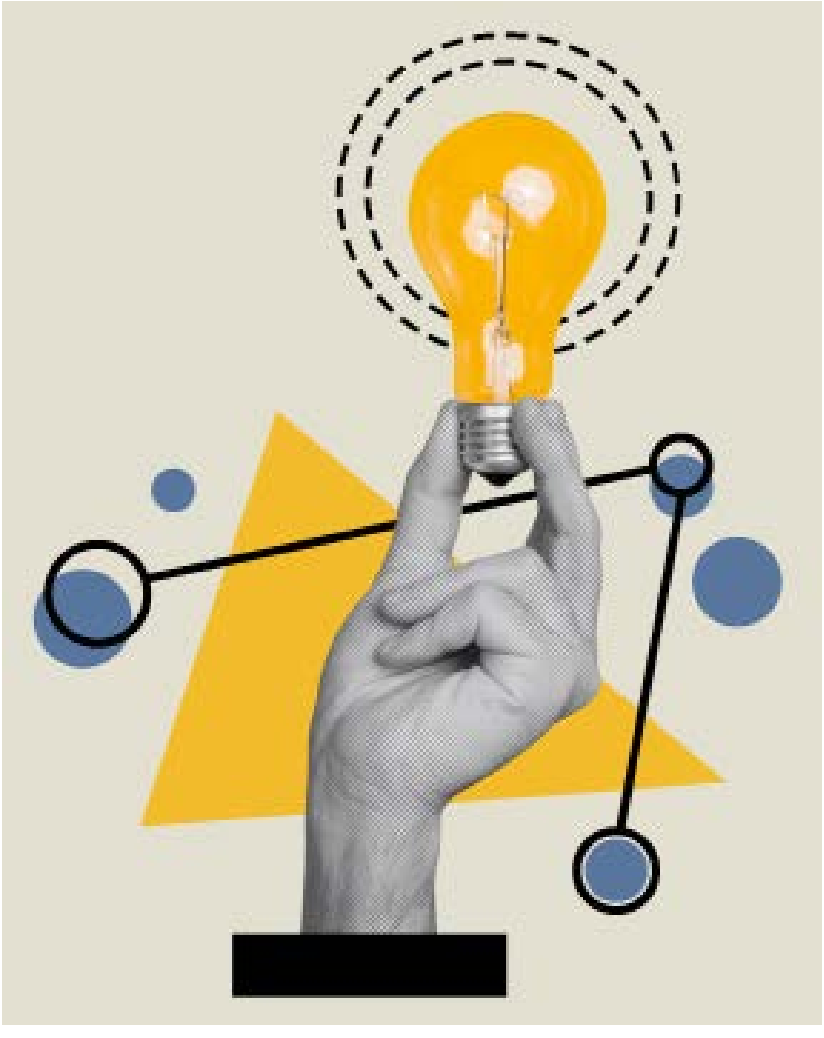
Rethinking **periodontal care**

A medical condition with a dental solution

Melissa A. Obrotka, BA, RDH



Roman Samborskyi / Shutterstock

The conventional approach to periodontal therapy has long emphasized mechanical debridement, calculus removal, and surface polishing. While these procedures address visible signs of disease, research continues to indicate that periodontal disease is a complex inflammatory condition that requires medical-level intervention. The role of the oral microbiome in systemic health has become increasingly evident, with periodontal pathogens contributing to the development of cardiovascular disease, diabetes complications, and an overall systemic inflammatory burden.

Periodontal disease affects 45%–50% of adults globally, with 11.2% experiencing severe periodontitis that drives systemic inflammation.[1] Traditional approaches, which primarily focus on mechanical debridement and calculus removal, fail to address the underlying pathophysiology of periodontal disease as an inflammatory medical condition.[2,3]

Now, let's consider the current trends that advocate for nationwide educational and board certification downgrades to provide supragingival scaling for patients; there is a disconnection between evidence and the call to action for a new workforce.[4] The evidence supports a medical model approach to periodontal therapy, with an emphasis on managing inflammation and restoring the microbiome. By integrating oral-systemic medicine principles into periodontal care, dental professionals can achieve superior patient outcomes while addressing the root causes of periodontal pathology. If more dental professionals adopted this philosophy of care, imagine the substantial impact dentistry could have on the financial and medical burden of the American people.[5]

Current evidence suggests that even after a thorough professional cleaning, the oral microbiome often remains in a state of dysbiosis, characterized by the persistence of disease-associated bacterial populations. This phenomenon explains why patients frequently experience recurring inflammation despite regular maintenance therapy. A paradigm shift toward treating periodontal disease as a medical condition requiring comprehensive inflammation management—similar to wound debridement therapy—offers the potential for transformative patient outcomes.[6-8]

The oral–systemic connection: Scientific foundation

Microbiome dysbiosis and systemic impact

The paradigm shift toward treating periodontal disease as a medical

condition received significant validation through the landmark study, which was the first peer-reviewed research to establish that periodontal disease caused by specific high-risk bacteria is a contributing cause of cardiovascular disease, moving beyond association to demonstrate causality.

The Bale Doneen research identified five high-risk periodontal pathogens that directly contribute to atherosclerosis: *Aggregatibacter actinomycetemcomitans*, *Porphyromonas gingivalis*, *Tannerella forsythia*, *Treponema denticola*, and *Fusobacterium nucleatum*.

Mechanistic evidence for causality

The study demonstrated that high-risk periodontal pathogens create a "triple threat" to arterial health. These bacteria make arterial walls more permeable to cholesterol infiltration, increase concentrations of small, dense LDL cholesterol, and make the arterial intima "stickier" like Velcro, promoting plaque formation and retention.

Clinical implications: This research establishes that periodontal disease caused by high-risk pathogens represents "a medical condition with a dental solution." The findings suggest that identifying and managing these specific bacterial populations offers significant potential for reducing the cardiovascular disease burden, fundamentally changing how periodontal disease is diagnosed and treated.[9]

Furthermore, research supports that periodontal treatment not only mitigates oral dysbiosis but also alters the gut microbial composition, triggering a cascade of effects on systemic health. Dental professionals are well-versed that digestion begins in the oral cavity. Therefore, the root cause of this chain reaction is poor oral hygiene, which leads to microbial dysbiosis, resulting in inflammation of the periodontal tissue and an increase in the production of gingival crevicular fluid. This environment becomes a breeding ground for inflammatory bacteria such as *P. gingivalis*, which thrive on inflammatory mediators and perpetuate the disease process.[10]

The systemic implications extend beyond local oral pathology through the hematologic route. As periodontal pathogens and periodontitis-associated systemic inflammation can affect extraoral pathologies by altering the function of bone marrow hematopoietic progenitors, they thereby fundamentally impact immune system function.[11-13]

Clinical evidence for systemic benefits

Cardiovascular health: Periodontal treatment reduces systemic inflammatory markers, lowers systolic blood pressure, and improves lipid profiles, resulting in measurable changes in cardiovascular risk factors. These findings support the integration of periodontal therapy into comprehensive cardiovascular risk management protocols.[14]

Diabetes management: A systematic review and meta-analysis confirm that scaling and root planing effectively reduce HbA1c levels and C-reactive protein in patients with type 2 diabetes. The magnitude of improvement in glycemic control rivals that achieved through specific pharmacological interventions.[15]

Systemic inflammation: Significant reductions in high-sensitivity C-reactive protein have been reported following periodontal treatment in patients with metabolic syndrome and severe periodontitis. The six-month follow-up data demonstrated sustained improvements in systemic inflammatory markers.[16]

Medical model implementation

Redefining treatment objectives

The medical model approach shifts focus from symptom management to addressing underlying pathophysiology. Rather than simply removing calculus and polishing surfaces, treatment objectives include:

- Inflammatory risk assessment involving gathering a comprehensive medical history to identify potential risk factors, as well as a thorough periodontal screening to assess inflammation, bleeding points, and periodontal staging
- Bacterial analysis via salivary diagnostics, pH testing, and biofilm disclosing
- Biofilm disruption via airflowing, targeting pathogenic bacterial communities
- Microbiome restoration promoting the growth of beneficial bacterial populations and discouraging the use of products that eradicate all bacteria
- Systemic health integration, coordinating care with medical providers

Advanced strategies for periodontal–medical model

Effective subgingival biofilm removal is crucial for achieving positive and stable outcomes in periodontal therapy, and it forms an indispensable part of any periodontal treatment approach. The development of air-polishing tools has emerged to alter the traditional sequence of care, shifting the focus to dental biofilm removal—the root cause of caries and calculus.

Recent systematic reviews have demonstrated that erythritol powder air-polishing (EPAP) provides equivalent clinical outcomes to traditional scaling and root planing, while offering superior patient comfort and enhanced antimicrobial properties. Mechanical debridement with erythritol-based powder results in more efficient biofilm and stain removal. Additionally, erythritol exhibits antimicrobial properties that inhibit the growth of periodontal infections and possesses anticarcinogenic, antibiofilm, and antioxidant properties. Clinical trials demonstrate

that subgingival erythritol airflowing achieves comparable reductions in bleeding on probing, probing depths, and clinical attachment levels compared to conventional debridement, while providing significantly better patient comfort with minimal tissue trauma.[17-19]

This technology aligns perfectly with the medical model of wound debridement, enabling thorough biofilm disruption while minimizing procedural discomfort, thereby supporting improved patient compliance and treatment outcomes in comprehensive periodontal therapy protocols.[20-22]

Adopting a medical model clinical protocol

Step 1: Comprehensive assessment implementation begins with a thorough evaluation of the inflammatory burden through intraoral, radiographic, and periodontal assessments, including documentation of systemic health connections. Practitioners should assess diabetes status, cardiovascular risk factors, and autoimmune conditions while educating patients about oral-systemic relationships and recommending salivary diagnostics.

Step 2: Biofilm disclosure: Provide a chairside bacterial analysis to reveal the bacterial maturity and volume a patient presents with at each hygiene appointment. Take an intraoral image of the disclosed biofilm for reference and provide a detailed explanation of how the bacteria affect the patient's periodontal condition and inflammation. The bacteria now have the hematologic route to create a systemic health impact.

Step 3: Self-care motivation: While biofilm is disclosed, coach your patient on the individualized techniques that will help them consistently disrupt the bacteria to prevent maturation into a dysbiotic state with the aim of reducing inflammation and gingival bleeding. Education here will also require establishing an understanding of how the patient's nutritional choices will impact their salivary pH, oral microbiome, and gut health.

> "Understanding how periodontal pathogens affect systemic health enables comprehensive treatment planning and appropriate medical referrals."

Step 4: EPAP airflowing emphasizes a comprehensive mechanical disruption of biofilm, rather than traditional ultrasonic, hand-scaling, and polishing protocols.

Step 5: Subgingival biofilm management can deliver EPAP via subgingival nozzles in pockets greater than 5 mm, delivering warm water, erythritol powder, and air to disrupt the subgingival gram-negative, anaerobic bacterial community comprehensively and efficiently.

Step 6: Targeted calculus management shifts the focus to removing hard deposits supra- and subgingivally. Research demonstrates that patients prefer piezoelectric over magnetostrictive as the linear motion is less invasive.[23]

Step 7: Quality control includes a final exploratory scaling to ensure comprehensive deposit removal and application of any adjunctive therapies to promote remineralization of enamel and a healthy commensal oral microbiome.

Step 8: Maintenance frequency: Educate patients on a maintenance frequency that achieves periodontal disease remission based on their ability to consistently disrupt bacteria and promote a healthy oral microbiome.

Ongoing management maintenance protocols incorporate inflammatory monitoring through bleeding indices and pocket depth measurements. Personalized oral hygiene recommendations tailored to individual microbiome characteristics can optimize long-term outcomes.

Professional role evolution

For dental hygienists

The medical model recognizes dental hygienists as health-care professionals who manage conditions with significant systemic implications. This approach requires:

- Investing in education and advanced understanding of oral-systemic medicine
- Competency in inflammatory risk assessment
- Collaborative communication with medical providers
- Patient education regarding the medical aspects of periodontal disease

For dentists

Successful implementation requires the dentist's recognition of the hygienist's expertise in managing inflammation and restoring the microbiome. Understanding how periodontal pathogens affect systemic health enables comprehensive treatment planning and appropriate medical referrals.

Future directions: Precision periodontal medicine

Emerging approaches in precision medicine offer exciting possibilities for personalized periodontal therapy. Advances in epigenetic research and microbiome interventions suggest future treatments will be tailored to individual microbiome profiles, genetic markers, and systemic health status.

Salivary diagnostic tools, nutritional interventions targeting inflammation, and stress management protocols

represent the evolution toward truly personalized periodontal care.

Implementation recommendations

- **Team education:** Invest in continuing education focused on the principles of oral-systemic medicine.
- **Evidence-based protocol implementation:** Establish standardized assessment and treatment protocols that emphasize medical model approaches, utilizing an eight-step protocol that combines EPAP with piezo debridement for a comprehensive yet gentle approach to biofilm and calculus removal.
- **Collaborative networks:** Establish referral relationships with medical providers to provide comprehensive patient care.
- **Technology integration:** Consider advanced diagnostic tools for microbiome assessment and inflammatory monitoring and invest in dental hygiene technology that provides an eight-step protocol for periodontal wound management.
- **Rehearsing patient conversations:** Effective implementation of the medical model approach requires clear and comprehensive communication with patients. They need to understand that periodontal therapy is not just about cosmetic concerns, but it addresses a medical condition with systemic implications. This understanding is crucial for their active participation in the treatment process.

Conclusion

The evidence overwhelmingly supports treating periodontal disease as a medical condition that requires comprehensive management of inflammation rather than focusing solely on mechanical debridement. Adopting the paradigm shift of biofilm management offers the potential for superior patient outcomes, instilling confidence in the new approach and addressing the root causes of periodontal pathology.

Dental professionals who adopt this evidence-based approach position themselves at the forefront of care, offering patients comprehensive treatment that addresses both oral and systemic health. The transition from reactive cleaning to proactive inflammation management represents not just an evolution in technique but a fundamental advancement in the standard of care for periodontal patients. Those who align with an emerging model of allowing providers to enter the dental hygiene field without a college education or board certification will forfeit the opportunity to advance dentistry and claim its rightful place in the field of medicine.

The scientific foundation is established, the clinical protocols and technology are available, and the opportunity for practice transformation is immediate. Periodontal care as a medical condition with a dental solution is not just a theoretical concept but a practical opportunity for dental professionals to lead this essential evolution in systemic health integration. The question you are facing is not whether this approach is practical, but whether you are prepared to seize this opportunity. **DE**

REFERENCES

1. Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJL, Marcenes W. Global burden of severe periodontitis in 1990–2010: a systematic review and meta-regression. *J Dent Res*. 2014;93(11):1045–1053. doi:10.1177/0022034514552491
2. Drisko CL. Periodontal debridement: still the treatment of choice. *J Evid Based Dent Pract*. 2014;14(Suppl):33–41.e1. doi:10.1016/j.jebdp.2014.02.007
3. Munasur SL, Turawa EB, Chikte UME, Musekiwa A. Mechanical debridement with antibiotics in the treatment of chronic periodontitis: effect on systemic biomarkers—a systematic review. *Int J Environ Res Public Health*. 2020;17(15):5601. doi:10.3390/ijerph17155601
4. Anderson O. New ADA policies empower states to alleviate dental workforce shortage. American Dental Association. November 15, 2024. Accessed July 1, 2025. https://adanews.ada.org/ada-news/2024/november/new-ada-policies-empower-states-to-alleviate-dental-workforce-shortage/
5. Preventive dental care improves overall health and drives savings. Cigna Healthcare. https://newsroom.cigna.com/preventive-dental-care-improves-overall-health
6. Aukhil I. Biology of wound healing. *Periodontol 2000*. 2000;22:44–50. doi:10.1034/j.1600-0757.2000.2220104.x
7. Chen C, Hemme C, Beleno J, et al. Oral microbiota of periodontal health and disease and their changes after nonsurgical periodontal therapy. *ISME J*. 2018;12(5):1210–1224. doi:10.1038/s41396-017-0037-1
8. Yama K, Nishimoto Y, Kumagai K, et al. Dysbiosis of the oral microbiome persists after dental treatment-induced remission of periodontal disease and dental caries. *mSystems*. 2023;8(5):e0068323. doi:10.1128/msystems.00683-23
9. Bale BF, Doneen AL, Vigerust DJ. High-risk periodontal pathogens contribute to the pathogenesis of atherosclerosis. *Postgrad Med J*. 2017;93(1098):215–220. doi:10.1136/postgradmedj-2016-134279
10. Xi M, Ruan Q, Zhong S, et al. Periodontal bacteria influence systemic diseases through the gut microbiota. *Front Cell Infect Microbiol*. 2024;14:1478362. doi:10.3389/fcimb.2024.1478362
11. Hajishengallis G, Chavakis T. Local and systemic mechanisms linking periodontal disease and inflammatory comorbidities. *Nat Rev Immunol*. 2021;21(7):426–440. doi:10.1038/s41577-020-00488-6
12. Hajishengallis G, Li X, Divaris K, Chavakis T. Maladaptive trained immunity and clonal hematopoiesis as potential mechanistic links between periodontitis and inflammatory comorbidities. *Periodontol 2000*. 2022;89(1):215–230. doi:10.1111/prd.12421
13. Nicu EA, Loos BG. Polymorphonuclear neutrophils in periodontitis and their possible modulation as a therapeutic approach. *Periodontol 2000*. 2016;71(1):140–163. doi:10.1111/prd.12113
14. D'Aiuto F, Parkar M, Nibali L, Suvan J, Lessem J, Tonetti MS. Periodontal infections cause

changes in traditional and novel cardiovascular risk factors: results from a randomized controlled clinical trial. *Am Heart J*. 2006;151(5):977–984. doi:10.1016/j.ahj.2005.06.018

15. Baeza M, Morales A, Cisterna C, et al. Effect of periodontal treatment in patients with periodontitis and diabetes: systematic review and meta-analysis. *J Appl Oral Sci*. 2020;28:e20190248. doi:10.1590/1678-7757-2019-0248

16. Montero E, López M, Vidal H, et al. Impact of periodontal therapy on systemic markers of inflammation in patients with metabolic syndrome: a randomized clinical trial. *Diabetes Obes Metab*. 2020;22(11):2120–2132. doi:10.1111/dom.14131

17. Gheorghe DN, Bennardo F, Silaghi M, et al. Subgingival use of air-polishing powders: status of knowledge: a systematic review. *J Clin Med*. 2023;12(21):6936. doi:10.3390/jcm12216936

18. Hägi TT, Hofmänner P, Salvi GE, Ramseier A, Sculean A. Clinical outcomes following subgingival application of a novel erythritol powder by means of air polishing in supportive periodontal therapy: a randomized, controlled clinical study. *Quintessence Int*. 2013;44(10):753–761. doi:10.3290/j.qi.a30606

19. Müller N, Moëne R, Cancela JA, Mombelli A. Subgingival air-polishing with erythritol during periodontal maintenance: randomized clinical trial of twelve months. *J Clin Periodontol*. 2014;41(9):883–889. doi:10.1111/jcpe.12289

20. Abdulbaqi HR, Shaikh MS, Abdulkareem AA, Zafar MS, Gul SS, Sha AM. Efficacy of erythritol powder air-polishing in active and supportive periodontal therapy: a systematic review and meta-analysis. *Int J Dent Hyg*. 2022;20(1): 62–74. doi:10.1111/idh.12539

21. Furrer C, Bättig R, Votta I, Bastendorf KD, Schmidlin PR. Patientenakzeptanz nach Umstellung auf «Guided Biofilm Therapy» [Patient acceptance of «Guided Biofilm Therapy»]. *Swiss Dent J*. 2021;131(3):229–234. German. doi:10.61872/sdj-2021-03-02

22. Shrivastava D, Natoli V, Srivastava KC, et al. Novel approach to dental biofilm management through Guided Biofilm Therapy (GBT): a review. *Microorganisms*. 2021;9(9):1966. doi:10.3390/microorganisms9091966

23. Muhney KA, Dechow PC. Patients' perception of pain during ultrasonic debridement: a comparison between piezoelectric and magnetostrictive scalers. *J Dent Hyg*. 2010;84(4):185–189.

Melissa A. Obrotka, BA, RDH, *has 25 years of experience in the dental field, with a strong focus on prosthodontics and periodontics. She is a motivator, educator, podcast host, change agent, and a recognized thought leader in the industry. Her expertise and contributions have received national recognition, including the ADHA Master Clinician Award and being named one of the "6 Dental Hygienists You Want to Know" for clinical practice by* Dimensions of Dental Hygiene.