OralDNA Salivary Diagnostics: Precision-Guided Periodontal Therapy in Clinical Practice

When Traditional Therapy Fails, Know Why.
OralDNA salivary diagnostics transforms periodontal guesswork into precision-guided treatment. One simple test. Quantitative bacterial data. Better outcomes.

Stephen Quimby, RDH, BSDH | MBA '25
Vice President, Oregon Dental Hygienists' Association

OralDNA Salivary Diagnostics: Precision-Guided Periodontal Therapy in Clinical Practice

When Couples Share More Than Just Dinner Plans: The Bacterial Transmission Reality

We've all had those patients—the ones who come in with picture-perfect oral hygiene but somehow still develop aggressive periodontal disease. Then, six months later, their spouse shows up with similar symptoms. Coincidence? Not quite. Research has consistently demonstrated that periodontal pathogens can be transmitted between intimate contacts, with studies showing that couples often harbor remarkably similar bacterial profiles (Asikainen et al., 1996).

DNA fingerprinting techniques have confirmed that Aggregatibacter actinomycetemcomitans and Porphyromonas gingivalis are readily transmitted among family members, with saliva serving as the primary vector (Petit et al., 1993). This isn't just academic trivia—it has real clinical implications for treatment planning and long-term maintenance protocols, particularly when dealing with aggressive periodontitis cases or those frustrating treatment-resistant scenarios we all encounter.

Beyond the Clinical Crystal Ball: Evidence-Based Decision Making

Let's be honest—how many times have we performed scaling and root planing, followed by laser decontamination and subgingival irrigation, only to have the patient return three months later with persistent bleeding and inflammation?

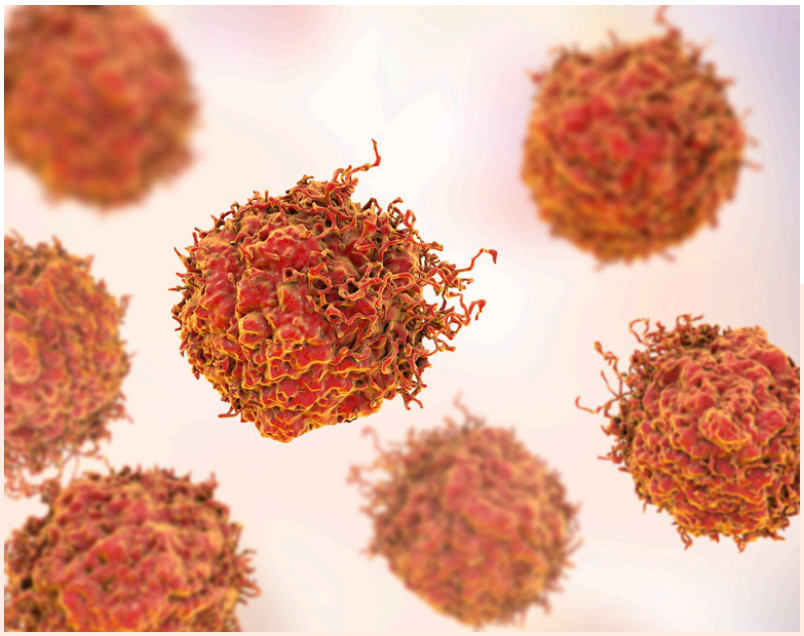
We know certain bacterial species are inherently treatment-resistant. Some require multiple therapeutic interventions, while others are so stubborn that targeted systemic antibiotics become necessary for any meaningful progress.

The traditional approach often feels like educated guesswork. We're treating symptoms based on clinical presentation, but what if we could identify exactly which bacterial culprits we're dealing with before developing our treatment strategy? This is where OralDNA salivary diagnostics transforms clinical practice from reactive to precision-guided therapy.

The MyPerioPath test ($110) is a go-to diagnostic tool, detecting eleven periodontal pathogens with both type and concentration data. This quantitative approach proves invaluable when determining treatment intensity and predicting therapeutic response. Rather than applying our standard scaling and root planing protocol to every case, we can now identify specific pathogens and tailor interventions accordingly.

For caries-focused evaluations, the OraRisk Caries test specifically targets the notorious trio: Streptococcus mutans, Streptococcus sobrinus, and Lactobacillus casei—the primary acidogenic species responsible for demineralization. Recent research demonstrates that salivary flow rates below 1.4 mL/minute significantly increase periodontal disease risk, while rates above 2.7 mL/minute provide protective benefits (Kim et al., 2013).

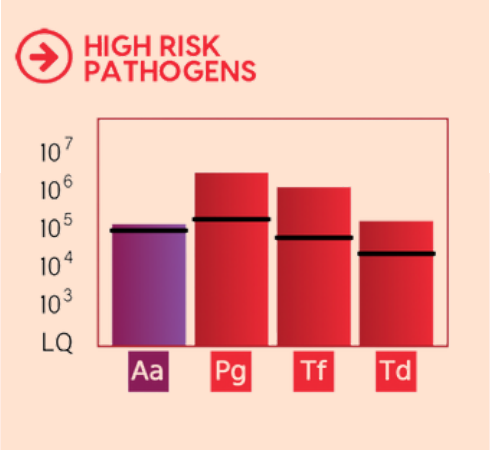
The OraRisk HPV test deserves special mention for its clinical relevance. With 100% specificity for 51 different HPV types, it's particularly valuable considering that 50-65% of oral cancers are now HPV-related. Early detection can literally be life-saving, and the simple salivary collection makes screening practical for routine use.



The Treatment-Resistant Rogues Gallery: Know Your Enemy

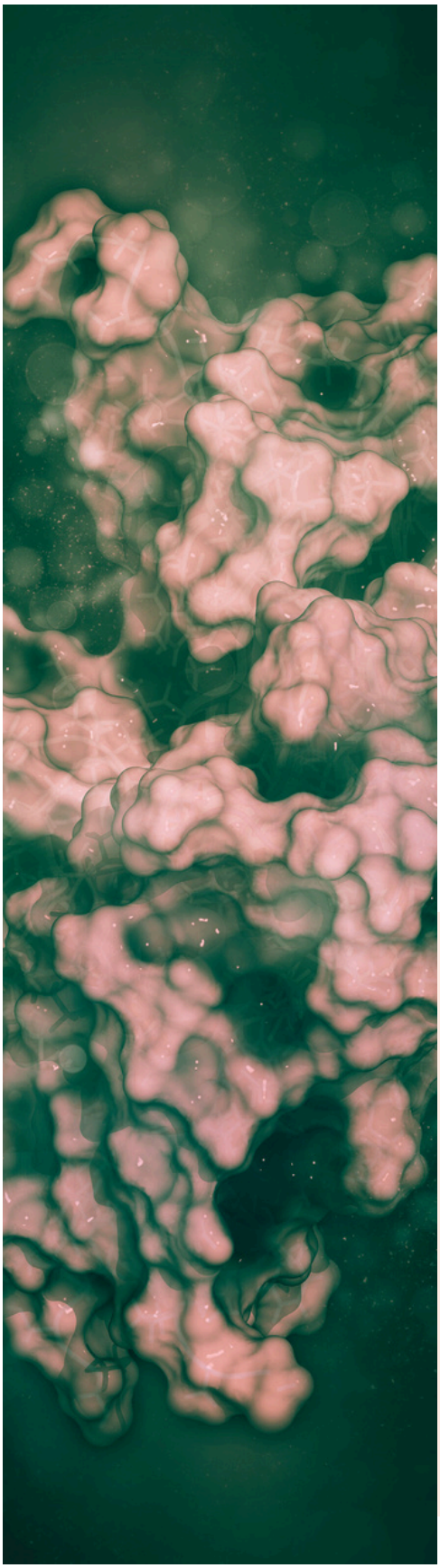
Clinical experience has taught us that not all bacteria respond equally to mechanical debridement. P. gingivalis and T. forsythia, for example, possess unique virulence factors including tissue invasion capabilities and biofilm formation patterns that make them particularly resistant to scaling and root planing alone (Socransky et al., 1998).

When salivary testing reveals high concentrations of these organisms, additional interventions such as adjunctive laser therapy or targeted antimicrobial protocols become clinically justified rather than just "something extra we could try."



"Systemic antibiotic therapy is often required for effective bacterial reduction"

A. actinomycetemcomitans, particularly the aggressive JP2 clone variant, demonstrates such resistance characteristics that systemic antibiotic therapy is often required for effective bacterial reduction (Haubek & Johansson, 2014). Traditional mechanical therapy alone rarely achieves meaningful reduction of this organism—something many of us have learned the hard way through treatment failures.



Real-World Applications: How Testing Changes Everything

I recently had a fascinating case that perfectly illustrates the power of genetic risk assessment. This patient presented with heavy bleeding and severe inflammation, but here's the kicker—her bacterial load was completely unremarkable. Clinically, the inflammatory response didn't match what we were seeing biofilm-wise. The MyPerioID IL-6 test revealed she had a high-risk gene variant, which explained everything. Her body reacts much more aggressively to even minimal bacterial presence due to this IL-6 genetic polymorphism. Understanding her hyperinflammatory phenotype completely changed our approach. She chooses to be proactive, coming in for laser decontamination at every maintenance appointment because we know that even the smallest amount of bacteria will trigger her immune response, leading to MMP activation and potential bone loss. The genetic intelligence transformed what seemed like treatment failure into precision-guided maintenance therapy.

THE SYSTEMIC HEALTH CONNECTION

More Than Just Gums

Date of Birth: 01/01/1975 (48 yrs)
Gender: Female
Patient ID: 920-I
Patient Location: Test Site A

Ronald McGlennen MD
7400 Flying Cloud Drive
Suite 150
Eden Prairie, MN 55344
855-672-5362

Accession#: 202306-03373
Specimen: Oral Rinse(P)
Collected: 06/17/2023
Received: 06/17/2023 23:00
Reported: 06/19/2023 11:30

Reason for Testing	New Patient
Related Info	Not Provided
Patient History	Current Smoker, Past History of Smoking

MYPERIOID® MOLECULAR DETECTION OF IL-6 PERIODONTAL RISK FACTORS

Genotype	Risk
C/C	LOW

Interpretation:

This individual's interleukin 6 genotype (IL-6) is C/C. The MyPerioID result indicates your patient does not have an increased risk for periodontal inflammation due to the genetic variation examined in this test.

Significance:

This individual's (IL-6) genotype is C/C and therefore is not at increased risk for periodontal disease by overproduction of (IL-6) cytokine in the presence of bacteria. This individual's result does not rule out all risk for periodontal disease.

Risk:

Studies demonstrate that carriers of the 'C' allele are significantly less affected by periodontal disease when compared with carriers of the 'G' allele. However, some patients may be MyPerioID low risk and have periodontal disease due to other risk factors.

Consider:

IL-6 is a potent stimulator of osteoclast differentiation and bone resorption, is an inhibitor of bone formation, and overproduction of IL-6 has been implicated in systemic diseases such as juvenile chronic arthritis, rheumatoid arthritis, osteoporosis, Paget's disease, and Sjogren's syndrome. The MyPerioID test assesses one of several risk factors that should be included in an overall evaluation of periodontal disease. Specific bacteria are associated with IL-6 initiation of the periodontal disease. Additional risk factors, including other genetic markers, smoking, diabetes, and oral hygiene, have an amplifying effect on disease progression and duration. The incidence of IL-6 genotypes is reported to vary by ethnicity. Additional testing, such as MyPerioPath, may be considered if not already performed.

Methodology: Genomic DNA is extracted and tested for the interleukin 6 genetic variation located at position -174 (rs1800795). This genetic variation is tested by methods of the polymerase chain reaction, endonuclease digestion and resultant restriction fragment detection by automated microcapillary electrophoresis.

Disclaimer: The reported genotypes are a subset of the group of genes that comprise the complete immune system. This genetic analysis may not detect specific immunologic diseases or predict the health and effectiveness of a person's immunity for specific diseases. Such an evaluation may require genetic counseling and testing directed to characterize those genetic conditions. The analytical and performance characteristics of this laboratory-developed test (LDT) was determined by OralDNA Labs pursuant to Clinical Laboratory Improvement Amendments (CLIA 88) requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

Ronald C. McGlennen

Ronald McGlennen MD, FCAP, FACMG, ABMG
Medical Director

Meta-analysis data confirms that untreated periodontal infections increase cardiovascular disease risk by up to 20% (OralDNA Labs, 2024). But here's where it gets interesting—specific bacterial species carry different systemic risk profiles. Recent groundbreaking research has identified P. gingivalis in the brain tissue of Alzheimer's patients, with toxic proteases called gingipains correlating with tau and ubiquitin pathology (Dominy et al., 2019). F. nucleatum demonstrates strong correlations with preterm birth complications, while certain strains are linked to colorectal cancer progression.

For patients preparing for joint replacement surgery, cardiac procedures, or other invasive treatments, salivary diagnostics provides objective bacterial clearance confirmation.

WORKFLOW INTEGRATION

Simpler Than You Think

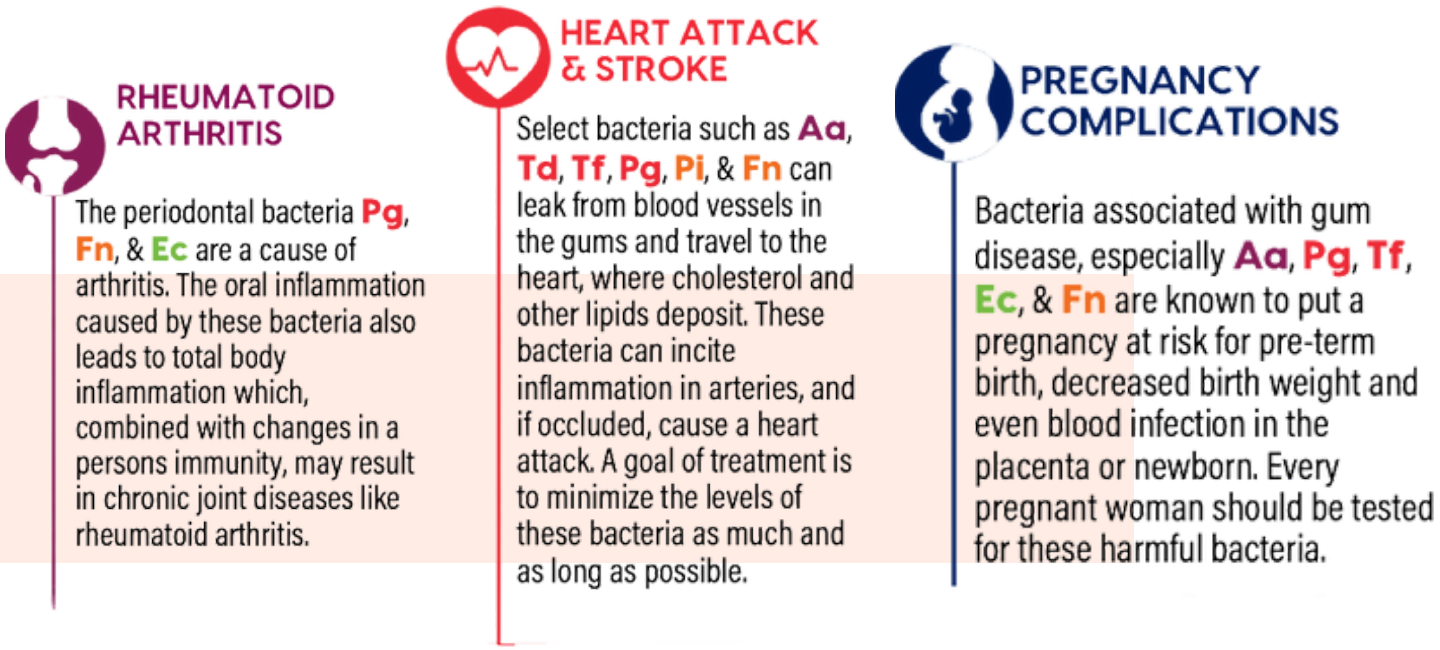
The testing protocol couldn't be more straightforward: patients perform a 30-second saline rinse, samples are submitted through the online portal at oraldna.com, and comprehensive results are available within five business days. The reports include bacterial identification, concentration levels, and evidence-based treatment recommendations, facilitating immediate clinical application.

Here's a typical workflow example: A patient arrives for their periodontal maintenance visit, but despite genuine efforts to improve home care, traditional therapies haven't yielded the expected results. You suggest MyPerioPath testing to identify the specific bacterial culprits. The patient performs a simple 30-second saline rinse, spits into the collection tube, and you submit the sample through the online portal that day. Results arrive within five business days, and you call the patient to review findings and answer any questions they might have.

At their next maintenance appointment, you discuss the bacterial profile together and develop a targeted treatment plan —perhaps laser therapy or oral microbiome probiotics based on the results. After implementing your protocol, the patient returns for follow-up testing using MyPerioProgress, which shows you exactly how effective our interventions have been. In many cases, you might see significant decreases in bacterial load, confirming your approach is working. If improvement isn't adequate, the data guides you toward alternative strategies rather than continuing ineffective treatments.

The Patient Buy-In Factor

SEEING IS BELIEVING

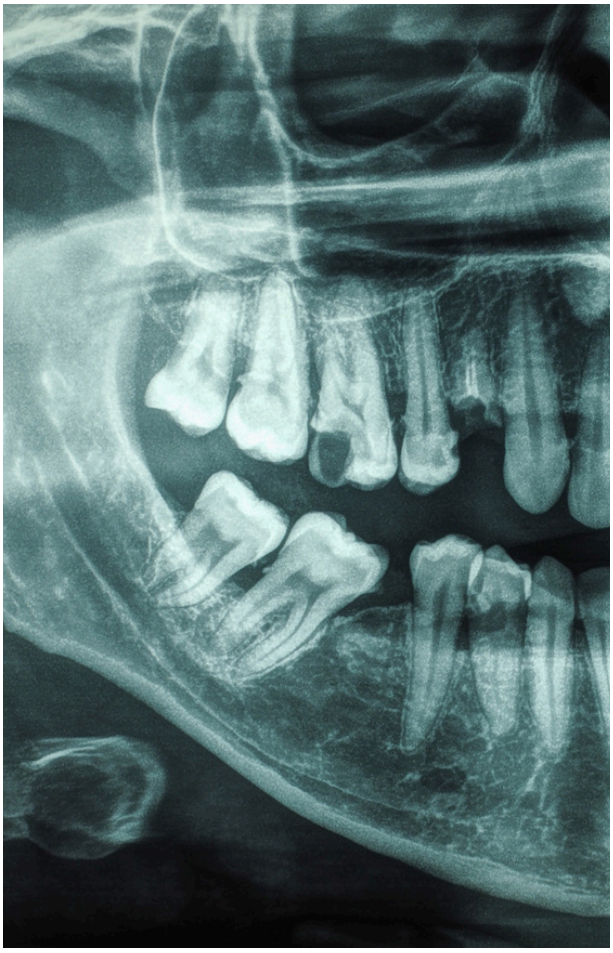


One unexpected benefit is dramatically improved treatment acceptance rates. When patients see specific bacterial counts and associated systemic health risks, case acceptance for comprehensive periodontal therapy increases substantially. The visual impact of quantitative bacterial data transforms abstract concepts of "bacterial infection" into concrete, measurable data that patients can understand and act upon.

I had one particularly skeptical patient who'd been putting off periodontal treatment for years despite 6-7mm pockets. After seeing his test results showing dangerous levels of bacteria associated with heart disease—and knowing his family history of cardiac issues—he scheduled treatment that day. The "seeing is believing" phenomenon is powerful, especially when combined with systemic health implications.

PROFESSIONAL DEVELOPMENT

THE EVOLUTION OF PERIODONTAL THERAPY



Recent studies utilizing advanced proteomic technologies have validated salivary biomarkers as reliable indicators of periodontal disease activity (Tortolini et al., 2024). Matrix metalloproteinase-8 (MMP-8) and interleukin-1β levels in saliva correlate strongly with active tissue destruction, supporting the clinical utility of salivary diagnostics in treatment planning.

Nanomaterial-based biosensors are further advancing the field, with recent research demonstrating improved sensitivity for periodontal pathogen detection (Nawaz et al., 2024). These technological advances continue to refine the accuracy and clinical applicability of salivary diagnostic protocols.

Dr. Robert Benavides recently discussed the value of proactive periodontal intervention (Trends in Salivary Testing, 2024), emphasizing how bacterial intelligence can guide conservative treatment approaches that preserve natural dentition while achieving bacterial clearance. The ability to track bacterial changes over time allows for protocol refinement during maintenance phases, enabling personalized maintenance scheduling based on individual risk profiles rather than applying standardized recall intervals.

THE FUTURE IS *Precision Medicine*

For clinicians committed to evidence-based practice, these tools offer measurable improvements in both clinical outcomes and practice efficiency.

Incorporating salivary diagnostics into clinical practice represents our profession's evolution toward precision medicine in periodontal therapy. The objective bacterial data provides scientific foundation for treatment decisions while improving patient communication and case acceptance.

The integration of salivary diagnostics with traditional periodontal therapy creates a comprehensive approach that addresses both the bacterial etiology and host response factors in periodontal disease management. Rather than treating all periodontal cases with the same protocols, we can now provide truly personalized care based on each patient's unique bacterial profile and genetic inflammatory response.

This represents the evolution of periodontal therapy from symptom-based treatment to precision-guided bacterial reduction protocols. And honestly? It makes our job a lot more interesting—and effective.

References

Asikainen, S., Chen, C., & Slots, J. (1996). Likelihood of transmitting Actinobacillus actinomycetemcomitans and Porphyromonas gingivalis in families with periodontitis. Oral Microbiology and Immunology, 11(6), 387-394.

Benavides, R. (2024, August 23). Did we overtreat: The value of proactive intervention for the periodontal patient. Trends in Salivary Testing. OralDNA Labs.

Dominy, S. S., Lynch, C., Ermini, F., Benedyk, M., Marczyk, A., Konradi, A., Nguyen, M., Haditsch, U., Raha, D., Griffin, C., Holsinger, L. J., Arastu-Kapur, S., Kaba, S., Lee, A., Ryder, M. I., Potempa, B., Mydel, P., Hellvard, A., Adamowicz, K., Hasturk, H., Walker, G. D., Reynolds, E. C., Faull, R. L. M., Curtis, M. A., Dragunow, M., & Potempa, J. (2019). Porphyromonas gingivalis in Alzheimer's disease brains: Evidence for disease causation and treatment with small-molecule inhibitors. Science Advances, 5(1), eaau3333.

Haubek, D., & Johansson, A. (2014). Pathogenicity of the highly leukotoxic JP2 clone of Aggregatibacter actinomycetemcomitans and its geographic dissemination and role in aggressive periodontitis. Journal of Oral Microbiology, 6, 23980.

Kim, J. J., Kim, C. J., & Camargo, P. M. (2013). Salivary biomarkers in the diagnosis of periodontal diseases. Journal of the California Dental Association, 41(2), 119-124.

Nawaz, M. Z., et al. (2024). Synthesis of novel metal silica nanoparticles exhibiting antimicrobial potential and applications to combat periodontitis. Environmental Research, 241, 117415.

OralDNA Labs. (2024). Learn more: Oral pathogen impact on overall health. Retrieved from https://www.oraldna.com/learn-more/

Petit, M. D., van Steenbergen, T. J., Scholte, L. M., van der Velden, U., & de Graaff, J. (1993). Epidemiology and transmission of Porphyromonas gingivalis and Actinobacillus actinomycetemcomitans among children and their family members. Journal of Clinical Periodontology, 20(9), 641-650.

Socransky, S. S., Haffajee, A. D., Cugini, M. A., Smith, C., & Kent, R. L. (1998). Microbial complexes in subgingival plaque. Journal of Clinical Periodontology, 25(2), 134-144.

Tortolini, C., et al. (2024). A disposable immunosensor for the detection of salivary MMP-8 as biomarker of periodontitis. Bioelectrochemistry, 156, 108590.

I do not work for or directly with OralDNA Labs - I do use their products and wanted to share more about them.