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### **Synopsis:**

Are we still treating periodontal disease as an infection when leading authorities have redefined periodontitis as an inflammatory disease? Today the AAP refers to periodontitis as an inflammatory disease with far reaching destructive effects on systemic health.

Science and research by leading authorities presents a call to action for dental professionals to challenge our thinking. The newly published JADA guidelines 'favor' only one adjunctive therapy to SRP. We have the ability to change lives through the power of our message and the science of our treatment. If the knowledge shared is put into practice, it will change the not only the way we treat periodontal disease but also the outcomes we can expect to receive. Discover the missing link in your periodontal program and take your practice and your patients health to the next level.

### **Learning Outcomes:**

Elevate understanding and treatment of periodontal disease as an inflammatory disease  
Recognize the role of chronic ongoing inflammation in placing today's patients at risk for systemic disease  
Understand and apply the most current JADA guidelines and treatment modalities into clinical practice and treatment delivery.  
Empower the patient through the provision of resources to understand the oral systemic connection

### **References:**

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<http://www.dentalproductsreport.com/dental/article/5-things-consider-regarding-connection-between-stroke-and-inflammation>

### **THE SILENT KILLER:**

## **Understanding and Addressing the Missing Link in Today's Periodontal Therapy Program**

Just the Facts!

**FACT:** The information has been redefining our understanding of how inflammation is at the very core of today's complex, prevalent and deadly diseases.

**FACT:** Moderate to severe chronic periodontitis has significant systemic implications.

**FACT:** The AAP has redefined periodontal disease as an inflammatory disease with far reaching effects.

**FACT:** We need to reconsider our therapeutic endpoints to ensure that the impact of periodontal disease does not continue to threaten overall health

**FACT:** We need to meet the needs of today's population.

**FACT:** We are in the era of dental medicine.

### **We've Lost the Battle**

When we focus on reducing the bacterial component only, we do not achieve the reduction of the host response. Inflammation and destruction continues placing healing, repair and systemic health in jeopardy.

### **Aha moment!**

To continue to ignore the inflammatory aspect of periodontal disease is inadvertently setting up our patient for risk of systemic disease

Also our tx outcomes will continue to be at a standstill

### **Today's Periodontal Therapy Program Objective**

Traditional clinical periodontal examination includes assessment of already existing damage to periodontal tissues

Focus should be on oral inflammation rather than solely focused on pocket depths

However, in diminishing future periodontal breakdown due to chronic inflammation, our current methods are far from effective

### **Aha moment!**

Debridement at regular intervals will never gain momentum against host response

Gram negative bacteria will begin forming 4 – 7 days after full mouth debridement and the immune cascade begins again

"If we, in dentistry, are indeed healers, it is imperative for us to take a different approach... the goal is to help patients become and remain inflammation-free." **Dr. Tim Donley**

### **We OWN This:**

Defining of a healthcare professional: *"An occupation whose core element is work based upon the mastery of a complex body of knowledge and skills...to be used in the service of others.*

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Donley T, Golub LM, Jones JD, et al. Addressing the inflammatory response in periodontal and related systemic disease. *Oral Health Periodontics* Fall 2015. [www.perio.org/consumer/other-diseases](http://www.perio.org/consumer/other-diseases)

Goldstep F. Periodontal Inflammation: Simplified. *Oral Health*: Dec 2013; 8 – 17. [https://www.cdha.ca/pdfs/Profession/Resources/Disease\\_Link\\_Article.pdf](https://www.cdha.ca/pdfs/Profession/Resources/Disease_Link_Article.pdf) [www.heartandstroke.com](http://www.heartandstroke.com)

Roifman I, Beck PL, Anderson TJ et al. Chronic inflammatory disease and cardiovascular risk: a systematic review. *Can J Cardiol* 2011 Mar-Apr; 27(2):174-82.

Golub LM, Lee HM, Lehrer G et al. Minocycline reduces gingival collagenolytic activity during diabetes: preliminary observations and a proposed new mechanism of action. *J Periodontol Res.*, 1983, 18:516-526.

Walker SG, Golub LM. Host modulation therapy for periodontal disease: Subantimicrobial-dose doxycycline, medical as well as dental benefits. *Oral Health*. October 2012.

**TIME Magazine article:**  
<http://www.inflammationresearchfoundation.org/inflammation-science/inflammation-details/time-cellular-inflammation-article/>

*Professions and their members are accountable to those served and to society. Society rewards health professionals...this status, however, comes with professional obligations."*

**What is our message here? And why is it so critical?**

**FACT: The Common Link – Inflammation**

Today's diseases of influence are linked by the inflammatory pathway

Periodontal disease is the most common chronic inflammatory disease known to mankind

Living longer, consequences of Western lifestyle adding to today's inflamed body

We have a responsibility as a dental professional to minimize risk of systemic disease by treating oral inflammation

**FACT: American Academy of Periodontology Statement:**

*« Research has shown that periodontal disease is associated with several other diseases. For a long time it was thought that bacteria was the factor that linked periodontal disease to other disease in the body; however, more recent research demonstrates that inflammation may be responsible for the association. Therefore, treating inflammation may not only help manage periodontal diseases but may also help with the management of other chronic inflammatory conditions.*

**Aha moment!**

Bacteria initiates the localized infection

Bacteria are essential but insufficient. Bacteria are incapable of breaking down collagen. What is required is a susceptible host.

**Host Modulation: Low-dose doxycycline (LDD) Medical and Dental Benefits**

About 30 years ago, Golub et al discovered that low dose doxycycline had the unexpected ability to inhibit host-derived tissue-destructive enzymes known as MMPs by mechanisms unrelated to the antibacterial/antibiotic properties of these drugs

These enzymes when present in pathologically-excessive levels are largely responsible for degrading collagen fibers and mediating bone resorption related to various medical and dental diseases

Over the past decade this novel non-antimicrobial LDD has been tested in patients with medical disorders which excessive MMPs and inflammatory mediators play a role

**And why is collagen breakdown so imperative to periodontitis?**

- Periodontium is primarily made up of collagen;
- gingival tissues - 60% collagen
  - periodontal ligament – 70-80% collagen
  - alveolar bone matrix – 90% collagen

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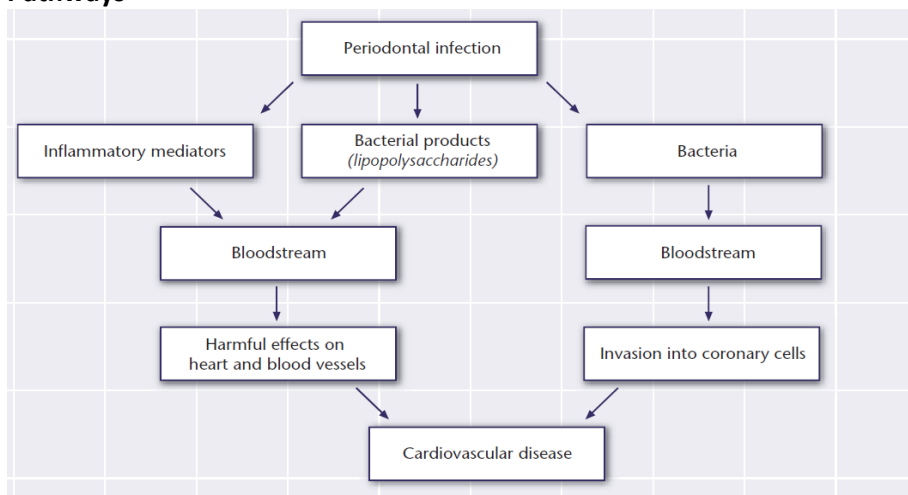
### Systemic Outcome of Collagen Breakdown

Breakdown of collagen in diseased joint (synovial) tissues increasing severity of symptoms in ARTHRITIS  
Breakdown of collagen in connective tissues around CANCER cells increasing ability for invasiveness and metastasis  
Breakdown of collagen rich protective 'cap' which is the only stabilizing force preventing cholesterol-rich arterial plaques from rupturing increasing risk for MYOCARDIAL INFARCTION & STROKE

Recognize the role of ongoing chronic inflammation in initiating disease states within the body



### Cardiovascular Disease: Understanding the Oral-Systemic Link – 2 Pathways



### Understanding the Oral-Systemic Link: Diabetes

Research supports that infectious and inflammatory processes increase insulin resistance resulting in hyperglycemia. Hyperglycemia (elevated blood glucose) diminishes the ability of WBC, neutrophils in particular to track, adhere and kill bacteria. Diabetes increases risk through an amplified inflammatory response and depressed wound healing; elevated blood glucose leads to elevated glucose levels in GCF hindering wound healing capacity of fibroblasts. GCF contains elevated concentrations of cytokines producing higher levels of MMPs that promote tissue destruction and disease severity

### References & Resources:

[www.heartandstroke.com](http://www.heartandstroke.com)  
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### The Game Changers;

Most recently published JADA Guidelines  
AAP newsletter (included in handouts)  
Availability of evidence-based medical vs. mechanical approach model to treatment of periodontal disease  
Therapeutic options to address the bacterial (chairside/self care) and host component of periodontal disease

### Understand and Apply the 2015 JADA Guidelines into Clinical Practice and Treatment Delivery

**Study:**  
Conduct a systematic review and meta-analysis on nonsurgical treatment of patients with chronic periodontitis by means of scaling and root planing (SRP) with or without adjuncts.

**Methods:**  
A panel of experts convened by the American Dental Association Council on Scientific Affairs conducted a search of PubMed (MEDLINE) and Embase for randomized controlled trials of SRP with or without the use of adjuncts with clinical attachment level (CAL) outcomes in trials at least 6 months in duration  
The panel included articles on the effectiveness of SRP with or without the following: systemic antimicrobials, a systemic host modulator (subantimicrobial-dose doxycycline), locally delivered antimicrobials and a variety of nonsurgical lasers

**Study Limitations**  
Inconsistency among studies regarding the number of tooth sites and teeth assessed; whole-mouth vs. periodontal sites  
*"Whole-mouth measurements may lead to underestimation of the treatment effect by including healthy sites in the computation of teeth or mouth averages or of changes over time. The estimates in the meta-analyses include studies in which the investigators reported at these different levels of assessment."*  
Studies did not include the reduction of CRP levels or other inflammatory mediators

### Determining Results and Clinical Recommendations

Balancing level of certainty and net benefit rating to arrive at clinical recommendation strength.			
LEVEL OF CERTAINTY	NET BENEFIT RATING		
	Benefits Outweigh Potential Harms	Benefits Balanced With Potential Harms	No Benefits or Potential Harms Outweigh Benefits
High	Strong	In favor	Against
Moderate	In favor	Weak	Against
Low	Expert opinion for or expert opinion against		

### References & Resources:

Smiley CJ, Tracy SL, Abt E, et al. Systematic review and meta-analysis on the nonsurgical treatment of chronic periodontitis by means of scaling and root planing with or without adjuncts. JADA 2015; 146(7):508-524.  
Stoner JA, Golub LM, Payne JB. Probing depth: a poor predictor of clinical attachment level changes. J Dent Res 2015 (94 Spec. Is.): Abstract 1670.

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Definitions for the strength and direction of recommendations.	
RECOMMENDATION STRENGTH	DEFINITION
<b>Strong</b>	Evidence strongly supports providing this intervention. There is a high level of certainty of benefits, and the benefits outweigh the potential harms.
<b>In Favor</b>	Evidence favors providing this intervention. Either there is a high level of certainty of benefits, but the benefits are balanced with the potential harms, or there is a moderate level of certainty of benefits, and the benefits outweigh the potential for harms.
<b>Weak</b>	Evidence suggests implementing this intervention after alternatives have been considered. There is a moderate level of certainty of benefits, and either the benefits are balanced with potential harms or there is uncertainty about the magnitude of the benefit.
<b>Expert Opinion For</b>	Expert opinion suggests this intervention can be implemented, but there is a low level of certainty of benefits, and there is uncertainty in the benefits-to-harm balance.
<b>Expert Opinion Against</b>	Expert opinion suggests this intervention not be implemented because there is a low level of certainty that there is no benefit or the potential harms outweigh benefits.
<b>Against</b>	Evidence suggests not implementing this intervention or discontinuing ineffective procedures. There is moderate or high certainty that there are no benefits or the potential harms outweigh the benefits.

**Conclusions**

For patients with chronic periodontitis, SRP showed a moderate benefit, and benefits were judged to outweigh potential adverse effects.

Authors voted *in favour* of SRP as the initial nonsurgical treatment for chronic periodontitis.

Authors voted *in favour* for systemic subantimicrobial-dose doxycycline and 'weak' for systemic antimicrobials because of the higher potential for adverse effects with higher doses of antimicrobials.

The strengths of 2 other recommendations were 'weak' for CHX chips and photodynamic therapy with a diode laser.

'Expert opinion for' doxycycline hyclate gel and minocycline microspheres however evidence is lacking and uncertainty of adverse effects

\*"Note that **expert opinion for does not imply endorsement** but instead signifies that evidence is lacking and the level of certainty in the evidence is low."

*"A panel of experts convened by the American Dental Association Council on Scientific Affairs presented an evidence-based clinical practice guideline on nonsurgical treatment of patients with chronic periodontitis by means of scaling and root planing (SRP) with or without adjuncts."*  
 JADA 146(7) <http://jada.ada.org/July 2015 p. 525-535 Table 4.>



Observation:

The Council voted only in favor of two clinical recommendations as nonsurgical treatments for chronic periodontitis;

- SRP (no adjuncts)
- SRP + subantimicrobial-dose doxycycline (SDD, Periostat)



**References & Resources:**

Jones, JD. Summary of the 2015 JADA Evidence-based Guidelines on the Non-surgical Treatment of Chronic Periodontitis. Oral Health. Dec 2015.

Oral Science Video Series: Dr. Lorne Golub and Periostat

Goldstep F. Periodontal Inflammation: Simplified. Oral Health: Dec 2013; 8 – 17.

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Walker SG, Golub LM. Host modulation therapy for periodontal disease: Subantimicrobial-dose doxycycline, medical as well as dental benefits. Oral Health. October 2012.

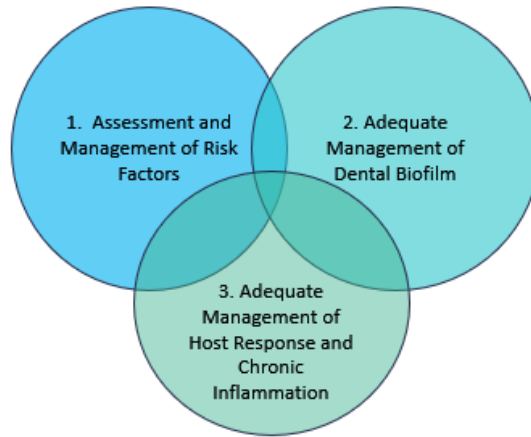
Sub-antimicrobial Dose Doxycycline (SDD) Study Listing at end of handout

Clinical recommendation statements from the American Dental Association Council on Scientific Affairs' Nonsurgical Treatment of Chronic Periodontitis Expert Panel.					
Strong	In Favor	Weak	Expert Opinion For	Expert Opinion Against	Against
Evidence strongly supports providing this intervention	Evidence favors providing this intervention	Evidence suggests implementing this intervention only after alternatives have been considered	Evidence is lacking; the level of certainty is low. Expert opinion guides this recommendation	Evidence is lacking; the level of certainty is low. Expert opinion suggests not implementing this intervention	Evidence suggests not implementing this intervention
CLINICAL RECOMMENDATION					STRENGTH
<b>SRP* (No Adjuncts)</b>					
For patients with chronic periodontitis, clinicians should consider SRP as the initial treatment.					+ In Favor
<b>SRP With Systemic Subantimicrobial-dose Doxycycline</b>					
For patients with moderate to severe chronic periodontitis, clinicians may consider systemic subantimicrobial-dose doxycycline (20 milligrams twice a day) for 3 to 9 months as an adjunct to SRP, with a small net benefit expected.					+ In Favor

Notes:

**Integration into Practice:**

*Assessment, Diagnosis, Planning, Implementation, Evaluation*



**Addressing Host Response and Chronic Inflammation**

**Assessment:**

Chronic periodontitis in a systemically healthy patient  
 Smokers who have chronic generalized periodontitis  
 Diabetics  
 Patients who suffer from autoimmune disorders  
 Cardiovascular disease

**Dental Hygiene Diagnosis:**

Moderate, {severe?} chronic generalized periodontitis

**Planning:**

Imperative to both eliminate the bacteria and modulate the host for the following  
 Concept of packaged periodontal treatment plan including 6 – 9 months of Periostat; convert Periostat into a procedure  
 Non-surgical approach and practice responsibility is to treat chronic periodontal disease which will impact your oral health and reduce your risk for overall disease as well.

**Implementation:**

Substantivity of treatment is sustainable for a minimum of 3 months for both chronic and severe periodontitis

**Evaluation:**

Re-evaluation performed at regular intervals i.e. at 3 month periodontal maintenance appointment assessing inflammatory resolution  
 If bleeding sites still prevalent, maintain patient on 3 month regimen

**Periostat: Mechanism of Action**

Periostat will help to reduce the over-production of collagenase (enzymes responsible for the destruction of collagen) and osteoclasts (bone cell responsible for the resorption of bone) that are present in overabundance during a chronic, prolonged & destructive inflammatory response.  
 This exaggerated **inflammatory** response is common among inflammatory diseases such as periodontitis, cardiovascular disease and rheumatoid arthritis.

**References & Resources:**

T Van Dyke, C Serhan, A Novel Approach to Resolving Inflammation, Oral and the Whole Body Health; 2006:42-45  
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## THE ULTIMATE PERIODONTAL THERAPY PROGRAM

### IN-OFFICE

1. Sulcular sterilization with soft tissue diode laser
2. Cetacaine Non-injectable topical anesthetic to minimize soft tissue discomfort while scaling
3. X-Pur CRYSTAL desensitizer

### HOME-CARE REGIME TO REDUCE AND/OR MODULATE ORAL INFLAMMATION

1. Periostat – address excessive inflammatory response with non-antibiotic doxycycline as per JADA guidelines
2. Plaque HD – enable patients to more effectively minimize soft deposit
3. Curaprox Interdental brushes to effectively clean interproximal spaces
4. Gengigel – to enhance healing with increasing hyaluronic acid improving tissue regeneration response

### *Empower the Patient through the Provision of Resources to Understand the Oral Systemic Connection*

The Least Important Thing We Did Today Was Clean Your Teeth – Dr. Tim Donley

<https://www.cincinnati-dental.org/files/DonleyHandout.pdf>

Colgate Professional;

[www.colgateprofessional.com/professional-education/oral-systemic-health](http://www.colgateprofessional.com/professional-education/oral-systemic-health)

[www.colgateprofessional.com/Professional/v1/en/us/locale-assets/docs/OSH-CardiovascularHealth-Healthy-Mouth-Healthy-Body.pdf](http://www.colgateprofessional.com/Professional/v1/en/us/locale-assets/docs/OSH-CardiovascularHealth-Healthy-Mouth-Healthy-Body.pdf)

CDHA Talking Points;

[http://www.cdha.ca/pdfs/profession/resources/FactSheet\\_WholeBody\\_C.pdf](http://www.cdha.ca/pdfs/profession/resources/FactSheet_WholeBody_C.pdf)

CDHO Knowledge Network;

<http://www.cdho.org/knowledge+network.asp>

American Academy of Periodontology Consumer Site;

<http://www.perio.org/consumer/other-diseases>

What's Your Real Age?

[www.realage.com](http://www.realage.com)

Oral Systemic Link Professional and Public Information;

[www.oralsystemiclink.pro](http://www.oralsystemiclink.pro)

[www.oralsystemiclink.net](http://www.oralsystemiclink.net)

### Product References:

Curaprox brushes, interdental brushes, Gengigel, X-Pur, Xylimelts etc. [www.oral-science.com](http://www.oral-science.com)

Oral Science Periostat educational materials for your practice: <https://www.oral-science.com/en/protocols/periodontitis/>

Oral Science Video Series: Dr. Lorne Golub and Periostat <https://www.oral-science.com/en/protocols/periodontitis/>

Customer Service: 1 888 442.7070

Thank you for your time and participation. If there is anything further that I may assist you with in regards to this presentation please do not hesitate to contact me.

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## Medical History Update

Patient Name: \_\_\_\_\_ Date: \_\_\_\_\_

Recent research indicates a strong relationship between the mouth and the body. Since we now know how closely they are related, we are going to be asking you some questions about your family history and your overall health that we may not have asked you about before. This additional information will assist us in providing the best possible care to maintain your oral health and overall wellness.

1. Any changes in your health since your last dental visit?  Yes  No If yes, please list: \_\_\_\_\_

2. What medications are you taking? \_\_\_\_\_

3. Any changes in medication dosage or medications?  Yes  No If yes, please list: \_\_\_\_\_

4. What over the counter or 'herbal/natural' supplements are you taking on a regular basis? Please list: \_\_\_\_\_

5. Do you smoke or use smokeless tobacco products?  Yes  No if yes, please list: \_\_\_\_\_

6. Are you taking any bisphosphonates in the past or presently? Yes  No  If yes, please provide details: \_\_\_\_\_

7. Do you have a persistent sore throat, hoarseness, earache or feeling of something being caught in your throat?

Yes  No If yes, please provide details: \_\_\_\_\_

8. Have you ever been diagnosed with a high-risk strain HPV infection? Yes  No

9. Have you had any surgery or been hospitalized since your last visit? Yes  No

If yes, please explain: \_\_\_\_\_

10. Are you being treated for any medical problem presently? Yes  No

If yes, please explain: \_\_\_\_\_

11. Have you ever taken antibiotics prior to having your teeth cleaned or before dental work? Yes  No

If yes, please explain: \_\_\_\_\_

12. Any allergies to drugs, food, metal or latex? Yes  No

If yes, please list: \_\_\_\_\_

13. History of illness or disease in family?

If yes, please explain: \_\_\_\_\_

14. Have you been diagnosed with osteoarthritis or rheumatoid arthritis? Yes  No

15. Have you experienced increased joint pain or decrease in mobility? Yes  No

16. Have you been diagnosed with diabetes?  Type I  Type II  Pre-diabetes

Diet-controlled  Medication controlled Under control: Yes  No

17. Does your mouth frequently feel dry? Yes  No

18. Have you had any heart problems or a knee, hip or prosthetic joint replacement? Yes  No

If yes, provide details: \_\_\_\_\_

19. Have you had a bone mineral density test? Yes  No  Results: \_\_\_\_\_

20. Female patients; Are you pregnant?  Yes  No

22. On a scale of 1 to 10 (10 being highest), how would you rate your general health at this time? \_\_\_\_\_

23. How would you rate your level of stress presently? Low  Moderate  High

24. On a scale of 1 to 10 (10 being highest), how closely related is the health of your mouth to your overall health in your opinion?

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## References: Subantimicrobial Dose Doxycycline (SDD) \*

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\*Note: This does not comprise a complete listing of studies related to LDD.

## What's new with SDD? Tetracycline antibiotics still provide therapeutic benefits for dental patients

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Many clinicians recall when subantimicrobial dose doxycycline (SDD) was introduced as an effective adjunct for scaling and root planing in the early 1990s. The idea that a low dose of doxycycline could improve periodontal outcomes, minus antibiotic activity and without the risk of antibiotic resistance, was a completely novel concept. In fact, SDD became known as a host-modulation therapy as a result of enabling the host to respond differently by inhibiting cytokines and matrix metalloproteinases (MMPs), which are notorious for their role in connective tissue destruction.

What should today's clinicians know about using these host-modulating agents?

First, let's review how this subantimicrobial dose of the tetracycline family of antibiotics works to improve clinical results in the treatment of periodontal disease. (But a warning is warranted due to the fact that this topic lends itself to the use of multiple acronyms.) Tetracyclines are a broad-spectrum antibiotic, and a dosage of 100 mg of doxycycline twice daily can be effective in killing a broad range of bacteria. At the subantimicrobial dosage of 20 mg twice daily, doxycycline does not kill or disrupt or really impact bacteria within the biofilm at all; hence the reason an individual can be on a daily dosage of 40 mg and not develop antibiotic resistance to doxycycline.

Much data has been published that supports no antibiotic resistance, even with two years of continuous use at this low dosage. Its "magic" for periodontal patients has to do with its unexpected ability to interfere when a susceptible host produces MMPs in response to the inflammatory process, which in turn breaks down the collagen and leads to hard- and soft-tissue destruction. Introduce SDD to the inflammatory scene and you have an interesting arsenal to help protect against this type of breakdown.

SDD has other powerful attributes in the fight against periodontal breakdown that should interest clinicians looking for ways to alter the host response against the ravages of chronic inflammation. It can significantly reduce the production of inflammatory cytokines, such as interleukin 1, tumor necrosis factor alpha, and markers of alveolar bone resorption, along with mediating other proteinases.

Interestingly, periodontal disease is not the only disease in which host-derived MMPs contribute to the disruption of the collagen matrix. Conditions in this category are referred to as collagenolytic diseases.

Soon after the discovery of how SDD interfered with collagen breakdown in the periodontal condition, the host modulation proved beneficial for patients suffering from chronic inflammatory skin diseases such as acne and rosacea. Periostat is a formulation of doxycycline that has been chemically modified to have zero bacteria-killing properties.

Chemically-modified tetracyclines (CMTs) appear to have enhanced anticollagenase properties without antibiotic activity and are a once daily versus twice daily formulation. Periostat was evaluated in the treatment of periodontal diseases in one double-blind placebo-controlled clinical study and proved to have significant therapeutic potential.<sup>1</sup> Additional studies are warranted, but the use of nonantibiotic tetracyclines for periodontal diseases and other systemic diseases is promising.

Due to the crossover between periodontitis and other collagenolytic diseases, future use of SDD or CMTs might prove to be beneficial as a host-modulation therapy for patients suffering from periodontitis and other chronic conditions, such as rheumatoid arthritis, diabetes, osteoporosis, or atherosclerotic cardiovascular diseases.

Because all of these conditions involve the collagen matrix, reducing cytokine and MMP activity could prove clinically relevant for many patients. In fact, there appears to be solid evidence in the role of SDD to profoundly improve outcomes in the management of many chronic inflammatory conditions, according to an article recently published in the *International Dental Journal*.<sup>2</sup>

Researchers at Stony Brook University in Stony Brook, New York, have been diligent over the last several years in exploring the connections of host-modulation therapy to reduce MMPs. Some of the studies reveal that nonantimicrobial formulation of doxycycline dramatically reduces C-reactive proteins and various cytokines in the plasma of acute coronary syndrome patients, while simultaneously increasing beneficial HDL cholesterol in atherosclerotic cardiovascular disease (ASCVD) patients with periodontal diseases.

Not surprisingly, these SDD formulations seem to provide significant therapeutic benefit for the management of both periodontitis and ASCVD, especially when accompanied with scaling and root planing to further reduce inflammatory burden.<sup>3</sup>

For patients suffering from periodontitis in conjunction with other chronic inflammatory conditions, there appears to be a valuable upside and a very low downside to prescribing 20 mg of doxycycline twice daily to interfere with collagen-destroying cytokines and MMPs.

If you found yourself relying on SDD years ago to help manage periodontitis, but lost interest in it or forgot about it, begin identifying patients who will benefit from this host-modulation therapy. Stay tuned to see where the next generation of CMTs leads us. **RDH**

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