

# PATHWAYS TO HEALTH – Through Risk Reduction & Antioxidant Arsenal

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***“Good health is not merely the absence of disease. Good health assumes protection from disease in the future...You cannot buy your health; you must earn it through healthy living.”***

***Eat to Live by Joel Fuhrman, M.D.***

*“John, I’m not only interested in the health of your mouth but also concerned about your overall health. We know that disease in the mouth can adversely impact overall health. I’d like to support you in reducing your risk for disease. How does that sound to you?”*

## **Drivers of Inflammation:**

### Pathogens

- Keystone Pathogens
- Dysbiosis
- Inflammatory Mediators
- Susceptible Host

### Lifestyle

- Physical Activity
- Diet
- Airway
- Alcohol/Tobacco
- Weight

Innate Immunity – First Responders

Adaptive Immunity – Second Responders

### High Risk Periodontal Pathogens:

- Aggregatibacter actinomycetemcomitans*
- Porphyromonas gingivalis*
- Fusobacterium nucleatum*
- Treponema denticola*
- Tannerella Forsythia*

### **Periodontal Disease is a Polymicrobial Inflammatory Disorder**

- Pathogens, biofilm required but not sufficient to promote disease alone
- Synergy of pathogens and commensal microbiota
- Keystone pathogens subvert immune responses to eliminate inflammation
- Dysbiosis fosters inflammation
- Host inflammatory response to pathogens initiates abundance of pro-inflammatory cytokines
- Susceptible hosts influence the onset, severity and duration of the inflammatory disorder

**Journal of the American Heart Association 2013:** CIMT progressed in a direct and dose-responsive manner to bacterial burden.

### **>KNOW YOUR NUMBERS**

- FASTING BLOOD GLUCOSE < 100 / HbA1C < 6%
- PRE-DIABETES BLOOD GLUCOSE 100 -125 / HbA1C 6.1 - 6.9%
- DIABETES BLOOD GLUCOSE > 126 / HbA1C > 7%
- HDL > 60
- LDL < 100
- TRYGLYCERIDES < 150
- TOTAL CHOLESTEROL < 200
- BMI normal -18.5 – 24.9
- BMI overweight – 25 – 29.9
- OBESITY  $\geq$ 30
- FEMALE WAIST CIRCUMFERENCE (High Risk) > 35 inches
- MALE WAIST CIRCUMFERENCE (High Risk) > 40 inches

### **CALCULATING BMI:**

Formula: weight (lb) / [height (in)]<sup>2</sup> x 703

[www.cdc.gov](http://www.cdc.gov) > **BMI Calculator**

Bale/Doneen Method of Heart Attack & Stroke Prevention

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

### **>IDENTIFY INCREASED RISKS WITH SALIVARY DIAGNOSTICS**

Bale BF, Doneen AL, Vigerust DJ. High-risk periodontal pathogens contribute to the pathogenesis of atherosclerosis. *Postgraduate Medical Journal* Published Online First: 29 November 2016. doi: 10.1136/postgradmedj-2016-134279  
Open Access online

Han YW. Fusobacterium nucleatum: a commensal-turned pathogen. *Current Opinion in Microbiology*. 2015, 23:141-147

**ORAL DNA LABORATORIES** [www.oraldna.com](http://www.oraldna.com)  
OraVital [www.oravital.com](http://www.oravital.com)

**MyPerioPath® test**

Pathogen identification and quantification through DNA polymerase chain reaction

**Celsus One® test**

8 Genetic markers related to the body's inflammatory response

**>ALTER RISK WITH INCREASED OMEGA 3**

***Elevated CRP stronger predictor of heart attack than elevated cholesterol***

Periodontal disease and body mass increase CRP levels

<b>CRP</b>	<b>CARDIOVASCULAR RISK</b>
<1mg/L	Low risk
1-3mg/L	Moderate risk
>3mg/L	High risk

***Omega-6 / Omega-3 Imbalance***

Most American diets are between 10:1 to 30:1 ratio of Omega-6 to Omega-3

Imbalance Promotes Disease

- Inverse relationship between Omega 3 intake and CRP levels
- Increased Omega-3 Exerts Suppressive Effect Against
- Inverse relationship between Omega 3 intake and CRP levels

**3:1 RATIO** (3) Omega 6 to (1) Omega 3

***Prostaglandins***

A dozen different ones exist. Pg2 increases with inflammation, endometriosis & in labor

Omega-6 fatty acids can increase Pg2 production

Omega-3 fatty acids can inhibit Pg2.

**>ALTER RISK BY DECREASING PRO-INFLAMMATORY DIETARY CHOICES**

Increased consumption of sugar corresponds with increased risk of weight gain, diabetes, heart disease, NAFLD, and gout.

**American Heart Association Recommendations:**

Women 6 tsp or 24 g daily sugar limit

Men 9 tsp or 36 g daily sugar

**Pro-inflammatory Foods:**

Added Sugar

Processed Meats

Trans Fats

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

**>ALTER RISK WITH TOBACCO CESSATION**

**Tobacco Cessation 1-800-QUIT-NOW**

[www.smokefree.gov](http://www.smokefree.gov)

70% of current adult smokers say they want to quit

A Cochrane Review study done in 2007 found that nicotine replacement therapies such as the patch, gum or inhaler increased the chances of quitting by 50% to 70%

Motivational Interviewing in Health Care by Rollnick, Miller & Butler

[www.webMD.com](http://www.webMD.com) > 14 Tips for the First Hard Days

**>ALTER RISK WITH ANTIOXIDANTS & BOTANICALS TO LOWER INFLAMMATION**

**ANTIOXIDANTS**

A molecule that prevents or delays oxidation and offsets or neutralizes free radicals

[www.superfoodly.com](http://www.superfoodly.com) - ORAC values

**BIOPHOTONIC SCANNER FOR ANTIOXIDANT LEVELS**

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

- Free Radicals - Can damage or alter cellular DNA
- Oxidative Stress - An **imbalance** between free radicals & the body's ability to neutralize the damage
- Imbalance due to overabundance of free radicals or inadequate amount of natural antioxidant defenses

**Oxidative Stress/Antioxidants & Periodontal Diseases**

- Plasma and GCF in periodontal patients had a lower mean total antioxidant capacity, compared with that of control subjects
- Periodontal disease (PD) is associated with lower antioxidant capacity in saliva
- Patients with the worst PD had greatest oxidative injury as measured by ROS in the saliva

- Oxidative tissue damage, induced by ROS, is involved in the pathogenesis of periodontal disease.
- Increased serum antioxidant concentrations are associated with reduced risk of periodontal disease

***Oxidative Stress Implicated in Oral Conditions***

Periodontal disease	Oral Cancer
Peri-Implantitis	Head & Neck Cancer
Lichen Planus	Xerostomia
Pre-Malignant Lesions	Dental Caries

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

**Botanicals/Antioxidants to reduce oral inflammation**

- Periosciences topical antioxidants – Gel, mouth rinse and toothpaste. Synergistic effect of antioxidants and essential oils. Anti-inflammatory, anti-bacterial, reduces oxidative stress [www.periosciences.com](http://www.periosciences.com)
- PeriActive® Mouthrinse – Synergistic effect of botanicals and antioxidants to reduce pain, swelling & inflammation [www.izunoralcare.com](http://www.izunoralcare.com)
- PerioPatch® Adhesive Patch - to reduce inflammation and improve wound healing, reduce gingival recession [www.izunoralcare.com](http://www.izunoralcare.com)
- StelLife VEGA or care system – Synergistic effect of botanicals to reduce inflammation, reduce pain and promote healing [www.stellalifehealing.com](http://www.stellalifehealing.com)

The results of this in vitro study indicate that diluted EO displayed no detectable detrimental effects on human gingival and PDL fibroblasts, whereas diluted CHX reduced both cell migration and long-term survival

Journal of Periodontology 2013

**NUTRITION JOURNAL 2010:**

- Plant-based diet protects against chronic oxidative stress-related diseases
- Antioxidants work on their own & induce mechanisms related longevity & cell maintenance and DNA repair
- Antioxidants can work synergistically therefore wide variety in diet is desirable
- Regardless of antioxidant level, bioavailability determines effectiveness & ultimate clinical relevance
- Antioxidant values vary depending on growing conditions, seasonal changes, differences in manufacturing processes

Evidence-based nutritional decision-making? [www.Nutritionfacts.org](http://www.Nutritionfacts.org)

**Eat to Live** by Joel Fuhrman, MD – develop anti-inflammatory eating habits

**Square One - Healing Cancer** by Chris Wark – avoid cancer-promoting foods / increase cancer-fighting foods

**2017 Dirty Dozen List of most pesticide residue:**

- Strawberries/Blueberries
- Apples
- Nectarines
- Peaches
- Celery
- Grapes
- Cherries
- Spinach
- Tomatoes
- Sweet Bell Peppers
- Cherry tomatoes
- Cucumbers
- (Kale/Collard Greens & Hot Peppers)

**2017 Clean 15 List of least likely to have pesticide residue:**

- Avocado
- Sweet corn
- Pineapple
- Cabbage
- Sweet peas
- Onions
- Asparagus
- Mangos
- Papayas
- Kiwis
- Eggplant
- Honeydew
- Melons
- Grapefruit
- Cauliflower

**World Journal of Gastroenterology 2015:**

- Curcumin  
Anti-inflammatory, Apoptosis of colon cancer cells
- Polysaccharides (Apples and Mushrooms)  
Apoptosis of colon cancer cells
- Resveratrol (Berries, Grapes, Peanuts, Wine)  
Inhibits tumor initiation and progression
- Quercetin (Fruits, Tea, Wine)  
Antioxidant, Anti-inflammatory, Anti-proliferative

**Adjunctive Supplements Improve Periodontal Outcomes**

- % BOP and % plaque lower @ 8 months w/ Fruit & Vegetable daily supplementation
- Juice Plus  
Journal of Clinical Periodontology 2011

**Protandim**

- Activates Nrf2 a protein messenger in cells
- Up-regulates cells to reduce oxidative stress
- Down-regulates pro-inflammatory cells
- 40% reduction in oxidative stress as measured by TBARS in individuals following only 30 days usage

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

## >ALTER RISK WITH LIFESTYLE CHOICES

### Physical Activity

- 150 minutes (minimally) moderate intensity aerobic activity, or equivalent
- Muscle strengthening twice weekly
- [www.heart.org/MyLifeCheck](http://www.heart.org/MyLifeCheck) - Click on My Heart Score to assess CVD risk

**Table 9: Ways to burn 150 calories**

Following are some activities you can do to burn 150 calories. If you do two of these activities every day of the week, you'll burn a little over 2,000 calories per week. These figures are based on a body weight of 150 pounds. If you weigh less than 150 pounds, it'll take you longer to burn the same amount of calories. The opposite is true if you weigh more than 150 pounds.

ACTIVITY	TIME
Biking, 6 mph	38 minutes
Biking, 12 mph	22 minutes
Jogging, 5.5 mph	12 minutes
Running, 10 mph	7 minutes
Walking, 2 mph	38 minutes
Walking, 3 mph	28 minutes
Walking, 4.5 mph	20 minutes
Tennis, singles	23 minutes
Gardening	30–45 minutes
Washing windows or floor	60 minutes
Water aerobics	35 minutes
Swimming, 25 yards/minute	33 minutes
Swimming, 50 yards/minute	18 minutes
Raking leaves	35 minutes
Shooting baskets	35 minutes

Used with permission from Harvard Health Publications

**REDUCING THE RISK OF CVD** Based upon data reported in the Harvard Health Review  
“Managing Your Cholesterol” 2014

- Lowering total Cholesterol by 10% can decrease your heart attack risk by 20% -30% (Example total cholesterol of 230 lowered to 207)
- Walking at least 2 hours a week can cut your chances of dying early from CVD by up to 53%
- If you smoke, quitting reduces your risk of a heart attack by half within a year
- Maintaining a healthy body weight reduces your risk of heart disease by 45%
- Eating about 1,200 mg less of sodium a day can reduce the need for BP treatment by half. It can also decrease deaths from stroke by 22% and those from heart disease by 16%

GASP available on [www.Amazon.com](http://www.Amazon.com)

Airway Centric – Michael Gelb, DDS [www.Airwayhealth.org](http://www.Airwayhealth.org)

**Family Practice News 2008:**

- 276 Adults / 21-64 / followed 6 yrs.
- Obesity 27% greater ave. 5-6 hrs.
- Obesity 21% greater ave. 9-10 hrs.
- 7-8 hours nightly for weight management

**Annals of Internal Medicine 2012:**

Even fat cells need sleep!

1.5 hours sleep / 4 nights: insulin sensitivity of fat cells decreased by ave. of 30%

**PATHWAYS TO HEALTH– TAKE AWAYS:**

- Know your own health indices
- Use salivary diagnostics to assess risk & treat infections
- Reduce prostaglandin & CRP levels through increased Omega 3 and decreased Omega 6 intake
- Eliminate trans fats, limit saturated fats & consume plant-dominate diets
- Slash sugar consumption
- Stop all tobacco use!
- Incorporate topical antioxidants to reduce inflammation and oxidative stress in the oral cavity
- Consider supplementation to lower oxidative stress systemically
- Increase physical activity weekly – set goals & be accountable
- Strive for 7 or 8 hours of quality rest nightly