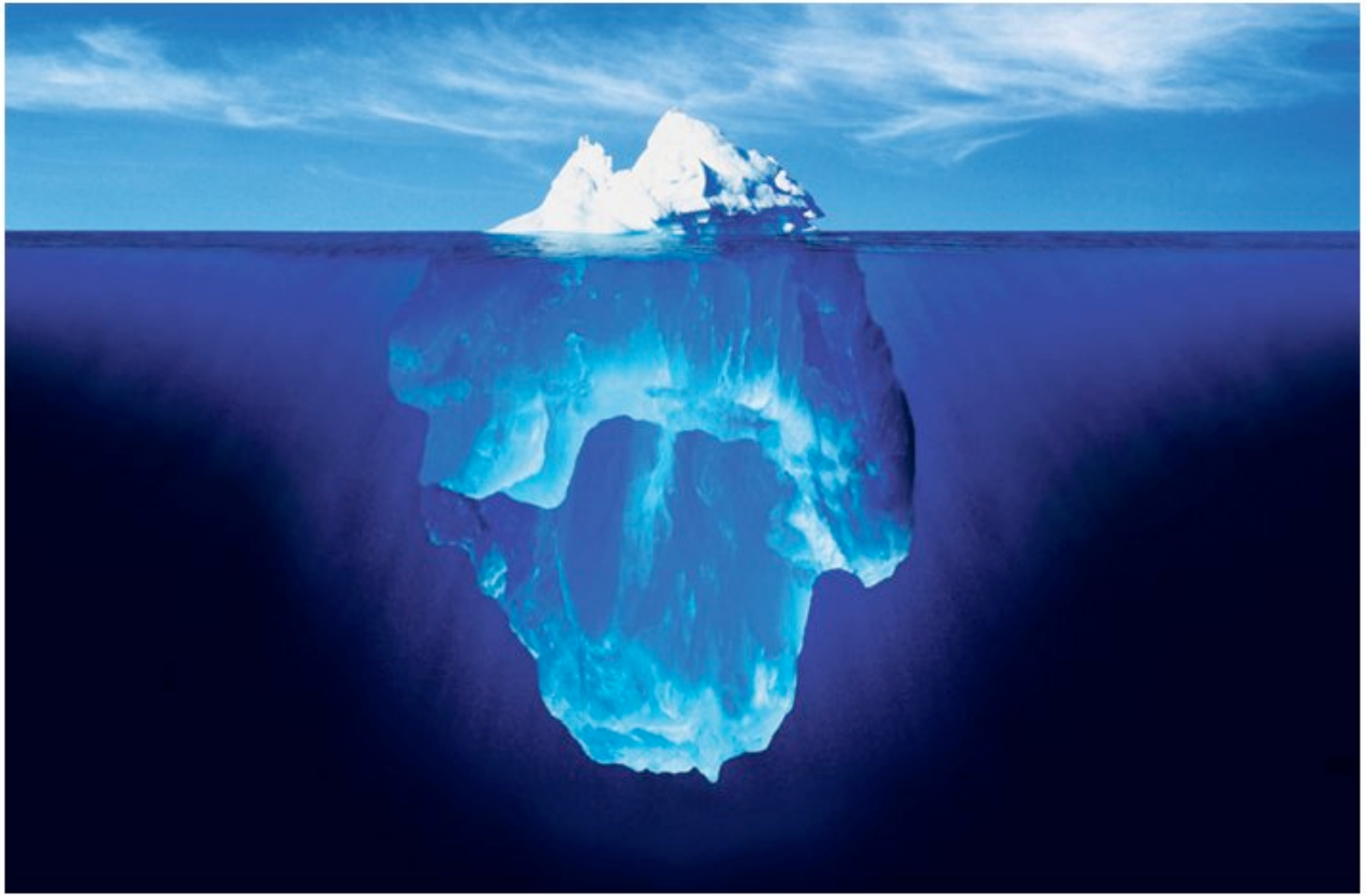
BRMI CONFERENCE 2018

Overview of Biological Dentistry

May 11,2018

Jack Kall, DMD, FAGD,MIAOMT



Biological Dentistry

Biological dentistry is not a separate,
recognized specialty of dentistry,
but it is a thought process and an attitude
that can apply to all facets of dental practice
and to health care in general:
to always seek the safest, least toxic way to
accomplish the goals of modern dentistry and
of contemporary health care.

Biological dentists are not all alike

- All dentists are trained and licensed as traditional, mainstream practioners to follow accepted “Standards of Care”

- Some state Boards of Dentistry, through their ability to penalize dentists, influence how far biological dentists are willing to bend or practice outside the “Standard of Care”

Biological dentists are not all alike

- Biological dentists will vary to some extent depending on where they are on their personal journey
- Some are members of various “holistic” dental groups
- The largest such group is the International Academy of Oral Medicine and Toxicology—IAOMT

Founded in 1984, the IAOMT is a trusted Academy of allied professionals providing scientific resources to support new levels of integrity and safety in health care.

IAOMT

- Certification levels
  - SMART
  - Accredited
  - Fellow
  - Master

IAOMT Accreditation

- Unit 1: Introduction to the IAOMT and Biological Dentistry
- Unit 2: Mercury 101 and 102 [SMART Module 1]
- Unit 3: Safe Removal of Amalgam Fillings [SMART Module 2]
- Unit 4: Clinical Nutrition and Heavy Metal Detoxification for Biological Dentistry
- Unit 5: Biocompatibility and Oral Galvanism

IAOMT Accreditation

- Unit 6: Dental Amalgam's Impact on the Environment
- Unit 7: Fluoride
- Unit 8: Biological Periodontal Therapy
- Unit 9: Root Canals
- Unit 10: Jawbone Osteonecrosis

The mission of the

International Academy of Oral Medicine and Toxicology

is

to be the trusted Academy of medical, dental and research professionals who investigate and communicate safe, science-based treatments to promote whole body health.

IAOMT RESOURCES

- https://iaomt.org/
- https://www.youtube.com/user/iaomt
- https://thesmartchoice.com/

The World and The Way We Are

"We don't see the world the way it is,
We see it the way we are."

Glossary of Dentistry Terms Relevant to Whole Body Dental Health Practices:

- “Mercury-free” - do not place mercury amalgam fillings
- “Mercury-safe” - use rigorous safety measures to mitigate mercury exposure, such as IAOMT’s SMART protocol
- “Biological” or “Biocompatible” - mercury-free, mercury-safe, AND consider the impact of dental materials and treatments on oral and systemic health

Glossary of Dentistry Terms Relevant to Whole Body Dental Health Practices:

- Holistic (Homeopathic, EAV, Kinesiology—muscle testing)
- Integrative
- Functional (Epigenetics, Polymorphisms—SNPs, Gut, History, Root causes)
- Bioregulatory ???

Nitrous Oxide, MTHFR and Trouble

by Dr Lynch on February 6, 2015 in MTHFR Mutations

Nitrous oxide side effects are real.

The pun of how laughing gas is no laughing matter is pretty worn out; however, it gets the point across quickly.

Nitrous oxide is becoming even more pervasive despite research finding it to be quite harmful to certain populations.

Let's discuss a few things about nitrous oxide before I begin to bash it.

http://mthfr.net/nitrous-oxide-mthfr-trouble/2015/02/06/

The progression of acceptance hopefully embraces:

- Biocompatible focus—no mercury, fluoride, BPA, or metals
- Bioregulatory perspective with an understanding of epigenetics, the bioregulatory terrain and a goal to optimize host resistance
- Promotion of a balanced oral microbiome (and gut as well)
- Nutrition based focus for optimizing health
- Tooth-organ relationships
- Homeopathic principles
- Antibiotic and steroid avoidance
- Ozone (medical grade) therapies

Bioregulatory Terrain

- “Ideal” conditions or environment (balance) for appropriate physiology leading to optimal function
- Tissue/fluid pH (urine, blood and saliva)
- Mitochondrial function
- Homeostasis
- Host resistance

Food and Chemical Effects on Acid/Alkaline Body Chemical Balance



MORE ACID
(Consume Less)

Food Category	⊖⊖⊖⊖	⊖⊖⊖	⊖⊖	⊖
Citrus Fruit Fruit		Cranberry Pomegranate	Plum Prune Tomato	Coconut Fig Guava Persimmon Juice Cherimoya Date Dry Fruit
Bean Vegetable Legume Pulse Root	Soybean Carob	Pea Green Snow Peanut Legumes (other) Carrot Chick Pea/Garbanzo	Bean Pinto White Navy/Red Aduki Lima or Mung Chard Split Pea	Bean Fava Kidney Black-eyed String/Wax Spinach Zucchini Chutney Rhubarb
Grain Cereal Grass	Barley *Processed Flour*	Corn Rye Oat Bran	Wheat Semolina Spelt, Jeff Kamut White Rice Buckwheat	Triticale Brown Rice Millet Kasha
Fowl	Pheasant	Chicken	Goose/Turkey	Wild Duck
Meat Game Fish/Shell Fish	Beef Shell Fish (Processed) Lobster	Pork/Veal Mussel/Squid	Lamb/Mutton Game Meat Shell Fish (Whole)	Gelatin/Organs Venison Fish
Egg				Egg, Chicken
Processed Dairy Cow/Human Soy Goat/Sheep	*Processed Cheese* Ice Cream	Casein Cottage Cheese Milk, Soy	Milk: Goat, Cow, Sheep	Cream/Butter Yogurt Cheese; Goat, Sheep
Oil Seed/Sprout Nut	*Cottonseed Oil/Meal* *Fried Food* Hazelnut Walnut Brazil Nut	Oil Chestnut Palm Kernel Lard Pistachio Seed Pecan	Oil Almond Sesame Safflower Tapioca Seitan or Tofu	Oil Canola Pumpkin Seed Grape Seed Sunflower Pine Nut
Beverage Preservative Sweetner Vinegar	*Beer* *"Soda"* *Table Salt* Yeast/Hops/Malt *Sugar/Cocoa* White/Acetic Vinegar	Coffee Aspartame Saccharin Red Wine Vinegar	*Alcohol* Black Tea Benzoate Balsamic Vinegar	*Kona Coffee* *MSG* Honey/Maple Syrup Rice Vinegar
Spice/Herb	Pudding/Jam/Jelly	Nutmeg	Vanilla Stevia	Curry
Therapeutic	*Antibiotics*	*Psychotropics*	*Antihistamines*	

Food and Chemical Effects on Acid/Alkaline Body Chemical Balance



MORE ALKALINE
(Consume More)

⊕	⊕⊕	⊕⊕⊕	⊕⊕⊕⊕	Food Category
Orange Banana Blueberry Raisin, Grapes Currant Strawberry	Lemon Pear Avocado Apple Blackberry Cherry Peach	Grapefruit Canteloupe Honeydew Olive Mango Citrus Loganberry	Lime Nectarine Raspberry Watermelon Tangerine Pineapple	Citrus Fruit Fruit
Brussel Sprout Beet Chive/Scallion Celery/Cilantro Squash Artichoke Lettuce Jicama Turnip Greens	Potato/Bell Pepper Mushroom/Fungi Cauliflower Cabbage Eggplant Pumpkin Collard Greens	Kohlrabi Parsnip/Taro Garlic Asparagus Kale/Parsley Endive/Arugula Jerusalem Artichoke Ginger Root Broccoli	Lentil Brocoflower Seaweed Nori|Kombu| Wakame|Hijiki Onion/Miso Daikon/Taro Root Sea Vegetables Burdock/Lotus Root Sweet Potato/Yam	Bean Vegetable Legume Pulse Root
Quinoa Wild Rice Oat				Grain Cereal Grass
				Fowl
				Meat Game Fish/Shell Fish
Egg, Duck	Egg, Quail			Egg
Ghee Human Breast Milk				Processed Dairy Cow/Human Soy Goat/Sheep
Oil Avocado Coconut Olive/Macadamia Linseed/Flax Seeds (most)	Oil Cod Liver Primrose Sesame Seed Almond Sprout	Poppy Seed Pepper Chestnut Cashew	Pumpkin Seed	Oil Seed/Sprout Nut
Ginger Tea *Sulfite* Sucanat Umeboshi vinegar	Green or Mu Tea Rice syrup Apple Cider Vinegar	Kambucha Molasses Soy Sauce	Mineral Water Sea Salt	Beverage Preservative Sweetner Vinegar
White Willow Bark Slippery Elm Artemesia Annua	Herbs Aloe Vera Nettle	Spices/Cinnamon Valerian Licorice Agave	Baking Soda	Spice/Herb
Algae, Blue Green	Sake		Umeboshi Plum	Therapeutic

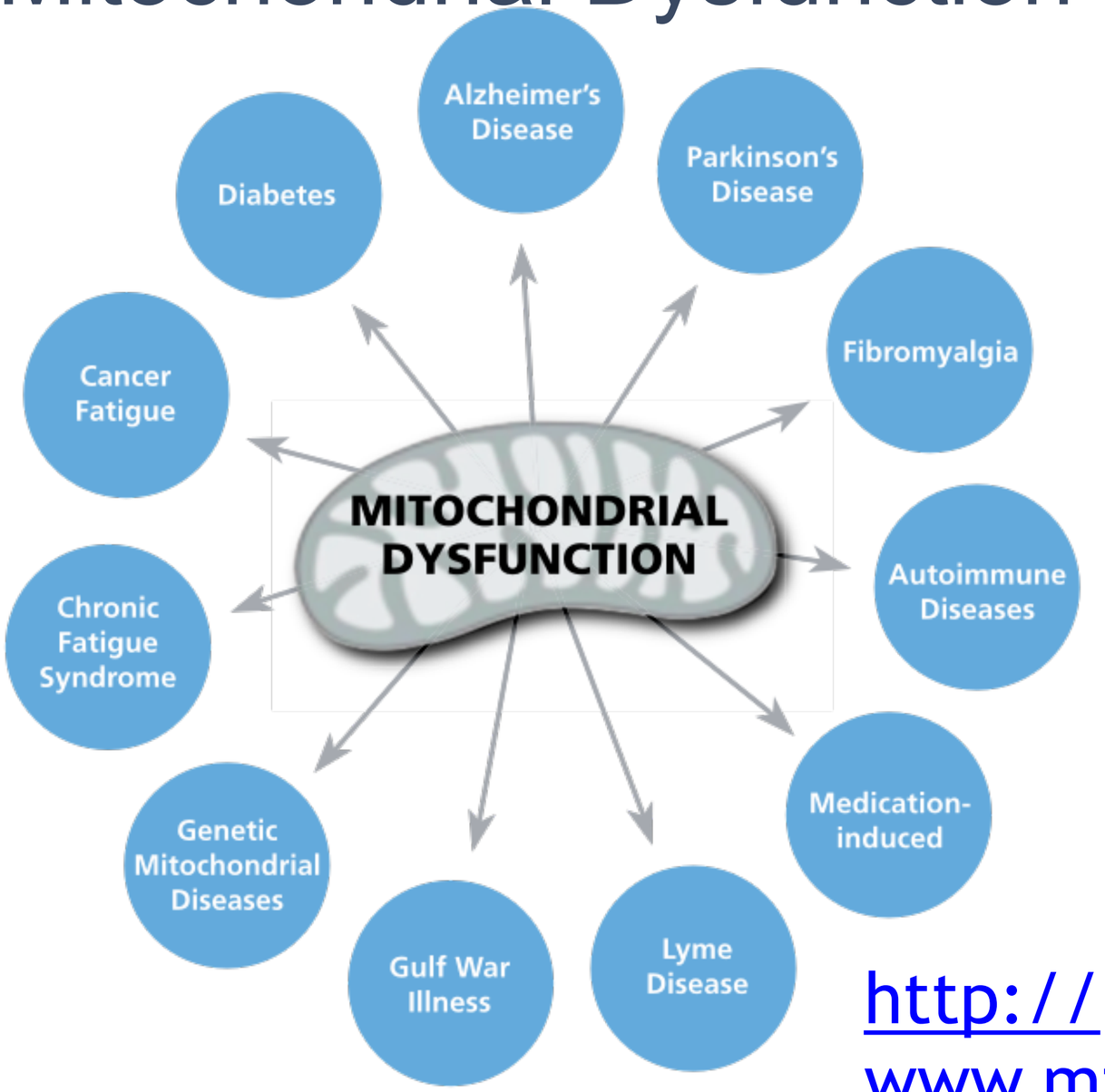
Italicised items are NOT recommended

Dr. Russell Jaffe Alkaline Food Chart

http://www.drrusselljaffe.com/alkaline-food-chart/

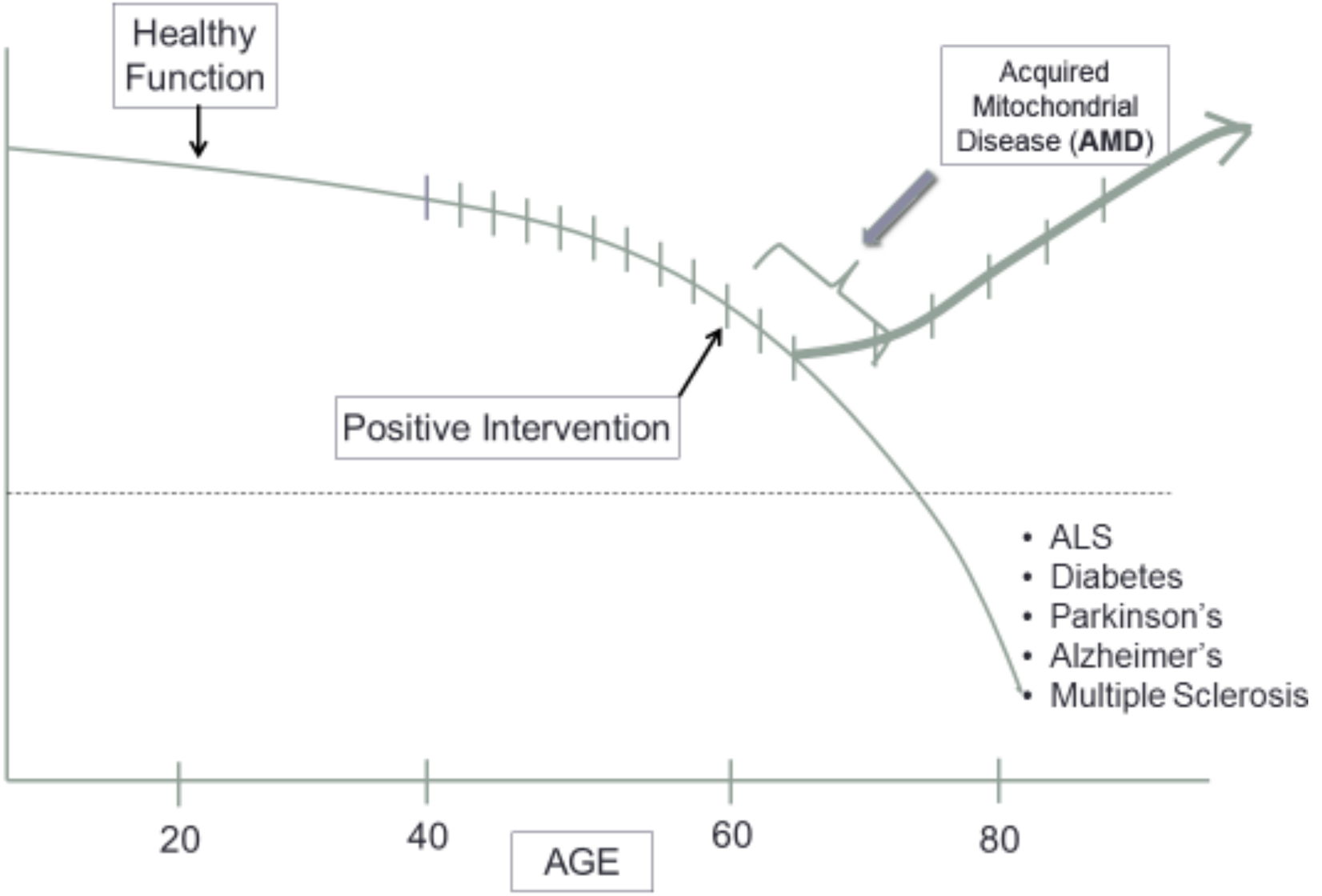
BRMI CONFERENCE 2018

Mitochondrial Dysfunction



http://www.mitoswab.com

Declining MT Function Leads To Age-related Diseases



MITOSWAB™

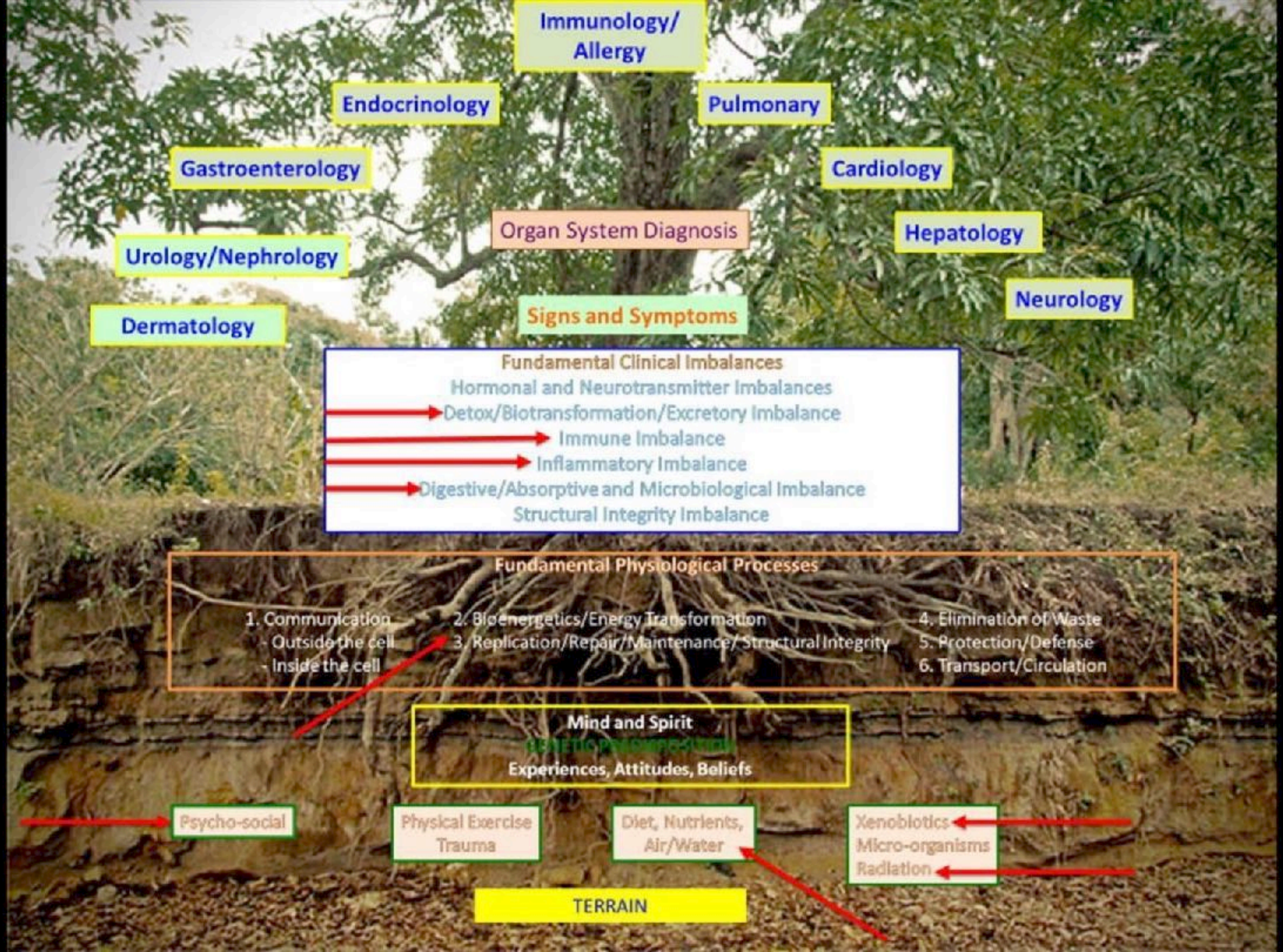
A NON-INVASIVE TEST TO DIAGNOSE MITOCHONDRIAL DYSFUNCTION

Know the Power of the Mitochondria with a simple swab of the cheek

- Mitochondrial disorders may occur at any age.
- Appropriate diagnosis may lead to effective treatment
- Mitochondrial dysfunction causes many acute and chronic illnesses including Autism, Developmental delays, Alzheimer's, Parkinson's, Heart Failure, Chronic Fatigue Syndrome, Depression, etc.

LEARN MORE

ORDER KIT

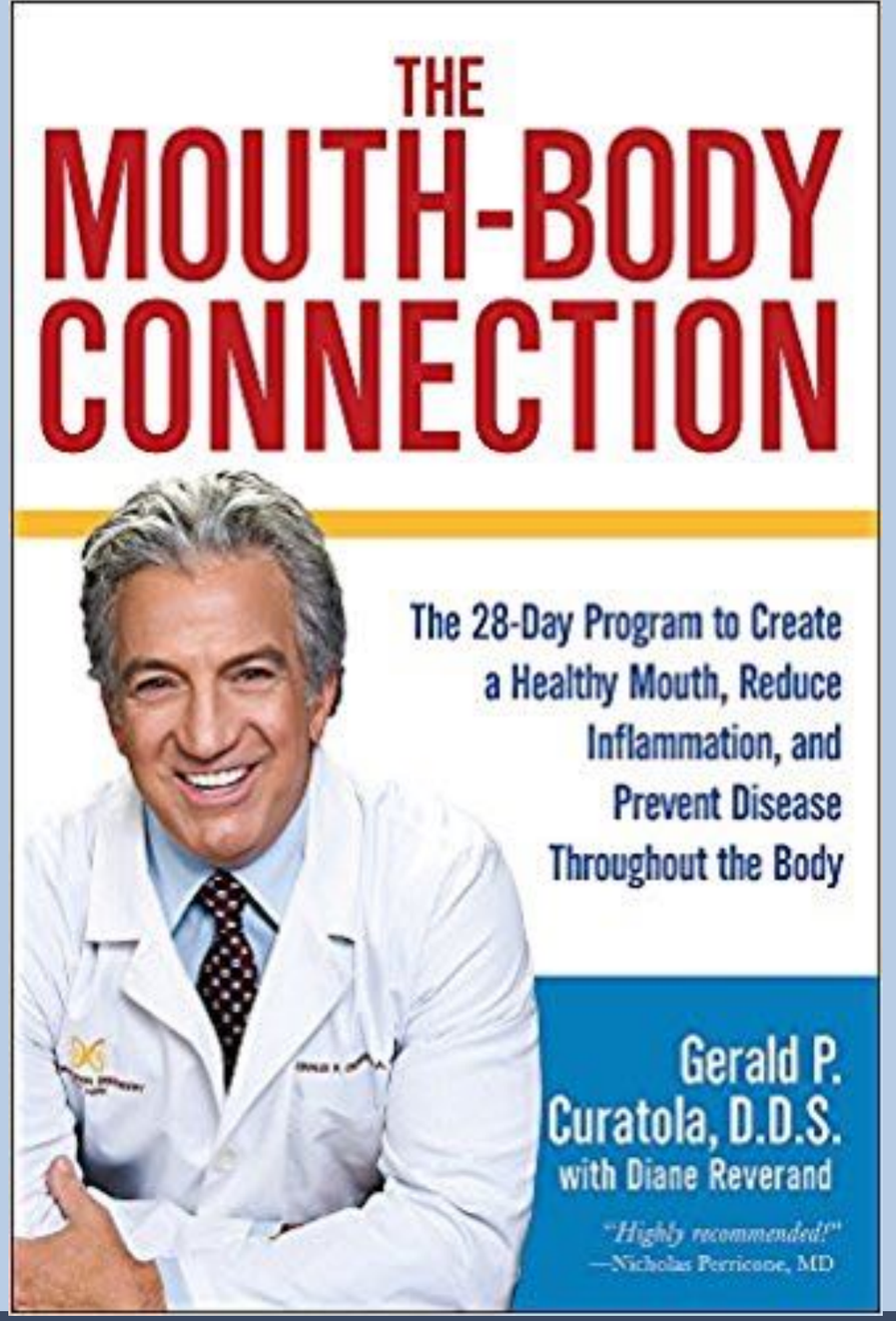

Immunology/
Allergy
Endocrinology
Pulmonary
Gastroenterology
Cardiology
Organ System Diagnosis
Hepatology
Urology/Nephrology
Neurology
Dermatology
Signs and Symptoms
Fundamental Clinical Imbalances
Hormonal and Neurotransmitter Imbalances
Detox/Biotransformation/Excretory Imbalance
Immune Imbalance
Inflammatory Imbalance
Digestive/Absorptive and Microbiological Imbalance
Structural Integrity Imbalance
Fundamental Physiological Processes
1. Communication
- Outside the cell
- Inside the cell
2. Bioenergetics/Energy Transformation
3. Replication/Repair/Maintenance/ Structural Integrity
4. Elimination of Waste
5. Protection/Defense
6. Transport/Circulation
Mind and Spirit
Experiences, Attitudes, Beliefs
Psycho-social
Physical Exercise
Trauma
Diet, Nutrients,
Air/Water
Xenobiotics
Micro-organisms
Radiation
TERRAIN

Underlying Cure as the Basis of ALL health challenges

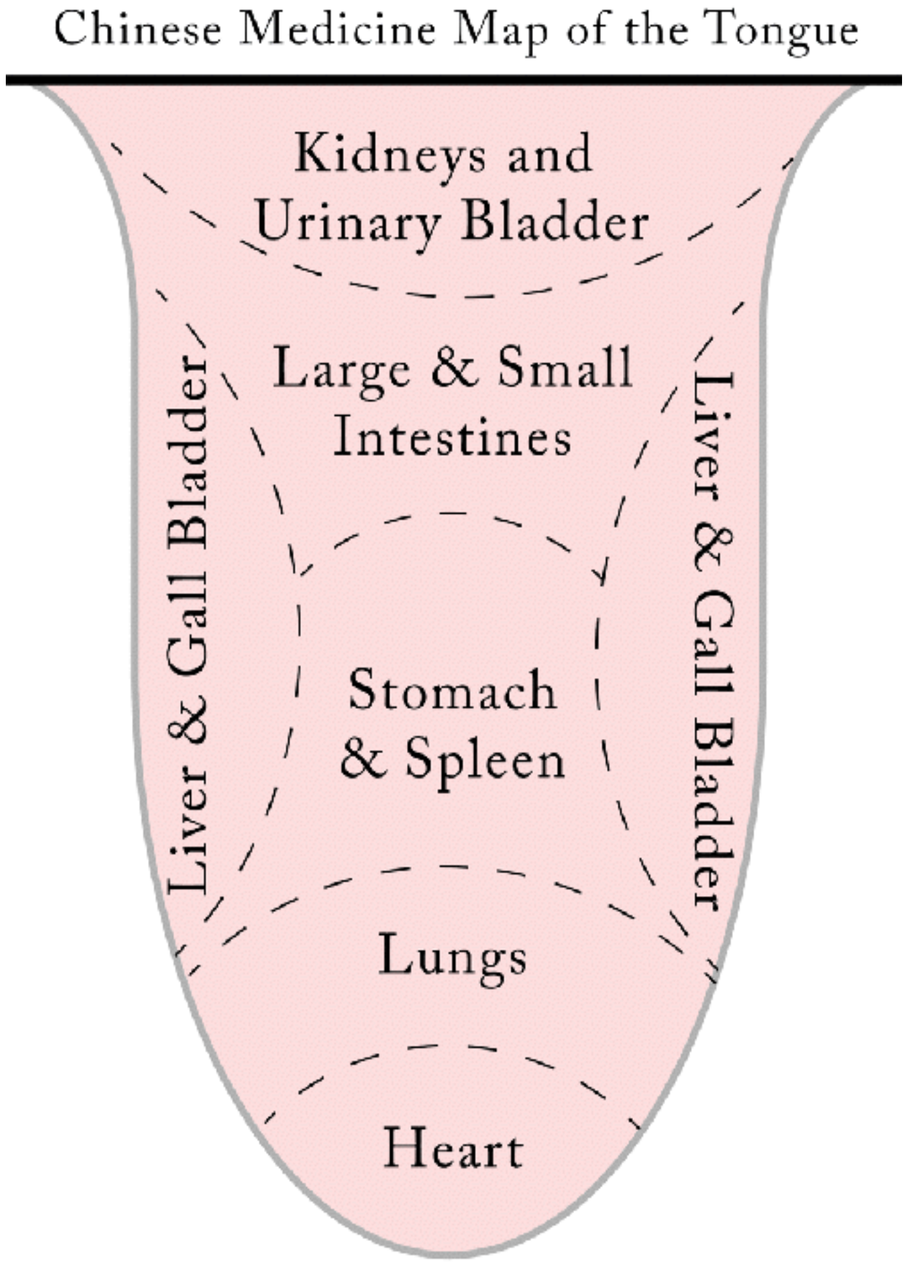
Miasm
-Psoric
-Sycotic
-Tuberculinic
-Syphilitic

Temperament
-Sanguine
-Lymphatic
-Choleric
-Melancholic

Constitution


THE
MOUTH-BODY
CONNECTION
The 28-Day Program to Create a Healthy Mouth, Reduce Inflammation, and Prevent Disease Throughout the Body
Gerald P. Curatola, D.D.S.
with Diane Reverand
"Highly recommended!"
—Nicholas Perricone, MD

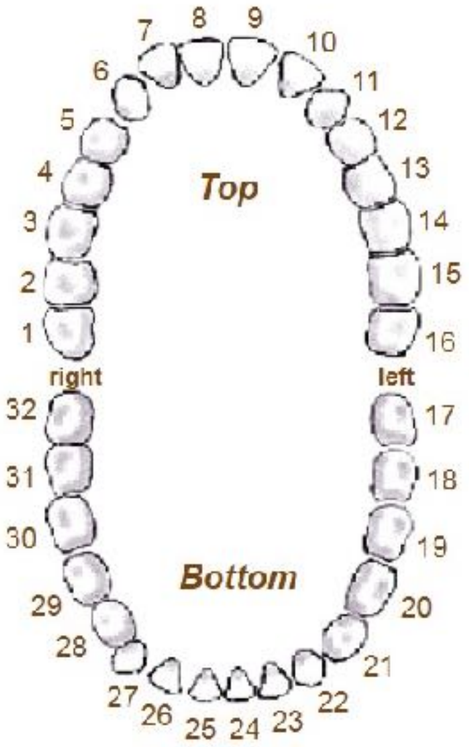

NEWS FOR THE GENERAL DENTIST
AGD Impact
FEBRUARY 2018
VOL. 46, NO. 2
The Practice of Oral-Systemic Health
Working with Your Patients on Whole-Body Well-Being



Tongue Diagnosis

- Color
- Shape
- Coating
- Thickness

Interactive Meridian Tooth Chart



Each tooth is related to an acupuncture meridian which is related to various organs, tissues and glands in the body on this particular meridian or "energy highway." This connection can often indicate your overall health and wellness by reviewing your dental condition. If a person has a weak internal organ, the condition of the associated meridian tooth could make it considerably more problematic.

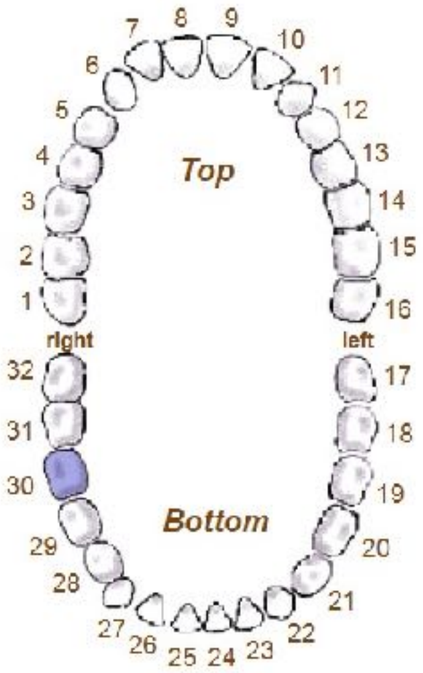
Click on a tooth above to see its relationships to the body

https://meridiantoothchart.com/toothchart/brmi.html

Select Organ

Select Organ

Interactive Meridian Tooth Chart



Click on a tooth above to see its relationships to the body

Tooth #30 - First Molar

Meridian	large intestine
Organs	 large intestine (right)  ileocecal
Glands	pituitary
Spine	C5,6,7 T3,4 L4,5 — Spinal Cord Segments — C5,6,7 T2,3,4 L4,5
Sense Organ	ethmoid cells
Musculature	trunk, lower & upper extremities musculature
Joints	shoulder, elbow, big toe, radial hand, foot, inner knee, sacroiliac joint, coccygodynia
Other Relationships	Radiates from ear, myalgia in the legs, masked on front side along stomach meridian, sacroiliac joint, deep lumbago, suspension crystallization of body fluids, excretion of urates, phosphates, oxalates & citrates, stones formation, rheumatism, hypothalamus, pituitary & veins

Select Organ

Large Intenstine

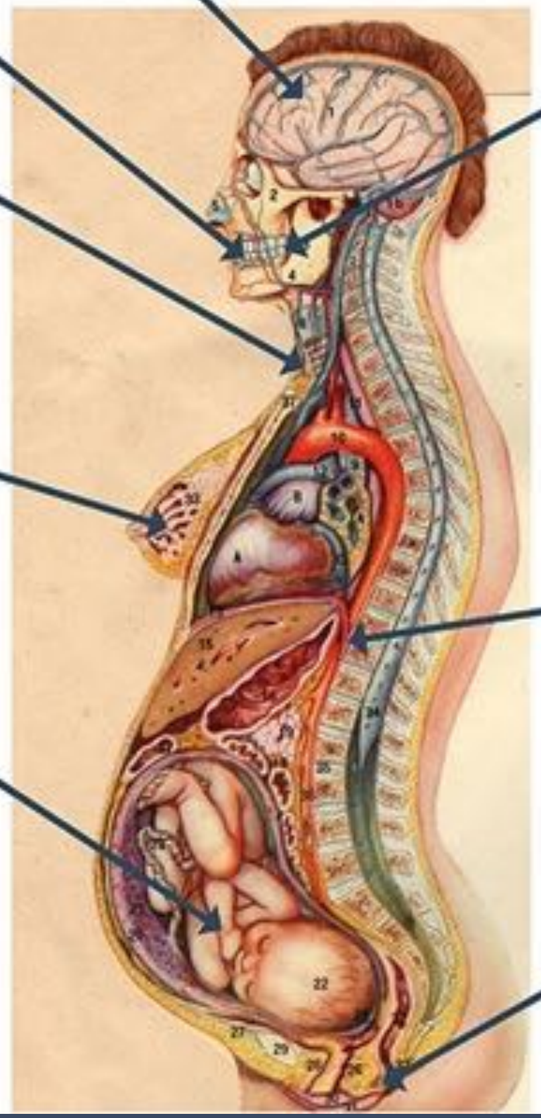
MERCURY TOXICITY

An estimated 80% of the **mercury vapor released by dental amalgam mercury fillings** is absorbed by the **lungs and passed to the rest of the body, particularly the brain, kidney, liver, lung, and gastrointestinal tract.** The half life of metallic mercury varies depending on the organ where the mercury was deposited and the state of oxidation.

Studies that have found the **mercury concentration in breast milk** increases as the number of amalgam fillings in the mother increases.

Maternal mercury levels are known to impact the fetus. Research on fetal and infant risks from dental amalgam has provided significant data associating the number of maternal amalgam fillings with mercury levels in cord blood; in the placenta; in the kidneys and liver of fetuses; in fetal hair; and in the brain and kidneys of infants.

Mercury deposited in the **brain** can have a half life of up to several decades.



Mercury vapor taken into the body binds to sulfhydryl groups of protein and to sulfur-containing amino acids throughout the body. **Mercury vapor, which is lipid soluble, can cross the blood-brain barrier** with ease and is converted into inorganic mercury in the cells by catalase oxidation. This inorganic mercury is eventually bound to glutathione and protein cysteine groups.

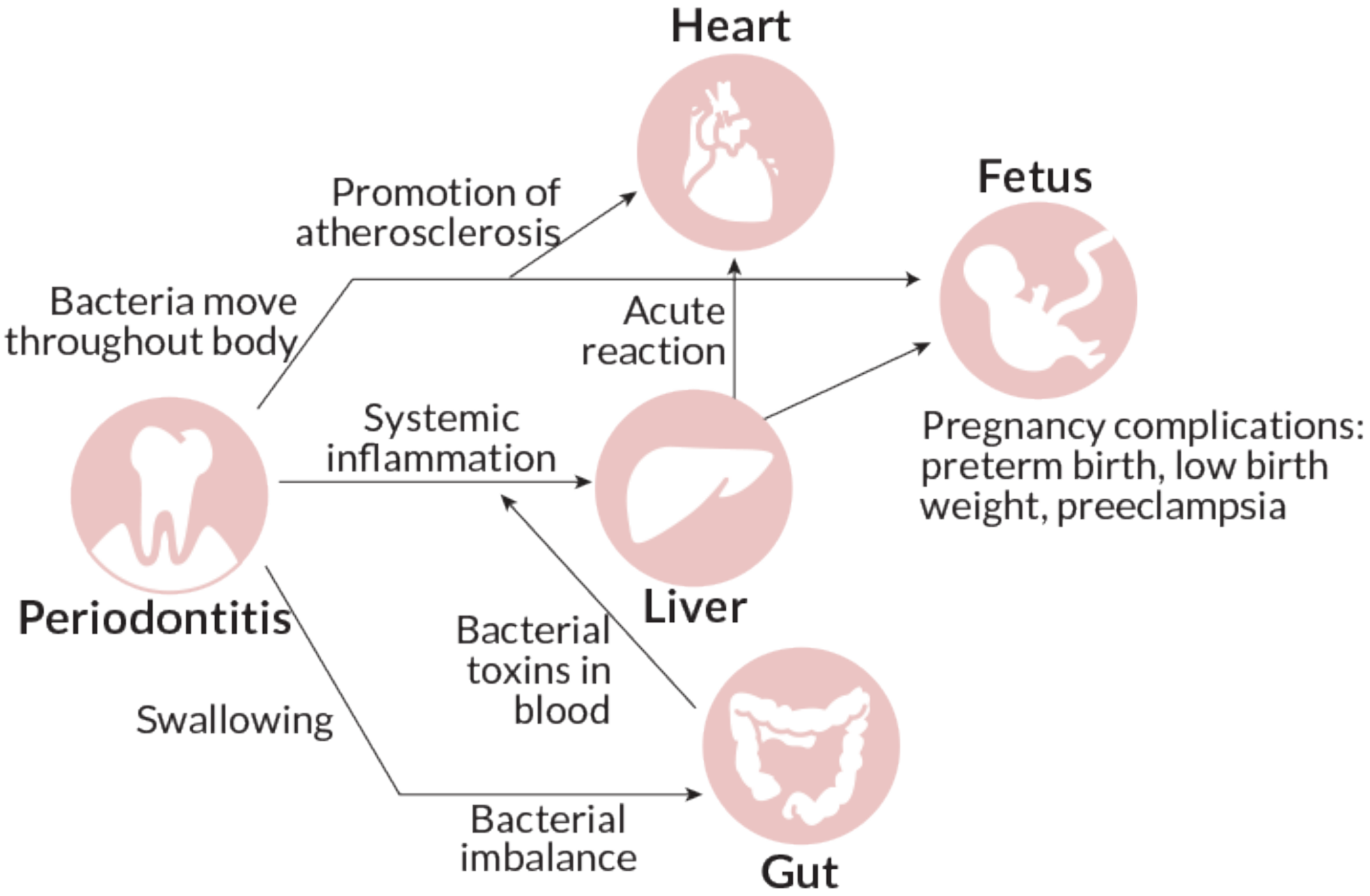
The half life of mercury in the **whole-body and kidney regions** has been estimated at 58 days.

Patients with amalgam fillings excrete over ten times more **mercury in their feces** than those without mercury fillings. It has been estimated that in the U.S., this is over 8 tons of mercury flushed out to sewers, streams, and takes per year.

Enamel erosion secondary to gastroesophageal reflux disease

Periodontitis in a patient with diabetes

Advanced Periodontitis


Heart
Promotion of atherosclerosis
Fetus
Bacteria move throughout body
Acute reaction
Systemic inflammation
Pregnancy complications: preterm birth, low birth weight, preeclampsia
Periodontitis
Liver
Bacterial toxins in blood
Swallowing
Bacterial imbalance
Gut

Oral Microbiome and Nitric Oxide: The Missing Link in the Management of Blood Pressure

- Recent discoveries that the oral microbiome reduces inorganic nitrate to nitrite and nitric oxide provide a new therapeutic target for the management of hypertension.

- The presence or absence of select and specific oral bacteria may determine steady-state blood pressure levels.

NS Bryan et al. Curr Hypertens Rep 19 (4), 33. 4 2017 https://www.ncbi.nlm.nih.gov/pubmed/28353075

Oral Microbiome and Nitric Oxide: The Missing Link in the Management of Blood Pressure

- Eradication of oral bacteria through antiseptic mouthwash or overuse of antibiotics causes blood pressure to increase.

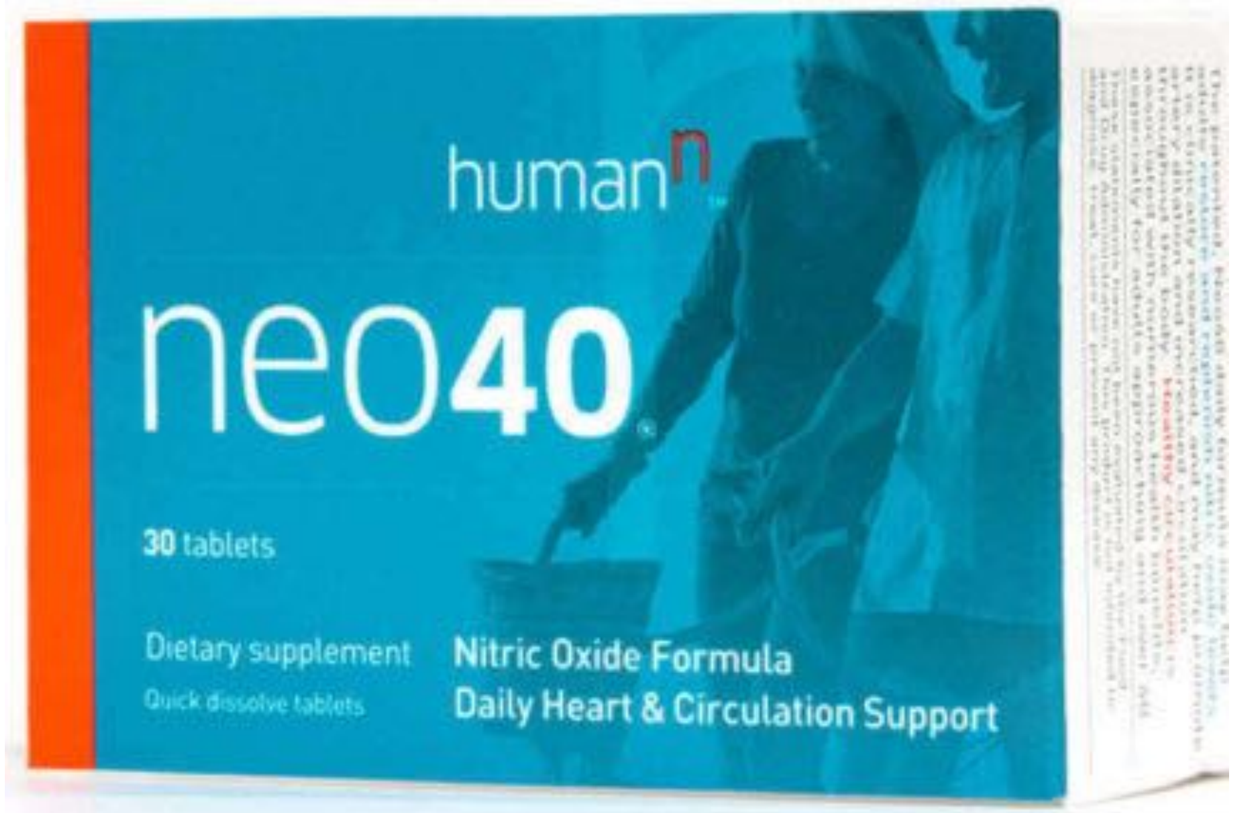
- Allowing recolonization of nitrate- and nitrite-reducing bacteria can normalize blood pressure.

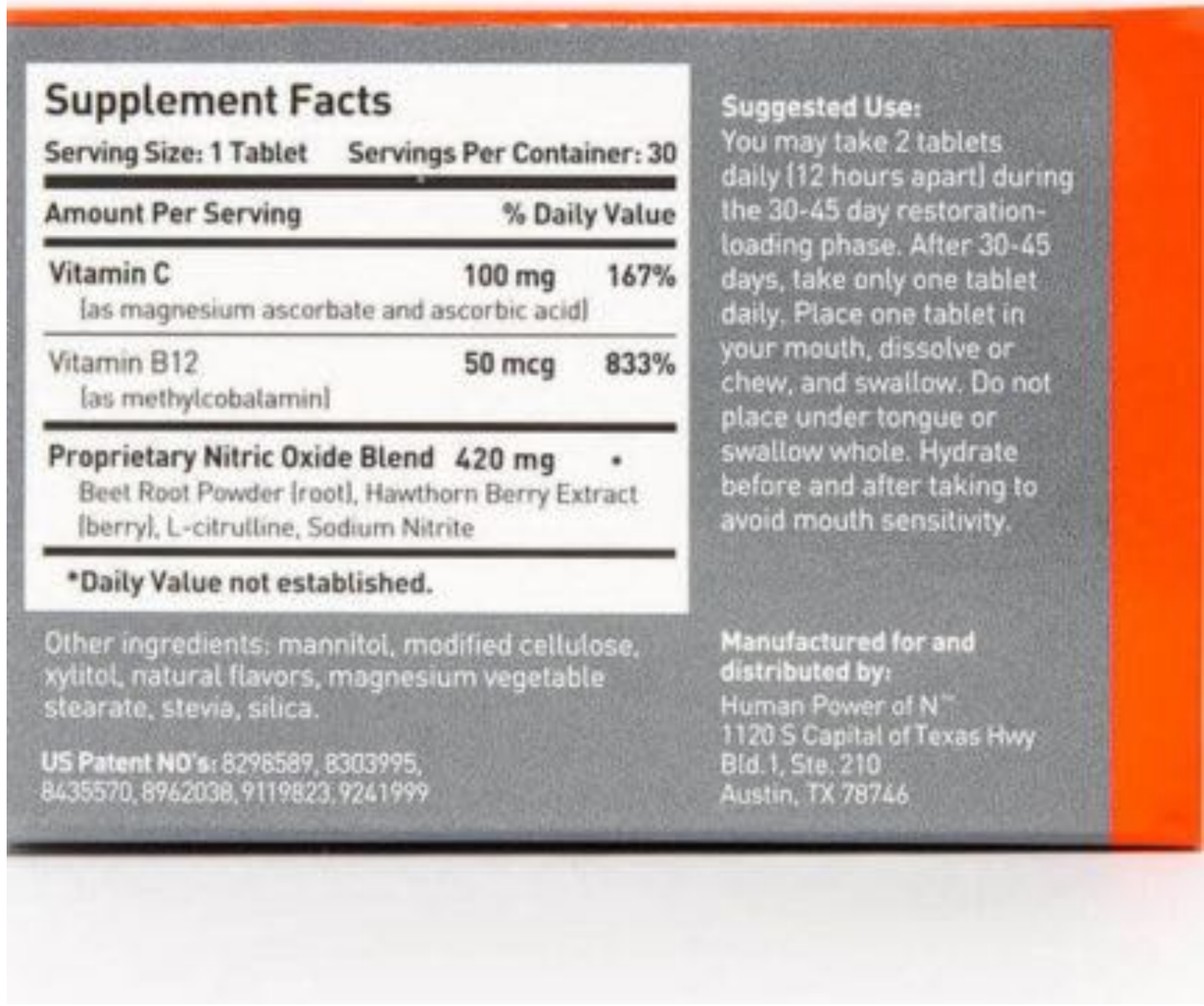
NS Bryan et al. Curr Hypertens Rep 19 (4), 33. 4 2017 https://www.ncbi.nlm.nih.gov/pubmed/28353075

Oral Microbiome and Nitric Oxide: The Missing Link in the Management of Blood Pressure

- Management of systemic hypertension through maintenance of the oral microbiome is a completely new paradigm in cardiovascular medicine.
- Green leafy vegetables like kale, spinach, arugula, butter leaf and oak leaf lettuces, Swiss chard, and beets.

NS Bryan et al. Curr Hypertens Rep 19 (4), 33. 4 2017 https://www.ncbi.nlm.nih.gov/pubmed/28353075
https://www.humann.com/science/neo40-clinical-trial-reveals-blood-pressure-impact/





https://www.humann.com/science/neo40-clinical-trial-reveals-blood-pressure-impa

Periodontal Disease: **It's Not Just Bacteria**

Periodontal disease has increasingly become a topic of discussion regarding how it impacts our overall health and other disease processes. As dental professionals, we discover and diagnose this disease by doing a periodontal exam looking for "pockets" and taking x-rays that show bone loss around the teeth. We find periodontal disease in patients who smoke or neglect their dental health. We then prescribe a treatment for the disease, and many times we will complete scaling and root planing along with seeing the patient for supportive therapy every 3 months to help maintain their periodontal health.

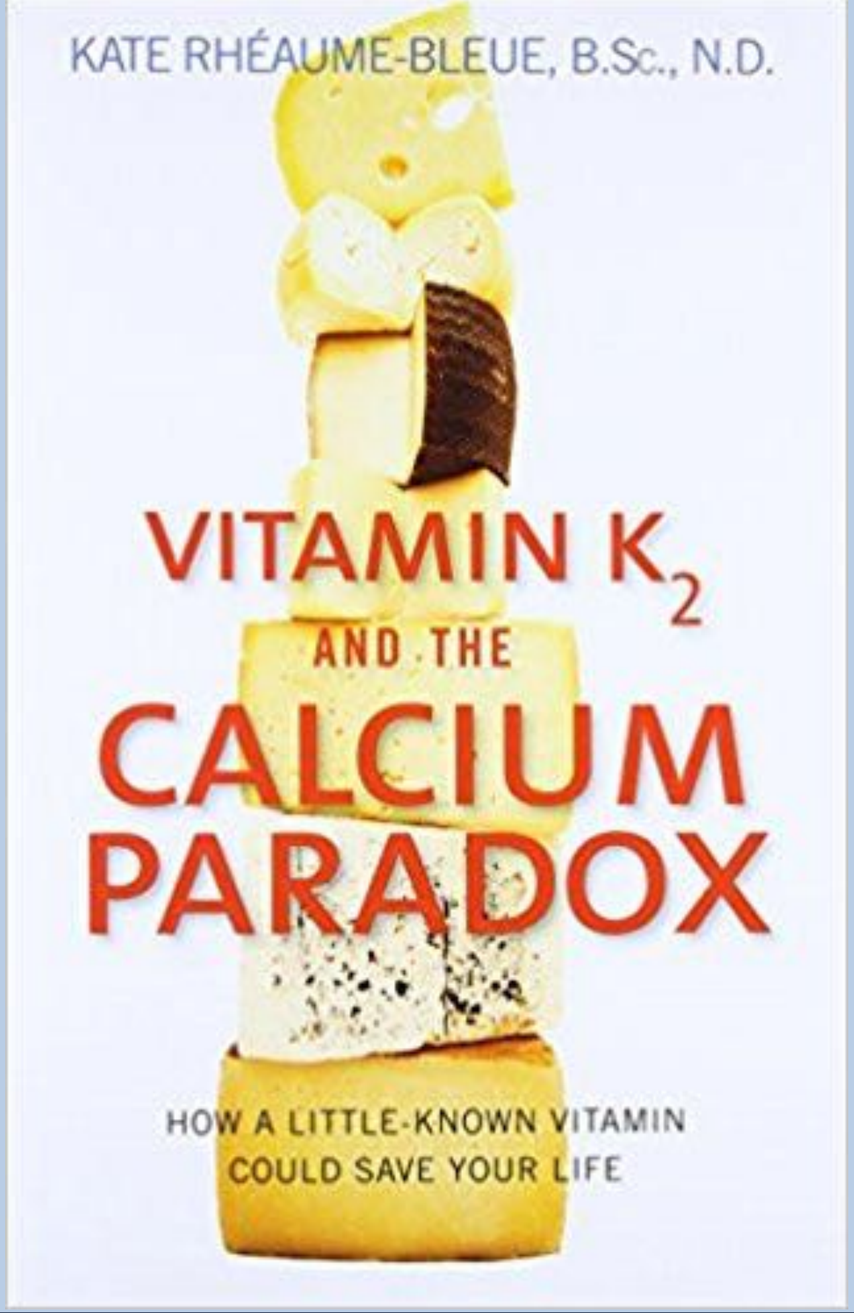
FEBRUARY IS GUM DISEASE AWARENESS MONTH.

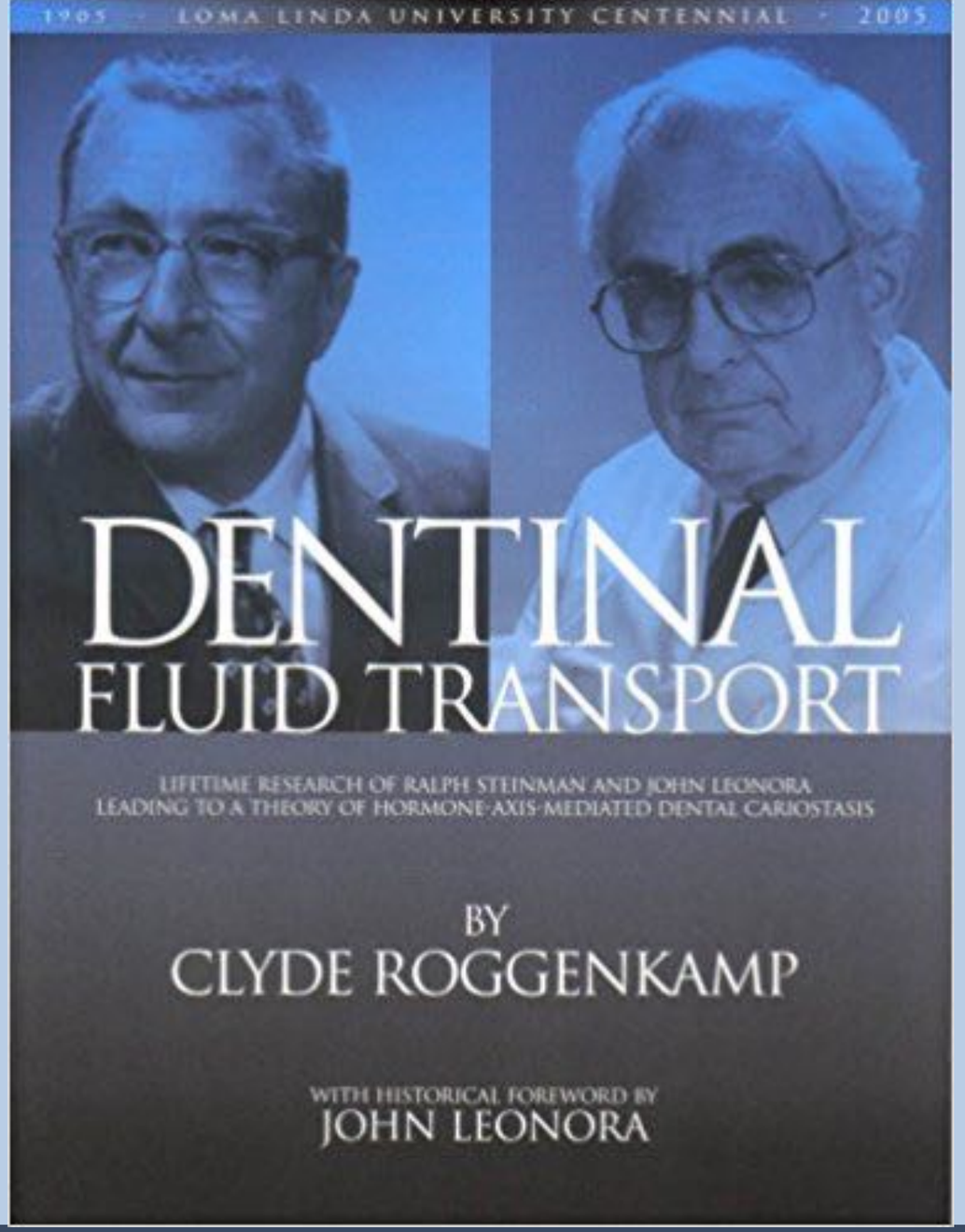
Scan the QR Code for resources and information on the global effort to raise awareness of the prevalence of gum disease and consequences of untreated disease.

Vitamin D is one of many vitamins that can have an impact on our patient's periodontal health, as well as vitamins A, C, E, K, and B. Unfortunately for many patients, this is often overlooked by primary care physicians as well as dental

NUTRITION

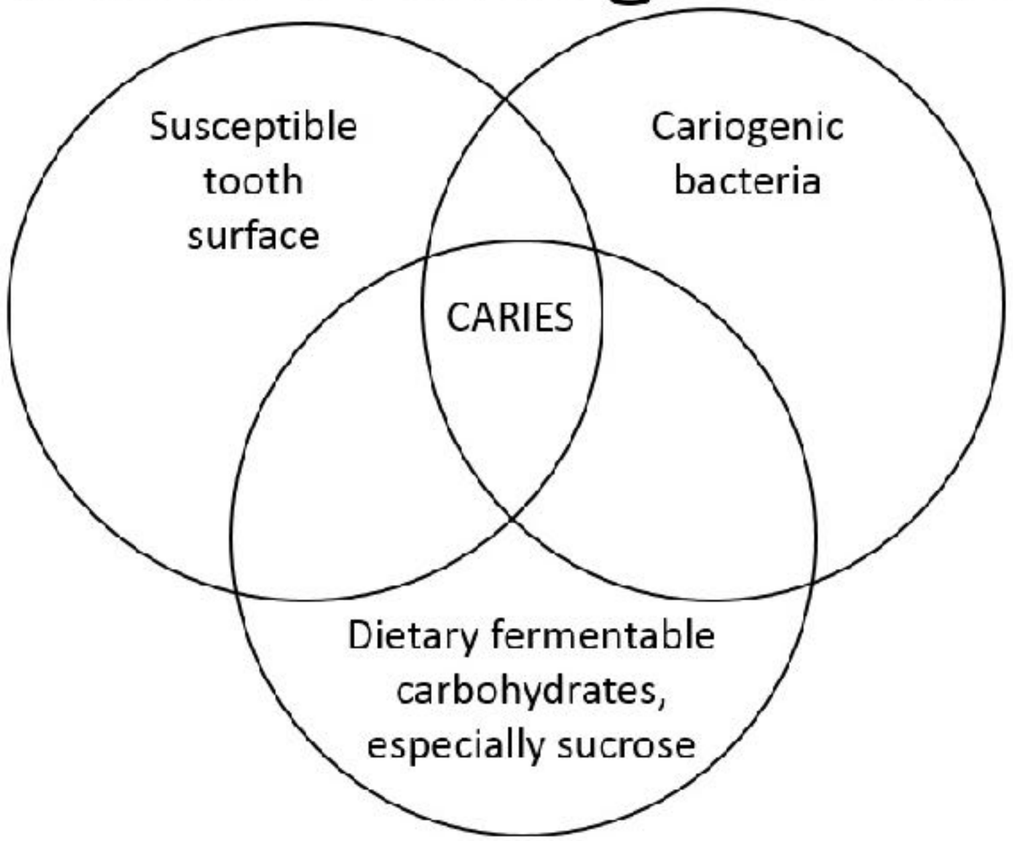
- Healthy diet
- Supplements
  - Probiotics
  - Vitamin K-2
  - Vitamin D
  - Vitamin C
  - Ubiquinol
  - Omega-3


KATE RHÉAUME-BLEUE, B.Sc., N.D.
VITAMIN K2
AND THE
CALCIUM
PARADOX
HOW A LITTLE-KNOWN VITAMIN
COULD SAVE YOUR LIFE

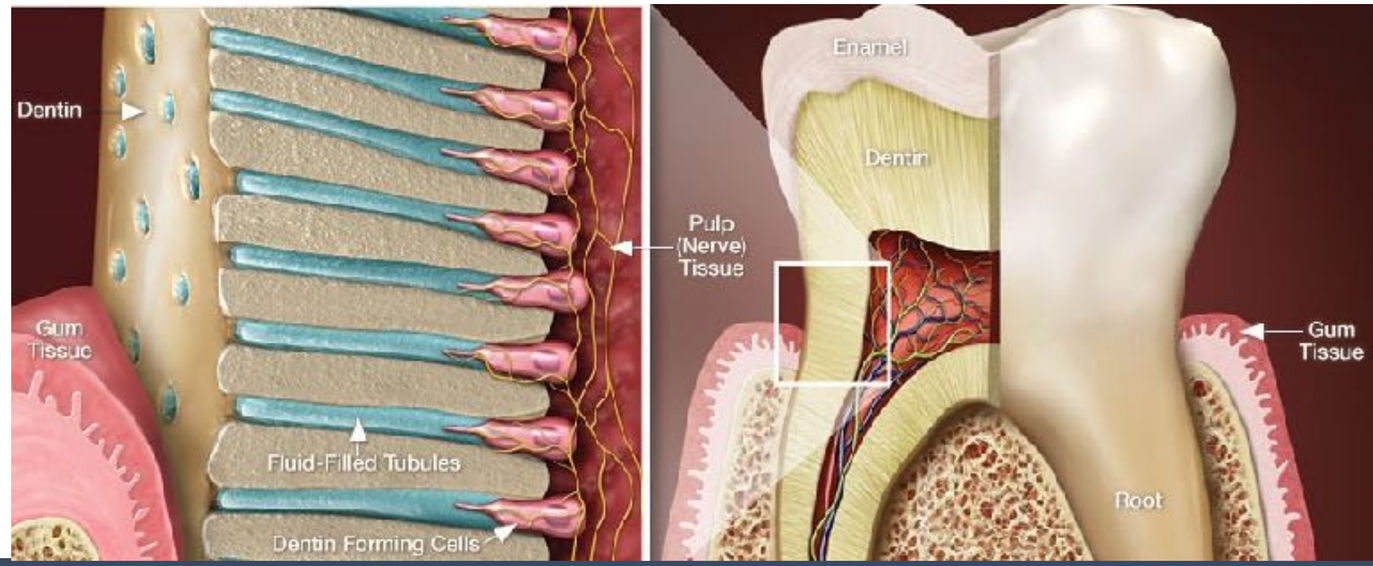

1905 · LOMA LINDA UNIVERSITY CENTENNIAL · 2005
DENTINAL
FLUID TRANSPORT
LIFETIME RESEARCH OF RALPH STEINMAN AND JOHN LEONORA
LEADING TO A THEORY OF HORMONE-AXIS-MEDIATED DENTAL CARIOSTASIS
BY
CLYDE ROGGENKAMP
WITH HISTORICAL FOREWORD BY
JOHN LEONORA

Theories of dental caries (tooth decay)

Miller's Acidogenic Theory **vs** Systemic—Oxidative Stress



- Consistant with Westin Price, DDS



The Hypothalamus/Parotid Axis

- The parotid gland has both exocrine (saliva) and endocrine functions (parotid hormone)
- Reactive oxygen species (ROS) are not just the exhaust of energy production. They are signals.
- ROS are the triggers for parotid hormone control by the hypothalamus

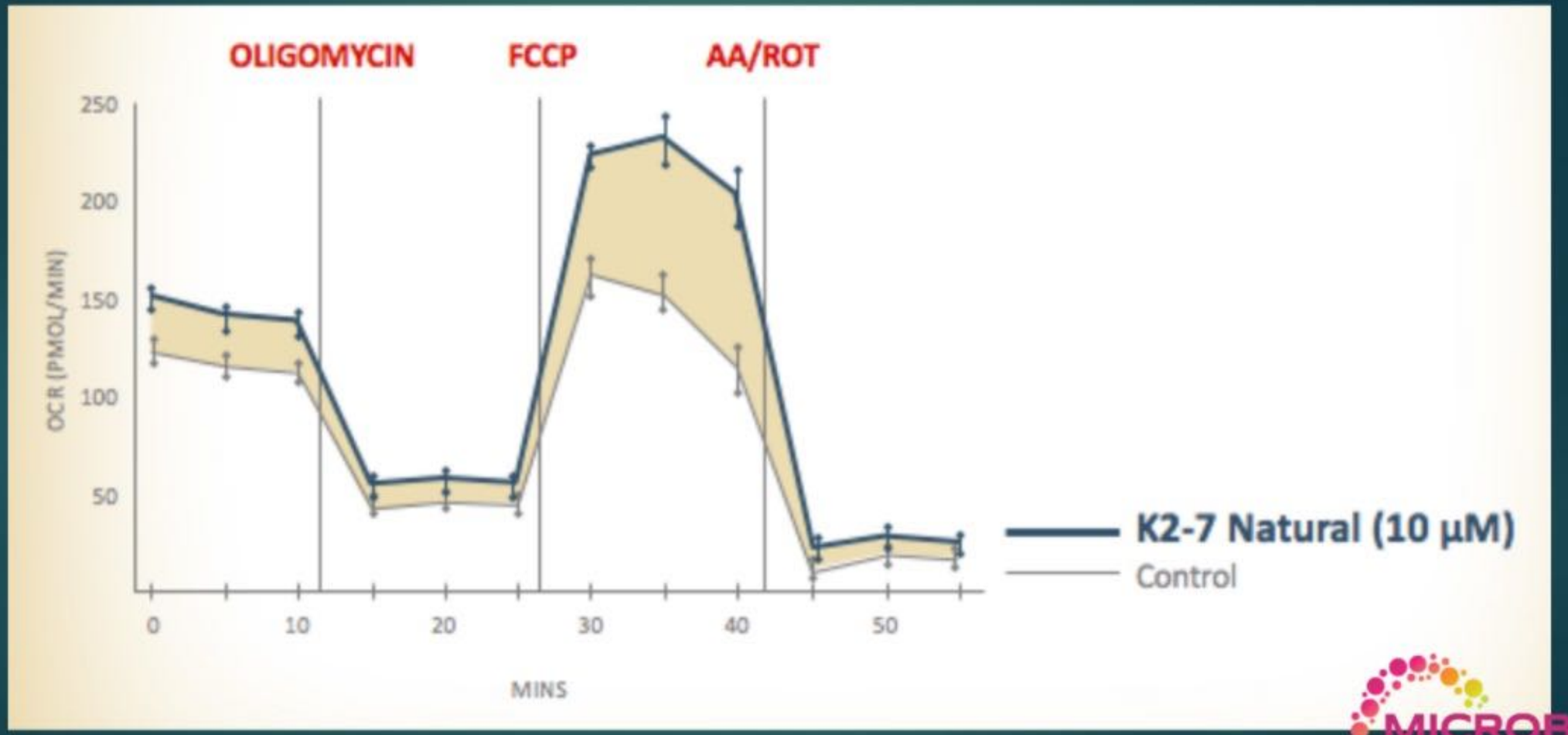
The Hypothalamus/Parotid Axis

- Oxidative stress in the hypothalamus from ROS and other free radicals
- Reduction of parotid hormone
- Stops or reverses **dentinal fluid flow**, creating vulnerability in the tooth
- The nature of the inhibitory effect of the sucrose diet is **to increase the rate of ROS in the mitochondria of the hypothalamus.** Oxidative stress increases and initiates signaling almost immediately.

This is where Vitamin K-2 comes in

- Role in developing teeth (dentinogenesis) and bones
  - Directs calcium into teeth (as well as bone)
- Increases efficiency of ATP production by mitochondria
- Which leads to upregulation of parotid hormone helping to restore normal **dentinal fluid flow**

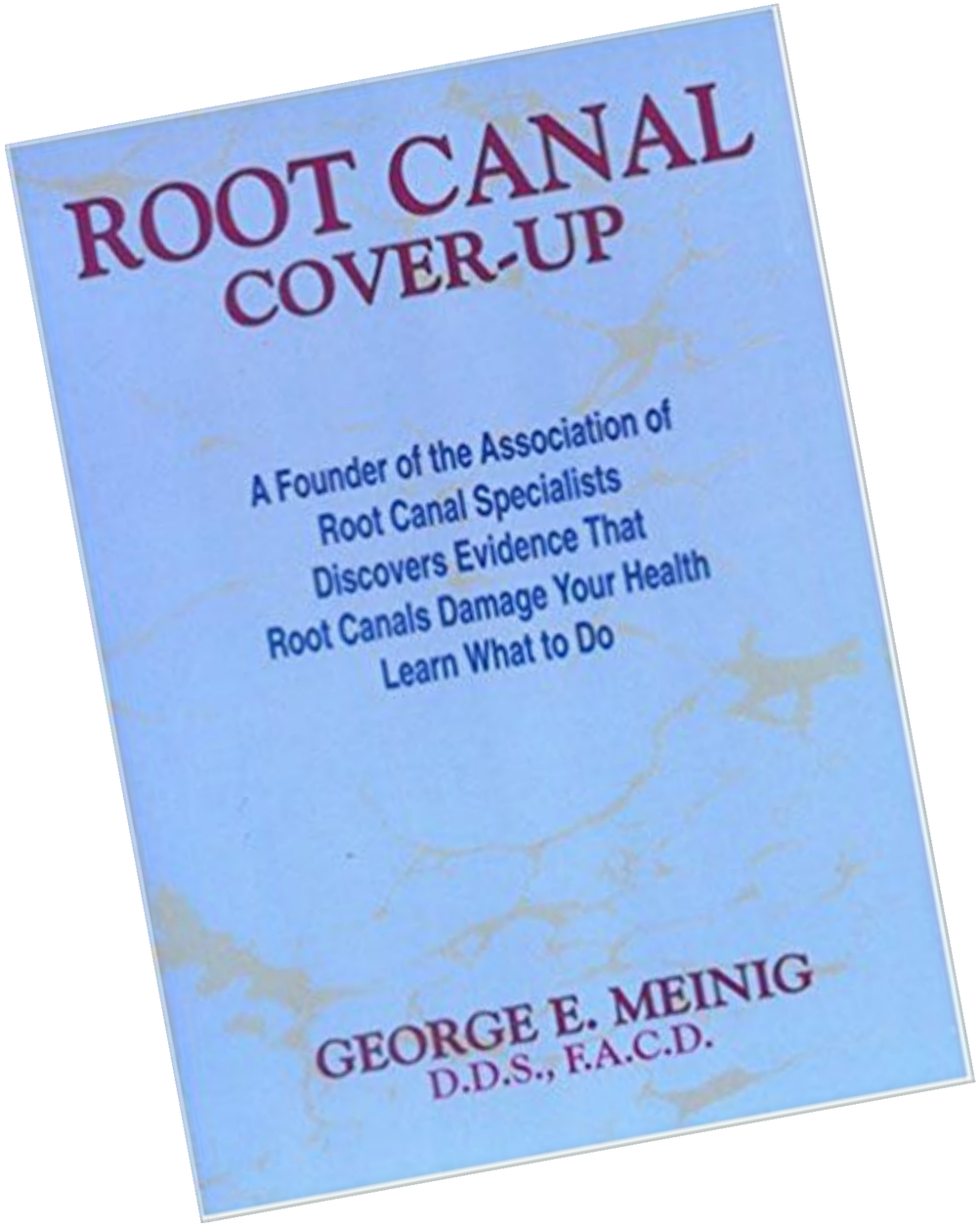
Vitamin K2 Bioenergetics



The World's First Prebiotic Oral Care Formulation.

A biologically effective, prebiotic formulation promoting homeostasis (balance) of the naturally occurring oral microbiome.

Combines essential antioxidants and cell energy enhancers CoQ-10, Vitamin C, Vitamin E, MSM, as well as a unique blend of microminerals, in a natural and organic base flavored with organic stevia.


ROOT CANAL
COVER-UP
A Founder of the Association of
Root Canal Specialists
Discovers Evidence That
Root Canals Damage Your Health
Learn What to Do
GEORGE E. MEINIG
D.D.S., F.A.C.D.

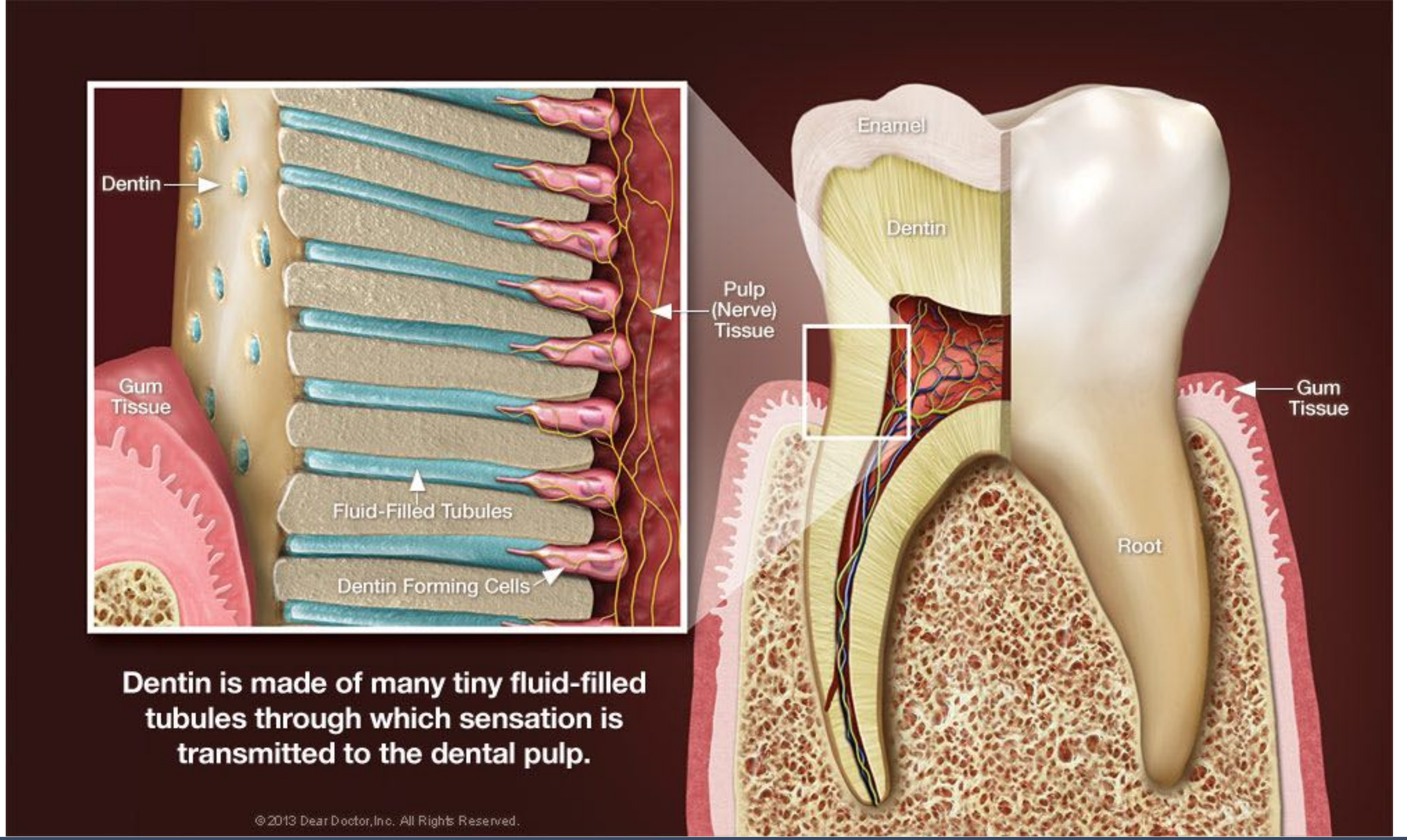

The
TOXIC
TOOTH
How a root canal could
be making you sick

ROOT CANAL TREATMENT (RCT)

Endodontic therapy, also known as endodontic **treatment** or **root canal therapy**, is a **treatment** sequence for the infected pulp of a tooth which results in the elimination of infection and the protection of the decontaminated tooth from future microbial invasion.

ROOT CANAL TREATMENT (RCT)

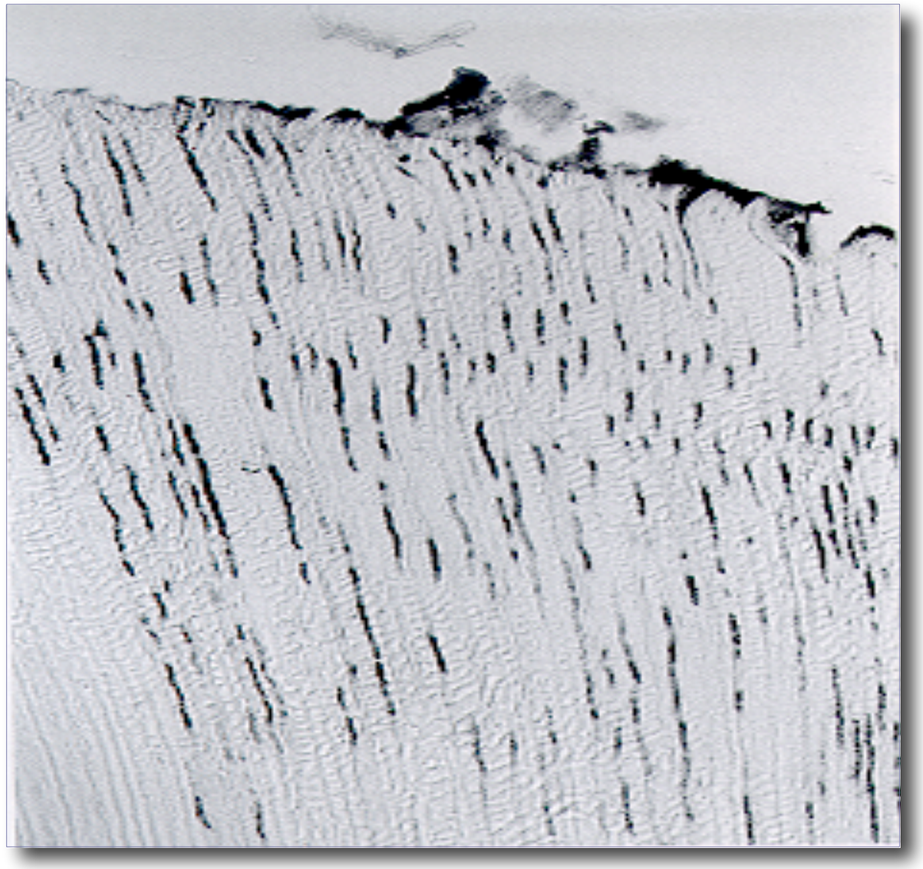
This is accomplished by a cleaning process associated with disinfection that includes chemical, ultrasonic and/or laser techniques. Mechanical enlargement of the main canal diameter contributes to eliminate the smear layer, and provides a homogeneous view of the dentin walls, including insights on accessory canals and dentinal tubules. The final step is the obturation or filling process with gutta percha that is condensed with a root canal sealer.


Dentin
Gum Tissue
Fluid-Filled Tubules
Dentin Forming Cells
Pulp (Nerve) Tissue
Enamel
Dentin
Gum Tissue
Root
Dentin is made of many tiny fluid-filled tubules through which sensation is transmitted to the dental pulp.
©2013 Dear Doctor, Inc. All Rights Reserved.

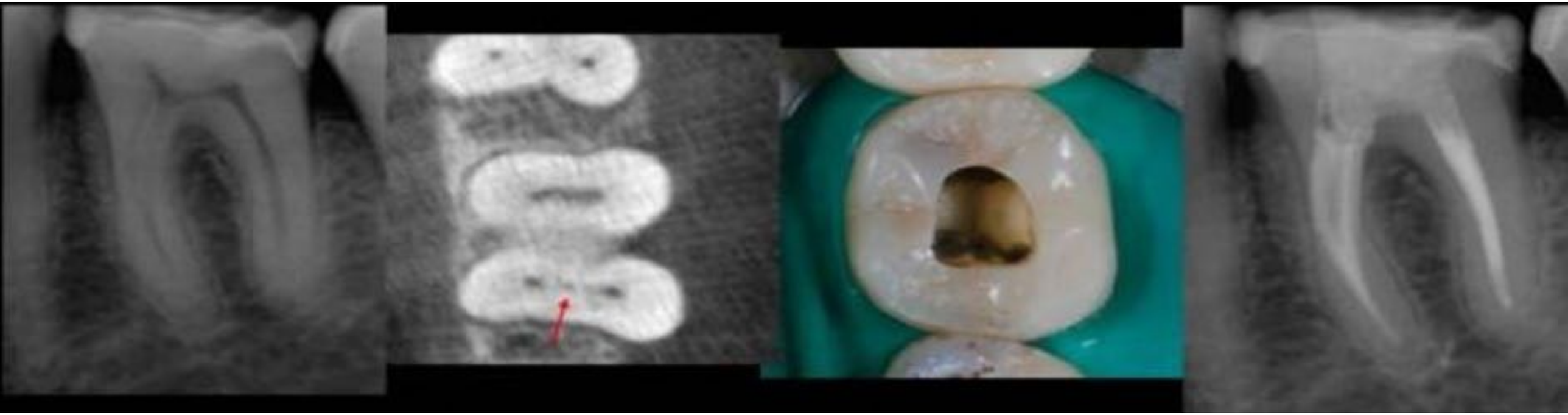
Nagaoka, et al. (1995). Bacterial invasion into dentinal tubules of human vital and non-vital teeth. *J. Endodon. 21: 70-73*

Vital Tooth

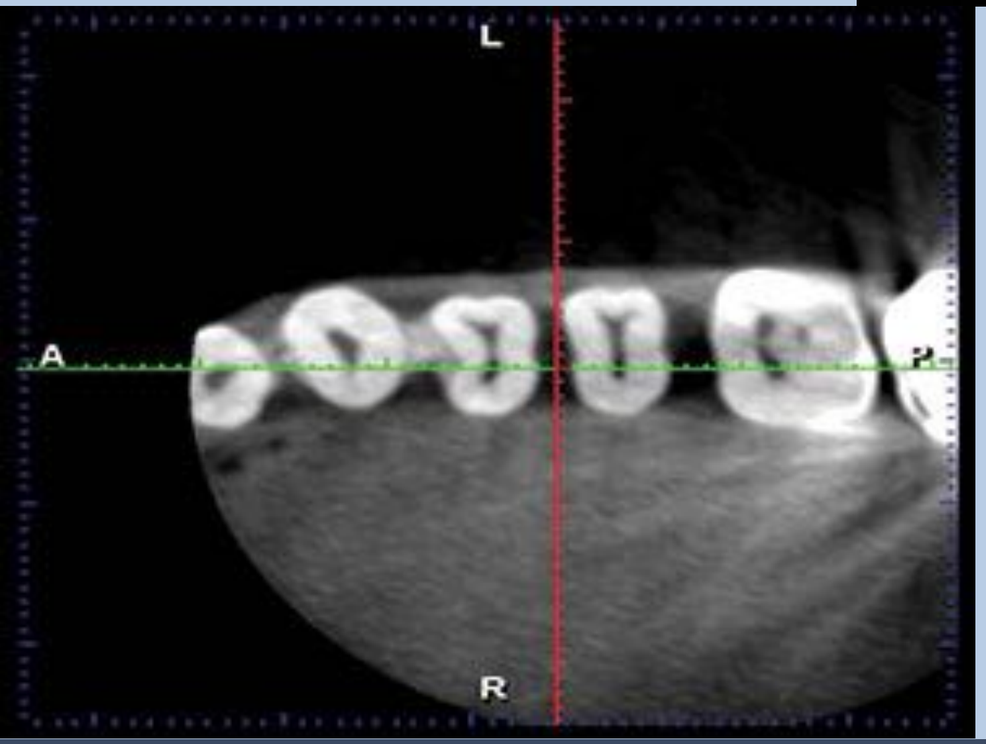
Non-vital Root Canal Tooth



% Invaded Tubules: 1.1% vs. 39.0%



IS THIS THE ANSWER?


L
A
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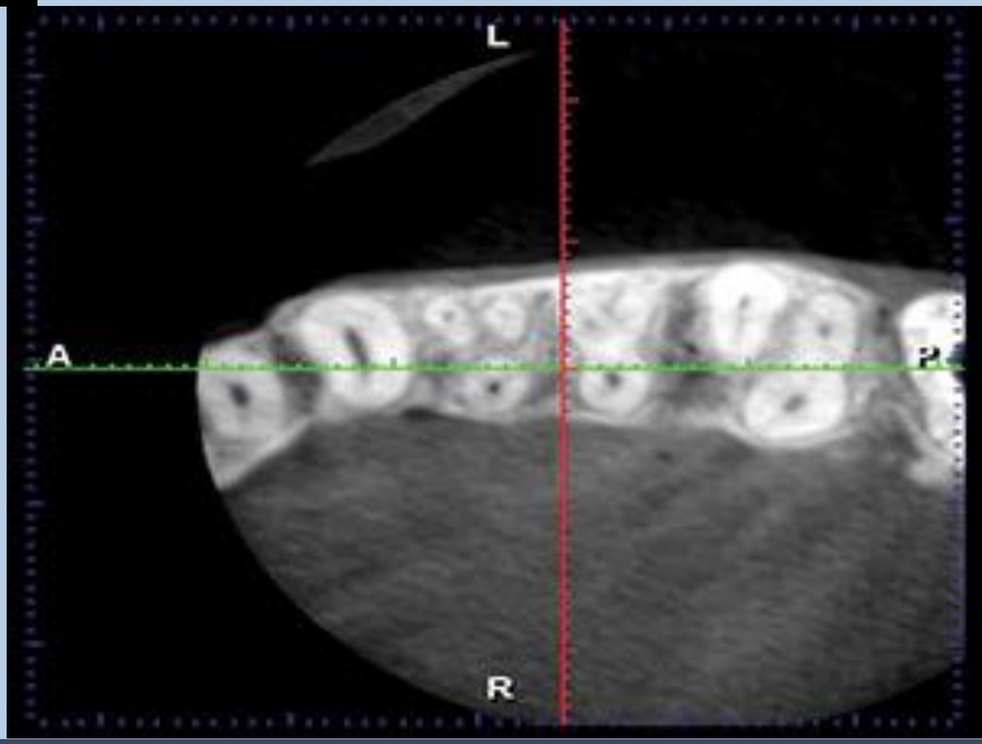
L
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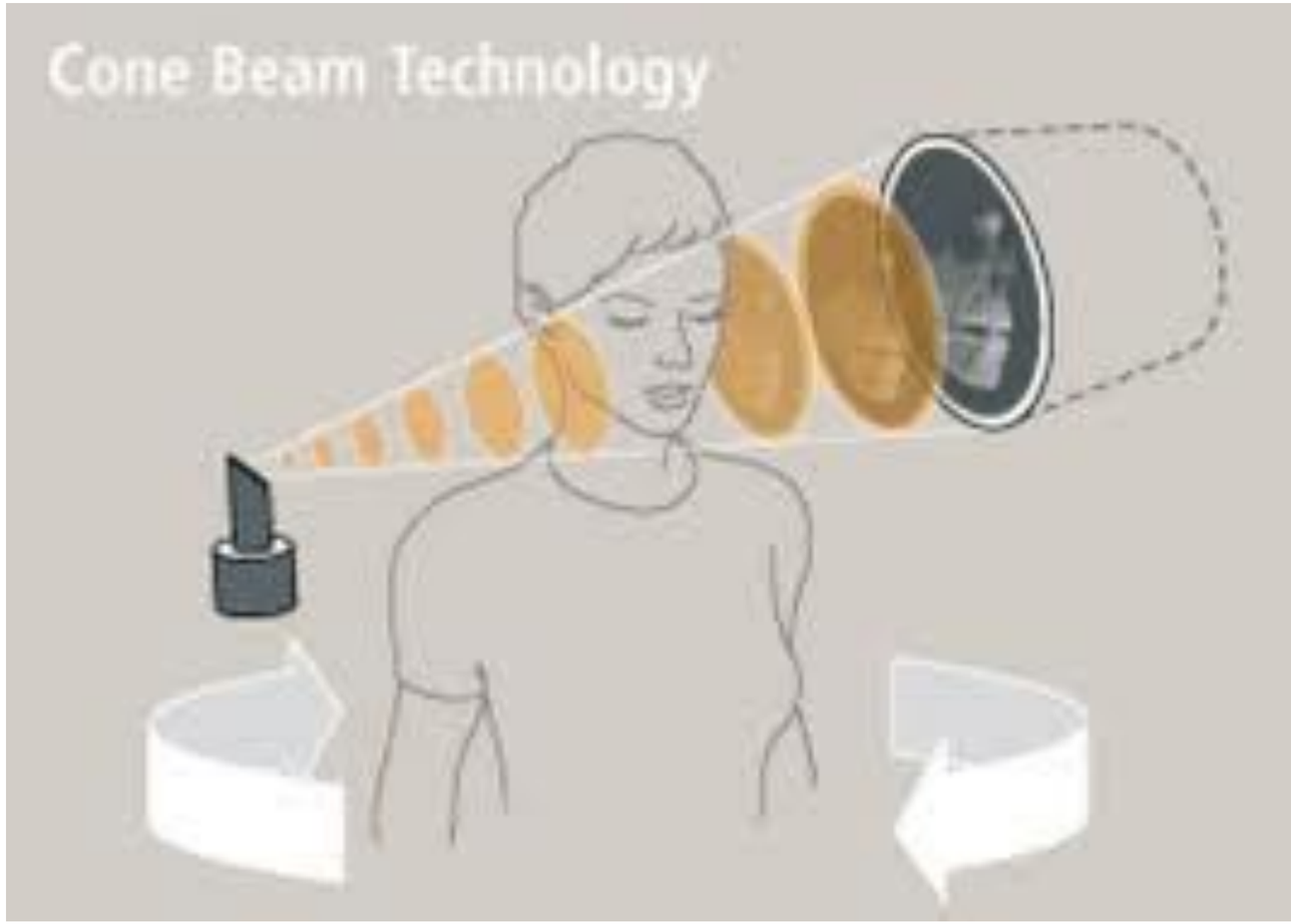
IS THIS THE ANSWER?



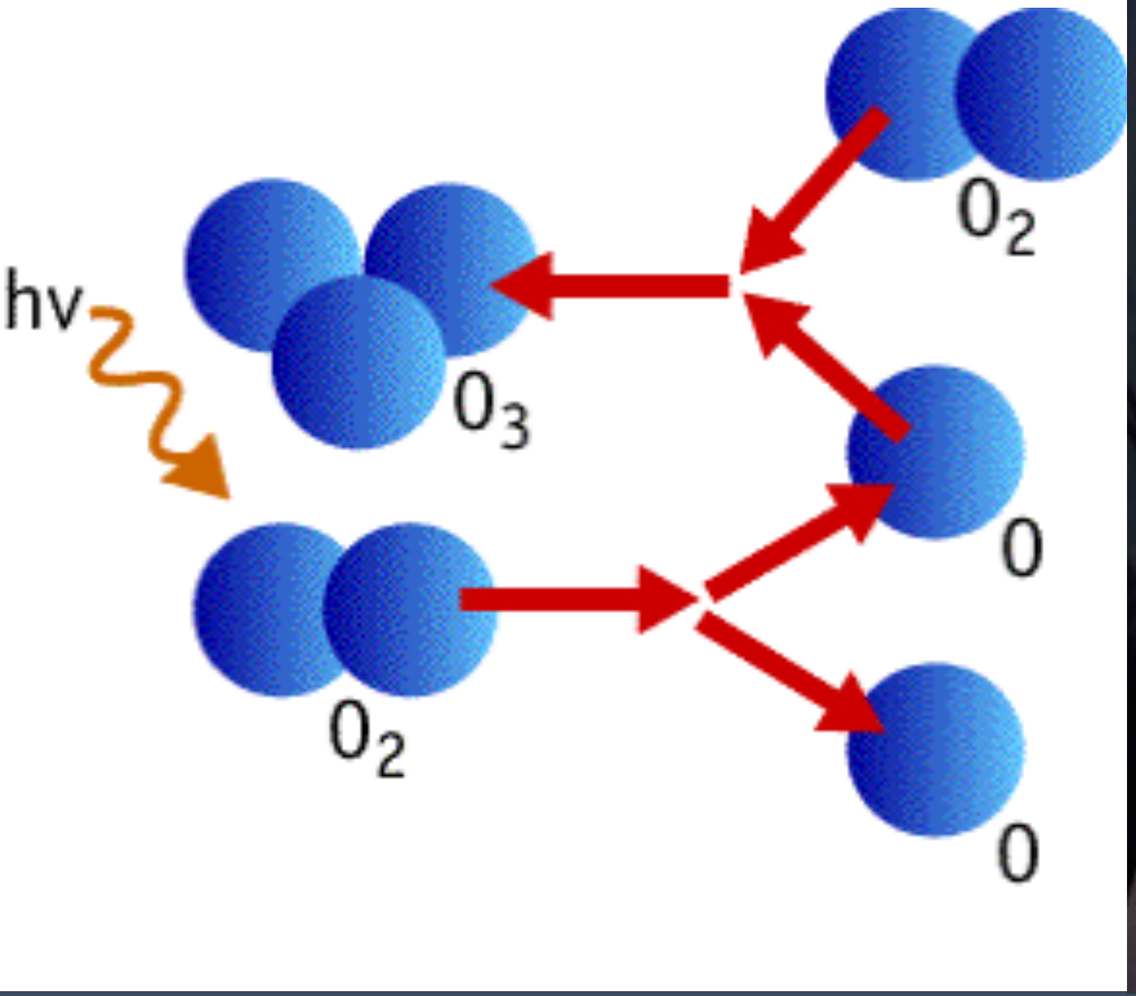
OR, IS THIS THE ANSWER?

BIOLOGICAL ENDODONTIC TREATMENT

- Is that an oxymoron?
- What about ozone?
- What about pulpotomy?
- Regenerative endodontics?
- What about stem cells?

Ozone and its uses in Root Canal therapy

Ozone and its uses in Root Canal therapy

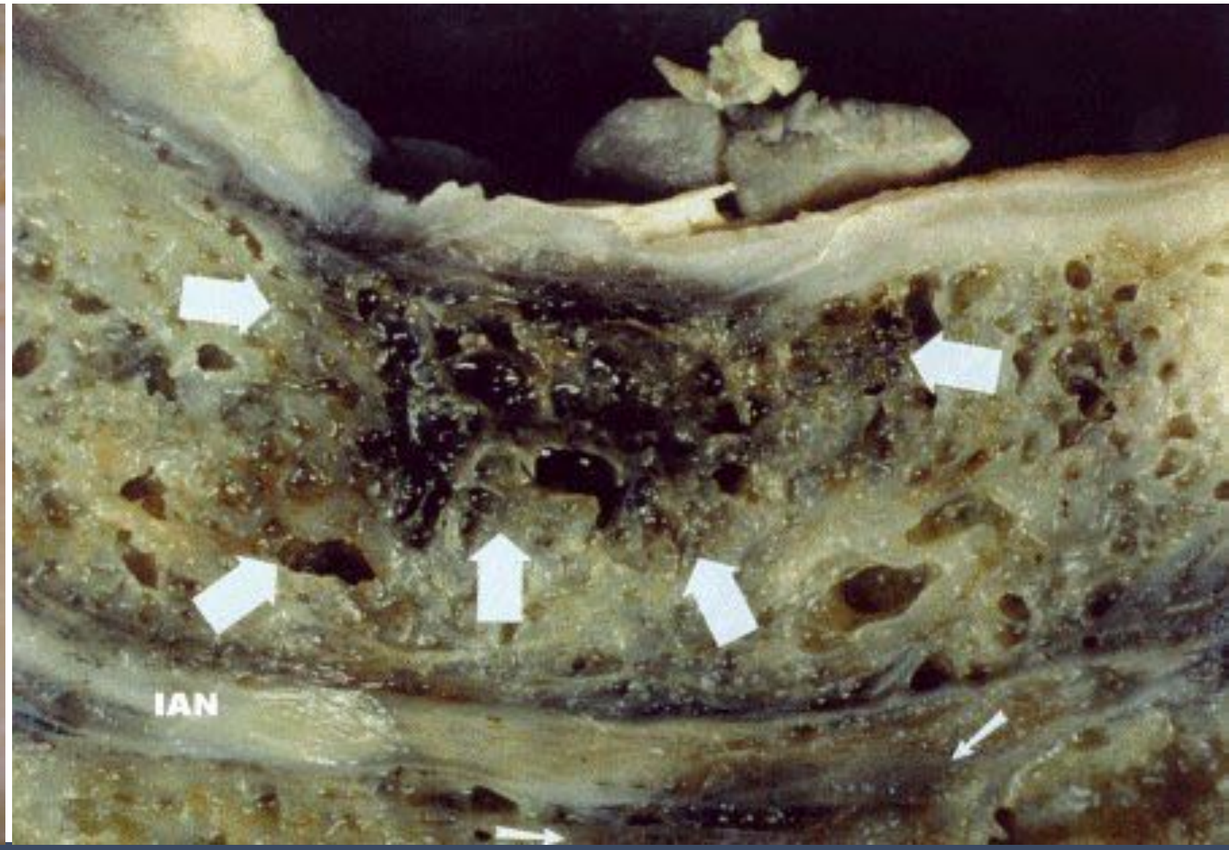


CAVITATIONS

- NICO (neuralgia induced cavitational osteonecrosis)
- FDOJ (fatty degenerative osteonecrosis in the jawbone)
- JON (jawbone osteonecrosis)
- IBD (ischemic bone disease)
- AIOJ (aseptic ischemic osteonecrosis in the jawbone)

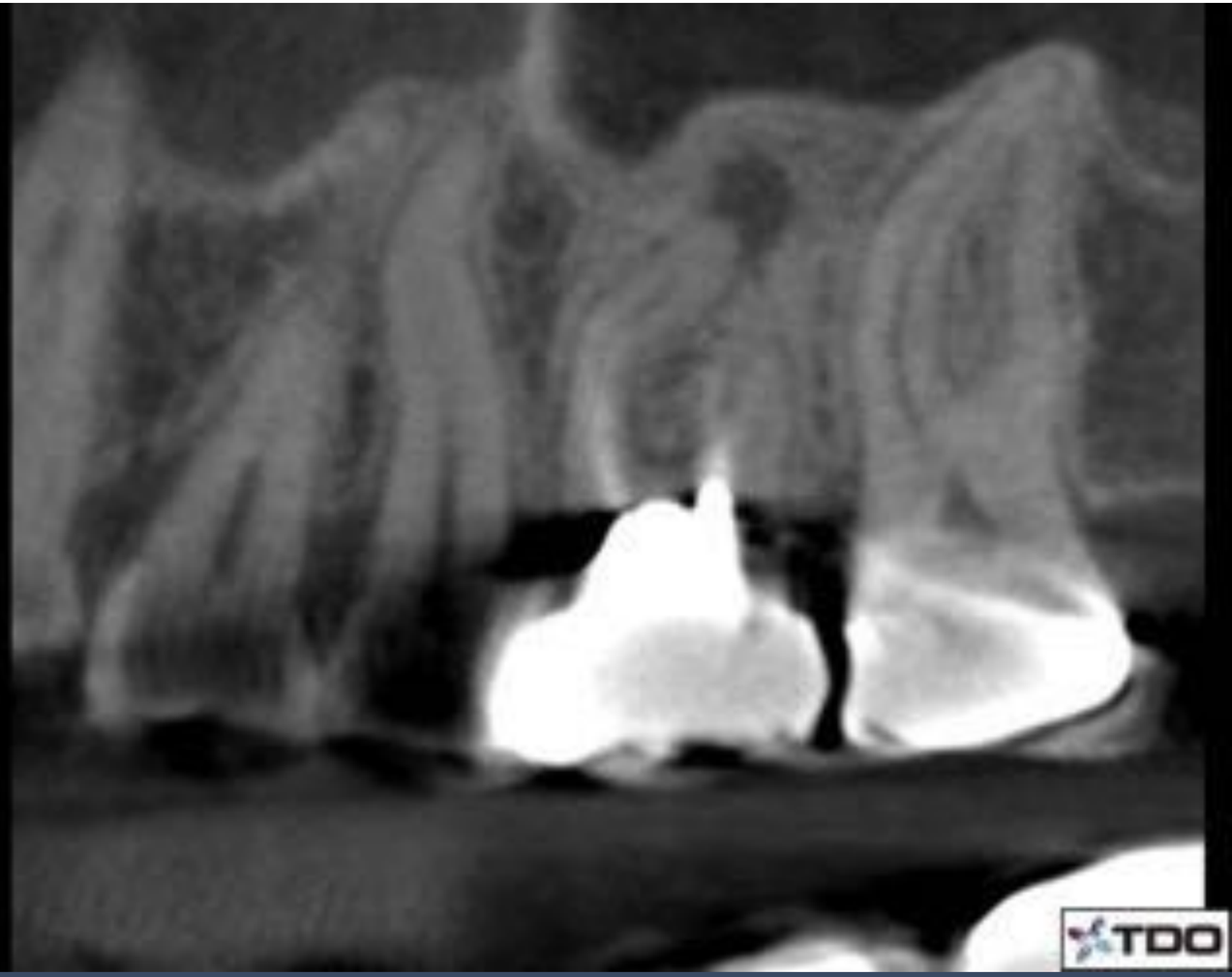
Healthy Bone

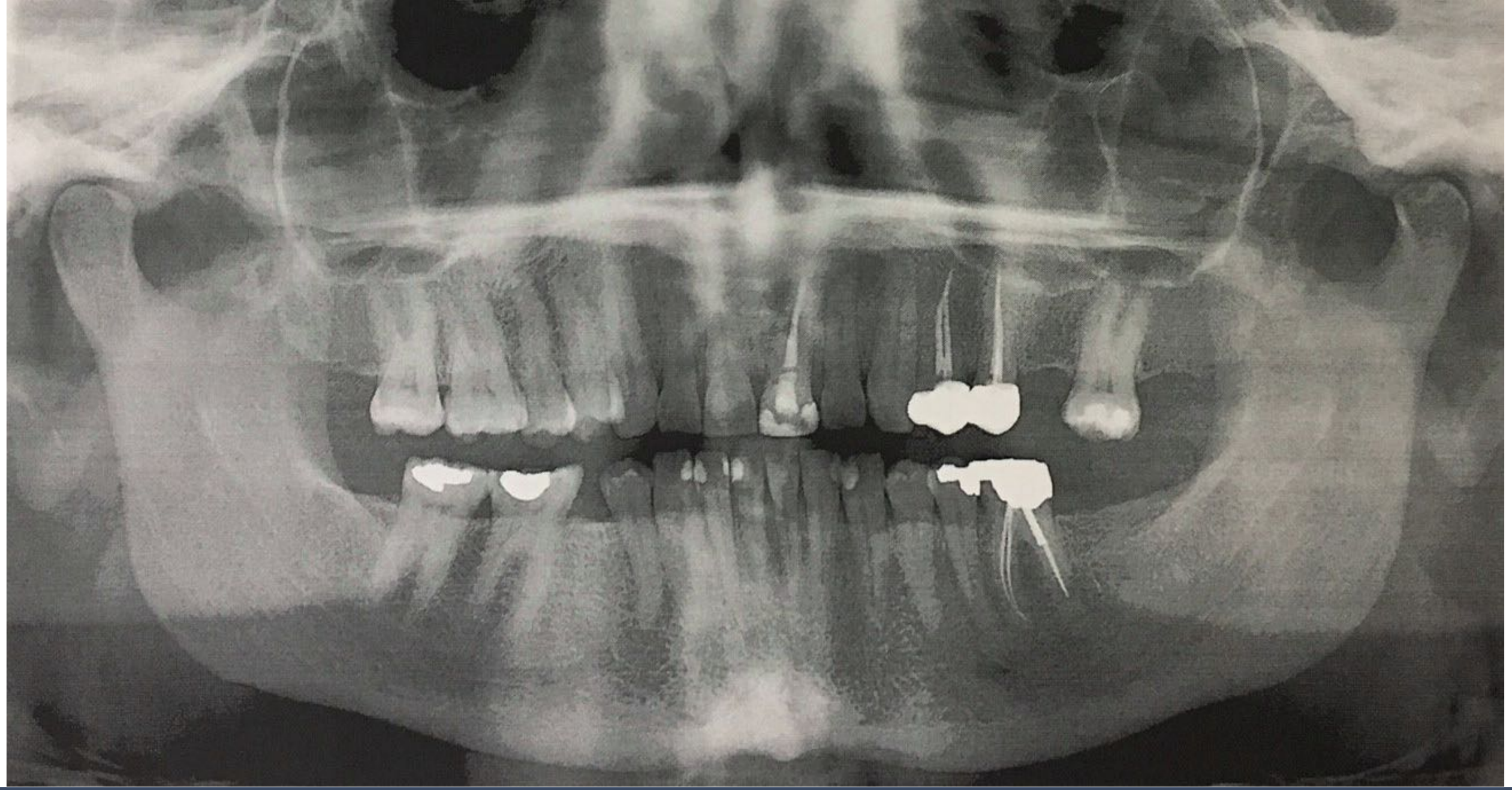
Cavitation



2-D

3-D

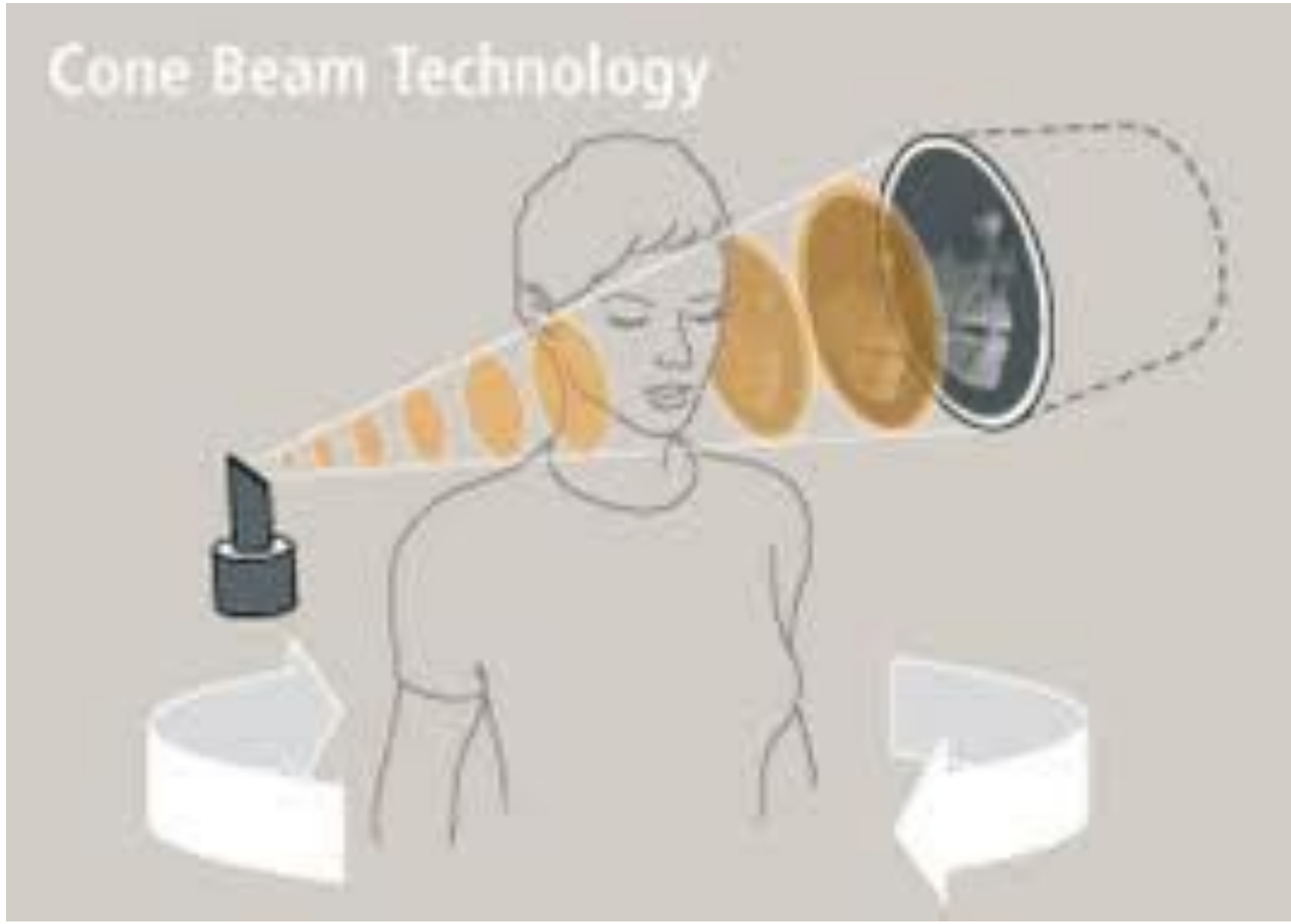




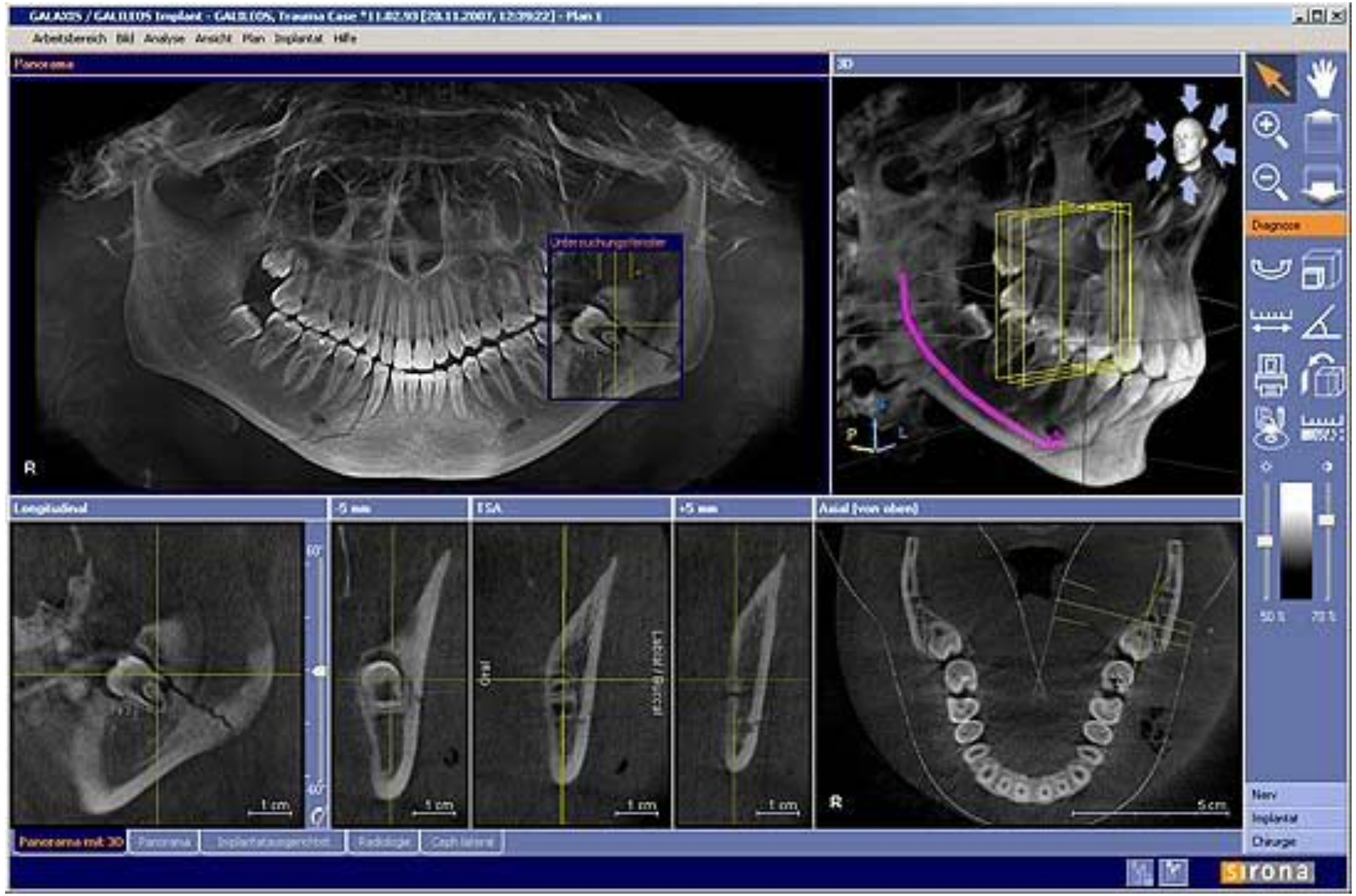
Cone-Beam Computed Tomography (CBCT)

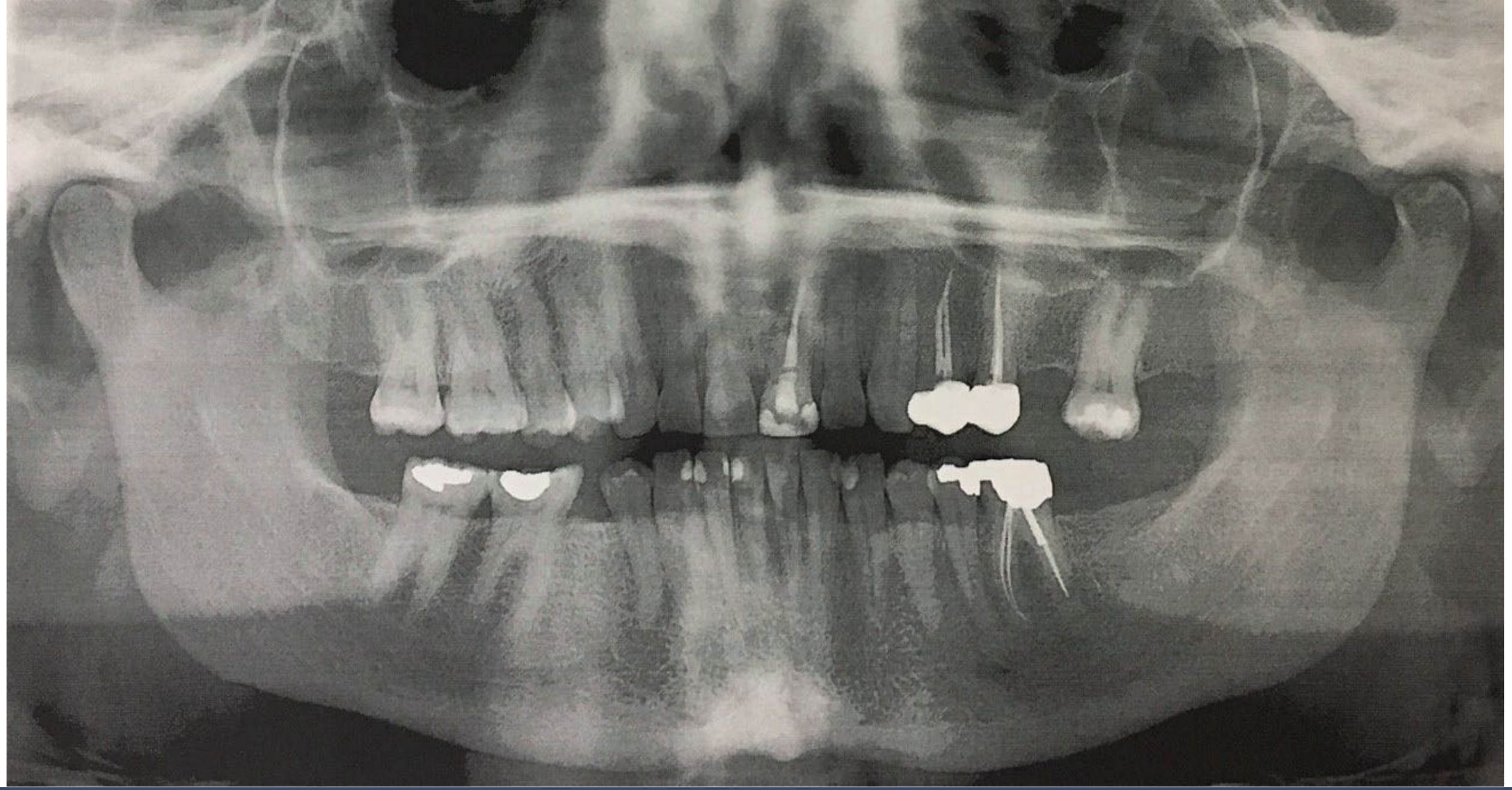
- Examine teeth, root canals, jaw bone, 3D
- Gold standard for detecting cavitations, cysts, granulomas
- Implant planning
- Assess airway space

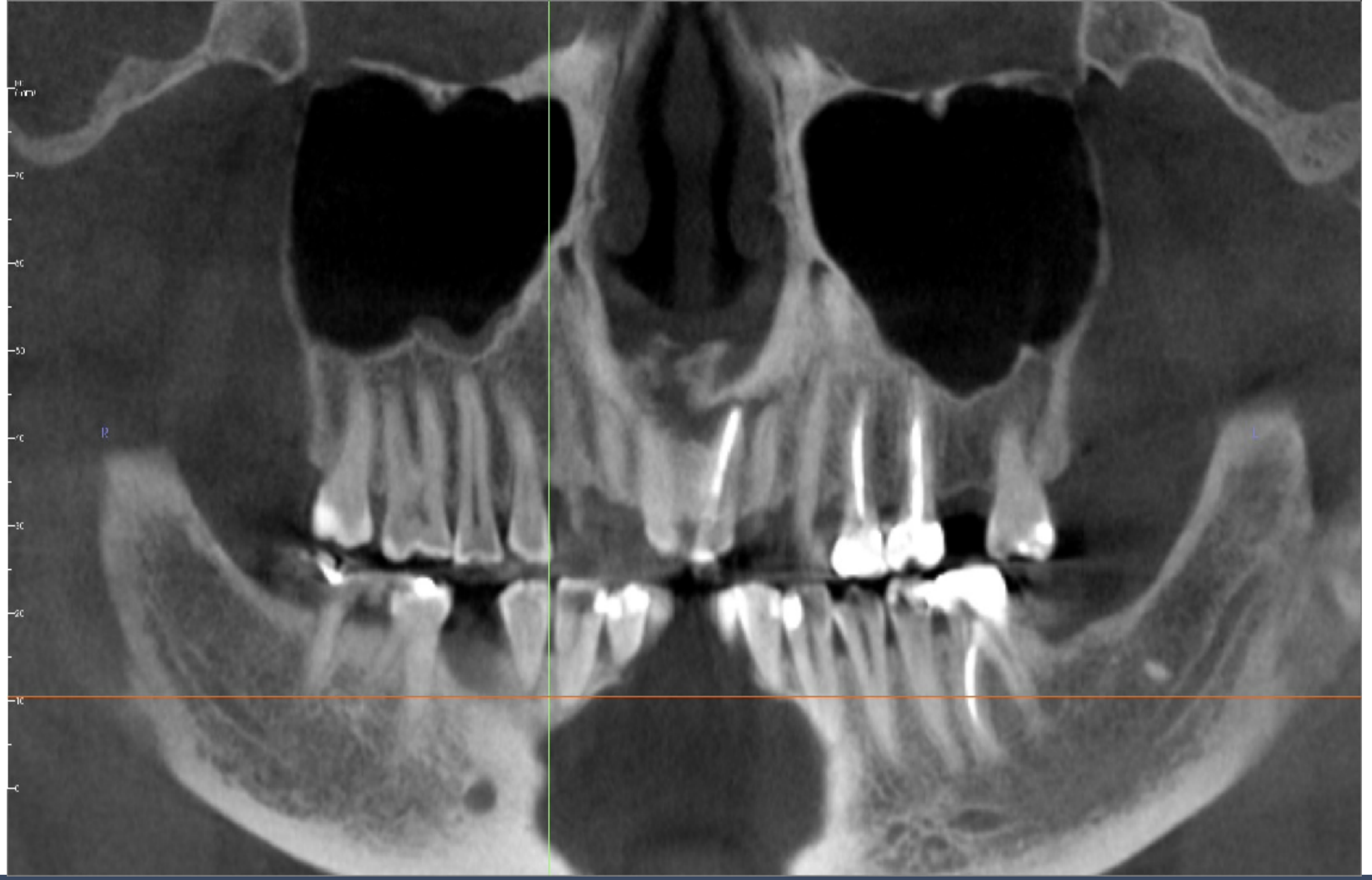
Cone-Beam Computed Tomography (CBCT)

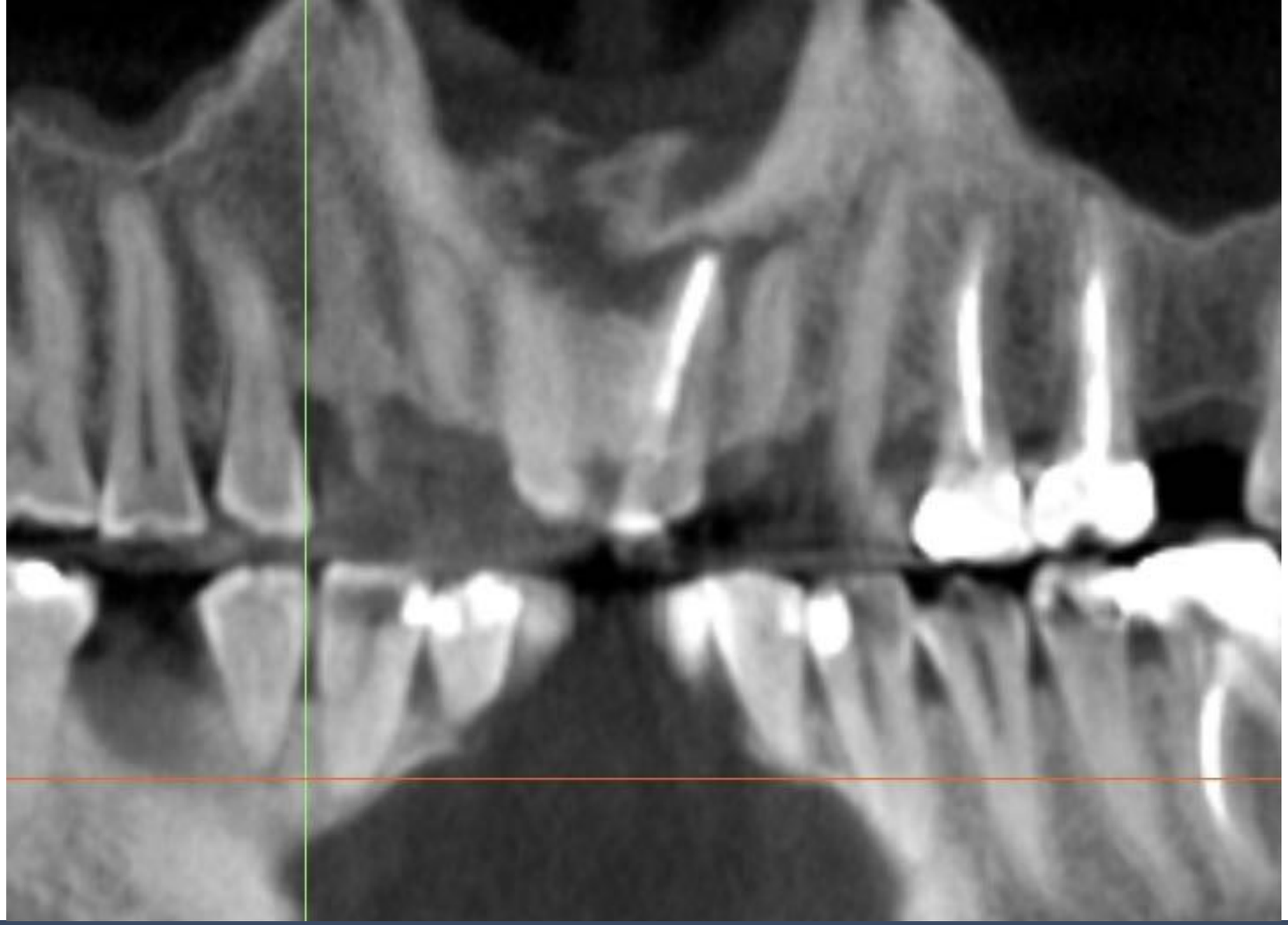


Cone-Beam Computed Tomography (CBCT)

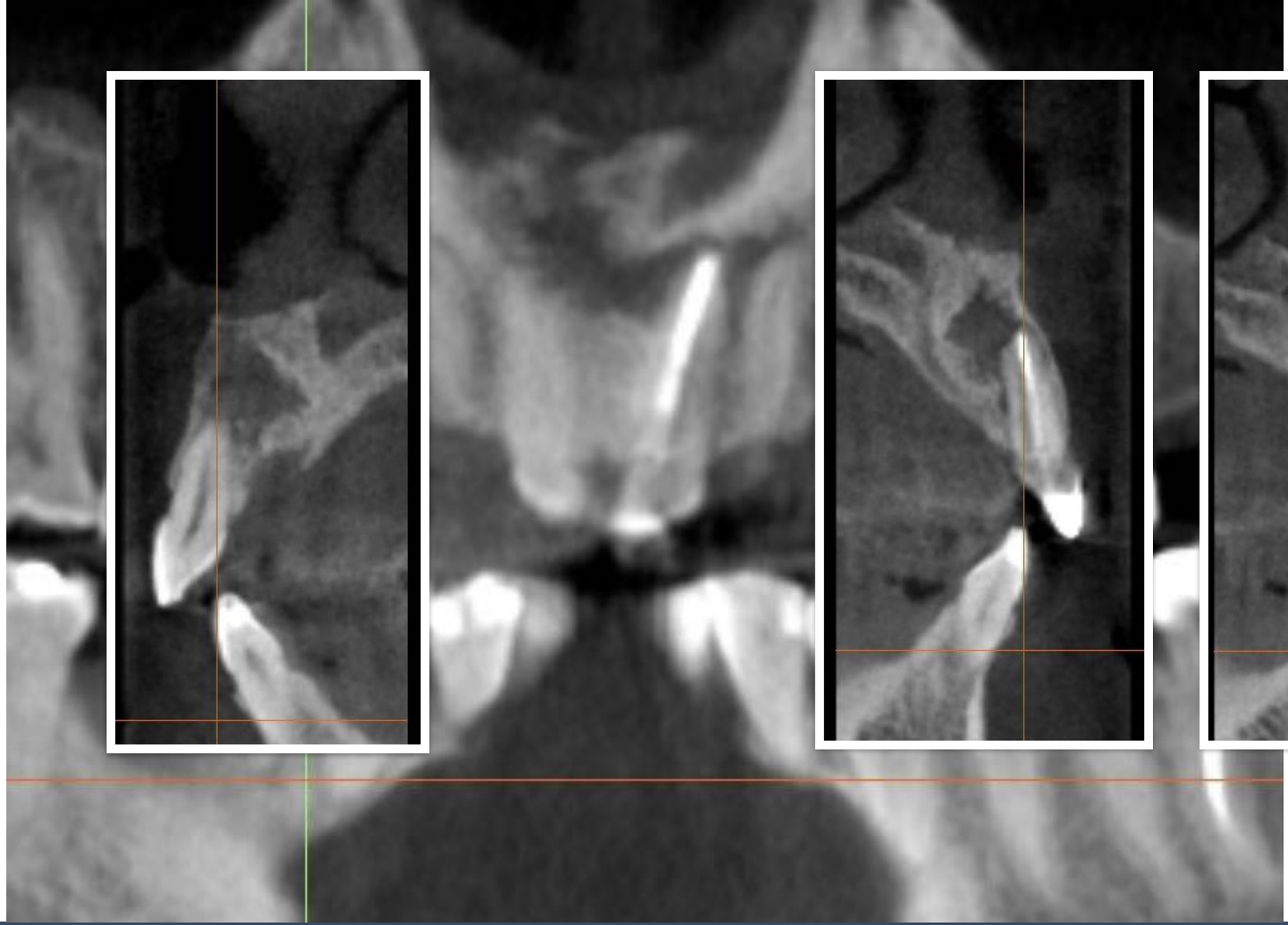










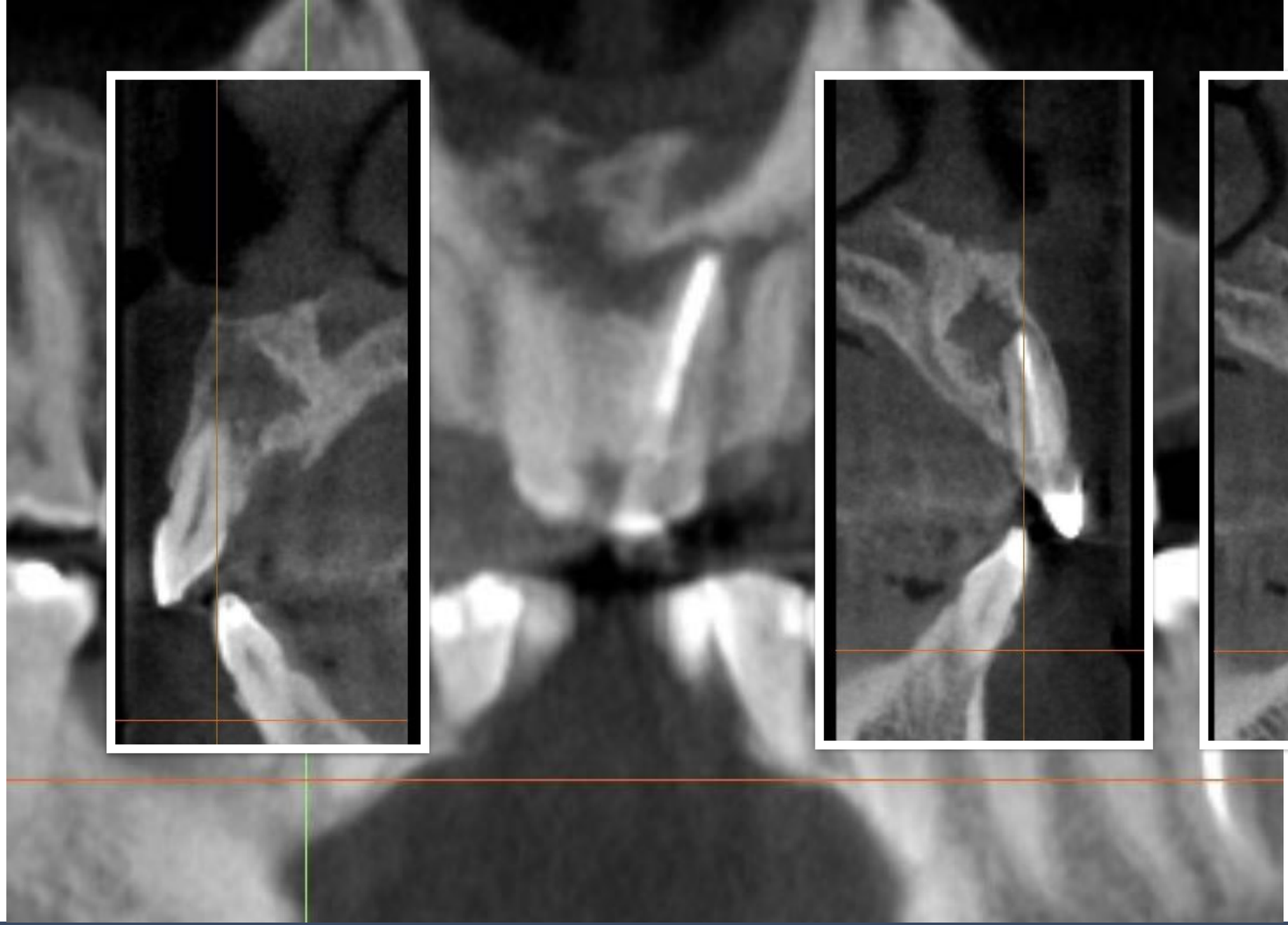


Cavitation treatments

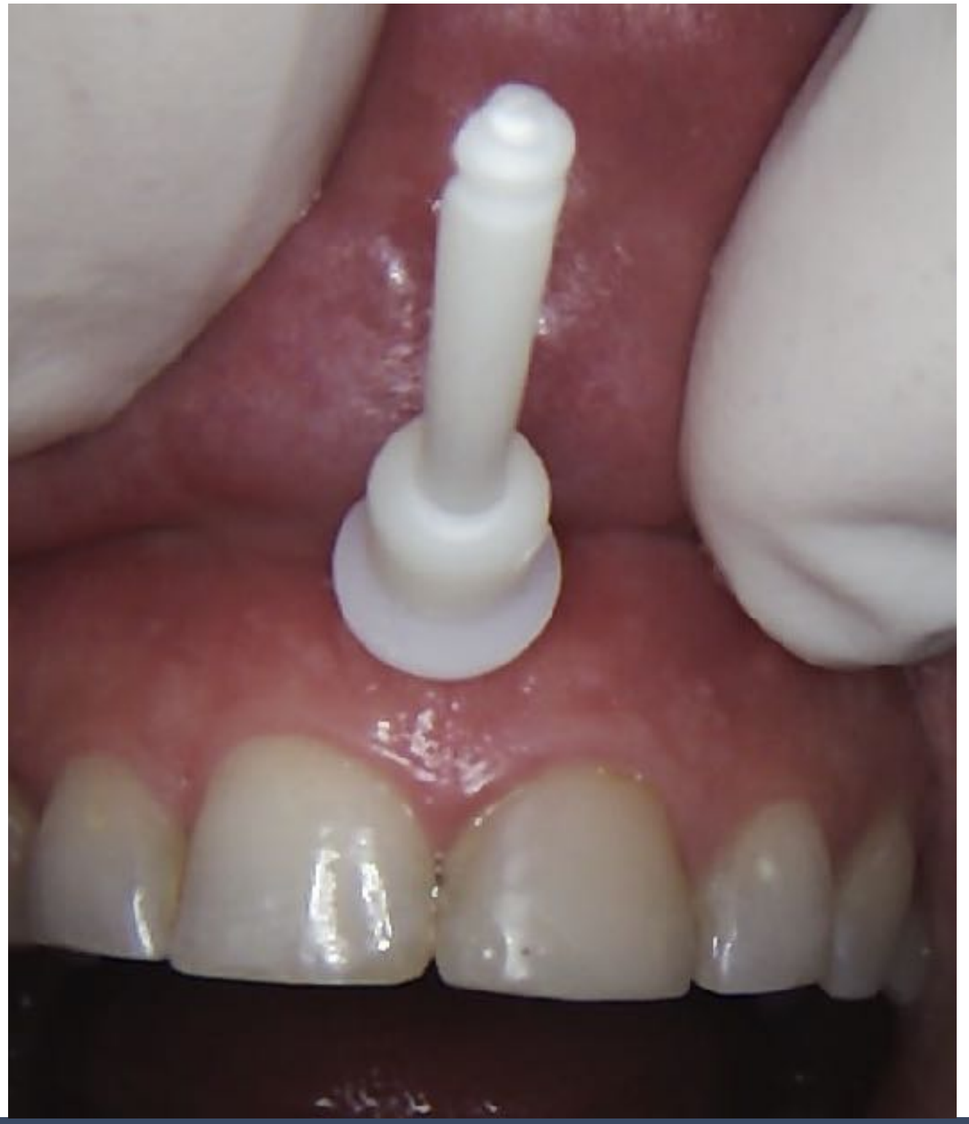
- Conditioning
  - IAOMT is developing a protocol
  - Testing
  - Reducing oxidative stress
  - Optimizing the terrain
- Surgery (sometimes involves tooth extraction)
- Ozone

Cavitation treatments

- Medical Grade Ozone – Oxygen Injection therapy to reduce the anaerobic bacteria
- Surgical removal of the dead bone and curettage and/or lasing of the lesion
- PRF – Platelet-rich fibrin graft to fill in the osseous void
- Hyperbaric oxygen
- Sanum remedies and Homeopathic supportive therapies
- Nutrition and nutraceuticals/antioxidants - decrease inflammation
- Acupuncture and Energy treatments
- Photobiomodulation—Laser or LED (near infrared)
- Detoxification
- Reduce other pains (TMD, myofascial, etc.) - bring pain below critical threshold - increase bloodflow/anti-coagulation modalities



X-Tip



X-Tip

X-Tip

Lechner and von Baehr *The EPMA Journal* (2015) 6:10
DOI 10.1186/s13167-015-0032-4

The EPMA Journal

RESEARCH Open Access

Chemokine RANTES/CCL5 as an unknown link between wound healing in the jawbone and systemic disease: is prediction and tailored treatments in the horizon?

Johann Lechner[1*] and Volker von Baehr[2]

RANTES: A cytokine ? that is a member of the interleukin-8 superfamily of cytokines. RANTES is a protein. It is a selective attractant for memory T lymphocytes and monocytes. It binds to CCR5, a coreceptor of HIV. RANTES is an acronym for Regulated on Activation, Normal T Expressed and Secreted. It is also known as CCL5.

retromolar and the apical jawbone samples showed clinically fatty degenerated and osteonecrotic medullary changes.

Results: All fatty necrotic and osteolytic jawbone (FDOJ) samples showed regulated on activation, normal T-cell expressed and secreted (RANTES) and fibroblast growth factor (FGF)-2 as the only extremely overexpressed cytokines. FDOJ cohorts showed a 30-fold mean overexpression of RANTES and a 20-fold overexpressed level of FGF-2 when compared to healthy controls.

Conclusions: As RANTES is discussed in the literature as a possible contributor to inflammatory diseases, and though

Conclusions: As RANTES is discussed in the literature as a possible contributor to inflammatory diseases, and though it might have oncogenic effects, we hypothesize that FDOJ in areas of improper and incomplete wound healing in the jawbone might act as hyperactivated signaling pathways, while serving as an unknown source of "silent inflammation". Because of the wide range of RANTES in immune diseases, treating FDOJ can cover many potential prediction or prognosis of individual outcomes.

Allergy Asthma Proc. 2001 May-Jun;22(3):133-7.

MCP-1 and RANTES are mediators of acute and chronic inflammation.

Conti P[1], DiGioacchino M.

Author information

Abstract

Regulation of leukocyte migration and activation by chemokines are recognized as potentially important functions in the induction of acute and chronic inflammatory reactions. Regulated upon activation normal T cell expressed and presumably secreted (RANTES), monocyte chemotactic protein-1 (MCP-1), and related molecules constitute the C-C class of the beta chemokine supergene family with inflammatory properties. Here we report that in experimental studies RANTES and MCP-1 provoke mast cell activation and increase histidine decarboxylase mRNA expression in a dose-dependent manner. Moreover, injections of RANTES and MCP-1 in the rat skin cause mast cell, eosinophil, and macrophage recruitment, and prostaglandin E2 (PGE2) generation. In a chronic inflammatory model MCP-1 was found to mediate the recruitment of mononuclear cells in calcified granulomas. In addition, MCP-1 mediated parasitic infections caused by Trichinella spiralis. In accordance with other studies, RANTES and MCP-1 were found to play an important role in the lung allergic inflammation, lung leukocyte infiltration, bronchial hyperresponsiveness, and the recruitment of eosinophils in the pathogenesis of asthma. Here for the first time we propose a new mechanism of pulmonary airway inflammation where RANTES and MCP-1 are deeply involved. We also studied the apparent role played by RANTES in the pathogenesis of relapsing-remitting multiple sclerosis enhancing the inflammatory response within the nervous system.

PMID: 11424873 [PubMed - indexed for MEDLINE]

Clin Cosmet Investig Dent. 2017 Nov 9;9:99-109. doi: 10.2147/CCIDE.S149545. eCollection 2017.

Aseptic-avascular osteonecrosis: local "silent inflammation" in the jawbone and RANTES/CCL5 overexpression.

Lechner J[1], Schuett S[2], von Baehr V[2].

Author information

Abstract

Of the definitions listed in the International Statistical Classification of Diseases and Related Health Problems, tenth revision (ICD-10), two disease descriptions can be found together: "idiopathic aseptic bone necrosis" and "avascular bone necrosis." The relevant literature on both the conditions abbreviates both as "aseptic ischemic osteonecrosis in the jawbone" (AIOJ). To shed light on the clinical details of this condition, osteolytic jawbone samples of 24 patients with different systemic immunological diseases were examined using four steps: presurgical dental X-ray, postsurgical histology, polymerase chain reaction DNA analysis (PCR DNA) of bacteria, and RANTES/CCL5 (R/C) expression. These four steps showed that neither X-ray nor histology delivered unambiguous results with respect to inflammatory processes; furthermore, the PCR results did not show evidence of any microbial load within the jaw samples. However, there is a striking, coherent overexpression of chemokine R/C in the AIOJ samples. This study proved the aseptic existence of "silent inflammation" within the jawbone. The ICD-10 (AIOJ) definition, which is hard to interpret, can now be substantiated with clinical evidence, while the cytokine expressions described in this report can explain the systemic immunological effects observed within the group of examined patients.

Evolution in Implant Dentistry

titanium implant
with titanium abutment
1980's

titanium implant
with zirconia abutment
2000

CERAROOT
zirconia implant
2005

IMPLANTS

Rev Med Brux. 2010 Jan-Feb;31(1):44-9.

[Allergies to dental metals. Titanium: a new allergen].

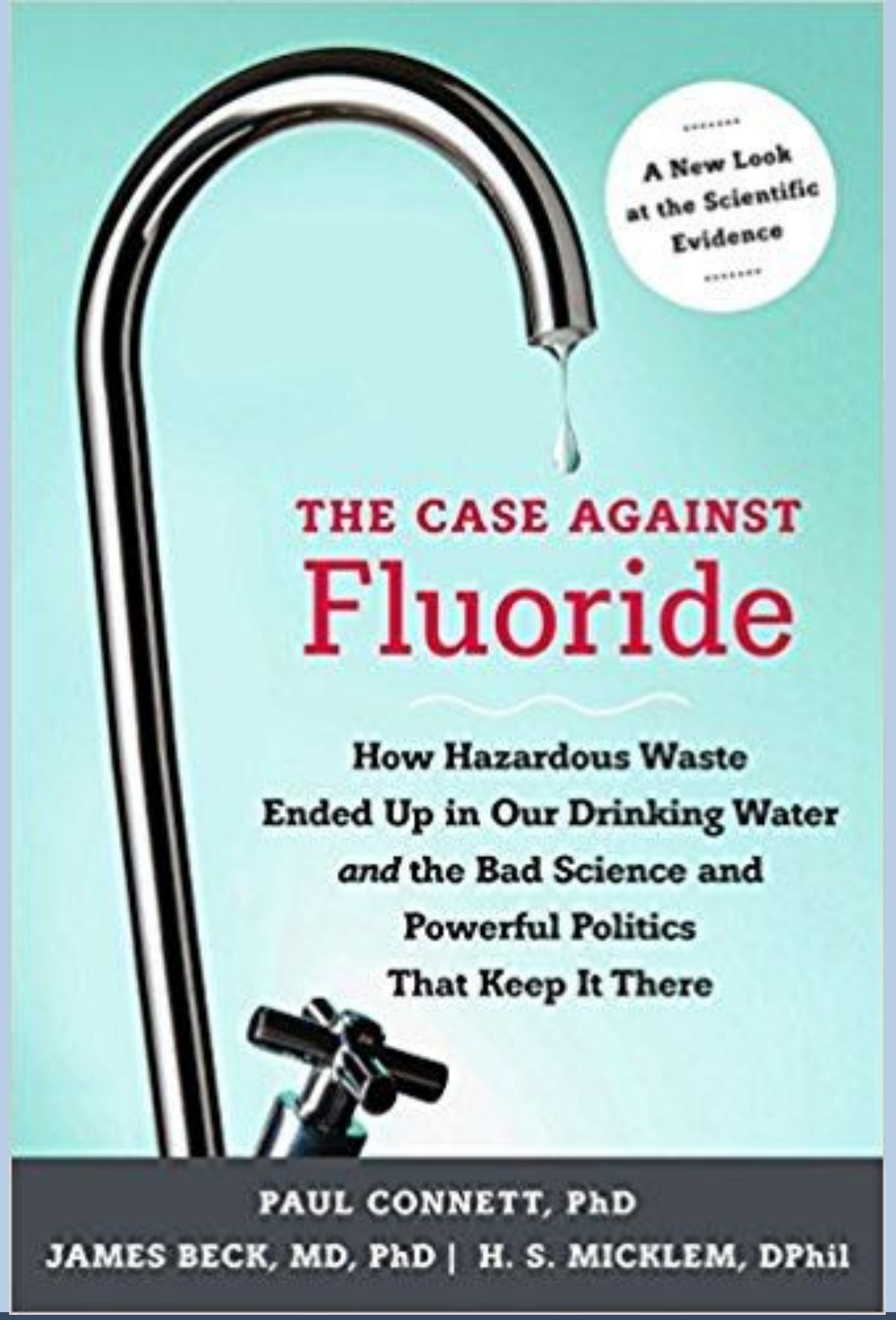
[Article in French]

Evrard L[1], Waroquier D, Parent D.

Author information

Abstract

Oral allergies are underdiagnosed by dental health professionals. Patients with an oral allergy complain of various symptoms such as burning or tingling sensations, with or without oral dryness or loss of taste, or of more general symptoms such as headache, dyspepsia, asthenia, arthralgia, myalgia. The signs of oral allergy include erythema, labial oedema or purpuric patches on the palate, oral ulcers, gingivitis, geographical tongue, angular cheilitis, perioral eczematous eruption, or lichenoid reactions localized on the oral mucosa. There is an increase in the prevalence of oral allergies to **metals** used in dental materials. Allergy to gold included in dental prosthesis has been well documented since the years eighties. Recently, titanium, used in orthopedic devices and oral implants, considered as an inert material, can induce toxicity or allergic type I or IV reactions. These reactions to titanium could be responsible for unexplained successive failure cases of dental implants in some patients (named "cluster patients"). The risk of an allergy to titanium is increased in patients who are allergic to other **metals**. In these patients, an evaluation of allergy is recommended, in order to exclude any problem with titanium medical devices. We stress the importance of a multidisciplinary approach to take into account patients with an oral allergy, with participation of specialists from dental and dermatologic fields.


A New Look at the Scientific Evidence
THE CASE AGAINST
Fluoride
How Hazardous Waste Ended Up in Our Drinking Water *and* the Bad Science and Powerful Politics That Keep It There
PAUL CONNETT, PhD
JAMES BECK, MD, PhD | H. S. MICKLEM, DPhil

BRIEF HISTORY OF FLUORIDE, Part 1

1886: Elemental fluorine was isolated by chemist Henri Moissan, and then industry began experimenting with fluorine compounds.

1930's: High levels of fluoride occurring naturally in water were linked to dental fluorosis as discovered and purported by Frederick S. McKay, DDS.

1942-45: Uranium fluoride and thorium fluoride were used in atomic bomb production.

1944: A *Journal of* *the American Dental Association* editorial and other authorities offered warnings about fluoride dangers.

1945: Grand Rapids, Michigan, was the first city to be artificially fluoridated for dental purposes (even though the experiment was never completed with the Muskegon, Michigan, control group).

BRIEF HISTORY OF FLUORIDE, Part 2

Circa 1950's: Fluoride "supplements" were introduced and prescribed. Perfluorinated chemicals were introduced for surface protection in certain products.

1960: Fluoridation of drinking water for alleged dental benefits had spread to over 50 million people in the US.

1960's: Fluoridated toothpaste was introduced. Glass ionomer cement was invented.

1970's: Fluoride sealants were introduced.

1980's: Fluoroquinolones (i.e. type of antibiotics) were introduced.

2014: Over 210 million Americans (66%) are known to be drinking fluoridated water (versus only 3% of western Europeans).

International Academy of Oral Medicine and Toxicology (IAOMT)
Position Paper against Fluoride Use in Water, Dental Materials, and Other Products for Dental and Medical Practitioners, Dental and Medical Students, Consumers, and Policy Makers

Originally Released on September 22, 2017

Compiled, Developed, Written, and Released by

David Kennedy, DDS, MIAOMT

Amanda Just, MS, Program Director of the IAOMT

John Kall, DMD, FAGD, MIAOMT

Griffin Cole, DDS, NMD, MIAOMT

Approved by the IAOMT Scientific Review and Clinical Practice Guideline Committee on March 25, 2017

Approved by the IAOMT Board of Directors on July 3, 2017

https://files.iaomt.org/wp-content/uploads/IAOMT-Fluoride-Position-Paper.pdf

https://iaomt.org/resources/fluoride-facts/

Fluoride is chemically synthesized and added to these items:

Artificially fluoridated municipal water	Beverages (made with fluoridated water)
Dental cements with fluoride	Dental fillings with fluoride
Dental gels with fluoride	Dental varnishes with fluoride
Floss with fluoride	Fluoride drugs (“supplements”)
Food (that contains or has been exposed to fluoride)	Mouthwash with fluoride
Pesticides with fluoride	Pharmaceutical drugs with perfluorinated compounds
Stain resistant and waterproof items with PFCs	Toothpaste with fluoride

This chart includes some of the specific human health risks scientifically associated with fluoride exposure:

Acne and other dermatological conditions	Arterial calcification and arteriosclerosis	Bone weakness and risk of fractures	Cancer of the bone, osteosarcoma
Cardiac failure	Cardiac insufficiency	Cognitive deficits	Dental fluorosis
Diabetes	Early puberty in girls	Electrocardiogram abnormalities	Harm to the fetal brain
Hypertension	Immune system complications	Insomnia	Iodine deficiency
Lower fertility rates	Lower IQ	Myocardial damage	Neurotoxic effects, including ADHD
Osteoarthritis	Skeletal fluorosis	Temporomandibular joint disorder (TMJ)	Thyroid dysfunction

Dental Fluorosis

- Excess fluoride in children known to result in dental fluorosis
- Condition in which the teeth enamel becomes irreversibly damaged and the teeth become permanently discolored, displaying a white or brown mottling pattern and forming brittle teeth that break and stain easily
- Can range from mild to severe
- Considered the first sign of fluoride toxicity

Photos from Dr. David Kennedy and are used with permission from victims of dental fluorosis

Dental Fluorosis Levels in the U.S.

According to the Centers for Disease Control, 23% of Americans aged 6-49 and 41% of children aged 12-15 exhibit fluorosis to some degree.

Centers for Disease Control and Prevention. Prevalence and severity of dental fluorosis in the United States, 1999-2004. NCHS Data Brief. November 2010, Number 53. https://www.cdc.gov/nchs/data/databriefs/db53.htm

These increases in rates of dental fluorosis were a crucial factor in the U.S. Public Health Service's decision to lower its water fluoridation level recommendations in 2015.

SUMMARY OF IAOMT POSITION:

Given the elevated number of fluoride sources and
the increased rates of fluoride intake in the American population, which have risen substantially since water fluoridation began in the 1940's, it has become a necessity to reduce and work toward eliminating avoidable sources of fluoride exposure, including water fluoridation, fluoride-containing dental

A Section 508–conformant HTML version of this article is available at https://doi.org/10.1289/EHP655.

Prenatal Fluoride Exposure and Cognitive Outcomes in Children at 4 and 6–12 Years of Age in Mexico

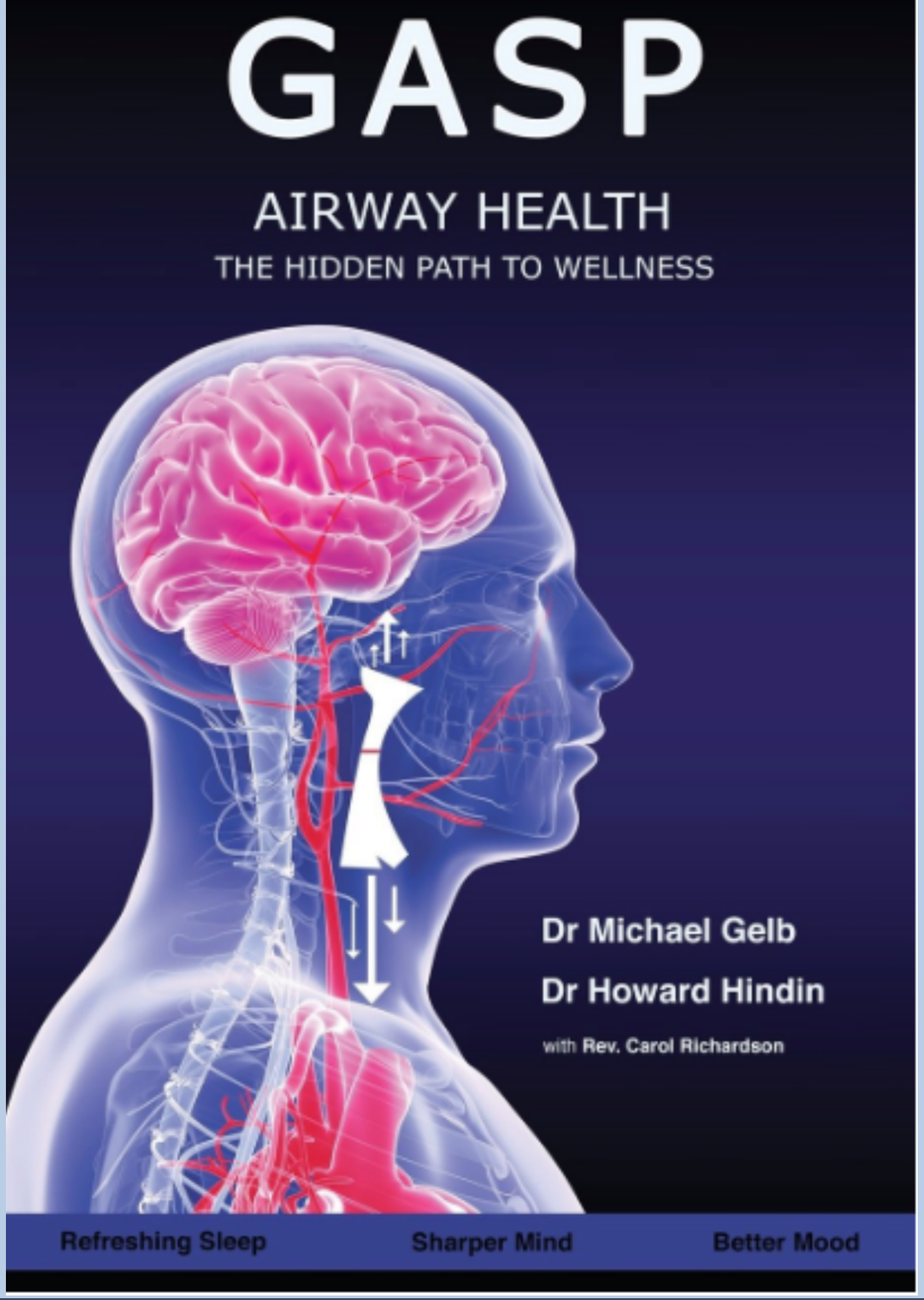
Morteza Bashash,[1] Deena Thomas,[2] Howard Hu,[1] E. Angeles Martinez-Mier,[3] Brisa N. Sanchez,[2] Niladri Basu,[4] Karen E. Peterson,[2,5,6] Adrienne S. Ettinger,[2] Robert Wright,[7] Zhenzhen Zhang,[2] Yun Liu,[2] Lourdes Schnaas,[8] Adriana Mercado-García,[9] Martha María Téllez-Rojo,[9] and Mauricio Hernández-Avila[9]

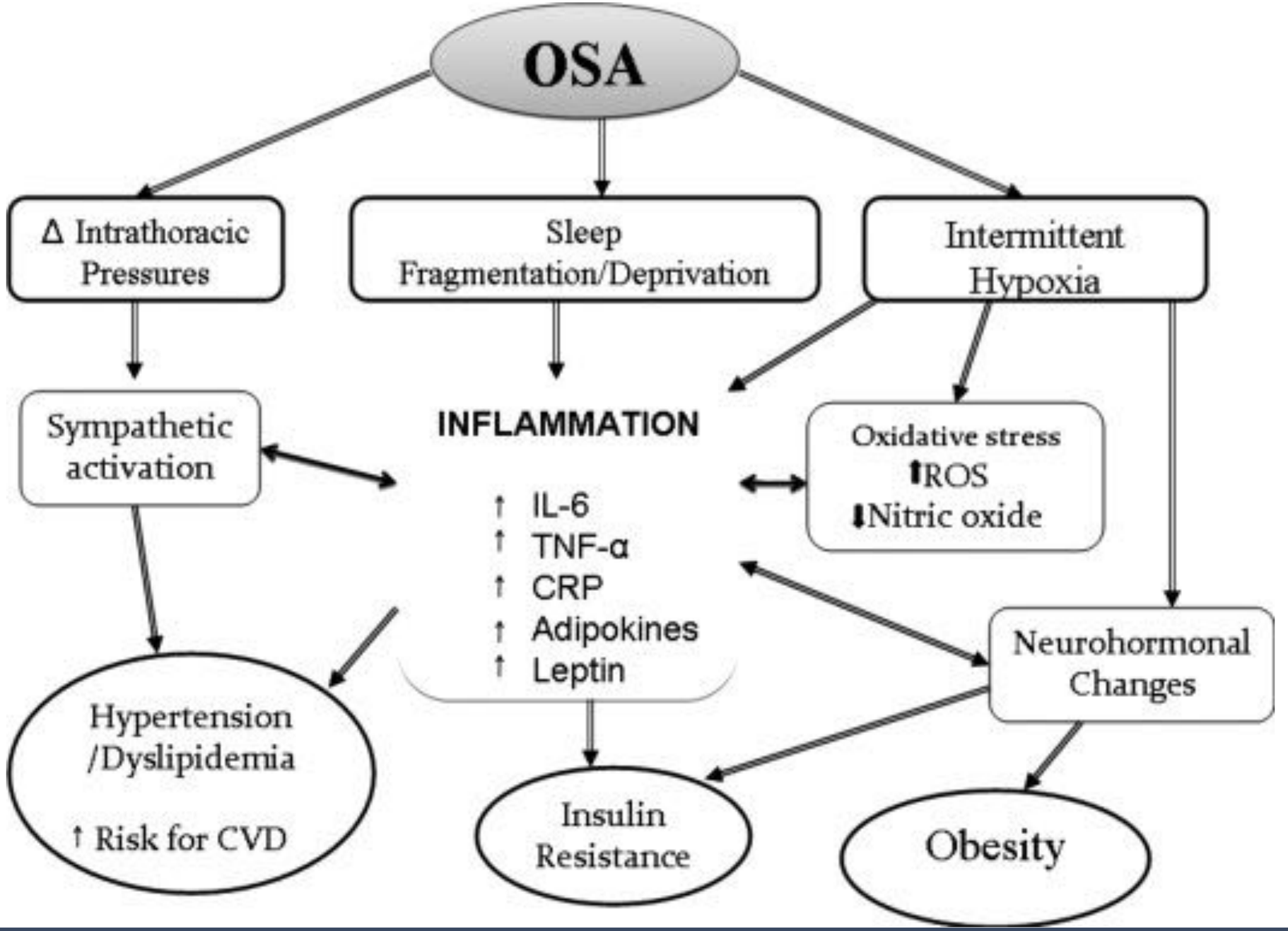
Background: Some evidence suggests that fluoride may be neurotoxic to children. Few of the epidemiologic studies have been longitudinal, had individual measures of fluoride exposure, addressed the impact of prenatal exposures or involved more than 100 participants.

Objective: Our aim was to estimate the association of prenatal exposure to fluoride with offspring neurocognitive development.

Conclusions: In this study, higher prenatal fluoride exposure, in the general range of exposures reported for other general population samples of pregnant women and nonpregnant adults, was associated with lower scores on tests of cognitive function in the offspring at age 4 and 6–12 y. https://doi.org/10.1289/EHP655

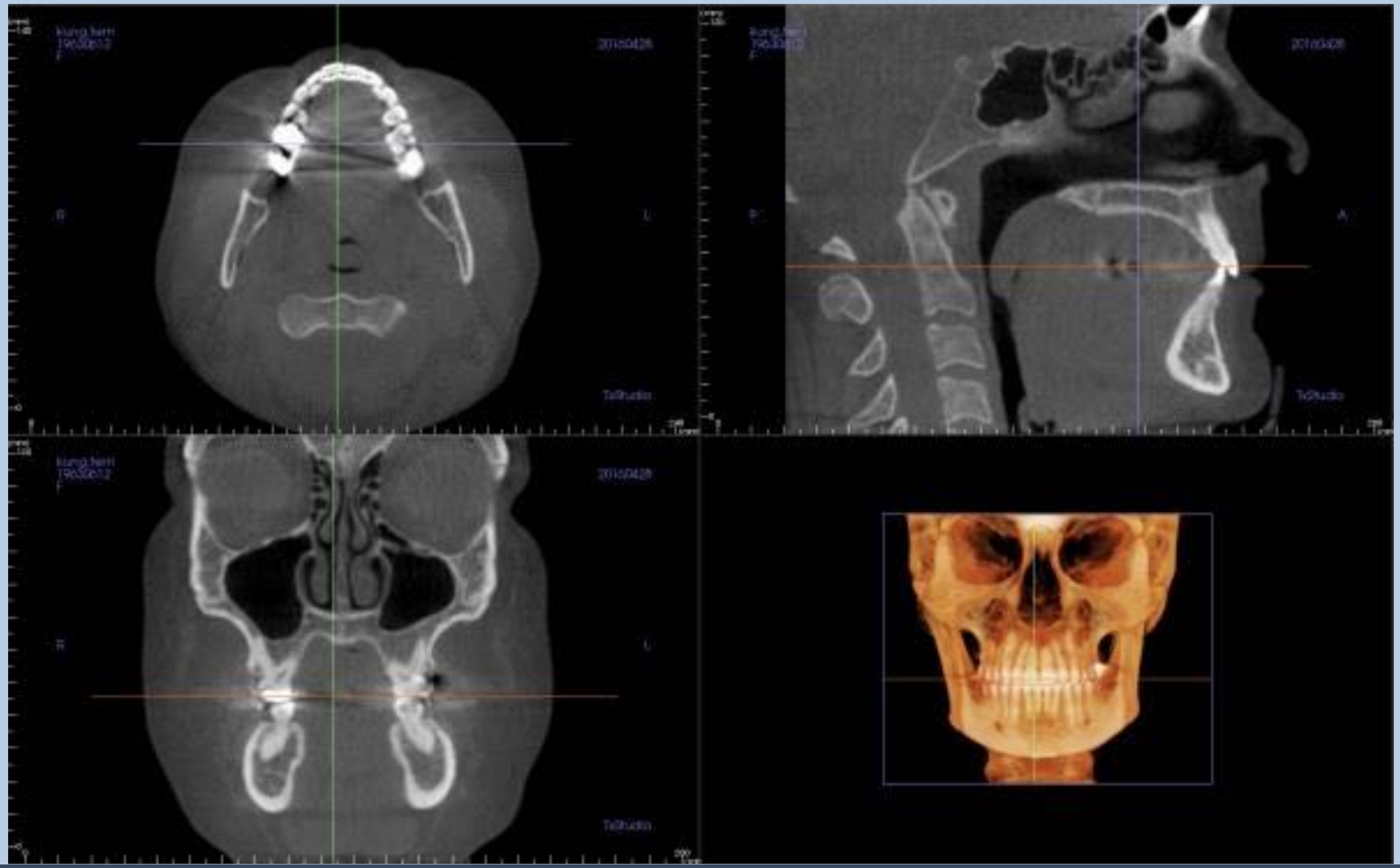
Received 14 June 2016; Revised 8 May 2017; Accepted 9 May 2017; Published 19 September 2017. https://ehp.niehs.nih.gov/wp-content/uploads/2017/09/EHP655.alt_.pdf

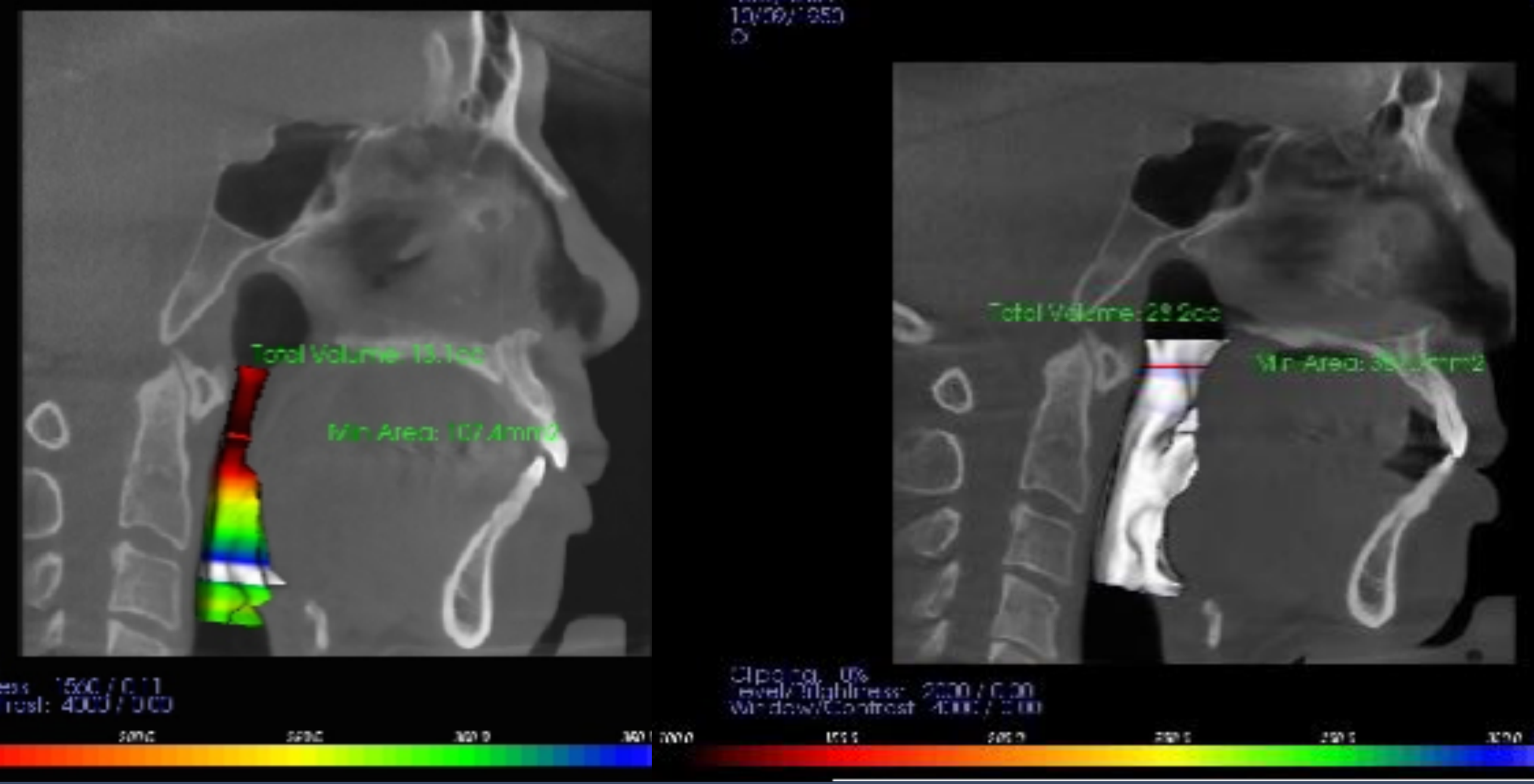

GASP
AIRWAY HEALTH
THE HIDDEN PATH TO WELLNESS
Dr Michael Gelb
Dr Howard Hindin
with Rev. Carol Richardson
Refreshing Sleep
Sharper Mind
Better Mood

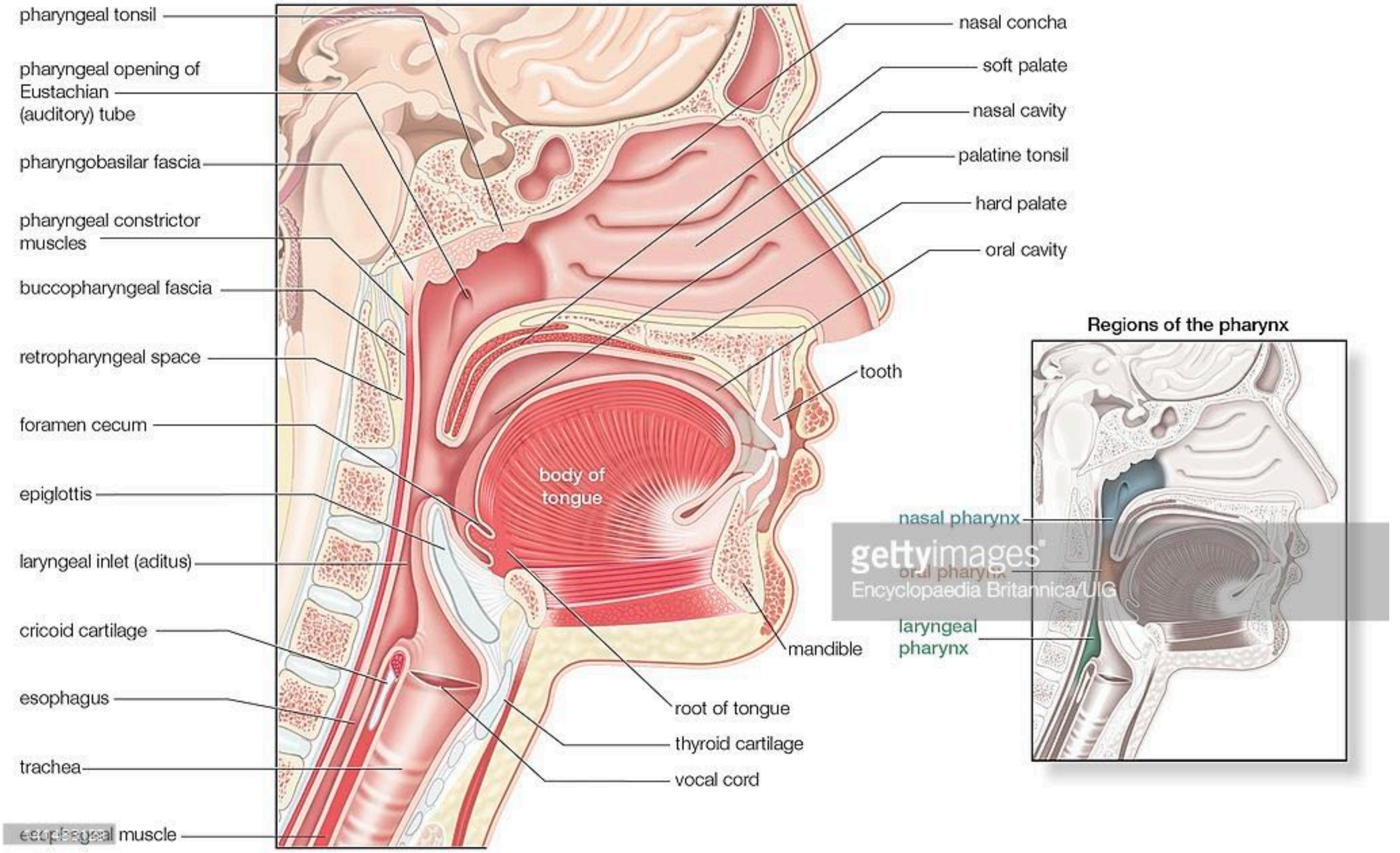


Jinkwan Kim, Fahed Hakim, Leila Kheirandish-Gozal, David Gozal, Inflammatory pathways in children with insufficient or disordered sleep, Respiratory Physiology & Neurobiology, Volume 178, Issue 3, 30 September 2011, Pages 465-474, ISSN 1569-9048, 10.1016/j.resp.2011.04.024.
(http://www.sciencedirect.com/science/article/pii/S1569904811001625)

DECREASED AIRWAY SPACE




Total Volume: 18.1cc
Min Area: 107.4mm2
Total Volume: 29.2cc


pharyngeal tonsil
pharyngeal opening of Eustachian (auditory) tube
pharyngobasilar fascia
pharyngeal constrictor muscles
buccopharyngeal fascia
retropharyngeal space
foramen cecum
epiglottis
laryngeal inlet (aditus)
cricoid cartilage
esophagus
trachea
esophageal muscle
nasal concha
soft palate
nasal cavity
palatine tonsil
hard palate
oral cavity
tooth
body of tongue
mandible
root of tongue
thyroid cartilage
vocal cord
Regions of the pharynx
nasal pharynx
oral pharynx
laryngeal pharynx
gettyimages
Encyclopaedia Britannica/UIG

Primitive: wide jaw

Modern: narrow jaw

Red Flags - OSA

- Large tongue
- Scalloped tongue
- High narrow palate
- Narrow nose
- Retrognathic jaws
- Large neck/obesity
- Hypertension

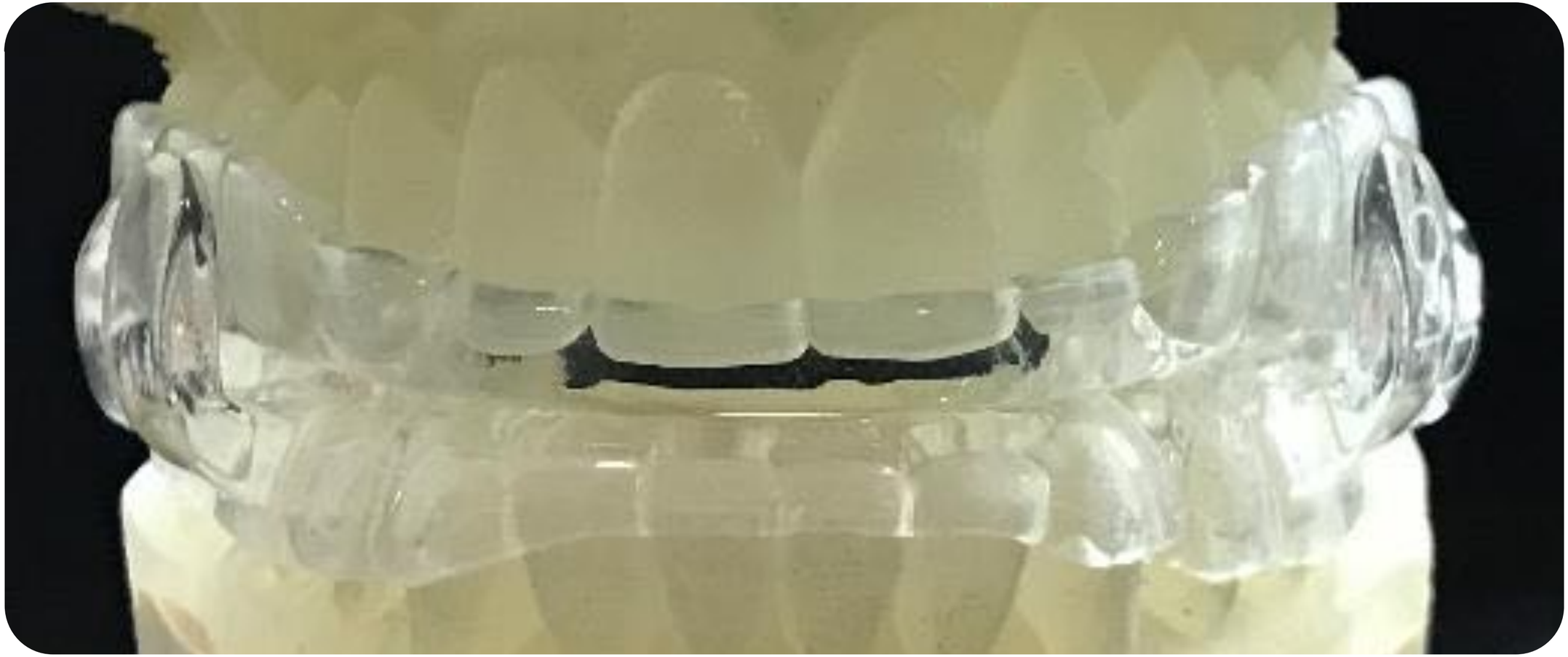
Epidemiology

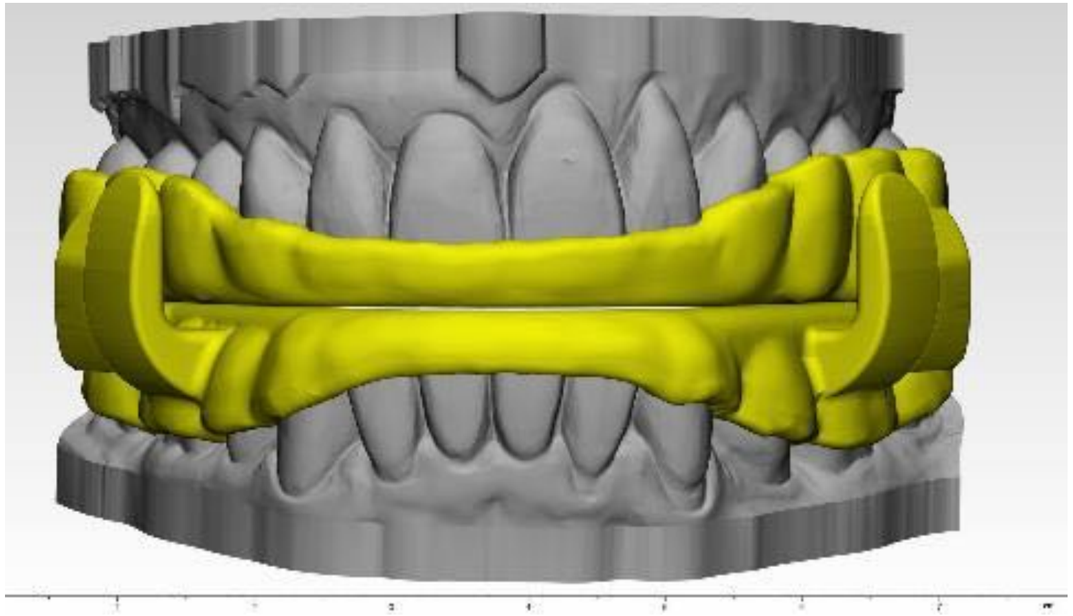
- 85 % undiagnosed
- 50% of your patients snore
- 36% have OSA
- Effects infants, kids , adults and seniors

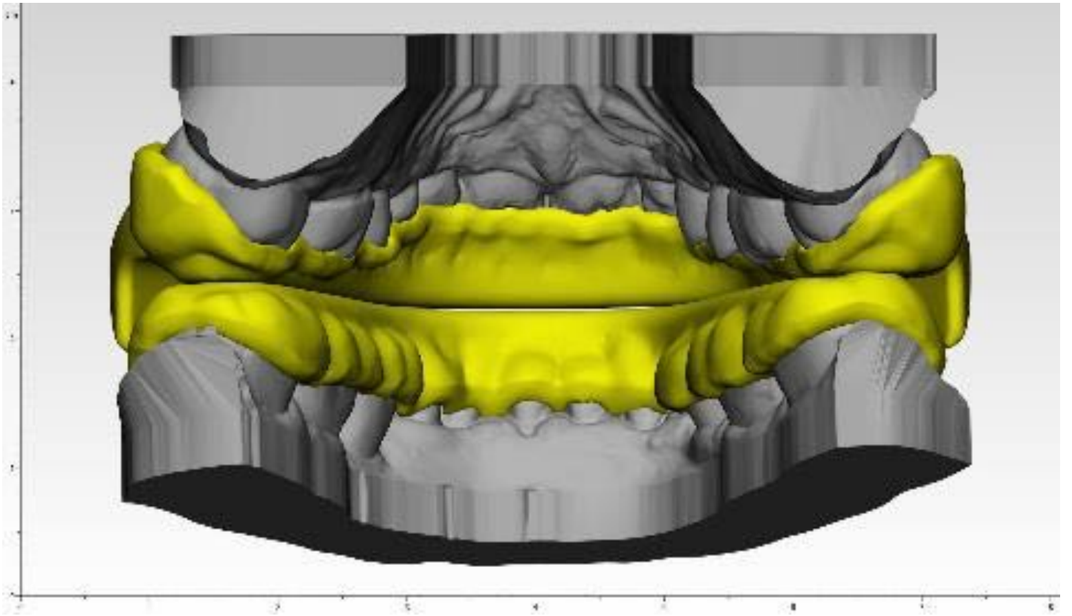
Common daytime complaints related to OSA

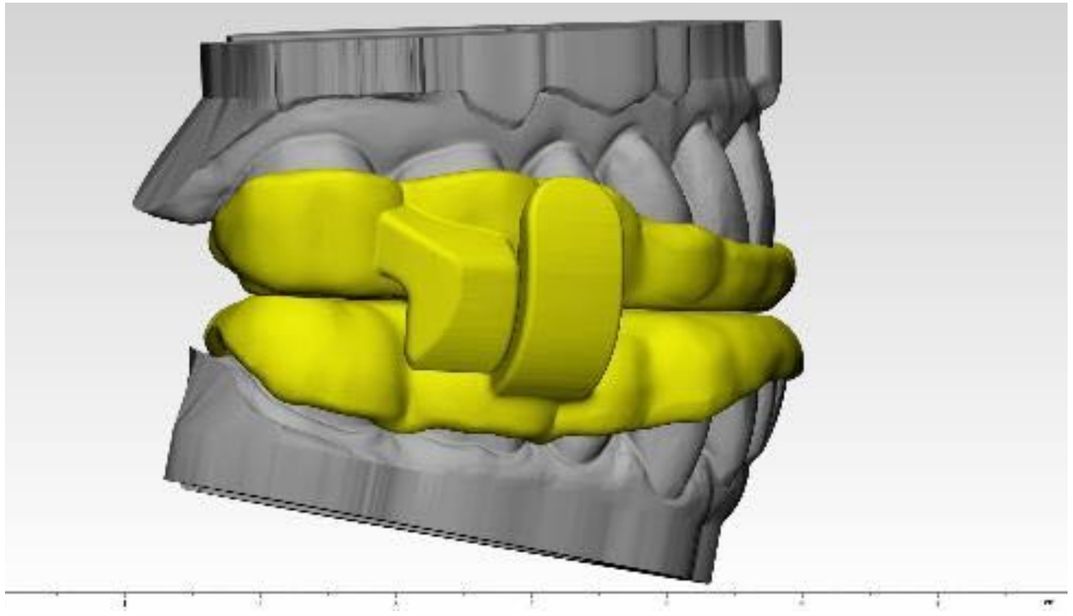
- Fatigue
- Exhaustion
- Difficulty concentrating
- Irritable
- Depressed
- Anxious
- Reflux
- GERD
- Morning headache
- High blood pressure

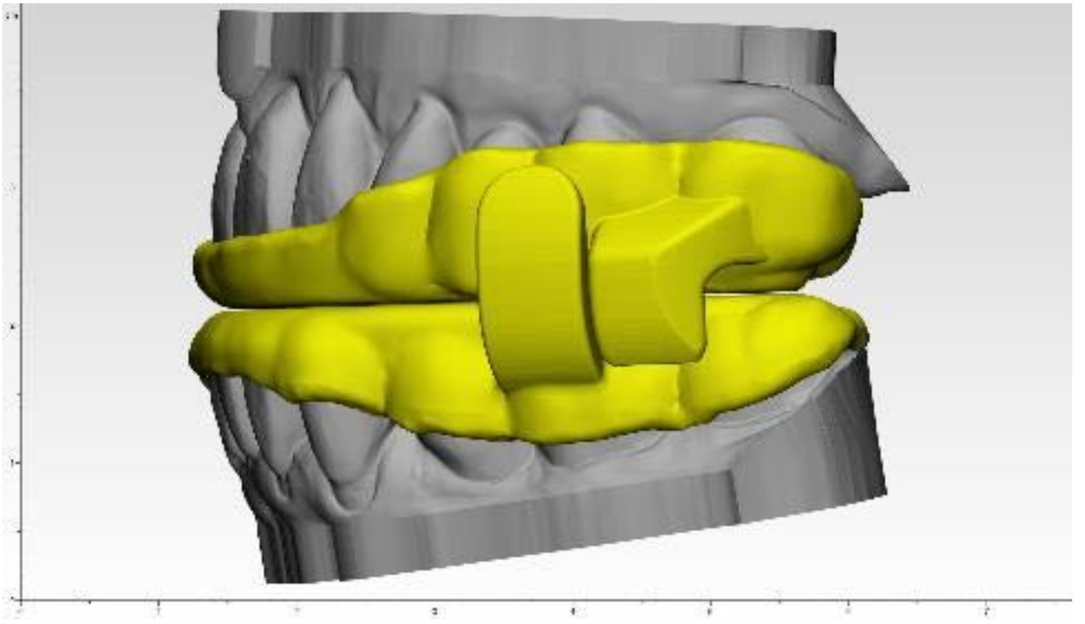
Dental appliances

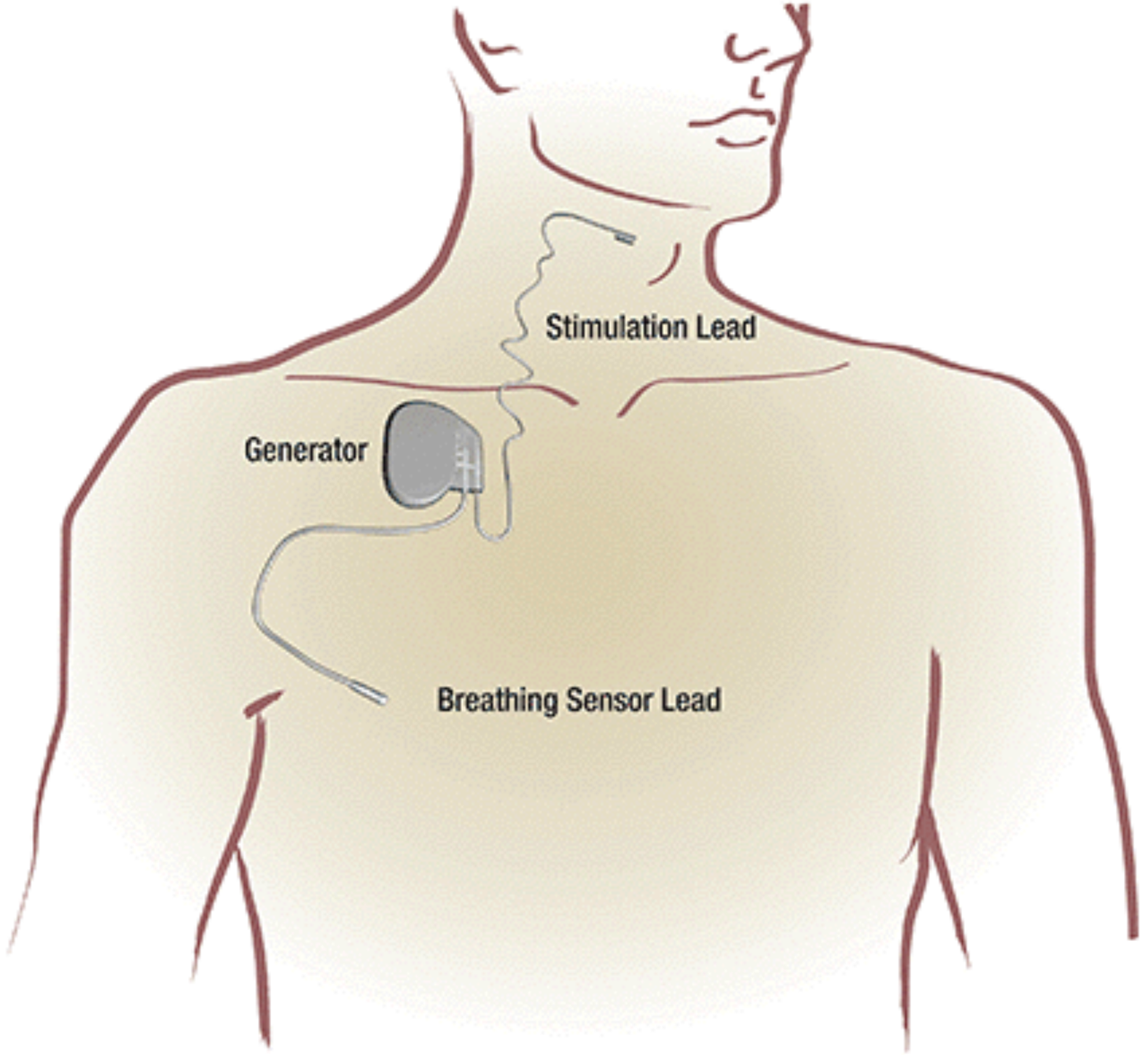












Stimulation Lead

Delivers mild stimulation to maintain multilevel airway patency during sleep

Generator

Monitors breathing patterns

Breathing Sensor Lead

Senses breathing patterns

Protection from diagnostic radiation

- Are dental x-rays dangerous?
  - Dental x-rays are one of the lowest radiation dose studies performed. A routine exam which includes 4 bitewings is about 0.005 mSv, which is less than one day of natural background radiation. It is also about the same amount of radiation exposure from a short airplane flight (~1-2 hrs).

- http://www.xrayrisk.com/faq.php
- https://www.xray-protection.com/faqs.html

Typical Effective Radiation Dose from Diagnostic X Ray—Single Exposure (Mettler 2008)

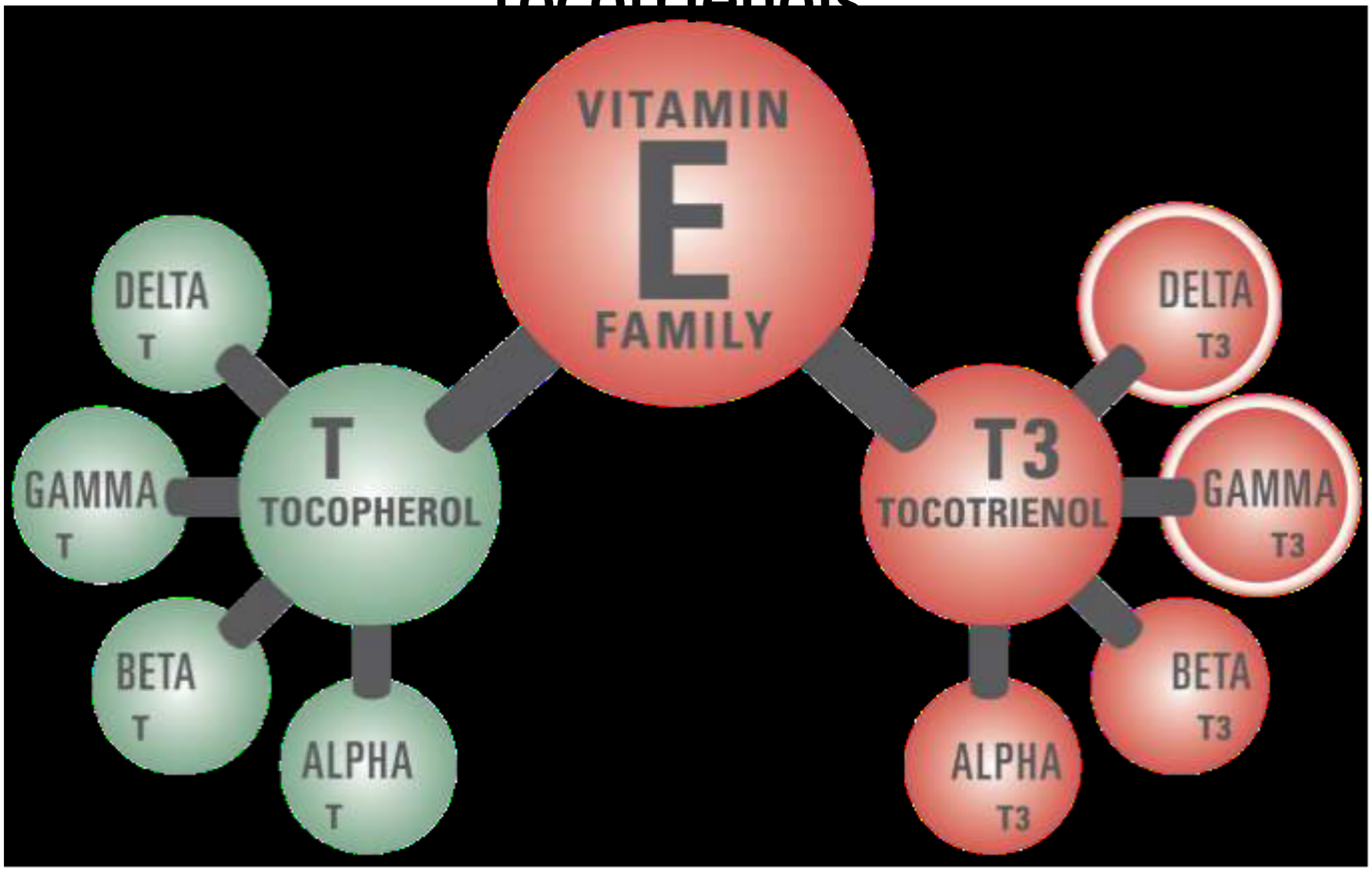
Exam	Effective Dose mSv (mrem)
Chest	0.1 (10)
Cervical Spine	0.2 (20)
Thoracic Spine	1.0 (100)
Lumbar Spine	1.5 (150)
Pelvis	0.7 (70)
Abdomen or Hip	0.6 (60)
Mammogram (2 view)	0.36 (36)
Dental Bitewings	0.005 (0.5)
Dental (panoramic)	0.01 (1)
DEXA (whole body)	0.001 (0.1)
Skull	0.1 (10)
Hand or Foot	0.005 (0.5)

The following table shows the dose a patient could receive if undergoing an entire procedure that may be diagnostic or inter-ventional. For example, a lumbar spine series usually consists of five x-ray exams. (Mettler 2008)

Examinations and Procedures	Effective Dose millisieverts (mrem)
Intravenous Pyelogram	3.0 (300)
Upper GI	6.0 (600)
Barium Enema	7.0 (700)
Abdomen Kidney, Ureter, Bladder (KUB)	0.7 (70)
CT Head	2.0 (200)
CT Chest	7.0 (700)
CT Abdomen/Pelvis	10.0 (1,000)
Whole-Body CT Screening	10.0 (1,000)
CT Biopsy	1.0 (100)
Calcium Scoring	2.0 (200)
Coronary Angiography	20.0 (2,000)
Cardiac Diagnostic & Intervention	30.0 (3,000)
Pacemaker Placement	1.0 (100)
Peripheral Vascular Angioplasties	5.0 (500)
Noncardiac Embolization	55.0 (5,500)
Vertebroplasty	16.0 (1,600)

https://hps.org/documents/Medical_Exposures_Fact_Sheet.pdf

Vitamin E means 4 tocopherols and 4 tocotrienols



RICE

50%

15%

35%

Tocopherols
Inactive or Antagonistic

PALM

25%

25%

50%

Alpha T3 & Beta T3
Less Active

ANNATTO

100%
(90%DT3 + 10%GT3)

Delta T3 & Gamma T3
Most Active

TOCOTRIENOL RESEARCH

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- Antioxidation and Anti-ageing
- Skin Care
- Brain and Nerve Health
- Radiation Protection

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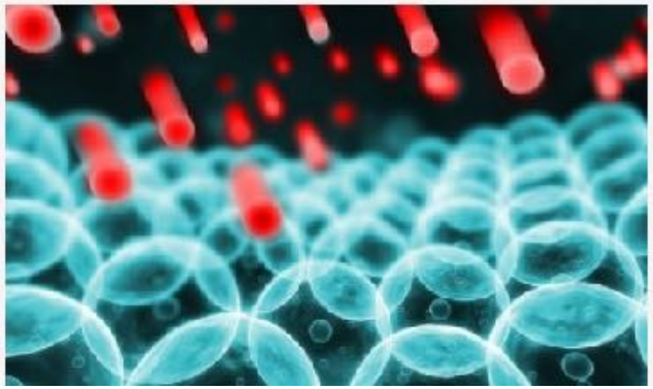

Ionizing radiation even at low doses can lead to lethal effects. Sustained exposure may even increase the risk of cancer in the long-term. Radiation exposure induces free radical species which mediates many of the acute and chronic effects of ionizing radiation. Increased reactive oxygen species following ionizing radiation exposure can empty antioxidant stores, cause cell death in tissues and hastens the ageing process. [1]

Tocotrienol emerging radioprotective effects

Gamma-tocotrienol potently reduces the expression of GFRP, one of the key regulatory proteins in the tetrahydrobiopterin (BH4) pathway, and may thus exert some of its beneficial effects

http://www.tocotrienolresearch.org/radiation-protection/

The British Journal of Radiology, 85 (2012), e1093–e1103

Mechanism of radioprotection by δ-tocotrienol: pharmacokinetics, pharmacodynamics and modulation of signalling pathways

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Objective: The objective of this study was to investigate the correlation between *in vivo* δ-tocotrienol (DT3) pharmacokinetics, pharmacodynamics and radiation protection, and to evaluate the effect of DT3 pre-treatment on radiation-induced alterations in apoptotic and autophagic pathways.

Conclusion: These data indicate that DT3 stimulates multilineage haematopoiesis, protects against radiation-induced apoptosis downstream of the mitochondria and stimulates cytoprotective autophagy. Apart from a potent antioxidant activity, DT3 may elicit survival advantage following irradiation by enhancing haematopoiesis and modulating signalling pathways.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3500808/pdf/bjr-85-e1093.pdf

Clinical Trial: Tocotrienol Bone Benefits

- Texas Tech University Health Science Center
- Study Type: Randomized, double-blind, placebo-controlled
- Intervention: Tocopherol-free tocotrienol from annatto
- Study Details: Post-menopausal women in 3 treatments (placebo, 300mg/d tocotrienol, 600mg/d tocotrienol) for 12 weeks
- Encouraging results just published April, 2018
  - Reduction of oxidative stress marker (8-OHdG)
  - Suppression of collagen degradation
  - Modulation of metabolite profiles (↓ inflammation and oxidative stress)
- Biochemical markers of bone turnover were used for bone mineral density (BMD)
- 2016: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5223723/ (preliminary)
- 2018: https://www.ncbi.nlm.nih.gov/pubmed/29330573
- Additional resources: http://americanrivernutrition.com/deltagold-studies


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