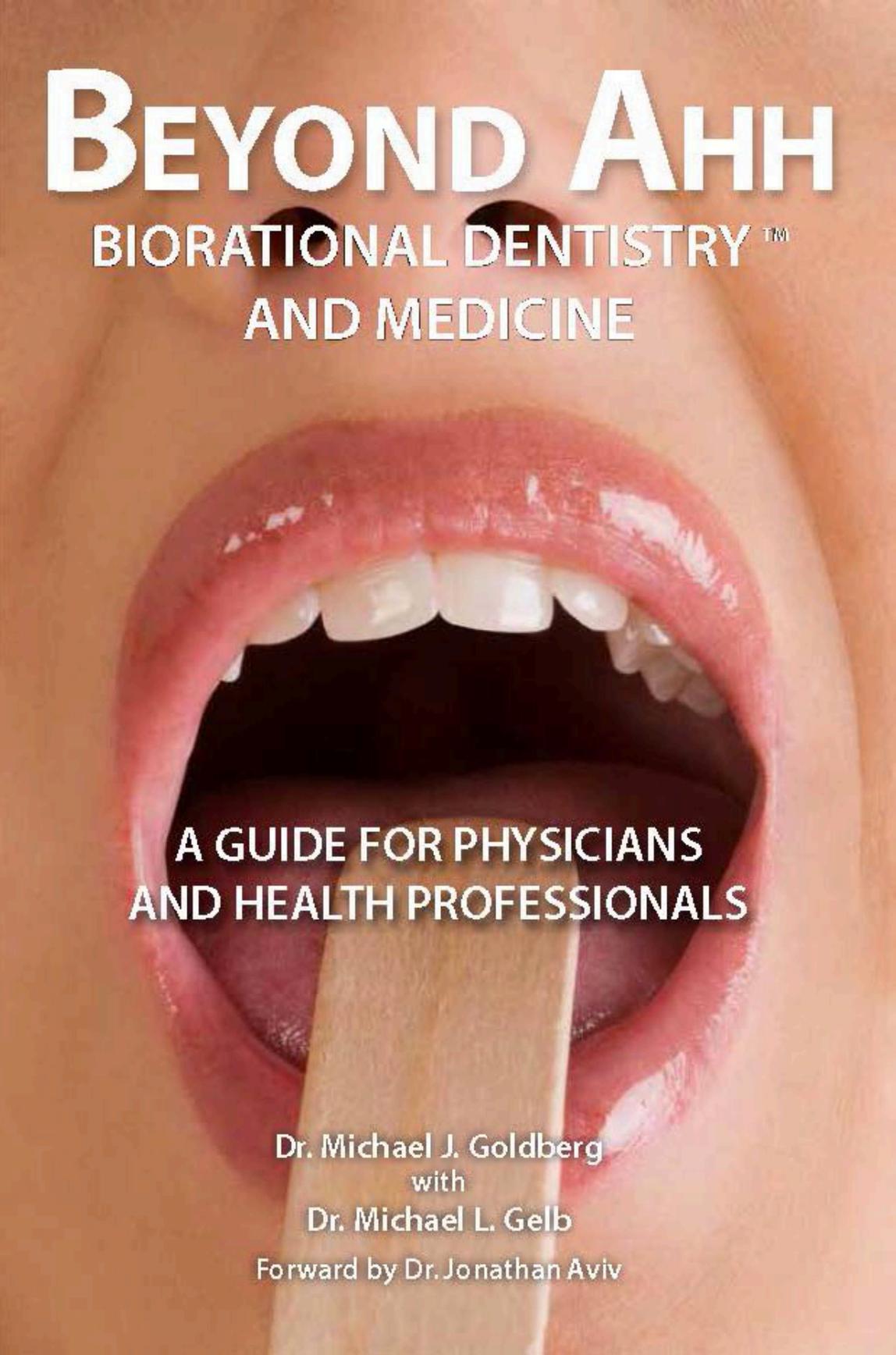


BEYOND AHH



BIORATIONAL DENTISTRY™
AND MEDICINE

A GUIDE FOR PHYSICIANS
AND HEALTH PROFESSIONALS

Dr. Michael J. Goldberg
with

Dr. Michael L. Gelb

Forward by Dr. Jonathan Aviv

BEYOND AHH

BIORATIONAL DENTISTRY™ AND MEDICINE

*The science of keeping your mouth and body
healthy for life, living and loving*

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Dedicated to my wife, Laurie, and our children, Jason and Jaimie. They put up with my obsession with advancing my profession and helping my patients. I only hope that my attention was not overly missed.

I love you.

“If not us, who? If not now, when?”

-John F. Kennedy

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FORWARD

As healthcare consumers and caregivers of all stripes, we are always looking for ways to quickly and accurately assess our own health and well being. We often wonder if, in fact, there even exists a no muss no fuss way to accomplish this goal. As it turns out, we all can be taught to get at least a basic understanding of our overall health status by beginning with the simplest of tasks; opening up our mouth.

In BEYOND AHH; BIORATIONAL DENTISTRY™ AND MEDICINE, Dr. Michael Goldberg and Dr. Michael Gelb provide us with an insightful guide on how the mouth, when examined a certain way, can give us clues not only about our gum disease, but whether or not we have system wide health issues in the rest of our body. The “dentist’s dentists” accomplish this complex endeavor with simple words and phrases using a conversational, engaging tone, weaving a combination of compelling anecdotes, scientific facts and their own seasoned clinical observations.

The “Michaels” connect the dots to show us that where food is placed from infancy throughout our lives is not only where our journey to health and wellness begins. It becomes a mirror of how we are doing, and in the greater analysis, where we may be going.

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PROLOGUE

In the summer of 2012, I found myself in an auditorium in Cleveland, Ohio. I was attending a conference on Oral-Systemic Health at The Cleveland Clinic. I'm a founding member of the American Academy for Oral Systemic Health, a cosponsor of the conference.

Dr. Michael Roizen, The Cleveland Clinic's Chief Wellness Officer gave the opening talk. Obviously aware that there were many dentists and hygienists in the audience, he made a statement that received a unanimous standing ovation. "Floss, red wine and Sex" he said were the keys to wellness.

"FLOSS, RED WINE and SEX"

He continued to elaborate on the benefits of each as well as discussing the issues facing the US and its healthcare system. He presented the case for change better than anyone I had previously heard. He showed how, as healthcare expenditures as a percentage of GDP went up, jobs left. Healthcare costs, he argued, were a jobs issue. Why President Obama didn't use him as an emissary or healthcare ambassador, I'll never understand.

What I do know is that his speech and the entire weekend changed my professional life. I began looking at things differently. I began asking different questions. I began formulating this book.

INTRODUCTION

MY STORY

I have been part of this healthcare system, practicing dentistry for 40 years. During that time, I have also been a student of the science, the art, the business and its education. I've been involved with both clinical and academic practice at Columbia University and New York Presbyterian Medical Center. I have been self-reflective, evaluating the successes I've had and the failures I've seen. I guess they call it a "practice" because you never quite get it perfect.

I've been blessed and fortunate to have been involved with some of the best and brightest healthcare practitioners in the world. Many of them have become patients and refer their patients to me, as well. In fact, my dental colleagues nicknamed me "The Doctor's Dentist," a moniker I am very proud of.

I have become increasingly frustrated by modern medicine's (inclusive of dentistry) approach to health or the lack thereof that we call illness. In fact, there is a preoccupation in this country with treatment of disease and not enough emphasis on the maintenance of health and prevention of illness. I say this because I too have been guilty of this treating symptoms and not causes. Unfortunately, that's how our healthcare system rewards its practitioners; for procedures rather than for diagnosis and cognitive effort. "Sick care" is what most of us practice and I'm looking to help change that.

Let me repeat this because understanding this is so important to personal change and I hope, might eventually affect the public discourse in the area of healthcare. We need to change how we think.

Today, when a person has a **problem**.... they go to the doctor, emergency room or to one of the many “urgent-care centers” (or as I call them Doc-in-the-boxes) that are popping up on seemingly every corner and in every strip mall.

That’s the typical healthcare process in our country. This is **“SICK-CARE.”**

In this book, I’m going to describe and explain a different process, one you can implement to benefit your patients (and yourself). Oral health is integrally related to your patient’s overall health. This process requires you to do several things.

1. Read this book and appreciate the interrelationships.
2. Begin asking your patients the right questions.
3. Find health care professionals who care, appreciate this approach and can help you.

My goal is simple and I hope yours is the same:

Happy, Healthy People

Sounds simple? It’s not.

Reading the book is simple. Assembling a knowledgeable health care team may not be. Our health care professionals are not usually trained to prevent disease. And, they’re currently not rewarded for doing so.

Every medical and dental student knows that to make enough money to pay back their loans and establish a decent lifestyle, they will need to learn how to do “procedures.” Why? Because that’s how our current system’s rewards are structured. In the current model, keeping your patients healthy isn’t valued.

Who is to blame? We all are. It starts with YOU and ME. We, as a society need to start thinking differently. We need to demand different things from ourselves, our fellow health professionals and from our lawmakers (government).

Lawmakers? Government? Yes, indeed! So much of our healthcare is tied to government programs such as Medicare and Medicaid. Obamacare will make this discussion even more important.

Some people might think that since they’re not on Medicaid or even Medicare, it doesn’t affect them. WRONG!

Our doctors are trained in centers that treat predominantly Medicaid and Medicare patients. So what they learn is dictated by these programs’ restrictions. If they don’t learn a technique because Medicaid won’t pay for it, what chance do you think that doctor will be able to do use that technique on you? And if so, will they be trained to use it effectively?

We’ve seen this in Dentistry already. Dental students are not trained to provide comprehensive care because Medicaid, which covers more than 80% of many dental school’s patients, won’t cover such extensive and often expensive treatment options. So students graduate from school not knowing how to deal with complex dental problems. And, because

so much time is invested into learning treatment skills, not enough time us spent teaching preventive strategies.

Significant, costly and time-consuming advanced education is required for a dentist to truly understand and participate in comprehensive care. And, with student debt skyrocketing, new graduates will never keep their heads above water long enough to be able to take these advanced courses and continuums.

Recently, I took a 6-month mini-residency in Dental Sleep Medicine at Tufts University. I had to take time out of my practice, travel up to Boston for long weekends, spend hours doing literature review and the process must have cost upwards of \$50K, including the productivity lost. What young practitioner can afford to do this? And yet, sleep, a vital and increasingly appreciated factor in overall and oral health is not taught at most dental schools.

In this book, you'll benefit from 40 years of clinical experience, 30 years of academic experience and thousands of hours of post-graduate studies all aimed at gaining knowledge and expertise. These include cognitive and physical capabilities. Learning how to observe and listen is as important as the "how to" portion of healthcare...perhaps even more so as robotics begin replacing humans. I have spent hundreds of thousands of dollars, spent countless hours and travelled countless miles in pursuit of excellence.

Many of our State Boards require that dentists spend a minimum amount of time getting 'continuing education' (CE). These minimal CE requirements range from absurd

to ridiculous to laughable. In New York, where I practice, the requirement is 40 hours every 3 years and there's no enforcement. I must easily do 100 or more hours a year.

It's left up to the individual dentist to get an advanced education. And, with the average dental student having more than \$250,000 of debt, how likely is it that he or she can spend the money or take the time off for such advanced education? coursework?

With an increasing burden of debt, new doctors could be subconsciously nudged to put well-reimbursed reparative treatments (procedures) ahead of poorly reimbursed diagnostic and preventive care. Our system has it all backwards.

The result is that most dentists practice "patch-up" dental care and people suffer. It was this realization that prompted me to write my first book "What The Tooth Fairy Didn't Tell You." I was angered by well-meaning dentists who just didn't look at the "**big picture**" and who's patients suffered somewhere down the road.

Manhattan Dental Health, my practices in Manhattan and Bergen County, New Jersey, focus on the larger picture of health and wellness, how the mouth and the rest of the body interact. Together, both books will help you advocate for better dental health for your patients. You'll see that your medical care and your patient's oral health are inseparable.

Such knowledge can help you help your patients live longer. Studies have shown that **keeping your mouth healthy can add up to 7.5 years to your life expectancy.**

We need to educate ourselves and our patients and then demand that our government, schools and allied healthcare professionals help out in their own ways. As Dr. Michael Roizen, chief wellness officer at the famed Cleveland Clinic has said, we need real healthcare and not “**sick care.**”

We now have “sick care” so how do we change that? The question is too big to answer here. What I can and will do here is to explain a new way to look about your oral health. I refer to my approach as BioRational Dentistry because we know that everything is connected and everything we do impacts something else. Trying to minimize and mitigate “unintended consequences” is a constant goal.

What we now have, for the most part, is “sickodontics.” Dentists fill holes created by decay, take teeth out that have been ravaged by gum disease and replace missing teeth. They make their living from treating the problems created by disease rather than teaching people how to prevent the problems in the first place. And, Dentistry has been better than Medicine in this area. Most people know or have heard that you should see your dentist twice a year. And, most insurance companies (I’ll get to them later) even pay for preventive dental visits twice a year. They’re not very magnanimous. Twice yearly visits have become the norm, though some insurance companies are cutting back on that, too!

Insurance and big Pharma have been complicit in promoting sick-care as opposed to preventative-wellness. I understand why big Pharma wants you to be sick; so you’ll need the

“cures” they sell. What I really do not understand is why insurance companies aren’t jumping on the preventative-wellness model. Theoretically, it should save them money and accomplish what their main objectives are; bigger profits. I guess it’s because they are placing short-term profits in front of long-term profits. Insurance companies are saddled with the need for “immediate gratification.”

Think of this. What if, in order to get the maximum amount of benefit from your insurance, you have to have 1 or better yet, 2 preventative visits a year? If you don’t, your benefit reduces a certain percentage and you’re out of pocket rises. You’d be encouraged to see your doctor more often. Your doctor would be seeing you when you’re healthy and can discuss how you can stay that way. Little problems can be dealt with before they become bigger ones which require more doctor time and more expensive procedures.

It’s like a warranty on your body. You have a responsibility for maintenance just as you do for your car. Isn’t it amazing that most of us take better care of our cars than we do of our most precious asset, our bodies?

The entryway to your body is through your mouth, so any discussion of health should start there. Unfortunately, most physicians know nothing about the mouth and most dentists are too busy filling holes to talk about how what happens in your mouth affects your body and visa versa.

They say, “What happens in Vegas...stays in Vegas.” When it comes to our mouths, we know that what happens there DOES NOT stay there. It travels through the circulatory

system (blood and lymph), the Gastro-intestinal system (esophagus, stomach, intestines), the respiratory system (nasal, trachea, lungs) and the nervous system – the 4 highways that reach every single cell of our body.

To complicate matters, what happens elsewhere in our bodies affect the mouth as well. Professionally, this is called ‘the oral-systemic connection.’ It could just as appropriately be called ‘the systemic-oral connection.’

We breathe through our nose and mouth. We eat through our mouth. We speak through our mouth. Can you imagine not being able to breathe or eat? Of course not! So why not pay attention to an area that is so vital for life?

Makes sense, right? So, why don’t more healthcare professionals discuss the mouth-body interaction?

The dialogue has begun. Places such as The Cleveland Clinic and organizations such as The American Academy for Oral Systemic Health (AAOSH) and The American Academy of Physiologic Medicine and Dentistry are at the forefront of this effort. They’re fighting against a lot of negative momentum and other self-interests.

Currently, it’s up to you to learn as much as you can about the mouth and how it affects the rest of your patients’ body. You can take charge. You can acknowledge that we’re all in this together and together we can encourage health better than we can individually.

Remember the old song “the hip bone’s connected to the knee bone...”? Everything in our bodies are connected.

We are amazingly intricate and complex beings. We're just beginning to understand the interactions we have within our bodies and with our environment. I'm going to show you some of these connections and interactions and give you the knowledge that will help you so you can help yourself and your patients stay healthy and well.

Think of this as part of your body's owner's manual. I'll show you how to interpret the signals the body is sending you. Understanding these signals is our job. It's why we went into the health professions in the first place.



When we see signals such as these on our car's dashboard, we know it's a call for action. We're starting to see such technology applied to our body systems too, the mouth being no exception.

We now have wristbands that monitor some of our most vital bodily systems. One day soon, technology will allow us to plug into a computer and have it analyze our systems just as it now does for our cars. IBM's Watson is already here and Memorial-Sloan Kettering is already using it.

Preventing problems poses a totally different challenge. While monitoring problems is nice, preventing them is far better. The current approach to prevention is just too anemic.

Not only is it anemic, it is also not individualized. We are unique and complex individuals. We have unique genes, family histories and are exposed to various external and environmental factors. All of these various factors have to be taken into consideration when evaluating an individual's risk and needs.

This individualized approach is challenging. It requires time, money and thought. All the data points have to be collected. The appropriate tests and results have to be factored into the equation and someone needs to make sense of it all and suggest and proactive plan.

Individualized care is being discouraged. Few want to spend the time and bear the associated costs. Insurance companies certainly don't want to and many people don't either. People, while healthy are reluctant to make changes until stimulated by some discomfort such as illness.

We are being discouraged from thinking. "Clinical Judgment" once the hallmark of medicine has given way to "evidence based" treatment and systems. Following this model, in short order, IBM's Watson supercomputer will be spitting out a treatment protocol based on some algorithm. And, I guarantee you, that algorithm will have a 'COST' component to it, dictated by some government program or insurance carrier.

But people are more complex than computers. Computers aren't affected by feelings, criticism or chocolate. Humans have the mental capacity to affect their health. The brain is the control system of our body and has it's own chemical manufacturing capacity. The effect of this capacity cannot

currently be accurately measured nor is it fully understood. As doctors, we've all seen patients who get better despite our negative prognosis. As a dentist, I've often seen a person function with a poor fitting prosthesis and visa versa.

Mind over matter isn't just a saying. When I was in dental school at Tufts in Boston, a group of us were called into a treatment room, where the professor stood with a woman who was about 45 years old. In front of us, he asked this woman how old her dentures were? She replied that they were probably 60 years old. How could a 45-year old woman have 60-year-old dentures? It turned out that the dentures she was wearing were her grandmothers and when she had all her teeth removed at age 20, the grandmother's dentures were placed in their stead. She had been using them and functioning with them for 25 years.

We examined her and found that the dentures barely fit. So how did she eat corn on the cob and apples? She trained her tongue to keep the dentures up. The lesson the professor was trying to convey was that despite all our efforts as healers, the patient has their own capacity to adapt...or not.

Psychology or a person's attitude can play a major part in health and disease. That's why a trained professional, a human being, rather than a healthcare computer, needs to listen, visualize and interact with a patient to totally assess needs and make recommendations for care. This model is becoming extinct. Clinical judgment is no longer 'trusted.' It's indefensible in a court of law. There's no 'code' for it on an insurance form.

Our healthcare system targets the median. It's healthcare by the numbers. I don't know about you but I don't want to be treated like a number. This book will help you make sense of what's happening and allow you to participate in a healthcare process that is more proactive, productive and personally satisfying.

**PLEASE DON'T IGNORE
YOUR PATIENT'S MOUTH**

CHAPTER 1

THE MOUTH-BODY CONTINUUM

There seems to be daily reports that connect some oral disease or process with some systemic issue. Our information-starved media seem just as quick to report such findings as they are to disseminate latest gossip about the Kardashians.

Our patients are being inundated with information and being aggressively marketed to. BIG Pharma spends billions advertising cures to symptoms, in an apparent attempt to bypass the doctor. As healthcare professionals we have a responsibility to keep up with the latest information and dispense it as needed for our patient's health and well-being.

Here's some of what we know about the mouth-body relationship.

- A study published in *The New England Journal of Medicine* identified elevated CRP (C reactive protein) levels as a stronger predictor of heart attacks than elevated cholesterol levels, and recommended CRP and cholesterol screening for accurate risk assessment of **cardiovascular disease**.
- Another study published in the *Journal of Periodontology* reported that inflammatory effects from periodontal disease, a chronic bacterial infection of the gums, cause oral bacterial byproducts to enter the bloodstream and trigger the liver to make proteins such as CRP that inflame arteries and promote blood clot formation.

- Oral biologists from the University at Buffalo have shown that levels of two inflammatory proteins known to raise the risk of **heart disease** can be reduced substantially by regularly treating existing gum infections.
- A study of dementia led by University of South California researchers revealed that missing teeth and chronic inflammation of the mouth at an early age quadruples the risk of developing **Alzheimer's disease**.
- We now know that individuals with type II **diabetes** are three times more likely to develop periodontal disease. Conversely, results from the National Health and Nutrition Examination Survey (NHANES) and its follow-up studies suggest that non-diabetic adults with periodontal disease develop type 2 diabetes more often than those without periodontal disease.
- Scientists have recently discovered what appears to be a definitive link between pancreatic cancer and periodontal (gum) disease. Pancreatic cancer is the fourth leading cause of cancer deaths in the U.S. because it is so difficult to treat. More than 300,000 Americans are expected to die from it this year.
- Scientists have found that bacteria that grow in the oral cavity can be aspirated into the lung to cause respiratory diseases such as **pneumonia**, especially in people with periodontal disease. This discovery leads researchers to believe that these respiratory

bacteria can travel from the oral cavity into the lungs to cause infection.

- There's a growing body of evidence showing an association between specific oral microorganisms and various types of cancer.
- Rheumatoid Arthritis (RA) and gum disease have similar pathophysiology and specific infectious agents such as *P. gingivalis* have been associated with RA.
- Scientists believe that through the aspiration process, bacteria can cause frequent bouts of infection in patients with COPD (**chronic obstructive pulmonary disease**).
- **Pregnant women** who have periodontal disease may be seven times more likely to have low birth weight babies and are more likely not to go full-term.
- A study published in "Cancer Epidemiology, Biomarkers and Prevention," the journal of the American Association for Cancer Research, showed that postmenopausal women with periodontal disease were more likely to develop breast cancer than women who did not suffer from chronic inflammatory gum disease.

In the following chapters, I'll discuss 5 specific areas and how the mouth relates and impacts the overall system and visa-versa. This is not intended to be an exhaustive study of the field, just present some of the more common and over-reaching interactions.

As with all fields of healthcare, today, it is impossible for a single practitioner to know everything about everything. That's why there are specialists. And, in the mouth, dentists should be the oral health specialists. I would hope that you avail yourself of their expertise.

- 1. Breathing**
- 2. Airway-Sleep-TMJ**
- 3. Inflammation**
- 4. Nutrition-digestion**
- 5. The Microbiome and Oral Biofilm**

CHAPTER 2

BREATHING

The 'PRIME DIRECTIVE''

I have to admit, I'm a Star Trek fan. I loved the original series because of its underlying social messages but I like the new ones, too.

StarFleet had a "Prime Directive" about interfering with the development of alien civilizations. Our body has a prime directive, as well, before Airway Centric™.

BREATHE or DIE!

My colleague and friend, Dr. Michael Gelb , who you'll hear from later, refers to a philosophy of practice he calls Airway Centric™, a term with a great deal of merit. Without enough oxygen everything fails and we die. OK, I know that you get that. But what about the mechanics of breathing and breathing properly and healthfully?

Carol's story:



Most dentists will look at this and see a beautiful smile and healthy gums. We look at this and see a mystery.

Carol, a 23 year old female, presented with no complaints. She came to us because she “needed her teeth cleaned.” In most practices, she’d have a cleaning, maybe sold on some whitening procedures and then placed on a maintenance program. Quick and simple. Right?

Carol’s medical history included “exercise-induced” Asthma for which she has been using an Albuterol inhaler. Her asthma symptoms have been getting worse, so she has been seeing her Allergist in an attempt to get better control, as she’s been training for the next NYC marathon.

When I looked at her teeth, I immediately knew there was something wrong. Why were Carol’s front teeth chipped? There was no history of trauma and Carol swore she never chewed nails or opened beer cans with her teeth. In fact, she didn’t even realize they were chipped.

Something was making Carol jut her lower jaw forward. Could it be an airway issue?

Upon further questioning, Carol told me about her frequent headaches and snored at night and so the plot thickened. I decided to take a CBCT, which would allow me to assess her airway.

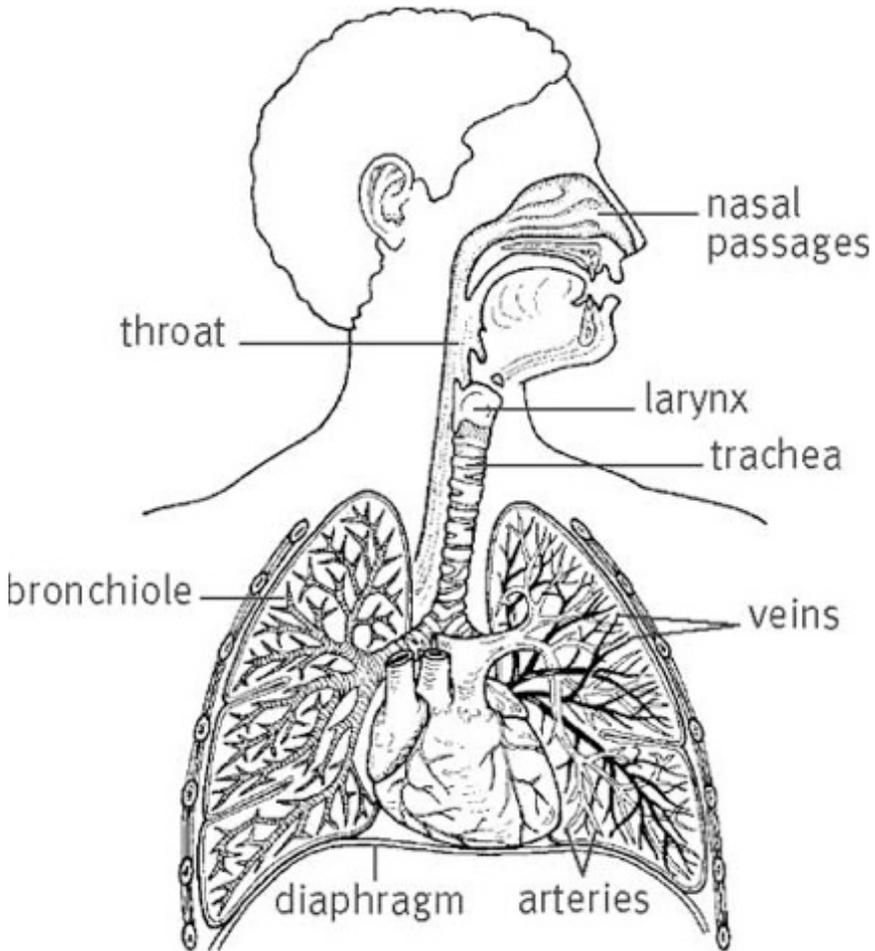
The report indicated a severely deviated septum, resulting in Carol exclusively breathing through her mouth. A referral to an ENT was made, nasal septoplasty performed and Carol has completed her first NYC marathon without the aid of Albuterol.

What about the differences between NASAL breathing and MOUTH breathing?

We know that we're meant to breath through our noses.

- Filters the air
- Moisturizes the air
- Warms the air
- Encourages proper Oxygen/ CO2 exchange in the lungs
- Bypasses the mouth and it's biofilms
- Brings paranasal sinuses into play
 - Nasal Mucous traps bacteria and viruses lessening colds and flu
- Nasal breathing encourages proper lung movement and lessens incidence of asthma and emphysema.
- Nasal breathing stimulates olfactory bulbs and hence, the hypothalamus which effects the autonomic nervous system, the endocrine system, temperature regulation, hunger/thirst and circadian rhythm (sleep).
- Encourages production of Nitric Oxide (NO)

It always irks me when representations such as the one above totally ignore the mouth as if it plays little or no role in the respiratory process.



Laurel Cook Lhowe

In fact, it plays a huge role. Let's start at the beginning.

The mouth is formed, as so many other parts of our bodies are by multiple factors. The influence of muscles play a huge role in the growth and development of the jaws and the roof of the mouth, the palate, which just happens to also be the floor of the nasal passage.

The formation and development of the nasal passage takes place through age 3. At that point the nasal passage is mostly formed. Why is that important?

Directly below the nose is the MOUTH. The roof of your mouth is the floor of the nasal cavity. The shape of the roof determines the shape of that part of the nasal cavity.

What shapes the roof of the mouth? THE TONGUE should. The tongue, one of the most powerful muscles act as the engine that guides the growth of the mouth and the nose.

Since the industrial revolution, we have hamstrung our children's tongues, so they often do not exert the proper pressure on the mouth, nose and face.

We're meant to be breast-fed. We're meant to suck and suck hard. Doing so properly means the tongue pushes up and forward against the roof of the mouth. It stimulates the bones it touches to widen and move forward.

When a child cannot breast feed properly or is bottle-fed, the tongue doesn't exert the proper pressure and growth abnormalities can ensue. Couple that with thumb sucking and Sippy cups, the tongue can be taken out of the picture entirely. Children suffering from this will have high roofs and little room in their nasal cavities. Thumbs can pull the upper jaw too far forward and at the same time retard the growth of the lower jaw. Such children cannot close their mouths. They have to breath through their mouths because they cannot develop a lip seal.

These children suffer from all sorts of maladies. They often have sleep issues. The lack of sleep can result in hyperactive nervous system syndromes that might be manifest as ADHD.

When you can't close your lips, there's another problem. You can't swallow properly. Swallowing is another one of those

automatic things we have to do yet never think about unless we have a sore throat. But in order to swallow with an open mouth, a child or adult has to create suction by placing the tongue in the opening. This “reverse swallow” or “tongue thrust” causes the front teeth to spread and often results in speech impediments.

Improper tongue position also affects the jaw joint (TMJ). Disturbances and malformations in this joint can result in painful eating, earaches and headaches

The tongue, in particular, plays a huge role in the proper or improper growth of the mouth. Proper tongue positioning is affected by several factors including the position of the tongue attachment (frenum). At birth, we often find that a baby’s oral tissues might be “tethered” or tied to other structures preventing proper function. Tongue-tie is not only a significant cause of failure to “latch-on” to the breast but also prevents proper swallowing and proper, tongue-guided palatal and jaw growth and development.

Tongue position and function should be assessed in the new born and monitored throughout a child’s growth and development.

Even in the adolescent and adult, tongue position and function play a role in proper swallowing, speech and breathing. A retruded position of the tongue can close off the airway making breathing more difficult. The effect of this can be Obstructive Sleep Apnea, which we will discuss in more detail in a later chapter.

Tongue function is an important factor in breathing; eating and growth can be modified by removing tethered tissues as well as by Myofunctional Therapy.

When a person is unable to breathe through their nose, they will mouthbreathe. Mouthbreathing creates an environment that favors the growth of certain microorganisms. Plus, mouthbreathing causes dry mouth, a condition of diminished saliva, which affects how one of the body's immune system components functions. Mouthbreathing might be caused from an malocclusion (bad bite), a skeletal malformation such as a deviated septum, overgrown tonsils and/or adenoids or even muscle issues.

And, mouthbreathing has a significant impact on the rest of the body as well. Sano et al (<http://europepmc.org/articles/pmc/4047298>) have shown that mouthbreathing causes a change in the oxygen load in the brain's prefrontal cortex that can result in sleeping disorders and attention deficit disorder.

Mouthbreathing also discourages the endogenous production of Nitric Oxide, which is primarily produced through nasal breathing. Nitric oxide acts as an airborne messenger that modulates pulmonary vascular tone. A lack of NO might result in hypoxic pulmonary vasoconstriction and in turn, pulmonary edema. Such situations are commonly found in the elderly, who seem to be more prone to pulmonary issues (Duplain et al: "Exhaled Nitric Oxide in High-Altitude Pulmonary Edema, *Am J of Respiratory and Critical Care Medicine*, vol. 162, No. 1 (2000), pp221-224) (Settergren, G et al "Decreased pulmonary vascular resistance during nasal breathing" *Acta Physiol Scand.* 1998 Jul; 163(3): 235-9).

Nitric Oxide itself plays an important role in other vascular and cellular functions, among them, vasodilation, cellular phosphorylation, neurotransmission, decreases cardiac muscle contractility and heart rate.

Breathing through the mouth has other disadvantages such as drying out the tissues of the mouth, discouraging saliva production, which in turn promotes laryngeal dryness, gum disease and inflammation and encourages dental decay.

Causes for Mouth breathing:

1. Nasal obstruction
 - Deviated septum
 - Chronic nasal congestion
 - Allergic rhinitis
 - Enlarged tonsils or adenoids
2. Skeletal Discrepancy (open bite)
3. Tongue thrust (reverse swallow)
4. Inability to achieve lip patency
 - Skeletal open bite/ long midface
 - Cleft or damaged lip
5. Habitual
 - Behavioral
 - Thumb or finger sucking
6. Oral appliances

Mouth breathing is to be discouraged and nasal breathing encouraged, whether during the day or night. In fact, nighttime mouth breathing is significantly more dangerous because of the negative impact it has on sleep. For this reason, I encourage parents to monitor their children's sleep to see if they are mouth breathing and if so, discuss this with anyone who will listen (Dentist, Pediatrician, ENT). Finding the cause of the mouth breathing behavior is crucial to encourage nasal breathing and proper facial growth and development.

Potential problems from Mouth Breathing

- Can cause improper facial growth and development in infants and children
- Can lead to poor head posture resulting in cranio-sacral problems
- Increased incidence of respiratory infection.
- Mouth breathers typically do not sleep well
- Suboptimal oxygen levels
- Digestive disturbances: gas, GI upset, acid reflux, etc.
- Increased incidence of gum disease and decay
- Bad breath or Halitosis
- Can contribute (via decreased NO) to Erectile Dysfunction and other vascular disorders.

How do we fix the problem?

It depends on what the cause is? So, the first step is to determine the cause. And, that's where a multidisciplinary approach can help. I don't pretend to know everything that

an ENT does about the nasal areas and I don't expect a pediatrician will know everything a dentist knows about the mouth. So, sharing information is vital to determining the cause or causes of a breathing issue.

What to do about it?

Here again, a multidisciplinary approach is often best. Pediatrician, dentist, ENT, Allergist, Pulmonologist, sleep specialist, myofunctional therapist, physical therapist all might be required depending on the causes of the problem and the resultant dysfunctions. The goal is simple... optimal breathing!

CHAPTER 3

Airway, Sleep, TMJ and Health

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As dentists we have moved beyond the teeth and gums to focusing on overall health and wellness this is the fulfillment of the vision of “dental medicine.”

As early as the first year of life, approximately 20% of us have compromised airways expressed as mouthbreathing, snoring and sleep apnea . Researchers such as Bonuck and Gozal have shown the effects of narrowed airways on the development of the prefrontal cortex, which controls attentiveness, behavior, cognition and mental health as early as the first year of life with significant consequences at age 4 and 7 into adulthood.

Growth and development is also negatively affected by increased nasal resistance with attendant abnormal muscle tone and function. The interplay of all the facial and pharyngeal structures result in the function or dysfunction of one of the body’s most crucial systems, enabling breathing and oxygen perfusion.

As adults, airway narrowing behind the tongue and soft palate, as well as a compromised naso-maxillary complex, leads to intermittent hypoxia (low oxygen) and sleep fragmentation (disturbed sleep).

Hypoxia and sleep fragmentation results in:

- Systemic Inflammation
- Oxidative Stress
- Metabolic Dysregulation
- Endothelial Dysfunction
- Hypercoagulability
- Sympathetic Activation
- Daytime Sleepiness
- Left atrial Enlargement

These are expressed as:

- Hypertension
- Myocardial Infarction
- Sudden Death
- Stroke
- Heart failure
- Arrhythmias
- Insulin Resistance
- Obesity

Sleep fragmentation and repeated arousals also lead to a variety of neurocognitive deficits seen as:

- Dementia
- Memory problems
- Difficulty concentrating
- Reduced psychomotor performance
- Decreased vigilance
- Chronic fatigue-like syndromes

Low oxygen levels produce an acidic state in the body including the mouth and decreased host resistance. The microbiome in the mouth and gut are altered due to the altered flora and decreased host resistance.

As the immune system is further compromised Cancer rates increase.

Prevention/Intervention

Prevention is dependent on early intervention and a change in the paradigm of dentistry and medicine. Airway enhancement can be achieved with treatment of allergies, adenotonsillectomy, palatal expansion and mandibular advancement as well as myofunctional therapy and occupational therapy. Breastfeeding also enhances airway development and immune system development resulting in smaller tonsils and adenoids. Airway-Centered Orthodontics is non retractive and builds the face and teeth around an open airway. This type of orthodontics can and should be initiated as early as possible (age 3-4) particularly in those children who moutbreath, snore and have OSA (obstructive sleep apnea).

As the maxilla (upper jaw) is expanded early in life, nasal breathing improves allowing the temporomandibular joint to develop optimally. The face in general, becomes retracted through genetic and epigenetic factors such as soft diet and environmental pollutants as well as the development of the brain.

Anthropologic investigation has shown the retraction of the human mid-face coinciding with the industrial revolution.

Our feeding and eating habits have impacted on our growth and development in ways that have impacted our ability to optimally assimilate oxygen.

This de-evolved evolutionary pattern has combined with environmental assaults on our immune systems to create a challenged ability to adequately perfuse our tissues with its most basic requirement...OXYGEN.

Headache, Bruxism and Fibromyalgia:

Sleep Bruxism or “clenching” is thought to be related to Airway Related Sleep Disorders. Upper airway resistance syndrome (UARS) and OSA have been associated with headache and fatigue. UARS has also been linked to Irritable Bowel Syndrome, Fibromyalgia and Tension-Type Headache possibly through the hypothalamic–pituitary-adrenal axis and stress.

**Sleep Disordered Breathing (SDB) just might
be the tip of the proverbial iceberg.**

We spend most of our time awake. Proper nasal breathing during the day just might be even more important than at night. And while we’ve recognized nighttime sleep disordered breathing as a national epidemic, our daytime breathing should get as much or more attention.

Narrow, long midfaces, poor head and neck posture, chapped lips, bags under the eyes and other signs might indicate a problem that can be more serious than SDB. It might mean that inadequate or inefficient daytime breathing is present. It

is our opinion that this needs serious attention as it impacts every cellular and bodily function.

Recognizing Daytime Breathing Dysfunction is a crusade we wish you to join.

In Airway Centric® and Biorational Dentistry® we like to look at the airway first and foremost due to the profound and dominant effects on the entire body.

TMJ disorders, Bruxism, Headache, and fatigue are secondary.

Lastly, we look at the teeth, bite or occlusion and the supporting tissues.

A healthy mouth with healthy pink tissue is secondary to an open airway, ideal breathing and high oxygen saturation. Our body's prime directive is:

BREATHE!!

CHAPTER 4

INFLAMMATION

We know that Inflammation is the underlying cause of many chronic diseases. In a recent ILSI Europe's article published in the British Journal of Nutrition, a coalition of experts maintained; "An unresolved inflammatory response is likely to be involved from the early stages of disease development." They continued; "Controlling inflammation is crucial to human health and a key future preventative and therapeutic target."

Why does this have to wait for the "future"?

We also know that according to the CDC, in 2010 nearly 50% of American adults suffered from some form of Periodontitis or gum disease and in adults over 65, that percentage skyrocketed to over 70%! Periodontal disease is INFLAMMATION of the gums, the most common form of inflammation in human beings!

And nearly 10% of Americans have Diabetes, whose interrelationship with gum disease is well documented.

RISK FACTORS FOR GUM DISEASE:

- Smoking/tobacco use
- Hormonal changes in girls and women
- Diabetes
- Medications, especially those that cause xerostomia, Ca channel blockers such as Cardizem and anticonvulsants like Dilantin, which might cause hyperplasia.

- Mouth Breathing
- Other illnesses; HIV, Sjogren's Syndrome, Lichen Planus, Rheumatoid arthritis
- Genetic Susceptibility
- Age: 70% of Americans over 65 suffer
- Poor nutrition and obesity
- Stress, particularly from clenching and or grinding but hormonal responses from stress also increases the risk of inflammation.
- Obstructive Sleep Apnea

So, if you are concerned with lowering the inflammatory burden in your patient, why wouldn't you insist that they see a dentist who focuses on such diagnosis and treatment?

I don't expect that you're going to probe around with a gum probe or look around with a camera as I do. I do expect that you ASK your patient if they've seen a dentist recently and if he or she probed and what they said.

Is asking if your gums bleed enough? Unfortunately, not.

Some gum disease does not result in overt bleeding. In fact, smokers notoriously DO NOT have bleeding gums yet are significantly more likely to have gum disease. Their disease is at the base of the gum pocket, deep down on the root of the tooth and the smoking, which has a significant vasoconstrictive effect makes the gums on top look nice and pink. It can be deceiving.

Plus, most people do not floss and hence never get to areas that might bleed if stimulated. So, a history of bleeding alone is insufficient to gauge a patient's gum inflammation.

Knowing a patient's inflammatory load is critical if you're going to help them deal with chronic illness or prevent such illness in the first place.

Let's talk about the most common diseases affected by and associated with oral inflammatory disease – Cardiovascular Disease and Diabetes.

The numbers are staggering. You know them. And, at least for Diabetes, they're getting worse. Could gum disease be a contributory factor? Of course it can.

Certainly, it pays to explore the issue!

SIGNS OF GUM INFLAMMATION

- Bad breath that persists
- Loose or shifting teeth
- Swollen, red, puffy gums
- Any bleeding: spontaneous or while chewing, brushing or flossing.
- Tender or painful teeth or gums
- Receding or shrinking gums

RISK ASSESSMENT FOR INFLAMMATION

We now have some very exciting tools to help us assess a patient's risk for developing gum disease.

In the mouth, there are several risk factors that can be measured. We know that there are 11, specific bacteria that are implicated in the formation of gum disease. We can actually measure the quantity of each of these bacteria present in a patient's mouth.

There are genetic variances that make certain individuals more prone to develop an inflammatory reaction to the bacteria that cause gum disease. We can assay for this genetic marker.

Proper salivary flow is critical to maintain overall health. Saliva affects the mouth, GI system and the respiratory system. Saliva therefore has a significant effect on the entire body that belies its seemingly minor role in the mouth. Dry mouth might be a minor annoyance but it is a serious issue.

Why Saliva?

- Begins **digestion**. The enzyme Amylase in saliva begins the process of the breaking down of carbohydrates of food in the mouth. It also contains Lingual Lipase, Kallikein and several minor enzymes.
- **Lubricates** the tongue and lips for smooth and clear articulation of speech.
- **Protects** the lining of the mouth from damage caused by abrasive foods and objects.

- Assists with acidity levels in the digestive tract. Bicarbonate ions **regulate** the pH levels in the mouth (think decay) and esophagus (think GERD).
- Acts as a solvent so that substances in the mouth can be **tasted**.
- Maintains a **clean** and hygienic mouth and carries anti-bacterial agents (immunoglobulins). They destroy microorganisms and remove toxic substances (think gum disease). Think MICROBIOME!
- Contains Opiorphin, a pain-killing substance that is up to 6 times more potent than morphine.
- Haptocorrin, a protein, binds to vitamin B12 to protect it against degradation in the stomach, before it binds to intrinsic factor.
- Promotes healthy teeth by encouraging remineralization and discouraging demineralization.

Digestion, lubrication, protection, acid regulation, taste and cleansing are some of the more important functions of saliva. The last issue is perhaps the least understood and potentially the most important function. Our microbiome has evolved to be as important a factor in our homeostasis as any other body part. Ideally, it works in concert with our body to help us cope with our environment. Many think that the myriad of 'autoimmune' attributed diseases we now see so commonly are actually expressions of an imbalance in our microbiome.

It is possible that even a slight alteration of salivary function can have a significant impact on health.

Hyposalivation is related to decreased salivary flow, with xerostomia as an expression of the more extreme form. Sjogren's syndrome is one manifestation of severe hyposalivation. Prolonged severe hyposalivation or xerostomia may induce oral symptoms such as pain, poor tolerance to dentures, loss in taste acuity and increased incidence of oral infections: gingivitis, periodontitis, oral candidiasis (Thrush), infectious sialadenitis and multiple dental caries. It changes the buffering capacity of saliva and the digestive processes that begin in the mouth. It also affects the airway, drying out the contiguous tissues.

Hyposalivation might also be associated with a change in the composition of saliva. Either a decrease in saliva or a change in the composition can be associated with a change that might induce symptoms and affect overall health.

A SPECIAL WORD ABOUT DIABETES

The relationship of diabetes to the mouth is a double edged sword. Diabetes makes gum disease worse and gum disease makes controlling diabetes more challenging. It's all about inflammation.

Patients with Diabetes, whether Type 1, Type 2 or even pre-diabetic, should receive close dental attention. We recommend patients have a thorough risk assessment to

determine an individual and customized program. The goal is to reduce inflammation, which in turn should help diabetic control. We know what causes the inflammation!!

What Should **YOU** Do?

- Do a cursory oral examination.
- Ask your patient when he or she last saw a dentist. Get the name of the dentist and contact information.
- If it's been longer than 6 months or if there's a history of any oral bleeding, urge the patient to seek care.
- Ask what was found at the last dental exam. Ask if they had their gums probed. At Manhattan Dental Health, we routinely send reports of findings.
- If in doubt, contact the dentist. We're a team. It helps if the players know each other.
- If inflammatory markers such as CRP, Cytokines, WBC's are high, contact the patient's dentist.
- If HgB A1c is high, contact the patient's dentist.

Health Care, at its best is a team sport. It only makes sense that every player on the team understands each other's role. Dentists are capable of reducing the most common source of

inflammation your patients have. Make a friend. It's all for the benefit of your mutual patient.

CHAPTER 5

NUTRITION-DIGESTION

IN THE BEGINNING...

Our need to ingest food is arguably secondary in importance only to our need to breathe and assimilate oxygen. Together, air and nutrients are the fuel which are crucial for us to live.

While we are born with a feeding umbilicus, once separated from our mothers, the ingestion of nutrients becomes critical.

The mouth is critical in this process.

The “Paleo” philosophy is based on the theory that we have evolved through adaptation to our environment in a complex manner. And, while I’m not a fan of “Paleo” because human beings back then also only lived three decades, I do agree about our evolutionary process and the importance of how we evolved together with our environment.

Getting nutrients involves such a complex evolution.

Breastfeeding is how nature intended us to get our nutrients as a dependent infant. Anything that interferes with this mission would be considered pathologic and without intervention would lead to death.

So, let’s look at the role of the mouth in breastfeeding.

In order for a child to “latch-on” to a breast, a complex series of muscular events have to occur. Lips, tongue and cheeks have to work in unison.

We know that when these tissue do not work in concert with each other, failure to feed results.

A Cleft lip and/or palate, muscular dystrophy or dystonia, atrophic malformation and tethered tissues can all result in the inability of an infant to properly latch-on and achieve the suction necessary to extract milk from the breast.

Tethered tissues present the most common and obvious problem. And, while most physicians are aware of tethered tongues they are not aware that tethering can occur in other oral tissues which can also impact the infant's ability to achieve suction and properly function.

And, while the inability to latch-on and breastfeed can be overcome through artificial means of bottle feeding, the results of a child's inability to properly function will have life-long consequences on growth and development.

The tongue, in particular, is the muscular engine that pushes the growth of the mouth. Since it includes the palate, it also impacts the nasal passages.

Children with tethered tissues often have long mid-faces, are unable to breathe through their nasal passages effectively and may not be able to properly chew or speak.

Most children who have speech impediments suffer from a lack of proper, tongue-guided growth and development. And, while myofunctional therapy can often re-train the tongue to compensate, it would be preferable to diagnose the cause as early as possible to allow for a natural growth and development process.

THE DIGESTIVE PROCESS

One could say that digestion starts with the eyes, ears or nose. When we see food, hear it or smell it our body gets poised

for the process. These stimuli, made famous in Pavlov's experiment, stimulate salivation. Saliva is the first part of the digestive process. It is, as we've evolved, an essential component to the process.

CHAPTER 6

SLEEP

We are only just beginning to appreciate the role of sleep in human homeostasis. Like other bodily functions, it is complex and has evolved together with our other systems in an intricate and beautiful orchestra of interactions.

The mouth plays a major role in sleep through its role in breathing.

We are meant to breathe through our noses during sleep. To do so, we must have competent and patent nasal passages and be able to achieve a proper lip seal.

Try keeping your lips apart and trying to breathe through your nose. It can be done only if your tongue can move up to the roof of your mouth and create an alternative seal. If your mouth is kept open wide enough and/or your tongue cannot create a seal, you'll not be able to breathe through your nose.

And, that's what happens with a lot of children. Tethered tissues, improper feeding, nasal obstruction and habits such as finger sucking and pacifier use can result in a child's inability to breathe through their nose. Mouth-breathing at all times is bad. At night, it can result in ineffective sleep with all the ramifications we're now beginning to appreciate.

During sleep, the mouth should be closed. Anything that interferes with mouth closure during sleep will result in sleep pathology.

Also, during abnormal sleep, bruxing or clenching of teeth often occurs. Such grinding, often heard by others such as parents or bed partners, is an indication of sleep pathology.

The dentist is often in the best position to see the earliest signs of sleep apnea through the dental manifestations of night-time bruxing. But, the dentist has to connect the dots and since this is a newer area of study, most don't.

Education in dental schools is lagging behind. So diagnosis in clinical practice has lagged behind as well.

Sleep is being seen in the dental industry as a growth area in regards to treatment and revenue. And, like most such new areas of interest, with opportunity comes danger. Practitioners who take a weekend or even shorter course are making mandibular advancement appliances that, while opening the airway, might also open the mouth or negatively impact the TMJ.

Such appliances have to be carefully designed, fabricated and adjusted to maximize airway patency and avoid complications.

Keeping one's mouth open either by opening the vertical dimension too much or pushing the mandible too far forward should be avoided.

Sleep and breathing are intimately related. And, I maintain that if someone's having a breathing issue during sleep, they are probably also having an issue during the day.

Daytime breathing deficiencies might be the cause of many chronic illnesses. To learn more about this, I suggest reading Patrick McKeown's fantastic book "The Oxygen Advantage."

CHAPTER 7

The Microbiome and Oral Biofilm

Our complex relationship to the world around us includes the microscopic organisms that live on us and within us. We live in a symbiotic relationship with these organisms, a relationship that is only now being appreciated and is so complex that it will take decades to fully understand.

Our Microbiome has evolved to be as important a factor in our homeostasis as any other body part. Ideally, it works in concert with our body to help us cope with our environment. Many think that the myriad of ‘autoimmune’ attributed diseases we now see so commonly are actually expressions of an imbalance in our Microbiome.

DNA analysis gives us a tool to study specific organisms yet there are billions on our skin, in our respiratory system and in our gut. While most are harmless, others serve a vital role in our homeostasis and yet others present clear and present danger.

Dentists are now able to culture and assay the oral Microbiome as never before. At Manhattan Dental Health, we use such a system to analyze a patient’s oral Microbiome as it relates to their risk for gum disease.

We know that there are 11 microorganisms that are implicated in gum disease. Oral bacteria have been implicated in other systemic diseases such as bacterial endocarditis, aspiration pneumonia, COPD, osteomyelitis, preterm low birth weight,

Alzheimer's disease, cardiovascular disease and a report of a case of pyogenic liver abscess.

The role oral bacteria play in systemic illness is not clearly defined. It's not known whether the issue is the inflammation and host immune response or the bacteria themselves travelling to other organs that cause the response. It has been shown that oral microorganisms do travel to other organs and have been found associated with the diseases mentioned above.

Components of the oral Biofilm activate host defense cells, which produce and release mediators that result in tissue breakdown. The Biofilm has the capacity to attract lymphocytes, macrophages and polymorphnuclear leukocytes (PMNs). Lipopolysaccharides present in the Biofilm activate macrophages to synthesize proinflammatory molecules including cytokines IL-1 and tumor necrosis factor-alpha (TNF-alpha), prostaglandins and hydrolytic enzymes. T-lymphocytes, activated by bacterial substances produce IL-1 and lymphotoxin (LT), which have potent proinflammatory and catabolic activity resulting in tissue breakdown.

Here's what we now know:

- Oral colonization by respiratory pathogens, along with poor oral hygiene and gum disease appear to be associated with nosocomial pneumonia. And, oral interventions can reduce the incidence by as much as 40%.
- Oral pathogens (*P. gingivalis* and *Actinobacillus actinomycetemcomitans*) have been found in carotid and coronary atheromas.

- Lipopolysaccharides from *P. gingivalis* have been found in brain tissues from patients with Alzheimer's disease.
- *Streptococcus sanguis* and *P. gingivalis* have been shown to induce platelet aggregation associated with thrombus formation.
- The HACEK organisms in the mouth (fastidious Gram-negative bacteria) have been implicated in infective endocarditis.
- *P. gingivalis* is suggested to play a role in disease risk and progression of Rheumatoid Arthritis.
- Salivary microbiota have been associated pancreatic cancer and chronic pancreatitis.
- Oral squamous cell carcinoma (OSCC) surfaces have been shown to harbor higher levels of *P.gingivalis* and *Fusobacterium nucleatum* suggesting their association with oral cancer, one of the most common cancers worldwide.
- Oro-digestive cancer mortality was found to be related to the levels of *P.gingivalis* antibodies.
- Studies have shown a strong association between colorectal cancer (CRC) and *Fusobacterium nucleatum*.
- Epstein-Barr virus (EBV) carried in saliva has been implicated in gum disease, infectious mononucleosis, oral hairy leukoplakia and various forms of lymphoid and epithelial malignancies.
- People with gum disease have a 51% higher incidence of oral Human Papilloma Virus (HPV) infection. HPV infection causes 40-80% of oropharyngeal cancers.

Oral diseases caused by periodontal Biofilm:

Gingivitis (acute/chronic): May be exacerbated by pregnancy, diabetes, puberty, contraceptives, ascorbic acid deprivation, menstruation
Periodontitis (acute/chronic): Mostly occurs in adults as a slowly progressive chronic disease, but could be rapidly progressive and occur in children.

Systemic Diseases with periodontal manifestations:

Diabetes
lichen planus
pemphigoid
pemphigus
leukemia
neutropenia
Wegener's granulomatosis
erythema multiforme
candidiasis
HIV/AIDS
psoriasis
tuberculosis
gonorrhoea
primary and recurrent herpes simplex infection
lupus erythematosus
histoplasmosis
linear IgA disease
primary and metastatic carcinoma
Crohn's disease
drug-associated gingival enlargement

Genetic disorders with periodontal manifestations:

Familial and cyclic neutropenias

granulomatous disease

agranulocytosis

Langerhans' cell disease

glycogen storage disease

hypophosphatasia

leucocyte adhesion deficiency

Papillon-Lefèvre, Chédiak-Higashi, Cohen, Ehlers-Danlos,

Marfan's, Down's, Haim-Munk, and Kindlers syndromes

*Adapted from Pihlstrom, Michalowicz and Newell,
The Lancet, Vol 366 November 19, 2005, pp.1809*

Clearly, what happens in the mouth does NOT stay in the mouth. So, a risk evaluation of the oral Microbiome has become an important factor in the overall risk analysis for our patients, not just for the oral diseases we commonly see such as gum disease and decay, but for oral cancer and systemic illness as well.

Coupled with data from other Medical sources, this information can provide a risk profile that can be used to develop preventative strategies that will lower risk and prevent disease occurrence.

CHAPTER 8

THE CHALLENGE

While academic and research projects continue to show the relationship between oral and overall health, clinical practice, too often does not reflect the science to the benefit of the patient.

The factors involved in this breakdown between *WHAT WE KNOW* and *WHAT WE DO* are many. Today, the factors involved are mainly financial and have been institutionalized in government and insurance programs that place “sick care” ahead of “wellness care.”

It’s a perfect storm of factors that have created a system where reimbursement for well-care is often totally ignored and the predominant group-think is that “if my insurance doesn’t cover it...it’s not necessary.”

That kind of thinking that someone other than a personal physician, dentist or licensed health professional knows better, is more common among younger patients, especially millennials and much less common among older baby boomers who still have some respect for the professional. And, it’s only when a millennial becomes sick that they begin to realize the problem with that type of thinking.

Physicians too, forced to cope with decreased reimbursement and increased bureaucracy, have adjusted their practices to cope with this new economic reality.

Our healthcare delivery systems are more focused on immediate needs. The proliferation of urgent care centers,

or what I call “Doc In The Box,” is just the beginning and a symptom of what I fear is a degradation of the traditional doctor-patient relationship. Such rapid-evaluation and symptom-driven treatment presents little or no opportunity to practice proactive wellness and preventative medicine. We’re heading down a path full of uncertainty and perilous roadblocks.

It is my hope that this book serve as a wake-up call to physicians and allied healthcare professionals to be more vigilant about caring for people as a ‘whole’ rather than as a single organ or system. Each organ and system is intricately interrelated to the whole and the mouth is no exception.

Finding professionals who share this philosophy is becoming more challenging as economic pressures increase. Yet, those of us who went into healthcare because of our desire to help others could do so better today than ever before if we just pay attention to the advances in our fields and take the time to listen to our patients.

FINDING THE RIGHT ORAL HEALTH SPECIALIST AND WELLNESS-FOCUSED PARTNER.

Just as medicine is undergoing a metamorphosis, dentistry, too, is being transformed and this transformation is happening at breakneck speeds and at an exponentially quickening pace. It’s not moving towards a model that promotes preventative care, integrative wellness or collegial interaction. Relationships are not valued nor encouraged.

Our academic and government institutions promulgate the notion that all doctors are created equal. While I appreciate the need to assure the public that healthcare providers are

competent and are worthy of trust, you and I know that there are good practitioners, poor ones and exceptional ones.

If you're looking for exceptional dentists to work with... good luck. They're not so easy to find. I tried for 30 years to educate such practitioners at an Ivy League institution. My efforts have been stymied by the reality of clinical practice where financial concerns have overwhelmed many. I've seen excellent students and residents succumb to "the system" and become financially driven and motivated. The pressures today are often insurmountable and impossible to resist.

You'll have to do some research. Here's what, in my opinion, you might want to look for.

1. Common Goals:

I don't know about you but I like to work with people that I like and admire. It's just easier. I prefer to hang around like-minded people. It's just more comfortable and I know that the more like me a fellow professional is, the more likely my patient will like them, as well. And, we all know that studies show that people who "like" their healthcare practitioners have better outcomes.

I get many requests for referrals. I have a few "go-to" internists that share my philosophy of care and caring. One, unfortunately, has a very bland personality. He's a cracker-jack diagnostician and before I give a person his name, I qualify the referral with the fact that he might not be the warmest and fuzziest person. If a person doesn't need that, then the match will work out just fine. More frequently though, a person wants someone they're

comfortable with. There's a reason that "Birds of feather flock together."

Healthcare, for me, has never been about the money. It's always been about helping and caring for others. I prefer working with people who feel likewise. Financial gain is just fine, but it has to take a back seat to patient care. Our practice goal is simple and is clearly stated and reviewed at our daily meetings.

HAPPY, HEALTHY PEOPLE

The kind of dental practice that I've been referring to in the previous pages is becoming increasingly rare, replaced by corporate, profit-driven models. So, finding dentist who have not been corrupted by this environment is also becoming increasingly more difficult.

Don't despair. Look and you will find them. Those of us who are members of The Academy for Oral Systemic Health (AAOSH), the American Academy of Physiologic Medicine and Dentistry (AAPMD) and the American Academy of Oral Medicine (AAOM) are more likely to be sensitive to the overall, more far-reaching effects of dental medicine that just filling holes and improving smiles.

2. Looks at the BIG Picture:

You can't look at the big picture by doing a cursory history and oral examination. As you know, it starts with a comprehensive history and involves listening to your patient.

In our practices, a history is computer-driven and active, meaning that a positive or negative answer results in a

different screen, with different follow-up questions. We appreciate that time is important and we use technology to help us gather the most comprehensive history possible. Then we listen.

Listening is an art form not taught in medical or dental school. Epictetus, the 1-2nd Century Greek Philosopher said that, “we have two ears and one mouth so that we can listen twice as much as we speak.” If only we practiced such restraint.

Listening takes time. Studies have show that on average, a doctor will let a patient speak for 12 seconds before interrupting him or her. You can't communicate much in 12 seconds.

In our offices, an initial examination and diagnosis can take as little as an hour and as many as three visits, depending on the requisite tests and consultative requirements. No two individuals get the same exact examination as no two individuals present with the same history, risks and needs. With human beings, *simple* and *easy* are rarely words we use.

We perform an Executive Oral Physical on all our comprehensive care patients. Yes, it takes time but it's the only way I know to see the big picture and listen to the patient's needs. Interestingly, listening develops a better relationship too. In today's increasingly impersonal environment, people are starved for attention. People want to be heard. Maybe that's why they're so fast to post everything and anything on internet-media like Facebook, Twitter and Instagram.

3. Speaks your language

Many dentists today take some form of advanced education. Dental schools barely prepare dentists to practice at the lowest level of care. Dentists who take hospital-based residency or advanced education programs are hopefully exposed to the medical system and model of care. Whether they integrate such knowledge is a matter of individual variance. I've seen the spectrum.

Your partner in patient care should understand what you're doing. He or she should appreciate your concern about reducing inflammation and how the oral environment might affect that goal. Knowledge of inflammatory markers and systemic disease pathophysiology is required. Serum Glucose, CRP, IL-6, Pre-Diabetes, metabolic-syndrome and such terms should not be foreign. You shouldn't have to give your dental partner a crash-course in things they once knew but forgot because of non-use or even worse, apathy.

You'll want someone who appreciates the possible side effects that might be manifested in the mouth from systemic diseases or medications. And, you'll want someone who can communicate his/her findings and concerns to you, all for the better care of your mutual patient.

4. Uses advanced technologies

Technology is not just an aid in assembling information. Advanced technologies help dentists diagnose and at the same time, reduce exposure to ionizing radiation.

Adherence to the ALARA principle (As Little As Reasonably Achievable) should be practiced.

Today, technology helps us with advanced risk assessment as well as therapy.

Radiation exposure is a big deal. Modern systems along with an individual risk/benefit analysis can help minimize exposure.

When I recently purchased a new CBCT (3-D, Cone Beam CT to evaluate airway, implants and TMJ's), I made a study of how many microseiverts my patients would be exposed to and made sure I bought a unit that would minimize overall exposure and yet give me the best diagnostic results.

We NEVER say that a patient is “due” for x-rays. X-rays should be taken only when there is a diagnostic benefit for the patient to avoid progressive decay, gum disease or bone pathology. And, often, we can diagnose decay with non-ionizing diagnostic tools such as lasers and intense lights.

5. Communicates and coordinates

When you refer your patient to a specialist, you expect a report in return. Why would you not have the same expectation from your oral-specialist-partner?

And, you'd want that report communicated in a way that is easiest for you and most beneficial for your patient.

We adhere to the strictest standards of infection control and other regulations. We understand the “standard of care” in medicine as well as Dentistry (which should be the same). In fact, we’ve also served as expert advisors to lawyers and have provided expert testimony in court.

For instance, when we take a CT scan of our patients, we send it to a radiologist for comprehensive evaluation. We know that the medical standard of care is to read an image from edge to edge. Just like an Interventional Cardiologist who does an angiogram, sends the study to a radiologist to see if there are issues in the surrounding structures, we too know that there might be valuable information there that we cannot diagnose. We use the services of a Board Certified, Maxillo-Facial Radiologist, who is well versed in these complex radiologic studies.

We’ve found spinal issues, carotid calcifications and sinus polyps and other pathology on these films. We’ll certainly forward these findings to you.

This is just another way the MDH way of practicing dentistry mimics that of our medical colleagues.

And, just like you receive a summary of findings from specialists you refer to, you will receive the same from us. We will send you reports from radiologists, culture and sensitivity reports, and even reports when we see our patients on routine maintenance visits.

At our maintenance visits, we routinely take blood pressures. We know that this is an important issue and we want to

help you keep our patients healthy. We will always include a blood pressure report along with the important measure of our patient's oral-inflammatory status and other oral issues.

You will receive our reports via HIPAA compliant fax or snail mail, so please instruct your staff to forward these reports to you.

I appreciate the time you've spent reading this and I hope it can serve as a resource and stimulate greater appreciation of the mouth-body connection.

I remain committed to moving this agenda forward in both the medical and dental communities.

WE NEED YOUR HELP!

Please contact us at:

Dr. Michael J. Goldberg

Dr. Michael L. Gelb

635 Madison Avenue

19th Floor

New York, New York 10022

212-928-1000

and

Manhattan Dental Health NJ

117 Kinderkamack Road

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In describing his career, people have used the term “Renaissance,” “forward-thinking,” “on the edge” and “technologically-advanced”. Dr. Michael Goldberg, a Magna cum Laude graduate of Tufts University School of Dental Medicine describes himself as having a chronic case of “professional attention deficit disorder” an incurable though socially and professionally acceptable condition.

He was elected to OKU, is a fellow of the American College of Dentists, The Academy of General Dentistry, The International Academy of Dental Facial Esthetics and The New York Academy of Dentistry. He is a founding member of the Academy for Oral Systemic

Health, was on faculty at Columbia University School of Dental Medicine for 30 years, was the Director of the GPR program at Columbia Presbyterian Medical Center, was a consultant to Sudler Hennessey for the Colgate account, writes a column for DLife.com on the oral-diabetes interrelationship, author of “What The Tooth Fairy Did Not Tell You”, serves on the Board of Directors of Glide Health (a health information technology company) and served as President and now on the board of American Friends of DWI, a not for profit organization that supports the DWI clinic, which gives free care to indigent children of all races, religions and ethnicities in Jerusalem.

His consulting company, Practice Perfect Solutions helps promote the vision of Biorational Dentistry as not just a clinical ideal but an economically viable alternative to the insurance-driven model.

Dr. Goldberg has built 3-high technology offices in the past decade and has consulted with the dental industry on technology integration. He has lectured on the topic around the world and currently practices Biorational Dentistry in his unique multi-specialty group practices, Manhattan Dental Health on Madison Avenue in Manhattan and in River Edge, Bergen County New Jersey.

Dr. Goldberg believes that his success has been the result of always wanting and looking for ways to help others and solve their problems. “When you solve other people’s problems, you inherently help yourself”

Dr. Goldberg lives in New Jersey with his wife and in the same community as his two married children and four grandchildren.

Dr. Michael Gelb, with world class offices in both NYC and White Plains, New York is an innovator in sleep apnea, painful TMJ disorders, and other head and neck pain disorders. Dr. Gelb has studied breathing related sleep disorders (BRSD), specializing in how they relate to fatigue, focus, pain, and the effects all of these can have on a person’s life. The Gelb Center is known as “The Sleep Apnea / Sleep Disorders Specialist in NYC”, “The TMJ Specialist” and “The New York Headache Center” because The Gelb Center is the premier destination for patients suffering with TMJ, headaches, or sleep disorders.

Dr. Michael Gelb is the Co-inventor the critically acclaimed “AirwayCentric™” medical device as well as the NIOBAD, or Nocturnal Oral Airway Dilator a appliance that reduces snoring by positioning the patient’s tongue and jaw so that airways stay open. Dr. Gelb has also updated the Gelb or MORA™ a appliance, named after his father, a pioneer in the industry, and has multiple patents pending for sleep disorder devices and pain management.

A co-founder of the Academy of Physiologic Medicine and Dentistry, Dr. Gelb is dedicated to educate the public about Breathing and Airway disorders.

