

HEALTH IS INTEGRATED BY DESIGN

“The way the health care system functions, one might think the mouth isn’t connected to the whole body. (It’s) just as important as medical care, hospital care, and prescription drugs. It is inconsistent for society to recognize that oral health is important yet treat dental care as if it were discretionary.

**~ William Maas, Director of the
Division of Oral Health at the
Centers for Disease Control (CDC) ~**

Explore:

1. What do the diseases we most fear have in common.
2. How can guarding your body’s gateway save money and help you maintain a dynamic lifestyle?
3. How did we lose the notion that integrated body systems work well or suffer together? How did the mouth lose its place in medical health models?
4. Can aspirated bacteria be deadly?

I am fortunate to work in Austin, Texas, a town dominated by people keenly interested in razor’s edge thought and lifestyle. The town resonates with energy. Its enterprising population nourished the miraculous emergence of the Whole Foods empire, a thriving music and film industry, and some of the world’s most recognizable high-tech companies.

Austinites are well informed, resourceful, and physically active. They passionately pursue health. A surprising exception is oral self-care. Most do not know oral health has life or death consequences until, to paraphrase inflammation specialist Dr. Charles McCall, the

inflammatory process gives up its secrets and the game is just about over. Chronic inflammatory diseases silently steal health for years. It is no secret that an inflammatory system gone awry lies at the root of many mortal and painful diseases ravaging our health. Those who seek a robust, long life know this. Heart disease, diabetes, arthritis, allergies, asthma, and eczema, are but a few of the hundreds of diseases with unbridled, long-term inflammation as a root cause.

They also share an intimate association with slimy biofilms, abundantly present in the mouth. Diet and obesity contribute to the inflammatory loads that aggravate these diseases. But gum disease, once considered a localized disease, shares the same pathways that create a web of damaging inflammation throughout the body. More than a decade after the *Surgeon General's Report on Oral Health* was released in 2000, gum disease is still the most undiagnosed and under treated of all systemic diseases.

Politics and the unsophisticated science of the early 1900s may have marginalized oral health's place in overall health. This rift keeps many Americans uninformed and unable to fully care for their own wellbeing. It keeps us from forging public policy that could provide cost containment and improve lives.

How Sexy Is It?

When news of the *Surgeon General's Report on Smoking and Health* captured headlines in 1964, smoking was sexy. Perceptions have since changed. Most smokers can list numerous reasons to quit and often try to. But Gene Simmons, of the rock band *KISS*, cuts through sound reasoning with a blunt assessment: Who wants to kiss a stinky, disease-ridden mouth?

Rising stars in any social or business strata know radiant smiles invite interaction; they project confidence, youth, vibrant health, intelligence, and success. To maximize your impact, you likely dash a brush over your teeth before social interactions to brighten and freshen your smile. From a vanity viewpoint, you know investing in your mouth enhances the likelihood of career and social advancement.

Quote from a successful, handsome financial analyst after viewing enlarged images of his mouth:

“Wow! After seeing my mouth ‘up close and personal,’ I feel really sorry for all those women I kiss! Ugh!”

My Rejoinder: “Don’t feel so bad. Their mouths probably look about the same!”

Look on his face: Priceless!

Mouths are due some appreciation. They are the source of intense and varied pleasure from birth to death. They are a major visual and tactile trigger. We relish new pleasures, but may also use foods and oral habits to satisfy emotional needs. Nutrition and digestion start here. Mouths articulate verbal and nonverbal thoughts and emotions.

While a private place fraught with psychological associations, your mouth is also critical to your social face. You owe yourself the comfort, clear speech, and confidence a healthy mouth brings to your work and social interactions.

My Smile Is My Image!

Discussing smiles with the manager of a luxurious Tokyo hotel, a man enthusiastically described the importance of his. “Oh, yes! Of course! I tell people all the time I wouldn’t be where I am professionally, nor could I operate effectively without my trademark smile. My smile is my image and my image must be impeccable. I depend on it...”

But to keep your confident smile as part of a fully functioning body, think beyond cosmetics. How seriously can you take vague news stories linking increased vitality and lifespan to flossing? What does that mean? How does this information affect you or your family? Shouldn’t news stories explain more? I applaud the media as they tell us oral diseases and other inflammatory diseases are intertwined. But they should also indicate that poor oral conditions don’t just drive other diseases; they also reflect poor overall health. Offering simple answers like brushing, flossing, and visiting a dental professional twice yearly plays into the Western tradition of treating disease symptoms, not their root causes. Cavities and gum disease are symptoms of imbalances within the body.

We will never cure disease until we change our Western mind set and think of healing from the inside out. What prematurely ages us is not bad germs, bad genes, or bad luck. It is not taking care of ourselves – not eating right, not moving enough, and perhaps cloudy thinking.

Biochemistry researchers believe microorganisms drive most diseases, but there is much more to the story. While high concentrations of germs reside in the mouth, there is a balance between beneficial and disease-causing bacteria. If you know how to balance your body chemistry and pay attention to oral health, you will make your body inhospitable to both oral and systemic diseases.

The following chapters will help you learn to ward off or minimize inflammatory diseases, even those to which you are genetically inclined, through balancing oral and whole body chemistry. This story of health is told through via the lens of oral health.

Will You Be Healthier in Five Years Than You Are Now?

You can be if you choose to. Scientists continue to unravel significant clues about inflammatory diseases. If you know how to shape your environment, you can turn back your biological clock. You are born with an amazing capacity to fight disease – to keep your body humming. Your immune system works full-time to keep a complex interplay of inflammatory diseases at bay. By adjusting your lifestyle, you can encourage your body to increase cellular repair and slow the destructive scarring caused by exaggerated immune responses.

A small, painless, chronic oral infection that afflicts – and is ignored by – most people influences inflammatory diseases. Initially it is hard to grasp the far-reaching effects of even minor gum inflammation. Can an overlooked cranny, the size of half a Popsicle stick (5cm²) exponentially ramp up your body's inflammatory response? Can germs teeming there invade arterial blood vessel walls and inflame this tennis court-sized area? What does that mean? Read on.

You probably think your gums provide as protective a barrier against germ invasion as the rest of your skin does. But often, the fragile oral barriers are breached. The gates are thrown open. Worse, there is no more hospitable place on your body for germs to breed – a warm, dark, moist nook blessed with a constant food source. No wonder gum disease is so prevalent. It is the most under-diagnosed

and untreated of all the inflammatory diseases. Acute symptoms of gum disease become obvious only as teeth loosen, drift, abscess, or become sore. Mild, early signs like bleeding or tenderness while flossing or brushing are often ignored. Would you tolerate consistent bleeding and tenderness anywhere else in your body?

Most of us don't choose to believe our mouths sports an "open oral wound", but at least three-fourthsⁱⁱ of Americans' mouths do. Denial plays a major role in the development of most chronic, hidden diseases.

Denial

Another observation, stumblingly delivered with a derisive smile after seeing his mouth magnified on a videoscreen: "I can't imagine what I was ever thinking.... I ... I obviously haven't been thinking at all I guess.... I can't run and hide from the reality of what I just saw... How can I change what I see?"

In your mouth, virulent germs can breed unhindered within a concealed reservoir. The skin lining the walls of this reservoir is unique. Unlike other skin, it is missing its top protective layer – its shield. Thus, like a skinned knee, it invites bacterial invasion. When the delicate balance between body defenses and bacteria shifts here, it affects organs such as your brain, heart, lungs, stomach, and kidneys.

Absence of pain does not mean absence of injury. The complex chemistry that underlies gum disease is overlooked because the structures it affects and the microscopic germs that alter complex chemistry are hidden.

There are other ways for poor oral conditions to poison us. Sometimes news stories focus attention on tragic examples, but stories like these quickly fade:

- "A young, nonverbal autistic California woman began to act out and hit other residents of her community residential care facility. She was admitted to a locked psychiatric facility at a cost of \$150,000 per year to the State of California. Fortunately, caregivers eventually discovered she had dental problems. Once her dental problems were treated, her acting out behaviors ceased and she was able to return to her community." ⁱⁱⁱ

- “In Louisiana, a \$70 tooth extraction would have saved an elderly patient fifteen days in the hospital, including two days in an intensive care unit, and a \$35,000 medical bill.”^{iv}
- In February of 2007, *The New York Times* reported the death of 12-year-old Deamonte Driver who died of a toothache. “By the time Deamonte’s... aching tooth got any attention, the bacteria from the abscess had spread to his brain, doctors said. After two operations and more than six weeks of hospital care, the Prince George’s County boy died... A routine, \$80 tooth extraction might have saved him.”^v

It is amazing such stories still bring so little attention, reflection, or calls for change. How tragic that the roughly quarter of a million dollar bill to Maryland Medicaid for Deamonte’s two-week hospital stay, could neither save his life nor go toward preventing similar catastrophes.

Most stories do not make the news. While conducting research for this book, people told me personal tales related to the mouth’s potential influence on overall health. One friend mentioned how an aunt’s knee replacement failed after oral bacteria entered her bloodstream and colonized her artificial joint. Another missed a kayaking trip due to an emergency hospital stay. The heart infection that almost killed him was traced to his gum disease. A client told me her mother uses rubber bands to stabilize her few remaining teeth. When I suggested researchers use something similar to induce gum disease in study rats, she shook her head and explained that without the rubber bands, her mother’s teeth would immediately fall out. Compromised nutrition was just one part of general health affected by her mouth infection. Another acquaintance told me a pathological cyst found on a relative’s spinal cord was traced to an oral infection.

Think for a moment. You may know someone whose health has been dramatically affected by poorly managed oral care.

While these stories are common, they are not common knowledge. General public awareness about the integration of body systems is cursory at best. Many people admit they feel comfortable about having mild or moderate gum disease because they do not notice immediate problems and they say so. I help them see the future through their oral health; it commands their attention.

Gum Disease: Another Source of Lung Pollution?



Recently, NPR radio aired a story called, “Think Music Heals? Trombone Player Began to Differ.”^{vi} A music professor developed something now being called “trombone player’s lung.”

After fifteen years of suffering with a constant sore throat, low-grade fever, and bouts of serious weight loss, a Professor Bean traveled without his horn – and felt better. A doctor, checking his horn, explained what made him sick. Organisms like mycobacterium, a TB-like organism, accompanied the air he blew into his trombone. Inside the closed, dark horn these microscopic organisms flourished. They also broke off and entered his lungs each time he inhaled.

Similarly, our lungs pick up and culture micro-organisms from our mouths delivered by tiny aerosolized saliva droplets. When one has gum disease, saliva enzyme activity increases. These enzymes cause disease-causing microorganisms to become extra sticky. They easily colonize in the throat and lungs where they continue their inflammatory destruction. We succumb to respiratory diseases when our resistance is weak. This is particularly true for the elderly, who often die as the result of respiratory infections.

Evidence of links between poor oral care and respiratory diseases like pneumonia, chronic bronchitis, and chronic obstructive pulmonary disease (COPD) continue to grow. Those with gum disease suffer respiratory diseases from infectious germs far more often than those with healthy mouths. Those with COPD cannot easily eliminate these sticky organisms from their lungs. They suffer frequent infections that cause irreversible damage, so it is particularly important for them to follow thorough oral self-care and schedule routine, competent professional oral care.

Researchers surmise enzymes from gum disease encourage the growth of respiratory disease organisms around teeth. The inflammation generated by this infection may alter lung cells so they are more susceptible to disease as patients aspirate the bacteria common to respiratory and gum disease. The general inflammatory

response cascades to further increase a person's susceptibility to respiratory infection.^{vii}

Improved personal and professional oral care reduces the progression or occurrence of respiratory diseases, especially among high-risk elderly adults living in nursing homes. A stronger correlation holds for those in intensive care units. Those who depend on others for oral care are at significantly higher risk for pneumonia.^{viii} There were from 34 to 83 percent less cases of pneumonia and other respiratory infections for people with good personal and professional oral care compared to those who did not.^{ix}

Research should illuminate improved strategies for avoiding the serious complications of pneumonia and influenza in hospital and nursing home settings.

A related Japanese experiment indicates a potent reason to relax current tight state regulatory control over preventive dental professionals (hygienists) in most states. The researchers proved that the presence of two destructive anaerobic oral bacteria¹ commonly found in gum disease induced inflammatory messengers in the body, which then resulted in pneumonia.

Then they studied the impact of improved oral care on the number of deaths from pneumonia. They instituted a 24-month program of weekly oral cleansing care to elderly patients in nursing homes requiring help with basic daily living skills. Dental hygienists administered the weekly oral care, which resulted in significant reduction of yeast, staphylococcus, and other anaerobic organisms as well as a decline in fatal aspiration pneumonia cases. Why aren't these professional activities allowed more widely in the United States?

In another Japanese program, dental hygienists administered frequent oral care to elderly persons in nursing homes for the six months of flu season. This effort resulted in fewer influenza cases, also known for higher mortality rates among older populations.^{x xi}

Research links between respiratory diseases and gum disease are well established. We must work to change how we care for immunocompromised patients and those in hospital settings on respirators and in intensive care units.

In a dental setting, if you or someone you love has COPD and gum disease, be sure your dental professional encourages a pre-procedural rinse. Ozonated water, water infused with an essential oil such as

¹ *Porphyromonas gingivalis* and *Treponema denticola*

Thieves, or in the traditional vein, Listerine or chlorhexidine will do. This lowers oral bacterial counts. They must also use high-speed suction, especially if they use ultrasonic instruments. The separate water supply should also be ozonated water or contain a biocide like chlorhexidine or essential oils known to kill germs, since studies show plain tap water moving through dental lines carry water with 10 – 100 times more bacterial colonies than the FDA allows² for safe drinking water. This is regardless methods dentists use for purging and disinfecting. The air supply must also be designed to be contaminant free.

Medicine's Stepchild: Dentistry

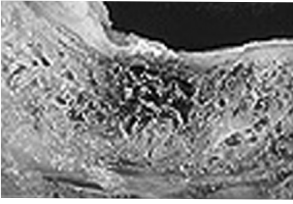
How, one might wonder, did oral health, prevention, and general dentistry become discretionary? The origins of dentistry's isolation from medicine may have begun in the early 1900s. At the time, many dentists believed abscessing teeth and infected gums were so septic they created widespread health damage. Advertising themselves as "one hundred per-centers" these practitioners proposed that pulling 100 percent of a person's teeth would cure many diseases.

The practice of full mouth extractions continued for years until a study concluded the radical solution conferred no measurable health benefits. The solution had overreached its premise. Despite this fact, these dentists addressed whole body wellness far ahead of their time. And perhaps they were not as far off the mark as it initially sounds. Of course their evaluation tools were too crude to measure health improvements. It is also likely that these diseases they studied were too established to reverse by the time they initiated "treatment."

Other factors may also have contributed. Cavitations likely often occurred at these extraction sites. Cavitations are areas of rotted, dead bone embedded within live bone. Many medical professionals and most veterinarians recognize and treat cavitations within skeletal

² Boil water notices go out when Colony Forming Units (CFUs) go above 500. The ADA recommends waterlines should contain no more than 200 CFUs. In a study by Ketterig J, Munoz C, Stephens J, et al (Comparison of methods for reducing dental unit waterline bacteria and biofilm.) presented in 1997, dental units with chlorhexidine solution demonstrated no bacterial growth for the duration of the study while the units containing tap H₂O, regardless of additional methods for purging and disinfecting, continuously had CFUs in the range of 500,000 to 5,000,000.

Cavitated lesion in a jawbone.



bone, yet dental professionals are slow to recognize their existence, much less their impact on human health. They are a constant source of whole body infection long after teeth are removed. In cavitated bone, anaerobic bacteria are trapped within the site. They feed into the circulatory system and spark low-grade chronic inflammation that constantly challenges the immune system. Cavitations are thought to be a particular risk in sites where extracted teeth had prior root canal treatment, were severely compromised at the time of the extraction, or when the ligament surrounding the root was incompletely removed during a crude extraction.

Dentistry continues to recover from the tremendous loss of respect it suffered. Only the last decade has brought an understanding of inflammation's crucial role in the diseases of aging, thus more insight to some dentists.

This book will illuminate the dark gateway most people dismiss. It is a personal wake up call for those with sizeable, untended "oral wounds" and for those responsible for the public policy keeping this awareness muted. This book provides information for people whose doctors are not paying attention to the significant and growing body of research about oral health's impact on wellbeing. It also offers proactive suggestions designed to empower those without access to care, as well as a minimal but targeted oral care routine that, if used, will enhance the lives of many. If we are all lucky, it can help forge progressive public policy. This book is for:

- A client from Ten Sleep, Wyoming who must drive to Montana for dental care or wait until she visits relatives who live in towns that offer dental services.
- A friend who mistrusts dentists, believing their goals to be solely pecuniary. He rarely seeks care and has no knowledge of the link between oral and general health.
- The friend who routinely seeks dental care for her children because she wants the best for them. She knows "twice a year" visits are recommended. She lacks dental insurance, sees an attractive smile reflected in her mirror, and thus does

not perceive the need to budget wellness visits for herself. As a result, she is left in the dark about the far ranging effects her mouth can have on her general health.

- The many Americans who pursue “dental tourism.” These people combine dentistry with trips to foreign countries as a way of reducing costs. Not having a close relationship with a trusted dentist could limit ongoing preventive monitoring and advice.
- Younger versions of the woman I heard about on a morning radio program. She was poor and lived a hard day’s journey from dental care. As she got older, she began to suffer severe oral pain and carefully saved money until she could travel to a dentist who would extract all her teeth. She wanted pain relief and to eat and feel better than she had for many years. Only in her later years, as she began to suffer, did she recognize the significance of oral health.
- The woman so hesitant to schedule her first dental visit she attempted to use her camera phone to visualize and solve her own oral problems.
- The patient referred to a hospital by a dermatologist friend of mine whose eyeball was very nearly expelled. The dermatologist correctly guessed an oral infection was the underlying cause and immediately referred the patient to a hospital.
- Those who shape restrictive public policy denying access to dental care in multiple ways.