

Risk Assessment and Minimally Invasive-based Care

The Case for CAMBRA and CariFree

by V. Kim Kutsch, DMD



Second opinions are common in health care; whether a doctor is sorting out a difficult case or a patient is not sure what to do next. In the context of our magazine, the first opinion will always belong to the reader. This feature will allow fellow dental professionals to share their opinions on various topics, providing you with a "Second Opinion." Perhaps some of these observations will change your mind; while others will solidify your position. In the end, our goal is to create discussion and debate to enrich our profession. — Thomas Giacobbi, DDS, FAGD, Editorial Director, *Dentaltown Magazine*

Until now, dentists have spent the majority of their time actively treating and restoring the real damages caused by dental caries. The caries infection, which is responsible for chronic cavities in patients, is a bacterial-mediated disease involving the two primary pathogens *Mutans streptococci* and *Lactobacillus*. However, recent biofilm science has expanded this disease model to include numerous pathogens in a biofilm community. Studies regarding biofilm suggest caries is a pH dysfunction of the biofilm. Prolonged periods of low pH in the mouth select for cariogenic pathogens and also lead to demineralization and net mineral loss from the teeth. In order to effectively treat dental caries, not only must the teeth be restored to function, but the dental biofilm needs to be restored to health. The intention of the CariFree system is to regulate the mouth's pH levels, as well as strengthen teeth in a process to correct the actual caries disease, as opposed to simply repairing the signs and symptoms.

Caries management by risk assessment or CAMBRA is a standard of care that includes early risk assessment and diagnosis of the disease process and then also treatment with minimally invasive procedures. Within all of health care, minimally invasive care is preferred by practitioners and patients. CariFree is an entire system that allows practices to diagnose and treat the caries infection, and support minimally invasive procedures. The traditional pick-and-stick method for cavity identification, followed by the drill-and-fill surgical model for treating cavities has become outdated. They are not only uncomfortable for patients; they are ineffective in maintaining oral health for high-risk patients, as the restorative measures have no beneficial effect on the dental biofilm. Frequently, dental caries is a life-long chronic disease for patients, a condition that

leads to ongoing restorative therapy, which continues until they run out of teeth or die. The way to significantly lower the potential decay rate for a patient is to effectively treat the underlying cause of cavities.

While new research indicates there might be genetic components and gender differences for dental caries, all members of the population might be at risk for the disease since it does not discriminate by age. In addition the disease might be transmitted horizontally and vertically within a family structure. Multiple risk factors exist for the disease and have been studied and validated. Dental caries is a complex biofilm disease, and the risk factors need to be addressed to effectively treat it. Previous attempts at treating chronic decay with improved oral hygiene, brushing and flossing, have had only limited results as it doesn't change the content or behavior of the biofilm. Reducing the plaque temporarily reduces the overall bacterial load, but the nature of the biofilm and the pH dysfunction remain the same. Even the use of fluoride has limitations. While fluoride has been demonstrated repeatedly to have beneficial effects at treating the disease in children, few studies demonstrate any significant benefit in adults. Fluoride does improve remineralization results, but increasing levels and frequency of fluoride use in treatment therapies have not been effective at reducing the decay rate. At this point, good oral hygiene and fluoride therapy might not be enough to provide effective treatment outcomes for all patients. The CariFree system focuses on correcting the pH dysfunction of the biofilm and combines the therapeutic effects of fluoride and xylitol. This revolutionary approach to treating dental caries offers significant hope to patients and predictable treatment outcomes for the practices responsible for their care.

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The CariFree system allows practices to begin with caries risk assessment and caries susceptibility screening. The CariFree caries risk assessment helps dentists identify which patients are at high-risk for dental caries by identifying specific known risk factors, which leads to individual-specific treatment protocols, rather than a “one-size-fits-all” surgical approach to the disease after it already exists. The CariFree CariScreen biometric measures the biofilm activity, and is diagnostic for the caries potential of the biofilm. The CariScreen is a chairside real-time test, which only takes seconds to administer and get results. The screening utilizes a light-sensitive meter and swab combination, based on ATP bioluminescence technology. The CariScreen biometric has been demonstrated in multiple independent university-based studies to correlate directly to the potential caries biofilm activity and patients’ caries risk. This procedure is extremely simple, provided at a low-cost, and allows practices to effectively monitor their patients’ risk levels. The biometric provides both a baseline and a therapeutic treatment endpoint so that practices can better design appropriate individualized treatment therapies and monitor their effectiveness and outcomes.

Cariogenic bacteria are both acidogenic and aciduric by nature. They all share adaptive mechanisms that allow them to exist and thrive in low pH conditions. While most people consider sugar to be the main culprit responsible for tooth decay, it is actually the acids produced when the biofilm bacteria metabolize the sugar, which becomes the basis for the disease. The low pH selects for bacteria that are acidogenic or aciduric and at the same time dissolves the calcium and phosphate from the teeth. By therapeutically raising the pH of the biofilm, the selection pressure is reversed and calcium and phosphate ions re-enter the enamel. Raising the pH encourages the growth of healthy bacteria and also drives remineralization. Xylitol has been demonstrated in multiple studies as an effective anti-caries agent. It reduces the transmission of cariogenic bacteria between individuals, as well as impedes bacteria’s ability to stick to teeth. In addition xylitol has a synergistic effect on even low levels of fluoride. The CariFree oral products combine pH strategies with xylitol and fluoride to provide effective treatment for the biofilm component of dental caries, and significantly drive remineralization of the teeth. The CariFree line of products can be bought online or sold directly from the dental practice. With products ranging from rinses, sprays,

and nonabrasive gels to lollipops for children, cavity prevention is made easy.

The dental profession is experiencing a rapid shift from the traditional surgical model to a risk-assessment-based medical model in treating dental caries. This shift is taking place in the dental schools as CAMBRA is now becoming a required part of the curriculum. The change is being driven in private practice as more professionals look for effective prevention measures, minimally-invasive-based care, reduced restorative risks and greater predictability in treatment outcomes. And finally, patients are aiding progress as they become better educated about dental disease and the options of minimally invasive care. Too many people have suffered from this disease for too long. What we’ve been doing isn’t acceptable anymore. With our increased understanding of the biofilm pH dysfunction of this disease, it’s time for us to take a bold new approach. G.V. Black dreamed of a profession that was truly prevention-oriented, where we understood dental caries so well that we could prevent its pathogenic effects. Bob Barkley admonished us to become education centers rather than surgical centers, where we teach our patients about prevention. Dr. John Kois teaches a system that incorporates risk-assessment-based diagnosis and minimally invasive procedures to provide greater predictability in treatment outcomes. It’s time for us to eliminate this disease. It’s time to stop the suffering in our youngest children and our oldest seniors. We can create a future where we spend our time focusing on wellness, creating the healthy, beautiful, confident and long-lasting smiles that all of our patients desire. It’s time! ■

Author’s Bio

Dr. V. Kim Kutsch received his undergraduate degree from Westminster College in Utah and then completed his DMD at University of Oregon School of Dentistry in 1979. He is an inventor holding numerous patents in dentistry, product consultant, internationally recognized speaker, is past president of the Academy of Laser Dentistry, and the WCMID. He also has served on the board of directors for the WCLI and the AACD. As an author, Dr. Kutsch has published dozens of articles and abstracts on minimally invasive dentistry, caries risk assessment, digital radiography and other technologies in both dental and medical journals and contributed to several textbooks. He also acts as a reviewer for several journals. Dr. Kutsch also serves as CEO of Oral Biotech. As a clinician he is a graduate and mentor in the prestigious Kois Center and maintains a private practice in Albany Oregon.