

## By Douglas Glenn Clark

Parents eager to teach their children proper dental hygiene insist that brushing teeth after each meal will keep the dentist and cavities away.

But clinical studies show that in some cases not even the most disciplined brushing and flossing will eliminate oral problems. In fact, 30% of children are at risk of developing chronic tooth decay in spite of their hygiene plan.

And tooth decay in baby's teeth is on the rise, according to new federal research that points to excessive sugar in child diets. The presence of cavities in toddlers ages 2 to 5 increased to 28% percent from the 24% derived from a previous study, the study further shows that over 51% of children between ages of 6 and 11 are currently afflicted with the same extent of tooth decay. Experts say this may indicate that this group of children will be more vulnerable to dental problems when they reach their teens.

Researchers say brushing is ineffective because it doesn't remove the cause of all cavities – cariogenic bacteria. Scientists have known since the 1920s that bacteria are the greatest foe to dental health. What they were unable to determine was what type of bacteria actually triggered the cavitation process.

While a couple of bacteria were identified early, several years ago researchers discovered that it was not free-floating bacteria in the oral environment that put teeth at risk, but a bacterial infection called dental caries. We now know that there are many bacteria involved in the dental caries biofilm that causes cavities. While many of these cavity causing bacteria remain to be identified specifically, their characteristics are well known.

Caries – cariogenic bacteria – lives in a thin, sophisticated layer of organic material known as biofilm. Biofilm adheres to the teeth and harbors various bacteria, good and bad. Scientists know that destructive bacteria can live and grow in small numbers even in a normal, healthy oral biofilm. But when tooth decay occurs, it indicates a high level of destructive bacteria.

In the past, when cavities occurred, dentists had no recourse but to drill out the decay and fill it with various materials to replace the tooth. For those blessed with a naturally balanced oral environment, an occasional cavity was an inconvenience, not a crisis.

But for parents with children whose mouths seemed to attract cavities like bees to honey, the incessant cavitation was a dreaded, expensive ritual. And some teen-agers who had endured years of tooth-decay faced an unfortunate remedy – extracting teeth and replacing them with dentures.

The malady was no less distressing to dentists, whose suggestions to improve damaged teeth were often rejected by patients who did not want to spend money on reconstructive procedures that would

only be undermined by recurrence of cavities.

Thanks to a technological breakthrough, a new standard of dental care is emerging and it is saving not only the teeth of young and old, but also the relationship between patient and dentist.

For Peggy and Stephen Whippo, of Albany, Ore., taking their three children to the dentist was the best and worst of times. Their two eldest children, David and Lindsey, both now in their 20s, suffered only one cavity between them throughout their formative years.

But from the time she was a toddler, their youngest daughter Heather developed a new cavity every six months. That changed dramatically about three years ago when the Whippo's dentist introduced them to a new, minimally invasive dental treatment called CariFree. As a result, Heather, now 18, is free of cavities.

"She had beautiful blue eyes but lousy teeth. Now she has beautiful blue eyes and great teeth," said Peggy Whippo.

The CariFree system is the first to give dentists advanced tools to measure and assess types of bacteria on teeth, and then effectively treat the condition. This preventative method is painless and promotes long-term dental health, rather than simply treating symptoms by filling cavities.

Here's how the new system works. Patients are asked a series of questions known as a caries risk assessment. The questions probe the patient's medical history, dental conditions, dietary habits, and so forth. Often, this information alone will suggest who is pre-disposed to bacterial infection.

If the patient has not eaten or brushed for at least one hour the dentist then swabs the surface of the teeth to collect bacteria. The swab is immediately scanned in a CariScreen device, which determines the level of decay-causing bacteria. It takes only one minute to learn if the patient has a low, moderate, or high risk of developing cavities.

If a moderate to high level of caries causing bacteria is identified, the mouth is probably a highly acidic environment with a low pH count. In this case, the dentist may prescribe CariFree's treatment program, which includes two mouth rinses. The first destroys harmful bacteria, and is used for only two weeks. The second is a maintenance rinse that has an neutralizing pH effect. It helps create an environment in the mouth that does not allow acidic bacteria to flourish. It may be prescribed for one month or used daily to keep a healthy oral environment.

Whippo said it was hard to get Heather to use the mouth rinse. "We'd tried everything, so she didn't have any faith in it. She said, 'Mom, it's a mouthwash. What are the chances it will work?' Within a year the cariogenic bacterial count in her mouth had dropped dramatically. I think maybe she's had one cavity since then – that's one in two years," she said.

CariFree may very well change the face of dental care, said B.C. Nelson, D.D.S., of Stayton, Ore., because it allows dentists to properly treat patients who otherwise have had to suffer chronic cavitations.

"It's a major break-through because it affects people at the most basic level. I use it to help people I've never been able to help before. You can change the lives of these people with a disease-free mouth. I'm really impressed," he said.

Aside from the dental benefits, Nelson said CariFree has helped him educate patients, many of whom were unaware that mouth diseases are transmittable, and they can make a person vulnerable to other problems, such as diabetes and heart disease.

"All of a sudden they realize that their mouth affects the health of the whole body, and something as boring as cavities becomes fascinating. They say, 'You mean I'm going to live longer because my teeth are clean?'" said Nelson, who has provided dental care for 17 years.

CariFree may also prevent major restoration failures due to recurrent decay. This builds confidence in patients who in the past may have distrusted restoration work for fear that it was a waste of money. Nelson, who has used CariFree for more than two years, said many of his patients are now more likely to consider long-term

dental strategies that include crowns and other restorative techniques.

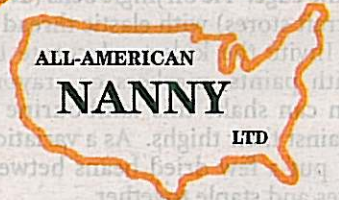
But Nelson warns that the bacterial balance of the mouth may change as the result of other medical problems. For example, a person with a clean bill of dental health may suddenly have cavities after a prolonged use of antibiotics. Why? The antibiotics kill "good" bacteria while allowing the "bad" to thrive. Caries bacteria in the biofilm can be a much more resistant to antibiotics than other common bacteria that are in the mouth.

Since risk factors change over time, Nelson recommends that patients be tested for caries once per year. Researchers call this approach to dental hygiene Caries Management by Risk Assessment, or CAMBRA.


And Whippo even admits her daughter Heather was not always consistent with the treatment. "I'd tell her, 'I have better things to do with my money than pour it into your mouth.' Every other day is about the best she ever did," said Whippo. "But as far as I'm concerned, that makes CariFree even more impressive."

For more information about the CariFree system visit [www.carifree.com](http://www.carifree.com). Or call the Oral Biotech patient hotline: 800-503-0625.

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