

Newsweek

The Mouthwash Debate

Does it cure bad breath? What you should know.

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NEWSWEEK WEB EXCLUSIVE

Updated: 5:05 PM ET Apr 24, 2008

For years medical consultant Gerard Einhorn, now 54, suffered from breath so bad that he avoided getting too close to clients and family members and even covered his mouth when he spoke. "You're going to sleep at night and your wife is next to you and says, 'Your breath is bad. Did you brush your teeth?'" he says. Today, thanks to good oral health habits, including an alcohol-free mouthwash, he has conquered his problem.

But millions of other Americans are still fighting breath that smells like rotten eggs. Should they turn to mouthwash too? And if so, should they use traditional alcohol-containing ones, like Listerine, or should they use alcohol-free ones, like Crest Pro-Health? After all, the original, gold-colored Listerine contains a scary-sounding 26.9 percent alcohol—twice the amount in wine, and more than five times the amount in beer.

Critics of alcohol-containing products say that alcohol dries the mouth, which could potentially worsen breath. (Think of dry, stinky morning breath after a night of drinking.) Listerine says its product does not dry the mouth when used as directed. Even if that's true, say critics, it's better to use any of the growing number of alcohol-free products, from Crest Pro-Health to Tom's of Maine to ACT. After all, why expose kids and alcoholics to a potentially toxic product? Meanwhile, Listerine officials say their century-old product is the most studied mouthwash and boasts the American Dental Association's seal of acceptance for helping reduce plaque and gingivitis. They say they're not working on an alcohol-free Listerine for adults, although just this month the company introduced an alcohol-free cavity-fighting, fluoride-containing product for kids called Listerine Smart Rinse.

An estimated 25 percent of Americans suffer from chronic bad breath, called halitosis. Many more suffer from it occasionally (say, post-onions) or are at risk of it from periodontal disease. About 70 percent of Americans suffer from some periodontal disease—a problem, since cavities and swollen gums are a good place for foul-smelling bacteria to hang out. Offensive mouth odor typically comes from bacteria in the mouth that release sulfur compounds—hence the rotten egg smell.

Why could alcohol be bad for breath? "It's well known that alcohol is a drying agent," says Matt Doyle, a senior scientist for Procter & Gamble, manufacturer of alcohol-free Crest Pro-Health and alcohol-containing Scope. "If you dry out the tissues, the smelly compounds that the bacteria produce are no longer naturally washed away, and you get a pungent experience." Dr. Harold Katz, a dentist who makes alcohol-free TheraBreath mouthwash, agrees: "The drier your mouth, the less saliva you have, which is nature's way of keeping your breath fresh."

"It is true that alcohol, at high concentrations, contributes to dry mouth, which exacerbates bad breath and the growth of germs," says Laura Brinker, a spokeswoman for Procter & Gamble. "Alcohol draws moisture out of the tissues in your mouth, and also slows salivary flow ... Since saliva is limited, the bacteria is not being diluted or washed out. This means bad-breath germs and other germs become concentrated in the mouth." (John Coelho, director of clinical research for Johnson & Johnson Consumer & Personal Products, which makes Listerine, notes that a study at the State University of New York at Buffalo on people with dry mouths found that using

Listerine even three times a day didn't make their mouths any drier. Without the alcohol, the active ingredients don't "penetrate" the plaque as well, says Coelho.)

Most mouthwash users spit out the product, anyway. "I'm not concerned with the alcohol content unless you're gargling straight vodka," says Dr. Richard Price, the American Dental Association's consumer adviser. "I'm not worried about temporary dryness from alcohol mouthwash, if there is one."

Contrary to popular belief, the alcohol in mouthwash isn't killing germs. It's a carrier for essential oils (eucalyptol, menthol, methyl salicylate and thymol) that are the active ingredients in Listerine. "It's used to dissolve the flavor oils," says P&G's Doyle. "If the alcohol weren't there, it would separate just like salad oils. The flavor oils would float on top. Without the alcohol, Listerine would look like salad dressing." But the amount of alcohol in mouthwash is not enough to kill germs, he says. Listerine agrees that the alcohol in the product is not the active ingredient. "[The alcohol] dissolves the four essential oils [the active ingredients], so that they can make or effect their change on plaque," says Coelho.

The best way to get rid of bacteria: floss and brush teeth and clean the tongue twice a day. It's like showering to get rid of body odor, says the ADA's Price. "You're not really killing bacteria when you're taking a shower. You're physically removing them." After they bathe, people put on deodorant—just as they use mouthwash after they brush their teeth. "The mouthwash is not as important as physically removing the bacteria. You don't need a mouthwash," says Price.

"You need to do mechanical cleaning to make any inroads," says Peter Hurst, chief of dental surgery at Northwestern University's Feinberg School of Medicine. Sugarless gum and products like BreathStrips may help because they increase the flow of saliva. (The gums' odors can also "mask" bad breath, says Price. He notes, though, that artificial sweeteners can irritate the gastric tract and cause gas.) Dentists also recommend twice-a-year professional cleanings. And consider taking a self-assessment for periodontal disease at Perio.org.

A dry mouth leads to an "overgrowth of bacteria," says Dr. Susan Karabin, president of the American Academy of Periodontology. More than 200 medications can cause dry mouth, says the ADA's Price. Some asthma medications, Prozac-like antidepressants, anti-anxiety medications and diuretics can cause dry mouth and make people more prone to cavities and bad breath. "You don't have the saliva washing away the food," explains Karabin. "Saliva is our best natural defense against oral disease, other than a toothbrush, dental floss and diet," says Price. Breath is usually at its worst in the morning because the mouth (and saliva flow) "kind of goes to sleep" at night, says P&G's Doyle.

Several diseases and habits, such as eating a high-protein, low-carb diet, can worsen breath. Sinus problems and post-nasal drip can too. People with stomach acid coming up also notice a foul odor. "They'll report smelling or tasting their food after they've eaten it," says Dr. Udayan Shah, a pediatric otolaryngologist at the Nemours/Alfred I. duPont Hospital for Children in Wilmington, Del., an associate professor of pediatric otolaryngology at Jefferson Medical College in Philadelphia and a member of the American Academy of Otolaryngology's tonsil and adenoid subcommittee. Sometimes tonsils can harbor disease too, since food debris can build up there. In some people the resulting yellowish-white or greenish-yellow secretions are "the size of cottage cheese curds," says Shah. Some people may even need to get their tonsils removed for this reason. Gargling with water, water and baking soda or mouthwash can help.

Bacteria that cause bad breath release sulfur compounds are "anaerobic," which means they thrive without oxygen. They love to burrow into the surface of the tongue, and they thrive in inflamed gums. Smoking causes bad breath. "It makes the mouth extremely dry, instantly," says Katz. (His 50-page "Bad Breath Bible" is free on his [Web site](#).) So does eating onions and garlic. "If it smells going in, it will smell going out," says Price. "We eat something that goes into our bodies and ends up in our bloodstream. You're breathing it out." People who are lactose intolerant may have problems with their breath after drinking milk, says Katz. "It's an overload of proteins in their mouth." Sugary foods, including Altoids, feed bacteria and encourage its growth, so they also promote bad breath.

Who should avoid alcohol-containing mouthwash? Alcoholics, and kids. Children's livers aren't fully developed, so alcohol exposure can be toxic and even put them in a coma, says P&G's

Doyle. "It's dangerous to leave this stuff lying about," says Northwestern's Hurst. "Leaving it lying about is like leaving a bottle of spirits about. It has the potential of an intoxicant." Other doctors agree. "You want to warn children against using alcohol-containing mouthwash," says Karabin. "Children don't tend to use things as directed." (Listerine officials note that they do not recommend that anyone swallow Listerine. "It's created so it's unpalatable for drinking," says Johnson & Johnson's Chris Charles.)

What mouthwashes, if any, do the experts use? The ADA's Price doesn't use them. Instead, he is a big believer in brushing and scraping the tongue. Hurst doesn't regularly use them. Shah gargles with a homemade mouthwash made from mixing a cup of warm water with a half teaspoon of baking soda. Karabin uses an alcohol-containing mouthwash because she thinks it kills the bacteria better than alcohol-free ones. She does not like homemade mouthwashes made from baking soda, because she says they get rid of some bacteria but not others and tend to lead to an "overgrowth of fungus." Rinsing with hydrogen peroxide also promotes fungal growth, she says.

The bottom line? "The best thing you can do for oral health is buy a three-minute egg timer," says Price, who wants people to spend that long brushing and flossing. "How much time do you spend blow-drying your hair?" And of course, wet hair doesn't smell—but dirty teeth do.

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