

Whitening: The next steps



Dr. Gerard Kugel, associate dean for research at Tufts University School of Dental Medicine and a dentist in Back Bay Boston, Mass., discusses the future of professional and over-the-counter whitening products. Kugel will be analyzing current controversies in vital bleaching at the 2003 American Dental Association annual session this month in San Francisco.

■ **Dental Practice Report:** How do you assess the current state of tooth whitening?

Dr. Gerard Kugel: It's a topic that has become popular again. Bleaching has been around for a long time. I started bleaching in the mid 1980s, and I would talk about it then, but it wasn't as popular a procedure and didn't seem to be as interesting to dentists. It's become more popular with dentists because it's become more popular with patients. And because more and more patients are going into dental offices knowing what they want—whiter teeth—I think the dentists are responding. The market responds to patient demand. It's not based on science, most of the time. Products are being introduced daily with very little science, just to meet what the patients want.

DP: What changes do you expect to see in tooth whitening in the next year?

Kugel: I see more and more over-the-counter products coming out that work better, and I see some new in-office bleaching

systems that may make life easier for the patient. Procter & Gamble has launched its new Crest Whitestrips Supreme, which is 14 percent hydrogen peroxide, compared to 6.0 percent in the over-the-counter product. This product works quite well and will be dentist-delivered. I think this will make it an easier decision for dentists to bleach a patient's teeth because there are more advantages—the chair time is zero, basically. You just grab a box and give it to the patient, with the argument that the product can't be bought at this concentration at the store.

And some of the paint-on products, which are not great now, will be improved.

DP: Do you have any concerns that dentists may be taken out of the tooth-whitening equation?

Kugel: My only fear is that with these products getting so good, how much longer will dentists be doing in-office bleaching? If the over-the-counter market has become so readily available to patients and so popular, there may come a point where they feel they can whiten their teeth just as well with an over-the-counter product.

I would imagine that the number of in-office bleaching cases is shrinking, or at least not growing. If I own a dental company that sells bleaching products, I probably am not seeing as much growth as I'd like to see, partly because there are so many over-the-counter products available now and some people believe that whitening toothpastes work.

The tray systems (nightguard vital bleaching) are pretty stable at this point, and they've been around for a long time. I don't see a lot of change in these products. There's really not a lot you can do with a tray system. I see the big improvements coming in some of the newer systems, such as the Crest Whitestrips Supreme. There may be other potential improvements, such as chemically activated bleaching systems, that would speed up in-office whitening.

DP: How do you view the market for over-the-counter bleaching?

Kugel: The over-the-counter market is getting crazy now. There are over-the-counter trays that are similar to nightguard

vital bleaching. The only difference is that with the over-the-counter products, you make your own mouth guard. But the gel is almost identical.

The over-the-counter trays work, but the only problem is you waste a lot of material because you make the tray yourself and usually it doesn't fit. You also take a chance with some of the over-the-counter trays irritating the gum tissue. So these are two negatives to these products.

We did a study looking at two paint-on products and neither one was great. One worked very poorly and one worked acceptably. But my experience with the paint-ons is the only ones that work are those that make people uncomfortable because it has to stay on the tooth.

We tested one paint-on product where everyone liked how it felt, but the reason was because it only stayed on the teeth for a short time and then was rubbed off. People complained about the feel of the paint-on that worked the best, and that was because it was made out of a material that was designed to stay on the tooth better. The ones we've looked at are minimally effective, but they do work, some better than others. Again, it's contact time. None of the paint-on products work nearly as well as the strips, however.

Some of the over-the-counter products use straight hydrogen peroxide, not in the gel form, and those do not work well, if at all. Some of the older over-the-counter systems contained phosphoric acid or citric acid, at levels high enough to etch teeth, and that makes them look chalky, but it's really not whitening them. It can damage the enamel, and that's not good.

DPR: *Do whitening toothpastes and gums work?*

Kugel: My personal feeling is there's not a lot of evidence they work. Most of them just clean teeth very well. The only thing

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—Dr. Kugel

peroxide in them. Most of the whitening toothpastes don't have peroxide—they have an abrasive or plaque-removing additive. They make the teeth whiter because they clean them. I don't see a lot of evidence that the toothpastes do a good job of whitening teeth. Some teeth will show a little change—a two-shade change on a 16-shade scale. To the average person or dentist, you can see it but it's minimal.

As for chewing gums, I don't see any evidence they whiten teeth. There's an abrasive in them, but most have contact only with the biting surface.

DPR: *How do you feel about light-activated bleaching?*

Kugel: There is some evidence out there, but minimal, to show that light-enhanced bleaching works. If you critically review the literature, there's not a lot of evidence that light-enhanced bleaching is of any benefit over just using the high-concentration gels. You have to remember that all the studies being published on this are

that has been proven to whiten teeth is hydrogen peroxide. And even the products that are non-hydrogen peroxide, and there's only a handful of those, usually they convert into an oxygen-free radical in the mouth so it's still a peroxide-type reaction.

If you look at the gum and toothpaste products, most don't have hydrogen

funded by the companies that make the products, so it's really hard for a dentist to read the literature and trust it. We still feel the light has a dehydration effect, and when you dry teeth, they get light for a while. Every bleaching system we tested rebounded in the first couple of weeks. In the studies we've done, we see no benefit to the lights.

DPR: *How can a dentist determine what literature can be trusted?*

Kugel: The problem is that a lot of dentists aren't trained to read studies, and a lot of the research they're seeing isn't well done. It's company-supported research that's really being done to promote a product. Even when you read reputable journals, you can't be 100 percent sure that the research you're reading is well done. I think that it's tough on dentists.

Some of the throwaway journals are fine, but it's not science you're talking about there. If you want to read science, you read certain journals like the *Journal of the American Dental Association*, the *American Journal of Dentistry*, *Operative Dentistry*, the *Journal of Clinical Dentistry* or the *Journal of Esthetic Dentistry*, because they're peer-reviewed and someone has a chance to reject an article.

Dentists should read research or papers that include control groups, measurements, a positive or negative control, clinical pictures, rebound effect and the number of patients in the study. Dentists are smart enough to know who they can trust—if you see a dentist out there who is promoting every product, you have to wonder how objective he can be. ○

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