In Practice

WITH DR. RONALD GOLDSTEIN

Whitening Options: How to Choose

Perhaps no other area of dental esthetics has captured the public's imagination like the whitening of vital teeth. I first learned about whitening back in 1959. Then I met Dr. Jake Friedland of Charlotte, South Carolina, who helped me with the design of a special photo floodlight that I used for years beginning in 1960 to whiten both vital and nonvital teeth. This design was developed and widely distributed by the Union Broach Company as the world's first whitening light for in-office whitening. To date we have whitened more than 40,000 teeth in the past 42 years. It has become an important part of not only our practice, but practices all over the world. This is why I have invited several leading practitioners to share how whitening is playing a role in their practices too. Based on the results, I think we can conclude that there is no single method; all whitening techniques work to various extents.

In our practice, we like the combination of in-office and at-home whitening, which produces the best results for us. Perhaps the conclusion is whatever technique works for you probably will also work for your patients. I would like to thank the members of this symposium who have responded to my request and appreciate their taking time to participate.

When do you suggest a whitening procedure to a patient?

E. Steven Duke, DDS—More often than not, patients present during initial examination appointments and treatment planning sessions and raise the issue of whitening their teeth. I will then begin to educate the patient of the procedure, including risks and benefits so they can make an informed decision on whitening. There are times I will bring up the topic and make the initial suggestion if I feel a patient could benefit from the esthetic results because of certain conditions and I feel confident of obtaining a good outcome.

James R. Dunn, DDS—Tooth whitening is not a procedure that we "sell" to a patient, but is part of general patient dental diagnosis and treatment plans based on patient needs and wants. Often patients ask for or about tooth whitening, and it may then become a separate or additional treatment.

Our goal is always to meet the patient's esthetic desires with the most conservative treatment possible.

Cary Goldstein, DDS—I suggest a whitening procedure to almost every patient. I look at their initial response to the esthetic questionnaire from CYS [**QA: What does CYS mean?**], and if they say they want whiter teeth, we discuss it. We also ask patients when they are having any bonding or crown work done if they ever plan to whiten their teeth. Most people plan on it at some time so they are happy we mention it to them. Then we either make trays or do an in-office procedure, or make their final restoration slightly whiter than their natural teeth to anticipate their whitening one day.

Van B. Haywood, DMD—I suggest whitening anytime a restoration is planned. Otherwise, I ask if they are happy with their smile, or do they wish they could change something about it? Also, if they inquire about toothpastes or over-the-counter products, I may pursue that avenue. It is important to have brochures and pamphlets with information readily visible and available to the patient.

Cherilyn G. Sheets, DDS—We suggest a whitening procedure to a patient when it is apparent that it will enhance their appearance, be a substitute to more invasive esthetic techniques in a dentition with good dental form and function, or improve the results of comprehensive esthetic rehabilitative dentistry. Our goal is always to meet the patient's esthetic desires with the most conservative treatment possible. Therefore, whitening procedures are often a conservative, effective method to "rewind the clock" and produce a more youthful, vibrant smile.

Larry Rosenthal, DDS—I recommend a whitening procedure for teeth that are both healthy and functionally stable, and are basically positioned appropriately into the arch. These teeth may just need to be lightened. Where there are arch form discrepancies, and occlusal and/or periodontal instability, I recommend a restorative option. It is not just the esthetic component that must be addressed; I feel it is necessary to evaluate function and health, not beauty alone.

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What factors affect the type of whitening option to choose?

E. Steven Duke, DDS—My overall general guidelines are to use lower concentrations of whitening agents over greater periods of time and a tray for delivery. This change has come about because of recent scientific findings demonstrating increased alterations in the microstructure of enamel treated with higher concentrations of peroxides and less resistance to abrasion of the tooth structure [**QA: Please provide reference(s).**]. Until a scientific consensus on this issue

is reached, I am favoring the patient's interests and well-being. This will include even the more difficult cases of intrinsic staining. I thoroughly explain to patients the present scientific knowledge available and work with them to get the best possible result with the least risk of harm to the patient.

Cary Goldstein, DDS—The type of whitening we select for patients is usually based on their response to cost and the idea of wearing a tray. Patients that know they will not wear tray are told about in-office whitening.

Van B. Haywood, DMD—Factors affecting the type of whitening to choose are cost, safety, efficacy (including efficacy for cost and time), flexibility for further treatment, changes anticipated in existing dentition, types of restorations or conditions (single dark tooth, endodontically treated tooth, etc.), and patient concerns and desires. These comprise a risk/benefit ratio and a cost/benefit ratio that must be considered.

Cherilyn G. Sheets, DDS—Our determination of whitening method depends on the type and intensity of staining, the speed with which the patient desires results, the sensitivity of the patient's teeth, and the investment the patient is willing to devote to whitening his or her teeth.

Larry Rosenthal, DDS—The factors that determine the whitening procedure are time, compliance, sensitivity of the patient, and degree of whitening necessary (eg, tetracycline stain). Often we will use a combination system of Power **[QA: Please explain Power.]** in-office and take-home whitening. The power acts as the booster with the take-home maintenance and daily whitening. We also recommend brushing twice a week with 10% carbamide peroxide for laminates and crowns.

Do some whitening options work better than others? If so, are there some instances in which a less powerful whitening option may still be chosen?

E. Steven Duke, DDS—Each patient is different when it comes to whitening options. Their expectations, the condition of their dentition, and patient compliance are but a few of the factors that can influence the final results with different whitening options. With a conservative posture and a thorough understanding of the state of the enamel discoloration, maximum benefits may result with less powerful whitening options. Ultimately, time may be the most critical influencing factor on outcomes.

James R. Dunn, DDS—We have limited the type of tooth whitening in our practice to tray or limited high-concentration peroxide techniques. We discuss the risks/benefits of each type, but are biased toward tray whitening because of the success of the tray method and the ability to adjust the amount of whitening to the patient's expectations. If patients want in-office whitening, we will refer them to a practice that provides those techniques. Our experience is that many of these offices include trays to maintain tooth color.

Cary Goldstein, DDS—Yes, I think the trays really do work

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better than the in-office techniques. We still offer the in-office treatments and find that at least three to six treatments are needed to get really great results.

Van B. Haywood, DMD—Yes. The safest, most cost-efficient, most efficacious for the least investment, easiest for the dentist and most patients, with the best ultimate result and possibly the longest duration is 10% carbamide peroxide in a custom fitted tray. Higher concentrations of carbamide peroxide invite more sensitivity, have greater rebound to a stable color, and do not appreciably alter the treatment time. In-office treatment of high concentrations of HP [**QA: Do you mean CP, carbamide peroxide?**] still require two to six visits, with an average of three, to reach maximum whiteness, although results will certainly be seen with one treatment. Over-the-counter products afford some lightening, but avoid proper diagnosis, and may not match the ultimate outcome available from the dentist or provide safety and reasonable long-term treatment options. The best technique must consider safety, efficacy, and cost/benefit ratio.

Cherilyn G. Sheets, DDS—We find that the higher-strength whitening products used with "whitening enhancers" (lasers, heat, or light activation) produce the fastest results, especially when immediately followed by at-home applications of whitening solution with custom fabricated trays. However, if a patient is not interested in speed, excellent results can be obtained with take-home whitening trays and traditional whitening gels. For extreme sensitivity, we will often desensitize the teeth with a gel in the whitening trays before using a low-intensity gel over a protracted time period to gently and painlessly lighten the teeth.

Larry Rosenthal, DDS—I believe the so-called power whiteners, be it laser or plasma arch, are stronger than the tray often because of sensitivity, cost, and the ability to control the degree of whitening.

When is in-office whitening a better option than over-the-counter whitening agents?

E. Steven Duke, DDS—When dentist "control" of the whitening procedure is important to the final result, then in-office whitening is a better option. This may involve a lack of patient compliance, improper use of the agents by the patient, a lack of sufficient remaining enamel, or highly stained conditions that do not respond to home whitening procedures. In such cases, a more closely monitored treatment with professional supervision may provide better results. However, as stated previously, I have backed away from extreme high concentrations of peroxides. Working with adjunctive procedures such as polishing and enamel abrasion, for example, along with whitening options can bring about excellent results.

James R. Dunn, DDS—We do not offer over-the-counter products, but when discussing whitening options with patients, we also give the risks/benefits of these products. Over-the-counter treatments can play a significant role with patients who cannot afford dentist-prescribed products, or need maintenance whitening. They also seem to be very effective for young patients at an affordable cost. As with dentist-prescribed whitening, patients can shorten or extend the whitening procedure to meet their expectations.

Cary Goldstein, DDS—In-office whitening is better only for noncompliant patients.

Van B. Haywood, DMD—Dentist-administered whitening is always preferred to over-the-counter products, in that the dentist needs to perform an examination (including radiographs) and make a diagnosis of the cause of discoloration, then determine if other treatments are needed instead of whitening or in addition to whitening. Only then should the patient proceed with whitening. When the examination and diagnosis are rendered, then it must be decided how much whitening the patient needs or wants. Over-the-counter products can lighten somewhat, but these products may not be as safe or effective as dentist-prescribed whitening. The best technique to satisfy all needs is 10% carbamide peroxide in a custom fitted tray. In-office treatment should only be considered if the patient has been fully informed of all the whitening options; has the financial ability to continue treatment with more than one visit if needed; wants the process to go as quickly as possible and does not have sensitive teeth; does not want the back teeth to be as light; does not want to do any treatment at home or where others would know; and is willing to pay for additional touch-up treatments at full fee should relapse occur. However, if fully informed patients would like the dental office to administer all the whitening treatment rather than take any responsibility or have any tasks to perform, then in-office whitening is certainly their choice. I have not found the procedure to be very rewarding for the outcome, time, and effort, and not easy to do on the mandibular arch or for highly demanding patients. In a recent International Association for Dental Research abstract presentation on in-office treatment, the dentist cited the average number of in-office treatments to "make the patient happy" was three. **[QA: Please reference.]**

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Cherilyn G. Sheets, DDS—In-office whitening is always a better option than over-the-counter whitening agents for several reasons. There is a wide diversity in quality and therefore effectiveness among over-the-counter products. The in-office techniques allow the whitening agent to have a controlled application that is evenly distributed and inclusive of all the teeth in the arch being treated. Importantly, in-office whitening allows an examination of the patient's mouth before starting the procedure to ensure that tooth whitening is appropriate for the patient. Finally, because tooth darkness can also be an indication of pathology, any disease will be diagnosed in advance of treatment, eliminating wasted time and money on inappropriate whitening products. Perhaps a role for the highest quality over-the-counter whitening agents is to periodically refreshen in-office whitening results, or solve minor whitening problems.

Larry Rosenthal, DDS—In-office whitening is stronger, there is more immediate gratification, and it is generally a better choice than over-the-counter whitening options. The only advantage of over-the-counter products is cost. It is of paramount importance to be monitored by a dentist. I have found "bleach junkies" who buy over-the-counter products daily without supervision. This is not a good thing.

Is there a danger in patients overwhitening their teeth? Are there ever any cases that call for the dentist suggesting the patient not whiten?

E. Steven Duke, DDS—Recent scientific findings have demonstrated increased enamel cracking, increased permeability with confocal microscopy, and altered histology of the enamel with extended use of certain concentrations of peroxides.**[QA: Please provide reference(s).]** Additional issues may involve patients presenting with extreme intrinsic staining, inadequate enamel remaining, presenting with shades that are already "normal" and do not need lightening **[QA: ok as edited?]** extreme sensitivity or adverse reactions to the whitening agents themselves, and extensive restorative work in the regions to be whitened could all lead to a decision not to whiten.

James R. Dunn, DDS—Patients who want their teeth to be "white" are always a challenge, but our experience is that when given the options with risks/benefits, most will choose tray whitening, because they can control the whitening effect. With no reports of adverse effects from long-term whitening, we have little concern about harm to the patient. As with all whitening, the probability of short-term tooth sensitivity is discussed with patients.

Cary Goldstein, DDS—I have not found any danger associated with overwhitening. In fact, I prefer it. I really love to see very white natural teeth. Unfortunately, very white veneers or crowns almost always look fake, yet overly white totally unre-

stored teeth look terrific. I have suggested to some patients to not whiten their teeth. Usually, they have too many restorations and do not plan on redoing them after whitening. Other times, we see patients that have open lesions, cracked or leaking fillings or crowns, etc.

Van B. Haywood, DMD— Overwhitening does not pose a physical problem, unless the solution being used is a low pH and causes damage to tooth structure. The esthetic danger is that the patient would not look natural. Jeff Golub-Evan's suggestion that the teeth match the whites of the eyes is a good standard for patients to seek [**QA: Please reference.**]. However, if they want whiter teeth than that, that is their choice. Conversely, not everyone can achieve their whitest desire, as teeth whiten to a certain level and go no further regardless of extended treatment time. What that level will be is unknown. There are contraindications to whitening. People may not whiten if they have restorations that currently match for which the financial or physical risk of replacement is too great. If they have old amalgams on teeth in the esthetic zone, those should be replaced before whitening. If they have a history of temporomandibular joint problems, they should proceed with caution, as well as a history of sensitive teeth. The biblical standard is teeth as white as milk (Genesis 49:12), so anyone with teeth darker than that will probably benefit from whitening. Some people want to "look their age" or do not feel comfortable with a striking smile, so whitening may not be for them.

There are contraindications to whitening.

Cherilyn G. Sheets, DDS— Any procedure can be overdone. Overwhitening can destroy the protein matrix of the tooth, creating a chalky-white unesthetic appearance. Care must be taken with patients who are compulsive in other areas of their life, as they may lose perspective on the color of their teeth, feeling that they are never "white enough." We advise all our patients to stop whitening when we mutually agree that they have reached the desired light, but natural-looking result. Follow-up whitening sessions (patient-administered or dentist-administered) are only recommended when indicated by a definite color shift. Patients are educated that much or all of their original stain has been permanently removed. External stains that may reaccumulate in the future can be removed during a routine dental prophylaxis appointment, sometimes combined with a single annual or biannual whitening session.

Larry Rosenthal, DDS— Overwhitening can cause teeth to become sensitive and brittle, and subsequently prone to fracture or chipping. I do not recommend whitening as an option for teeth that have severe wear or that have large restorations. These teeth need a more comprehensive treatment with laminates or crowns. ○