



TRAY TOOTH BLEACHING THE RIGHT THING AT THE RIGHT TIME

By **Van Haywood, DMD**



If you rob a bank and give the money to the poor, have you done the right thing? If you restore teeth with the best possible porcelain veneers when the teeth do not need veneers, have you done the right thing?

Bleaching teeth is one of the many treatments that everyone should have in their treatment options in order to do the right thing at the right time. Once you have determined to do the right thing, then you need to do the thing right (according to the wisdom of my late esteemed colleague, Dr. Dick Tucker).

When considering bleaching, the most cost-efficient, safe and efficacious technique for both the dental office and the patient is generally recognized as tray bleaching using a 10 % carbamide peroxide (CP).

The following checklist on tray bleaching may be helpful:

- 1) Everybody's teeth respond differently, both in how white they get and how quickly that whitening occurs. Tray bleaching expectations include:
 - Normally discolored teeth can take three days to six weeks.
 - Nicotine-stained teeth can take one to three months.
 - Tetracycline-stained teeth can take two to 12 months or longer. The average for tetracycline-stained teeth is three to four months to get lighter, but not necessarily white.

Once teeth reach their maximum whiteness, further treatment or different products or concentrations will not improve that shade. Teeth look the best when they match the color of the sclera of the eyes.

- 2) Prior to bleaching, the dentist should conduct a proper examination and analysis of the smile. This examination should include:
 - Evaluating how much of the teeth are showing in a full smile because the gingival area of teeth do not bleach as well as the incisal portion.
 - Identifying the gummy smile because whiter teeth make the gummy smile more noticeable. Periodontal therapy for altered passive eruption may be first indicated.
 - Identifying the existing restorations revealed in a full smile because the restorations do not change color.
 - Evaluating the results of the periodontal conditions because exposed roots do not bleach.
 - Recording all existing decay, gingival disharmony, history of sensitivity or occlusal problems.
- 3) **The dentist should take a screening radiograph of the anterior teeth to be bleached and any single dark tooth to determine the cause of the discoloration. That cause could include:**
 - An abscessed tooth.
 - Internal or external resorption.

- Calcific metamorphosis (the pulp chamber obliterated by secondary dentin).
- Different size pulp chambers.
- Caries.
- Cysts or tumors.

4) There are two different bleaching materials that require different instructions for the patients. CP is composed of hydrogen peroxide and urea. CP is best worn overnight, as it is active for 6-10 hours. Hydrogen peroxide (HP) is only active for 30 to 60 minutes, so it is applied during the day. A 10% CP product is comparable to a 3.5% HP product. Because CP has a long activity time, it takes fewer nights to reach the same shade as HP worn during the day. Conversely, HP worn during the day will take more days of less wear time to equal the nighttime bleaching with CP.

5) The pH to get tooth decay on dentin is below 6.8 and in enamel is below 5.5. Because CP has urea, the pH of the mouth and in the tray is elevated above 8 within five minutes of insertion such that patients cannot get tooth decay while wearing the bleaching tray with CP. Hence CP in a tray may be used for caries control when fluoride in a tray is not working. HP has a pH of 5, so does not favor tooth protection for long-term wear.

6) Different tray designs are important for different products, different concentrations and different patients. Ten% CP was originally designed to treat the gingivae as an oral antiseptic (Glyoxide), so trays can be made that extend onto the tissue 1-2 millimeters for a more comfortable, better seal. The gingival health in research projects always improves during bleaching. Concentrations higher than 10% require scalloping the tray such that there is no tissue contact to avoid tissue burning.

7) Spacers or reservoirs are not needed to bleach teeth as only a thin film of material is required with tray isolation, but reservoirs account for tight or ill-fitting trays. A proper alginate impression (where the adhesive has set for 10 minutes in the tray before use, the impression is held in the mouth for one minute past tacky and poured within 15-45 minutes without bubbles) creates an excellent fitting non-scalloped, no reservoir tray for 10% CP.

8) Tooth sensitivity is a result of the easy passage of peroxide through intact enamel and dentin to the pulp in five to 15 minutes. This easy passage changes the color of the dentin as well as the enamel. Sensitivity is a transient pulpitis, and the higher the concentration, the greater the sensitivity.

9) In addition to a proper fitting tray and low concentration of CP, the best treatment for sensitivity involves the tray application of 5% potassium nitrate for 10-30 minutes prior or after bleaching. Potassium nitrate is

found in most desensitizing toothpastes in the U.S. Professional products are also available, as well as bleaching products, which contain potassium nitrate.

10) Bleaching should not be started immediately after a prophylaxis. Before initiating bleaching and to reduce sensitivity issues, it is best to wait two weeks. During this time the patient should brush with a desensitizing toothpaste to further reduce the chance of sensitivity.

11) Because bleaching materials penetrate the tooth and release oxygen, the bond strengths of composite to enamel are reduced by 50% if bonding is performed immediately after bleaching. The dentist should wait two weeks after bleaching for the oxygen to dissipate before initiating bonding procedures.

12) The oxygen released during bleaching also affects the shade of the tooth, so the patient should not be bleaching for two weeks prior to a shade being taken for a crown or composite. Since some patients may be using over-the-counter products unknown to the dental office, it is important that the receptionist question the patient before scheduling an appointment that involves bonding or shade matching.

13) Restorations will not change color from any type of bleaching. While the surface will be cleaned, which may result in a more favorable-appearing restoration, the color is the same. Patients need to be informed of the cost of replacing unaesthetic restorations as a separate fee from the bleaching fee.

14) A single dark tooth is best treated with a single tooth bleaching tray rather than a full-mouth tray. This allows the single tooth to reach its maximum whitening before changes are attempted on the adjacent teeth. A single-tooth tray is fabricated by taking a full-mouth tray extended further onto the tissue, and removing the tooth molds so that the bleaching material only contacts the single dark tooth. While there is much more information about how to do the thing right with bleaching, these points provide a starting point for good quality patient care. ■

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About the Author

Dr. Van Haywood is a Professor in the Department of Restorative Sciences, Dental College of Georgia at Augusta University. In 1989, he co-authored the first publication in the world on Nightguard vital bleaching (at-home tray bleaching) with Dr. Harald Heymann. He has over 145 publications on the tray bleaching technique and bleaching and esthetics. His book, Tooth Whitening: Indications and Outcomes of Nightguard Vital Bleaching, was published in 2007. Since 2001, he has been listed every year in the "Top Leaders in Continuing Education" for the United States by Dental Products Report.