

## At-Home Vital Bleaching

**Authors:** Sonya T. Mitchell, DMD, MSHA; A Robles, DDS, MS

### Synopsis

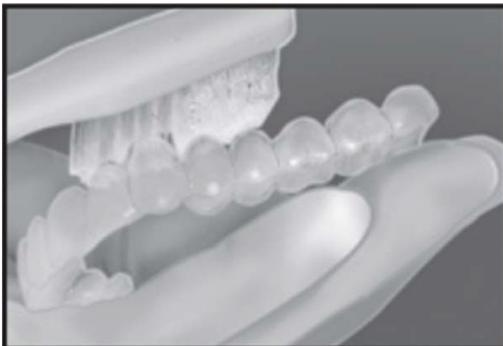
Vital bleaching is defined by the American Dental Association (ADA) as “the treatment, usually involving an oxidative chemical, that alters the light absorbing and/or light reflecting nature of a material structure, thereby increasing its value (whiteness)”. This SOP describes the clinical and laboratory procedures for at-home vital bleaching of teeth.

### Armamentarium

- Alginate
- Stock trays
- Tray adhesive
- 0.08 inch thermoplastic vacuum-formed tray material
- Scissors
- 10% Opalescence Whitening Kit

### Clinical decision-making

At-home vital bleaching is performed to visually lighten the extrinsic color of the teeth. Typically, an ADA approved carbamide peroxide gel is used in a soft custom tray. The gel should be used by the patient for at least 2-4 hours per day. Compliance is often improved with overnight wear. Some clinicians prefer to bleach one arch at a time – usually the maxillary – so that the patient can monitor the bleaching effect by comparison with the opposing arch. This may also improve compliance.

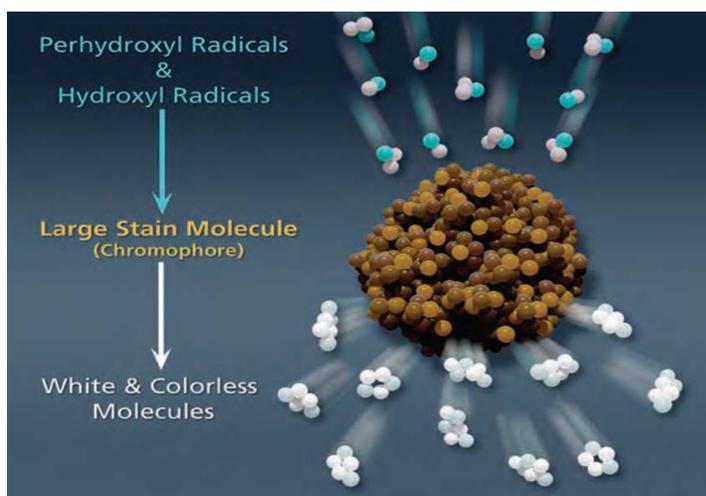


**Figure 1**

Horseshoe shaped custom tray Available at: <http://www.ultradent.com/en-us/Product%20Instruction%20Documents/Opalescence%20Tooth%20Whitening.pdf>  
Accessed 6/25/2012

Hydrogen peroxide is the active ingredient. It is highly unstable and has a fast reaction time; therefore it is administered as urea peroxide in a stabilized anhydrous glycerin base (carbamide peroxide) as this is a more stable form. Carbamide peroxide has a slow reaction time and is thus more “controlled”.

Carbamide peroxide decomposes to hydrogen peroxide and urea. Hydrogen peroxide further decomposes to water and oxygen. Hydrogen peroxide oxidizes a wide variety of organic and inorganic compounds. Bleaching of chromophores (color producing materials embedded in tooth structure, usually organic compounds) can occur by destroying one or more of the double bonds in the conjugated chain, by cleaving the conjugated chain or by oxidation of other chemical moieties in the conjugated chain. The mechanisms of these reactions are varied and dependent on the substrate, the reaction environment, and catalysis. Urea breaks down to ammonia and carbon dioxide.



**Figure 2**

Embedded particles that carry color:  
Chromophores

<http://www.dentistrytoday.com/aesthetics/deep-bleaching-techniques/970>  
(accessed 4-24-2012)

Patients selected for at-home vital bleaching must be caries-free with good oral hygiene. Existing restorations should be well-sealed. The patient should be cautioned that while natural tooth structure will whiten, existing restorations will not, and replacement may be required to achieve an acceptable esthetic result. Patients should

always be offered the option of vital bleaching prior to prosthetic treatment in the esthetic zone.

Time of treatment varies according to the severity and the predominant hue of the staining. Yellow/brown stains are the most susceptible to bleaching and results will be observed in 1-2 weeks in a compliant patient with maximum effect at 4-6 weeks. Blue/grey staining takes longer – significant whitening may not be observed for four weeks. Tetracycline staining is the most difficult to treat and may require 2-6 months of consistent wear to achieve an improvement. Patients should be cautioned that around 5% of the population does not respond to bleaching.

The most common side effects of at-home vital bleaching are gingival tenderness and temperature sensitivity of the teeth. These problems can be minimized by using a tray that does not extend onto the gingival and using the minimum amount of bleaching material in the tray. Localized gingival soreness can be addressed by trimming the tray away from the soft tissues.

Most patients will experience some degree of thermal sensitivity during treatment. Sensitivity is generally mild and transient and occurs early in the treatment. It will generally decrease with time but may last for several days following the cessation of treatment.

Sensitivity is believed to be the result of the freely diffusible nature of the materials used. Some by-products pass through dentinal tubules reaching the pulp causing reversible pulpitis (i.e. tooth sensitivity). Also, the carrier for many whitening products is glycerin, which absorbs water and causes dehydration during the whitening treatment resulting in tooth sensitivity.

If the sensitivity becomes severe there are a number of steps that the clinician can take. The patient can be advised to take a break from treatment for a day or two, shorten bleaching time, or use a desensitizing gel or paste containing fluoride or potassium nitrate and fluoride. These gels can be used for in the trays for 10-30 minutes prior to whitening.

## **Clinical Procedure**

### Appointment 1:

- Exam, Diagnosis, pre-operative shade determination, clinical photographs (with shade tab), alginate impressions

### Appointment 2:

- Tray insertion: no rough edges on tray, no distortions
- Provide bleaching gel container and explain how to administer it
- Provide both written and verbal instructions

### Appointment 3:

- Final eval and instructions 2 -6 weeks after completion of whitening - depending on case. Take post-op photos (with shade tab).

### Intermediate appointments as required:

- Call office if there is a problem
- Discontinue one day if sensitive or reduce treatment time
- Adjust trays as needed
- Restorative work: wait 2 weeks after finishing bleaching!

## **References**

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