

## THE MEDICAL COLLEGE OF GEORGIA

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The following information is adapted from  
**Haywood VB. Nightguard Vital Bleaching: Current Concepts and Research. JADA supplement 1997;128:19s-25s.**  
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<b>NIGHTGUARD VITAL BLEACHING ISSUES</b>		
<b>INDICATION/ISSUE</b>	<b>PROGNOSIS</b>	<b>COMMENTS</b>
teeth discolored by aging, inherit discoloration	Excellent in 1-6 weeks treatment for 9/10 patients	Dentin and enamel change in color; Removes stains & changes inherit color of tooth; All teeth may be darker and need whitening, or only the canines markedly darker than incisors
teeth discolored by smoking or chromogenic materials	Excellent::make take from 2 weeks to 3 months to eliminate discolorations	Heavy nicotine stains take longer (3 months of nightly treatment); patients should not smoke and bleach at the same time if possible
teeth discolored by tetracycline ingestion	Favorable outcome: make take 2-6 <b>months</b> of nightly treatment	Never get as white as non-tetracycline, but all improve. Patient compliance/ expectations important; dark gingival 3rd has poorest prognosis: program like weight-loss or exercise regime
Single dark teeth	Generally lightens almost as much as other teeth; radiograph important for pulp size & status, and periapical status	Can make tray for single tooth (NS/NR and remove tray over adjacent teeth), or use conventional design tray for all teeth and apply material longer on darker tooth
Brown fluorosis or islated brown discolorations	about 80% of teeth will respond, but others may need microabrasion. Also brown due to trauma will respond.	Removal of this brown fluorosis stain may be permanent; bleach prior to microabrasion to get color stable in case composite is required to mask unremovable stain. Use Ultralight composite shades.
White spots	Are not removed, and may get lighter during tx (Spotchy look). Return to original color after bleaching	If remainder of tooth is darker, white may be less noticeable after bleaching. If not, microabrasion is treatment of choice, with possible composite bonding to mask. Use Ultralight composite shades.
Surface changes	No clinical or reasonable SEM evidence	Random tooth variation exceeds reported effects on tooth structure
Tooth hardness	No change in hardness	No changes on surface, or in subsurface enamel to the DEJ with neutral pH solutions.
Sensitive teeth	2/3 patients have 1-4 days sensitivity, some throughout treatment. Can be sporadic, and helped by reduction in tx time or frequency of application.	Sensitivity ceases with termination of treatment with no sequelae; only predictors are history of sensitive teeth and increased frequency of applications in one day: Potassium Nitrate 3-5% 30 minutes prior to tx or alternating nights with treatment beneficial.
Cracks in teeth	No evidence of increased sensitivity, but patient should be warned of possibility	Although cracks may provide a channel for faster ingress, they are not a contraindication. Stained cracks are cleaned well.
Caries	Bacteriostatic properties of 10% CP inhibit caries during treatment	Sensitivity may require caries-control restoration, but final composite should be done after bleaching for color match
Exposed dentin	No evidence of increased sensitivity	History of sensitive teeth and too frequent applications are only predictors of sensitivity
Spotchy teeth	Different parts of the tooth may respond as different rates	Continue bleaching and other parts will "catch-up"; Apparently enamel formed in different ways (like knots on tree)
Non-responsive teeth	Either extend treatment time, or if patient is tiring, use in-office bleaching as a booster	Consent forms should always include subsequent treatment options, such as microabrasion, bonding and veneers
Initial color relapse	After bleaching, there is a small immediate relapse as oxygen trapped in tooth (which changes optical properties) diffuses out of tooth	Do not encourage regular touch-up treatment. 74% patients stable after 1.5 years with no touch-up; 62% patients still stable after 3 years with no touch-up; 35% stable after 7 years. Wait 2 weeks for shade stabilization prior to restorative treatment.
Longevity of color change	1-3 years duration, although some may be permanent (7 year recalls 35%)	Touch-up generally requires only 1 day per week of initial treatment; examine patient to insure no other cause for darkening.
Age range for treatment	10-14 years for younger, generally done on permanent teeth; no limit on older persons.	No correlation with age and sensitivity or treatment success; root surface in older teeth does not lighten as well as clinical crown
Pregnant patients	No known concerns, but do not recommend treat pregnant or lactating women due to normal precaution and no reason not to wait	If patient becomes pregnant during bleaching, no cause for alarm; no evidence of any problem, although generally stop treatment for peace of mind of patient and dentist, as well as gingival reponse.
Radiographs taken	One periapical to evaluated for periapical pathology and pulp chamber size	Dissimilar pulp chamber sized may result in different rates of treatment; look for internal resportions or periapical abcess.
Restorations on teeth	Neither composites or porcelain will bleach; large color shifts will require replacement	Contraindication to bleaching may be amount and cost of restorative work that would be needed after bleaching

<b>ADA-ACCEPTED PRODUCTS (10% carbamide peroxide only)</b>	
PRODUCT NAME	COMPANY
Rembrandt (fluid gel in tube)	Denmat
Opalescence (viscous gel in syringe)	Ultradent Products Inc.
Platinum (white paste in tube)	Colgate Oral Pharmaceuticals
Platinum Overnight (white paste in syringe)	Colgate Oral Pharmaceuticals
NiteWhite (viscous gel in syringe)	Discus Dental Inc.
Patterson's Toothwhitening Gel	Patterson Dental Supply Co.

**ADA Guidelines for the Acceptance of peroxide containing  
Oral Hygiene Products: JADA 125, Aug 1994**

SAFETY DATA REQUIRED	EFFICACY DATA REQUIRED
acute toxicity	two double-blind studies
subchronic toxicity	2-6 wks treatment
chronic toxicity	2 color measurements
genotoxic potential	soft tissue evaluations
carcinogenic potential	3 & 6 mo. color duration
<b>ADA acceptance policies updated May 1998</b>	

**TRAY DESIGN FEATURES**

Feature	Advantages	Disadvantages
<b>Reservoir</b>	- tray puts no pinching pressure on teeth -aid in seating tray with highly-viscous materials -design allows seat against gingival of tooth -no evidence that bleaching is any faster -some evidence material may be active longer (4-10 hrs)	-loss of retention must be compensated by thick and sticky material -added thickness of tray may irritate lips and cheek -potential occlusal interference on mandibular arch -requires additional time & products to make
<b>Scalloped</b>	-no soft tissue contact -minimal gingival irritation -minimal material use	-saliva ingress removes material at neck of tooth -tongue or lip irritation from edges -requires additional time to fabricate

**TRAY DESIGN OPTIONS**

Design	Indication	Comments
<b>S/R</b>	-where minimal tissue contact is desired -for highly viscous materials which supply retention -maxillary arch to conserve material use	-saliva ingress a problem unless relatively insoluble material is used (thick and sticky) -special trimming scissors facilitate fabrication
<b>non-S/ non-R</b>	-for maximum retention of tray -for maximum retention of material at gingival of tooth -for fluid and honey-like materials -for mandibular arch where occlusion contacts facial of tooth	-allows tissue contact which may cause gingival irritation -cannot extend into undercuts -should not terminate on soft tissue peaks such as rugae or impinge on frenum movement or canine eminance
<b>facial-S/ R</b>	-where taste is a problem to patient -where tongue irritation from edges of tray a problem	-avoids spill-over of material onto tongue from lingual -provides smooth edge for tongue contact
<b>S/ non-R</b>	-for fluid materials when tissue avoidance is desired but with maximum retention of tray	-no apparent difference in bleaching rate with and without reservoirs
<b>non-S/ R</b>	-for seating of tray with viscous materials when a better seal is desired	-mandibular arch best with non-scalloped for material retention/ tissue comfort

**BLEACHING TETRACYCLINE-STAINED TEETH**

QUESTION	ANSWER	COMMENTS
TIME TEETH STAINS OCCUR	Children from birth through elementary age; adult teeth now reported to stain from tetracycline ingestion in adult years	Adults deposit in secondary dentin; Minocycline stains cited from acne treatment
TREATMENT TIME	-2-6 MONTHS average; Some have taken as long as 12 or minimal of 2; Patients should be willing to go at least two months	-Nightly wear if possible, but requires compliant patients with realistic expectations; best presented as program like "weight loss" or "exercise" regime
PROGNOSIS	-all have some lightening -depends on the severity of color and compliance	-Discoloration at gingival of tooth has worse prognosis -Color seldom as light as non-involved teeth
LONGEVITY	@ 4.5 years, 83% still perceived as color stable by patients	At 1 & 4.5 year recalls, all patients felt their teeth were lighter than before treatment; none back to original shade
PATIENT SATISFACTION	All patients who were able to complete treatment were glad they bleached their teeth	Patients would repeat treatment and recommend it to a friend
EFFECTS ON TEETH	No detrimental effects either clinically or under SEM viewing (200 and 2000X) different from untreated teeth	No patient had a crown or endodontic therapy related to the bleaching
SENSITIVITY	Ranges from none to through-out treatment. Average similar to 2-wk NGVB (1-6 days).	Treatment must be either Passive (less time or longer intervals between Tx) or Active (5% potassium nitrate or neutral fluoride in tray).
FEE	-Consider initial regular fee with slight increase for one month's material -Additional fee for each monthly recall required	-Monthly recalls for examination and material -Continue recalls until patient unable to detect color change (after 2-3 months initial treatment)
TRAY DESIGN	-Depends on viscosity, stickiness, and water solubility of material -want material to be held against neck of tooth	For very thick materials, scalloped trays work well; More fluid materials require Non-Scalloped tray +/- reservoirs to seal against tissue