



Achieving optimal aesthetics with at-home and in-chair whitening

By Jurka Vuletic, BSc (Oral Health)

The allure of white teeth is commonplace in today's society and is often synonymous with youth, health and attractiveness, at least within Western culture. Due to this appeal, it's little wonder that the marketplace is filled with products that promise patients pearly whites. These include pastes, charcoals, magical lights promoted on social media by celebrities and influencers alike, or good old-fashioned wives-tales often involving lemons, strawberries and baking soda. A Pinterest search bar is also often featured.

So how do professional dental results stack up, how are these results achieved and what protocol provides us as clinicians with predictable results? While on the surface, our treatment costs appear steep from the patient's perspective, it is our role to educate them in this non-invasive treatment modality. This will ultimately save them dollars - enamel rod length! What can we realistically do for our patients' aged, stained and knackered looking gnashers?

As clinicians, there are a number of factors to consider when discussing, recommending and/or providing whitening treatment, the least of which is their clinical suitability (i.e. is the patient pregnant, what is the nature of the stain (extrinsic, intrinsic), the state of both dentition and gingival health and importantly, the patient's expectations).

While I do not profess to be an authority on all things whitening, I have had clinically successful results using a combined approach to tooth whitening with Opalescence (Ultradent) patient-administered and in-chair options. For those seeking information on the science behind the results, I encourage you to read papers by Van Haywood and Heymann.¹⁻⁵ Their studies will arm you with the knowledge required to answer any patient questions about product safety and ultimately allay any reservations you may have yourself with regard to the efficacy and efficiency of whitening agents.

Case study

A healthy, non-smoking 31-year-old female patient presented to the clinic with a desire for whiter teeth. She previously drank coffee and enjoyed the occasional glass of red wine with a meal or after a long day. She had never whitened her teeth before and reported no previous experience of temperature-induced tooth sensitivity or any sensitivity for that matter.



Figure 1. Initial situation and baseline shade (2M2).

The patient attended regular dental appointments (she is the daughter of a dentist), maintained great oral hygiene and was cleared in terms of outstanding restorative work prior to consultation. Basically, she was looking for the lightest possible result without the need for reductive prosthetic dentistry.

The consultation process ruled out conditions which would have discoloured her teeth such as post-traumatic hemosiderin staining of dentin, necrotic pulp, dental caries, stained hypo-mineralization or hypo-calcification and tetracycline and/or minocycline staining. The latter is a broad spectrum, semi-synthetic antibiotic used in the treatment of papulopustular acne which has the potential to stain teeth at any age. The patient reported no past or current affliction with any of the aforementioned conditions.

Strategy

Prior to any bleaching treatment, the patient had an initial therapy hygiene appointment followed by alginate impressions being taken for custom cervical seal bleaching trays with an emphasis on troughing the cervical aspects of the teeth on the model to ensure an excellent seal. The importance of the seal is two-fold. Firstly, saliva seepage will neutralize the bleaching solution while also deactivating the agent with salivary peroxidase and secondly, this will ensure the gingival tissue is as protected as possible.



Figures 2-4. Results following use of 10% carbamide peroxide (Opalescence) overnight for an initial period of 2 weeks (Shade 1M1).



Figures 5-6. Results following use of 10% carbamide peroxide overnight for a subsequent period of 2 weeks (Shade 0M3 uppers).

During the seven days required for the lab to manufacture the trays, the patient was provided with Colgate Sensitive Pro-Relief toothpaste and instructed to use it in lieu of her regular paste commencing immediately and throughout the entire bleaching process.

On receipt of the custom bleaching trays, the patient was booked in to ascertain her baseline shade, which was photographically recorded as 2M2 (Vita 3D-Master shade guide) for the cervical half of the central incisors only (Figure 1).

The patient was given instructions on gel distribution (how much and where), tray insertion, removal and hygiene. The patient was instructed to bleach overnight for two weeks with a 10% carbamide peroxide solution (Opalescence, Ultradent).

While the patient did follow instructions, she was not able to return to the clinic for a month and when she did, it was noted that she had only used two of the eight syringes provided. At this appointment, the shade recorded was 1M1 (Figures 2-4).



Figures 7-9. Results following in-chair application of Opalescence Boost 40% hydrogen peroxide - 3 x 20-minute cycles (Shade 0M3 for both arches).



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Further instructions were given to her to home bleach for a further two weeks and to increase the bleach droplet size in each tooth space of the custom tray facially. On her return to the clinic two weeks later, her upper anteriors were recorded as 0M3 but the lower anteriors had a slightly lower value (Figure 5-6)

In-chair whitening using Opalescence Boost with 40% hydrogen peroxide was carried out after gingival isolation using a light cured gingival barrier material (Opaldam, Ultradent). A total of three 20-minute cycles were completed as per protocol. The patient, who had still been using Colgate Sensitive Pro-Relief, reported minimal sensitivity. The final shade recorded for both upper and lower anterior sextants was 0M3 (Figures 7-9)

While a definitive Vita 3D-Master shade of 0M3 for uppers and lowers is fantastic, the patient was instructed to continue with home bleaching for a further 2 weeks to account for a slight but inevitable colour rebound.

About the author

Jurka Vuletic graduated from the Auckland University of Technology with a Bachelor of Health Science (Oral Health) and is an oral health therapist at Tam Dental Group in Auckland. She has a particular focus on advanced periodontal cases and adjunctive therapies and is the practice's go-to dental bleaching guru.

References

1. Haywood VB, Heymann HO. Nightguard Vital Bleaching. *Quintessence Int* 20: 173-176. 1989.
2. Haywood VB, Leech T, Heymann HO, Crumpler D, Bruggers K: Nightguard Vital Bleaching: Effects on Enamel Surface Texture and Diffusion. *Quintessence Int* 1990;21:801-806.
3. Haywood VB, Heymann HO: Nightguard vital bleaching: How Safe Is It? *Quintessence Int* 1991;22:515-523.
4. Haywood VB, Houck VM, Heymann HO: Nightguard Vital Bleaching: Effects of varying pH solutions on enamel surface texture and color. *Quintessence Int* 1991;22:775-782.
5. Haywood VB, Heymann HO. Response of normal and tetracycline-stained teeth with pulp-size variation to nightguard vital bleaching. *J Esthet Dent* 1994;6(3):109-114.