

Maintaining Tooth-Whitening Results

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The ever-expanding tooth-whitening options and number of individuals who have chosen this economic, safe, and most effective means of smile enhancement have created demand for maintenance protocols. Maintaining the results of professionally administered or dispensed whitening will vary from patient to patient and largely depend upon daily habits. As a result, most recommendations for maintaining results are based upon basic oral hygiene science combined with new products that can assist with maximizing whitening. A review of considerations both pre- and post-whitening—in addition to maintenance options—arms clinicians with critical information to assure maximum tooth-whitening results and client satisfaction.

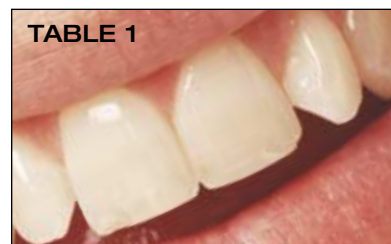
How Does Stain Occur?

Maintenance of whitening results begins long before the final whitening treatment or application is completed. Careful evaluation of patient habits and type of staining, in addition to the whitening treatment rendered, determines the potential longevity of whitening results. Staining can be classified in terms of the type of staining: 1) age-related or deep internal (ie, intrinsic) staining, as seen with tetracycline exposure or excessive fluoride

ingestion, or 2) extrinsic staining, which is due to exposure to liquids, or tobacco (Table 1). Intrinsic staining is a result of an accumulation of internal and external staining that has occurred over years. Additionally, with age, the enamel thins at the cervical areas, allowing more dentin to show through, making the teeth appear dark and even dingy.

A more dense intrinsic stain is a result of systemic exposure to a specific agent such as tetracycline or fluoride. While these stains are more challenging to whiten, the desired outcome can be accomplished with longer treatment times for dispensed at-home whitening, more chairside treatments, or a combination of both. An extrinsic stain is an external accumulation on the enamel surface that has resulted from exposure to staining-related

TABLE 1



Classification of Stains

■ INTRINSIC

Age-related

Deep internal

Tetracycline exposure

Excessive fluoride ingestion

■ EXTRINSIC

Exposure to:

Liquids (eg, coffee, tea, colas)

Tobacco products

agents. Regardless of the type of staining, once whitening is achieved, the maintenance of the result will be the same.

How Does Whitening Work?

Whitening agents can be divided into peroxide-based agents and those products that do not contain peroxide. Peroxide-based products and treatments are effective in achieving a wide range of shade enhancement and are available by professional application in-office or through professional dispensing for

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daily use. Hydrogen peroxide is utilized in both professionally applied and dispensed products, while carbamide peroxide is typically used for extended wear on a daily basis.

When peroxide-based agents come into contact with tooth surfaces, they break down and remove or dissolve stain within both the dentin and enamel surfaces through oxidation. Both external and internal stains deep in the tooth structure are impacted by these agents. As this process continues, the enamel surface becomes more opaque and reflects light, making the teeth appear whiter and brighter. Whitening results can be seen immediately with professionally administered systems and within as little as a week or so with professionally dispensed take-home products. Nonperoxide-based products will be useful in maintaining results and will minimize or reduce extrinsic-based stains.

Maintenance of Professionally Administered and Professionally Dispensed Whitening Results

Maintenance for chairside whitening, which may utilize a light or laser source to accelerate the whitening, begins at the whitening appointment. During a chairside treatment, immediate whitening occurs. The first step to maximizing results is to initiate tooth rehydration through the application of a 1.1% neutral sodium fluoride solution. This is easily applied after the last application of the whitening agent and should remain on the teeth for five minutes. The application of fluoride will not only begin the rehydration phase, but is also useful in preventing chro-

mogenic (staining-related) material from being absorbed by the newly whitened enamel surfaces.

As the shade stabilizes and teeth rehydrate, patients should avoid foods or liquids that stain (Table 2) for the first 24 to 48 hours following chairside treatment. This assures that maximum whitening will be realized and must be effectively communicated to clients. Additionally, staining-related habits, such as use of tobacco, should be avoided for obvious reasons. This may also provide an excellent opportunity to initiate a tobacco-cessation program. Maintenance options at this point are identical to those of patients who have chosen professionally dispensed, take-home whitening products.

For those patients who prefer take-home options, professionally dispensed products are an important part of a successful and long-term result. These systems typically involve a custom-fitted tray and either hydrogen or carbamide peroxide solutions. Results are usually seen within weeks and can be maintained through a variety of products. Patients should be informed about staining-related agents and advised that daily exposure to such agents can reverse whitening results over time (Table 3).

Over-the-Counter Options: Peroxide-Based Products

It is important to educate patients regarding over-the-counter (OTC) whitening products as they are not always reliable. This is due to many factors, such as acidic and runny solutions which are easily swallowed and may damage enamel, as well as



TABLE 2

Maximizing In-Office Whitening Results

- Apply 1.1% neutral sodium fluoride immediately following the last application of whitening material.
- Tell patients to avoid foods and liquids that stain, such as curry, ketchup, mustard, red wine, cola, coffee, and tea.
- Make impressions for a custom tray for future touch-up procedures.
- Reappoint for tray delivery and final shade analysis. Also, reappoint for additional chairside application and/or at-home use for further whitening.
- Instruct the patient on daily maintenance.

unproven means to deliver the whitening agent through boil-and-bite mouth trays. In addition, many OTC options have not undergone the rigorous testing seen with professionally dispensed products. Recently the American Dental Association (ADA) issued a statement that OTC peroxide-based whitening products would not be eligible for consideration for the ADA Seal of Acceptance. According to the ADA's Statement on the Safety and Effectiveness of Tooth Whitening Products, "Only those products dispensed through the dental office are considered for the

TABLE 3



Patient Education

Pointers for Maintaining Whitening Results

- Avoid staining-related habits, such as use of tobacco products.
- Use drinking straws with chromogenic beverages, such as coffee, tea, and colas.
- Utilize automated toothbrushes and whitening toothpastes.
- Practice thorough daily oral hygiene, including use of interdental aids, irrigators, and tongue deplaquing and/or scraping.
- Seek regular dental hygiene care to maintain periodontal health, to keep staining to a minimum, and to determine the need for whitening touch-up.

Seal because professional consultation is important to the procedure's safety and effectiveness."

As a result, patients should not use these products to maintain whitening results without the express recommendation of their dental professionals. Instead, patients should be counseled to request a shade analysis at preventive appointments to determine the need for possible touch-up utilizing professional products. This consultation, in addition to use of nonperoxide-based products, assures the longest-lasting results possible.

Over-the-Counter Options: Nonperoxide-Based Products

Nonperoxide-based products are available in a variety of options from toothpaste to chewing gum and everything in between. There are two main categories of nonperoxide-based means, mechanical and chemical, which work on extrinsic stain. Essentially any device designed to remove, reduce, or eliminate plaque provides value in keeping extrinsic stain to a minimum. Automatic toothbrushes, as well as auto-flossers, are of particular interest as they have been proven effective in extrinsic stain reduction and even elimination with certain technologies. Manual toothbrushes and specialty floss also may be useful in minimizing interproximal stain accumulation. Patients should be instructed to utilize these devices on a regular basis, and recommendations for specific products should be based on client preference, lifestyle, and habits.

Other mechanical functioning products include whitening toothpastes and chewing gum. Toothpastes are helpful mechanically and even chemically, in some instances, by keeping extrinsic stain from forming. Additives to toothpaste and chewing gum reportedly coat the teeth so that staining cannot occur. Care should be taken in recommending certain chewing gum products as they call for multiple pieces throughout the day for twenty minutes of chewing at a time. Regardless, these options only benefit extrinsically-based stain and do not provide the intrinsic stain removal seen with professional products; therefore, their main bene-

fit is extrinsic stain reduction/removal versus true "whitening."

What to Recommend

Regardless of the system utilized to achieve tooth-whitening results, maintenance strategies are similar. To assure maximum results, patients should be provided with touch-up whitening material as needed. Professionally dispensed take-home products assure the quickest results possible. The general consideration is that for every week it took to achieve the final result, one wear time/exposure is required to rewhiten the dentition. For example, if it took three weeks of nighttime wear to whiten the teeth to the designated degree of whiteness, then three nights of wear should restore the whitening result. Daily methods to minimize extrinsic stain are beneficial for maintaining whitening results as well as maximizing oral health between touch-ups or to extend the results.

Conclusion

The role of the dental hygienist as the patients' educator begins almost immediately. By setting realistic outcome expectations and by providing information on available methods to extend the whitening results, the patients' will realize long-term benefits for this inexpensive, safe, and effective means to enhance and improve their smile.

References

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