Why, when and how to whiten your patients' teeth
World expert Van Haywood puts you on track

One year on, Nicola Kramer once again interviewed Van Haywood to find out more about aesthetic smile design

Van B Haywood, DMD, is Professor in the Department of Oral Rehabilitation, School of Dentistry at the Medical College of Georgia. He is a member of numerous organisations, including the American Dental Association, the International Association of Dental Research, the American Academy of Esthetic Dentistry and the American Academy of Restorative Dentistry. In 1989, he co-authored the first publication in the world on nightguard vital bleaching (at-home tray bleaching using 10% carbamide peroxide) with Dr Harald Heymann, which formally introduced the technique to the profession

Why is it that you tend to prefer to whiten your patients' teeth using at-home tray bleaching rather than in-office power bleaching?
In-office bleaching requires one to four visits to achieve the same level of whitening as at-home bleaching. Hence the cost and effort of in-office bleaching tend to outweigh the benefit.

Each visit can be one to two hours of time. Since the dentist does not know if the patient will require multiple visits, it is hard to predict a fee that is fair to both. The patient must be willing to pay for multiple weekly visits should they be needed. Generally, the darker the teeth, the more visits required, and not all teeth will successfully bleach.

With at-home bleaching, if a treatment time longer than two to six weeks is needed, such as for nicotine staining or tetracycline staining, or when the teeth are very dark, then the only requirement is additional material, which is much less costly. At-home bleaching is very easy and very safe. It whitens all the teeth, where in-office only whitens the six or eight anterior teeth. The in-office bleaching requires isolation techniques to avoid burning the gingival, which can be quite uncomfortable. The staff must take great care not to burn themselves or the patient, which requires constant supervision. Post-operative sensitivity is greater with in-office bleaching as well.

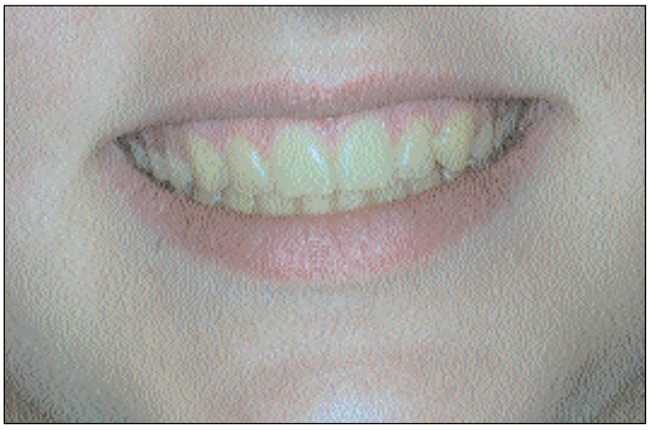
Can you explain the process involved in tray bleaching?
An impression is made of the teeth and gums. This is used to generate a stone replica of the patient's teeth. A thin, clear, flexible tray is fabricated on the stone cast. This is trimmed and fitted to the patient. The patient applies a small amount (pea-sized) of 10% carbamide peroxide (CP) in each tooth mould of the tray, and inserts the tray. They press the material-filled tray against the teeth to spread the material. Then they sleep with the tray in place, or wear it about four hours per day. Whitening of the teeth generally takes two to six weeks of nightly wear, although some teeth may lighten in a matter of days, and other discolourations take months.

Is dental supervision necessary when bleaching teeth? What is your perspective on over-the-counter (OTC) pharmacy-bought bleaching kits?
My concern for off-the-shelf products is that a proper examination has not been performed to determine the cause of the discolouration, and whether a patient is a good candidate for bleaching.

Some discolourations of the teeth are indicative of pathology (abcessed teeth, dental decay, internal resorption) and need treatment other than bleaching

This 16-year-old girl has completed orthodontics, but is not happy with her smile due to her yellow teeth

A smile analysis reveals both the maxillary and mandibular teeth show in a full smile. However, to encourage patient compliance, and measure the difference in colour change over time, only the top arch will be treated initially



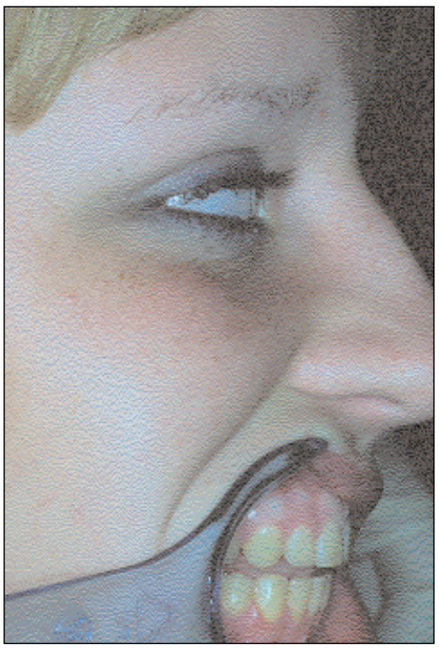
(the bleaching actually hides the indication of disease). Other patients have crowns and fillings which will not change colour, so if they bleach their teeth they have a 'pinto pony' look, where the crowns and fillings are dark and the natural teeth are white. Other fillings may show through the teeth after bleaching and require replacement.

After a proper examination and diagnosis, the patient can use a number of treatment options, some of which may include OTC products. However, the quality of the OTC product is determined by the company, so I would beware of unknown sources.

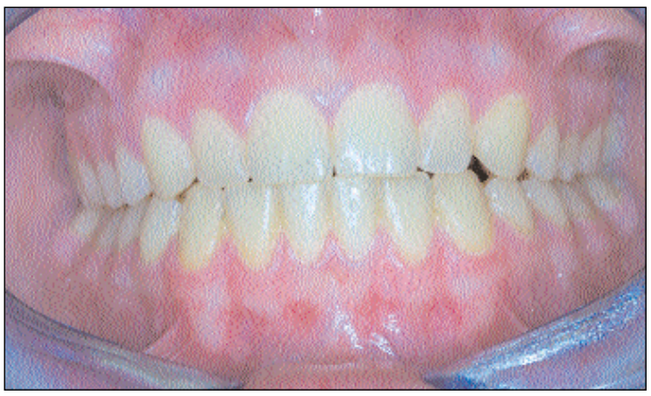
If you consider that a patient is a candidate for whitening, how do you broach the subject with them?
The challenge is how to inform them of their option without insulting them. I ask them if they are happy with their smile, or if there is anything they would like to change. There may be a question on the medical history that asks if they want to bleach or lighten their teeth.

If they come in for a tooth cleaning, they need to see posters and pamphlets describing the process. I also verbally note the shade of the patient's teeth to my dental assistant, and tell them to note in the chart that: 'If ever the patient is interested in lightening their teeth, they are a good candidate'. Having staff who have bleached their teeth is often a good visual aid, as are photographs in the reception room of patients.

On the other hand, if I am doing some restorative work, I always ask them if they want to bleach their teeth. Because I am going to pick the shade of the restoration, which will not change, it is important that we determine the overall shade for the teeth.



A closer examination demonstrates that the teeth do not match the whites of her eyes. This indicates the patient would benefit from bleaching



A close up of the teeth demonstrates the baseline colour. Her teeth are shade A4 on a Vita Shade guide, which is a dark yellow

> 'Since everything in dentistry (and the world) hinges on the morals and ethics of the person involved, there are certainly issues in tooth whitening that occur'

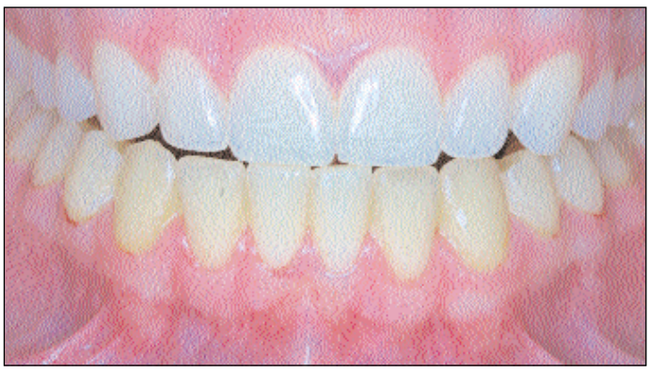
If patients ask whether they would look better, then I evaluate the whites of their eyes. When the colour of the teeth and the whites of the eyes match, that is a very photogenic and natural look. Hence if their teeth are darker than the whites of their eyes, they will look better with bleaching.

Is it appropriate to consider children as candidates for bleaching?
The only children with primary teeth we have bleached is when primary centrals were darkened by trauma. Otherwise, primary teeth (or milk teeth) do not need bleaching. However, I do a lot of mixed dentition bleaching, when the central incisors and lateral incisors are erupting, and they are markedly yellow or have fluorosis staining. The teeth respond very rapidly, the children do great, and the benefit to their confidence is enormous.

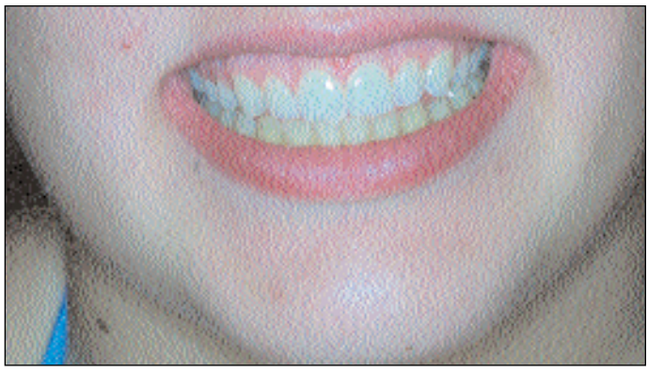
Is there a difference in procedure when bleaching the white or brown discolourations associated with excessive fluoride ingestion?
Brown stains are removed about 80% of the time by bleaching, so bleaching is the first choice for brown discolourations. White stains do not go away (and may actually get lighter during the process and regress at the end), but the background of the tooth can often be lightened to mask the white stain. If bleaching is not sufficient, then abrasion of the white area, possibly with coverage by composite, may be required.

In what situations is an extended whitening course likely to be needed?
Tetracycline-stained teeth can take two to six months of nightly treatment with 10% carbamide peroxide in a custom-fitted tray. Nicotine stains generally take one to three months of treatment. Other stains, from ageing to foodstuffs to genetic discolourations, vary in the two to six week range.

For those who are concerned about the safety of nightguard safety bleaching, what would you say to them?
There is a long history of safety with 10% carbamide peroxide prior to bleaching, including use in infants for throat infections, youths with orthodontics and elderly patients. The baby is given 10 drops of 10% carbamide peroxide every two hours for seven to 10 days to heal the throat infection. This is far more than is swallowed



After 8 days of treatment with 10% carbamide peroxide in a custom fitted tray (non-scalloped, no reservoirs), the patient has experienced significant lightening. Treatment will continue until either the teeth no longer change colour or the whites of the eyes are matched



The difference in colour change between the top and bottom teeth is apparent to the patient in her full smile and encouraged her to continue nightly treatment. The patient is excited about the outcome and has experienced little problem with wearing the tray at night, although she has skipped a few nights due to lifestyle issues

during bleaching.

Prior to bleaching, the Food and Drug Administration in the US had recognised the use of 3% hydrogen peroxide and 10-15% carbamide peroxide as 'generally recognised as safe' for oral use for the life of the person. More importantly in the bleaching arena now, we have 10-year recalls on the first group of patients treated with two to six weeks of bleaching, and 7.5-year recalls on the patients using six-month tetracycline-stained bleaching.

In both groups using 10% carbamide peroxide, there are no detrimental effects to the teeth, body or health, and the benefit for the minimal cost and minimal risk is very good and long lasting. There are several other studies supporting this statement.

Other routinely performed dental procedures, including a prophylaxis (tooth cleaning), do more harm to the teeth, as does drinking juices and colas, than bleaching.

As with any elective treatment, there are clearly some ethical issues involved in tooth whitening. How do you see these issues?

Since everything in dentistry (and the world) hinges on the morals and ethics of the person involved, there are certainly issues in tooth whitening that occur.

Probably the most discouraging practice is the over-the-counter products sales. Companies have discovered that if they place the word 'whitening' on their toothpaste or gum it sells incredibly well, whether or not it works. Consumers are spending a lot of money on products that have no research or clinical papers to demonstrate efficacy. The claims made in advertisements do not have support but play on the emotional needs of the consumer to be beautiful and accepted.

> 'My concern for off-the-shelf products is that a proper examination has not been performed'

Another issue for the manufacturer is making claims of a certain number of shade changes and superiority over another bleaching product (both of which work), when the change is more dependant on the patient or the research design than the material (assuming the material is a good product).

Since shade guides used to measure bleaching changes are not linearly spaced, there is no good way to compare reasonable products in studies with similar shade changes.

Another issue with companies is their using research tools that are available only to their company, where no other researchers can duplicate their experiment or support their claims because they cannot use those tools.

One issue for the dentist is charging too much for a procedure, rather than a fee reflective of the time and cost to the practice, in an attempt to make a lot of money quickly. Additionally, claiming superiority of their technique by use of some special light or material, or charging the patient for in-office without mentioning the other less-costly and possibly more appropriate bleaching options, is inappropriate.

There is a place in the bleaching arena for most all delivery forms that have been shown to work, but that choice is driven by patient conditions, their desires and lifestyle, financial resources, and reasonable expectations. The cost-benefit and risk-benefit of any procedure should be considered carefully in making the final decision after a proper examination and diagnosis of the discolouration.

The patient received a custom tray fabricated from an alginate impression, and a carbamide peroxide product, Dentalwhite, from a European company (Victoria Dental Products Limited, Victoria House, Greenock, Scotland PA15 1HD; tel: 00 44 1475 807 116). The initial treatment uses 10%CP in a syringe. The additional syringes are 16%CP, which can shorten treatment time somewhat if sensitivity is not a problem