

Tooth Whitening

Causes of Tooth Discolouration

- Colour of a tooth is primarily determined by the underlying dentine
- Colour of dentine modified by thickness, translucency and colour of covering enamel
- Extrinsic stains are discolouration of the tooth surface. Caused by tobacco, foods/drinks or poor oral hygiene and can be removed by scaling, prophylaxis and some whitening toothpastes.
- Intrinsic stains are discolouration within the tooth that can be caused by tetracycline, fluorosis, smoking, amalgam and tooth vitality.

Whitening Modes of Action

- "Whitening" encompasses both stain removal and bleaching.
- The active chemical ingredients used in whitening systems are Hydrogen peroxide (H_2O_2) and Carbamide peroxide ($CH_6N_2O_3$).
- Carbamide peroxide is slower-acting than Hydrogen peroxide taking two steps and leaving a by-product of urea.
- During bleaching the hydroxyl free radical acts on the organic component of the dentine causing an oxidation of the discoloured tooth structure.

Whitening Treatments

- General cleaning and prophylaxis
- Over-the-counter Products: toothpastes containing pyrophosphates or hydrated silica, pens, gels, strips, paint on applications.
- Professional Products: custom-made trays and gels, in-office treatments.

Safety and Side Effects

- Has been used for over 75 years
- Not indicated for use in children, pregnant or breastfeeding women
- Potential side effects are very real and need to be assessed by the clinician and may include dentine sensitivity, gingival irritation, effects on tooth structure and effects on aesthetics of restorations

- Higher concentrations balance faster results with a higher incidence of side effects.

Indications, Contraindications and Clinical Exam

- Indications for Tooth Whitening
 - ◆ Mild generalised staining
 - ◆ Age -related yellow discolouration
 - ◆ Mild tetracycline staining
 - ◆ Very mild fluorosis
 - ◆ Acquired superficial staining
 - ◆ Tobacco staining
- Contra-indications for Tooth Whitening
 - ◆ Unrealistic expectations
 - ◆ History of severe dentine hypersensitivity
 - ◆ History of extensive whitening product use
 - ◆ Poor dental hygiene
 - ◆ TMJ disorders or bruxism
 - ◆ Gingival recession/exposed root surfaces
 - ◆ Thin enamel/erosion
 - ◆ Large pulp chambers
 - ◆ Under 16 years of age
 - ◆ Pregnant and breastfeeding women
- Clinical Exam
 - ◆ Check for other treatment needs (caries, periodontal treatment)
 - ◆ Consider possible side effects and discuss with patient

Take-home Whitening

- Take-home whitening is a clinically proven therapy for patients using high quality, individually moulded patient trays.
- Maintenance is easy and affordable for patients who require it.

In-office Whitening

- In-office whitening aims to produce rapid results using high concentrations of peroxide.
- Colour changes should be assessed 5-7 days after treatment to allow for re-hydration of teeth and possible regression or rebound.
- Patient expectations need to be managed and maintenance is still often required.

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