

Efficacy of Fluoride Varnish

Fluoride varnish is a professionally applied, highly concentrated (22,600 ppm) fluoride product. Various studies have proven fluoride varnish to be effective in preventing dental caries (1-13) and Weintraub et al (3) documented a dose-response effect. In addition to the general caries preventive benefits of fluoride varnish, fluoride varnish can also reverse early white spot carious lesions. (1) Advantages of fluoride varnish are that it is easy to apply, is generally acceptable to patients, and does not require special preparation of the teeth or expensive equipment.

Fluoride varnish works in several ways to prevent caries.(53) Fluoride reduces the solubility of enamel during the repeated cycles of demineralization and remineralization in the caries process. It both inhibits demineralization of sound enamel and enhances remineralization once enamel is already demineralized. The first visible sign of tooth decay or demineralization is a chalky “white spot” lesion.” The reversal of this process is remineralization, which happens when the tooth heals from the calcium and phosphate provided by saliva. This natural tooth repair is enhanced by fluoride if it is present in the mouth and the renewed fluoride enhanced mineral is more resistant than before to acid from the bacteria because it now contains more fluoride and less carbonate.

A documented program for applying fluoride varnish as part of well-child care for AI/AN children was conducted by Dr. Steve Holve, MD, Chief Clinical Consultant in Pediatrics at Tuba City Regional Health Care Corporation in Arizona. (14) Pediatric clinic staff applied fluoride varnish (Duraflor) during well child visits at 9, 12, 18, and 24 months of age. Parents also received age appropriate information on caries prevention. Head Start children were surveyed over a three-year period to assess effectiveness, with the children in Year One (n=133) serving as historical controls. A pediatric dentist who was blinded to the fluoride status of each student performed visual exams using standard dmfs scoring system. Children without any fluoride varnish treatments had a mean dmfs score of 23.6. There was no decrease in dmfs score for children who received only one or two applications of varnish and only a slight increase for those who receive three applications. Children who received four or more applications (n=75) of fluoride varnish over a two-year period had a mean dmfs score of 15, which was 35% lower (p=0.005) than children who had no treatments. No increased benefit was found for having more than four treatments.

Lewis et al (54) performed an in-depth case study of fluoride varnish diffusion in 12 pediatric, family medicine, and nurse practitioner offices that underwent fluoride varnish training in the state of Washington to learn more about the factors that encourage or impede diffusion of fluoride varnish into primary care physician’s offices. Many valuable lessons were learned including the importance of involving all staff in the early decision making for implementation of fluoride varnish in well child care clinics. Other recommendations include the importance of appropriate reimbursement, hands-on training and practice, provision of all materials and supplies, chart reminders, timing of the treatment (before immunizations), and availability of dentists for referrals.

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