Choose Your Weapon:
Finding the Best Fluoride Option for Your Patient

by Holly Litt, RDH, MDH

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A pre-emptive strike

Fluoride has been shown to reduce the prevalence and severity of dental caries in the United States and other countries worldwide.¹

On a scientific level, the benefits of topical fluoride include prevention of demineralization, remineralization of early decay, decrease in enamel solubility and maximization of enamel resistance to decay.² Many fluoride options are available for your patient and choosing the right one will help maximize its benefit.

Topical fluoride applications can be broken down into two categories: in-office (professionally applied) or at-home. Options for at-home application are sodium fluoride, stannous fluoride, and over-the-counter rinses. In-office methods include fluoride varnishes, gels, foams and rinses. Always consider the patient’s risk factors when recommending a caries-prevention agent.³

Specific patients at higher risk of caries who should use stannous fluoride gel are those with xerostomia, those undergoing radiation therapy, and patients in orthodontia.

Fluoride gels and foams can be found in two formulas, a 2 percent neutral sodium fluoride (NaF) and a 1.23 percent acidulated phosphate fluoride (APF). APF and NaF are similar; however, the APF has a low pH, which allows for greater uptake of fluoride ions into the enamel.

Neutral territory

The neutral sodium fluoride is indicated for patients with composite restorations because studies have shown that the APF gel causes pitting in resin materials. Recommended application of this product involves the use of a correctly fitting tray and a four-minute contact time.⁴ Although it’s common to apply gel or foam for just one minute, no clinical trials have taken place to confirm that less contact time is as effective as four minutes.²

After application, the patient is required to wait 30 minutes before eating or drinking. Ideal patients for this in-office fluoride tray application with gel are those with high caries risk. Patients with braces and those with previous restorative work will need NaF.
In-office methods include fluoride varnish, gel, foam and rinse. Always consider the patient’s risk factors when recommending a caries-prevention agent.

In Germany, fluoride varnish has been used for more than 30 years as a caries-prevention agent. It has been approved for use in the United States only as a desensitizing agent, but is being utilized “off-label” for caries management. Fluoride varnish use has been proven to reduce caries risk. Advantages of fluoride varnish are the high concentration of fluoride ions available for uptake by enamel, usually 5 percent neutral sodium fluoride (12,500 ppm).

The process is simple: Open the package, mix the varnish with the brush provided and sweep over the teeth, covering all surfaces including exposed roots. The varnish sticks to the teeth immediately so there is no waiting period before the patient can eat or drink. The application stays on the teeth for several hours, delivering remineralizing agents to the tooth enamel. Varnish is the only fluoride application method recommended for children younger than 6 because there is a lower risk of ingestion.

Another topical method, the fluoride rinse, has fewer parts per million (ppm) of the fluoride ion. The fluoride rinse also has less contact time with the dentition than the gel tray method—typically, a rinse is used for one minute. Patient convenience is one factor in its use, but effectiveness may not be equivalent. For example, most fluoride rinses have a concentration of 1500–3000 ppm, while a gel fluoride ranges from 9000–12,300 ppm. In addition, the risk of swallowing the liquid rinse is greater for younger patients. Many offices have discontinued the use of the fluoride rinse for these reasons.

**Strategic weaponry**

Fluoride foam, another topical application method, contains less fluoride overall, which means a lower chance of patient ingestion. This is one of the product’s main benefits.

However, the American Dental Association does not recommend this application for children under the age of 6, or patients with permanent dentition.

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**Taking the battle home**

At-home fluoride options include neutral sodium fluoride gel, stannous fluoride gel and over-the-counter rinses. Both sodium fluoride and stannous fluoride prescription-strength gels and pastes have been shown to help prevent root caries and provide a significant caries reduction when used regularly. Stannous fluoride has one additional benefit that sodium fluoride does not: It is antimicrobial. This means that it has the ability to kill bacteria in the mouth, thus reducing the risk of caries.

Specific patients at higher risk who should use the gel and paste application are those with xerostomia, those undergoing radiation therapy, and patients in orthodontia. Professionally made custom trays are the best delivery system for this gel. A patient applies gel to the custom tray and places it in the mouth for five minutes, once a day. The success of an at-home regimen is solely based on patient compliance.

Over-the-counter fluoride rinses are popular and provide some level of anticavity protection. They are not recommended for patients younger than 6, because of risk of ingestion. Available rinses range in concentration from 100–225 ppm fluoride. Daily use can facilitate the remineralization of weakened areas of the enamel and are especially helpful for patients with orthodontic bands, those with suboptimal fluoride exposure and those who have the presence of exposed root surfaces.

Many years of research has proven that fluoride has many positive benefits and is safe for children and adults if used properly. Numerous options for topical fluoride exist today—both professionally applied and for use at home. Both will aid in the prevention and reduction of caries when used as directed. You can help your patient maximize fluoride’s benefits by selecting the most effective method of application, based on his or her specific needs.

References