Why is it important to classify our patients into age groups—children, adolescents, adults, and geriatrics—when deciding on a fluoride treatment?

Different age groups have different dentitions and different risk categories for tooth decay. The age groups can be even further subdivided. For instance, very young children (under 3 years of age) are at risk for early childhood caries (formerly called baby bottle tooth decay) due to their feeding practices. As children age and develop their permanent dentition, their first and second permanent molars are at high risk for pit and fissure caries, which is when sealant application is most important. Additionally, children under the age of 6 will swallow toothpaste instead of spitting it out so any fluoride ingested at this age needs to be closely monitored. Adolescents have most of their permanent teeth but have drastically different diets. They frequently snack on sugary products so teeth are also very vulnerable at this point.

The adult category is the broadest, including those aged 18 to 65. For likely every decade of life, the average adult will lose a tooth. Age is not a factor with caries in healthy adults but often times older people are taking medications for multiple health problems that dry the mouth, which provides a higher risk for tooth decay, especially on the root surfaces. Root caries is a major problem in the geriatric population and is difficult to manage.
Q What effect has community water fluoridation had on the fight against tooth decay?

A Water fluoridation has been the most effective strategy in fighting dental caries across varying age groups. Most of the studies are conducted with children because follow-up is easier. The few studies done with older people show that there is up to a 50% reduction in the amount of tooth decay and root caries in those living in a fluoridated community.\textsuperscript{1-3} Of course, water fluoridation provides a very low level of fluoride on a constant level—1 ppm, which pales in comparison to the concentration of fluoride in toothpaste, rinses, or office applications. But even a low level of fluoride has a direct benefit.

Q What role has fluoride toothpaste played?

A Toothpaste became, by default, a public health program. More than 90% of people use fluoride toothpaste and by their own choice.\textsuperscript{4} Some controversy exists over the recommendation for young children and the use of fluoride toothpaste. Based on a review of the literature and my own experience, using a pea-sized amount of fluoride toothpaste on a daily or twice daily basis from the time the teeth erupt is a safe practice.

Q Do dental hygienists need to be concerned about fluorosis?

A A study was done nationally on tooth decay and fluorosis. In comparing data on school children from 1986-1987 with data collected from 1999 to 2001, an increase in the prevalence of children with fluorosis was noted—about 23%-32%.\textsuperscript{5} Dental fluorosis comes in different forms. The bulk of fluorosis in children (more than 90%) is very mild, meaning the discoloration of the teeth is only noticeable when looking closely at the teeth.\textsuperscript{6} The data were collected before the 1992 policy recommendation of using only a pea-sized amount of toothpaste was in place for sufficient time, so we need to wait for the next study to see whether the policy has made a difference. In 1994, another policy change was instituted. Prior to 1994, the recommendation was to give fluoride drops to babies from birth in nonfluoridated communities where the fluoride level was lower than 0.3 ppm. The fluoride drops had the disadvantage initially of delivering the total dose in one or two drops. So if you inadvertently gave more than one or two drops, the dose was doubled or worse. The recommendations changed in 1994, advising that children should not be given fluoride drops until 6 months old. The amount of fluoride recommended was also reduced for different age categories. The effect of these changes won't be known for several more years. We are concerned about dental fluorosis from swallowing too much toothpaste and too much fluoride from prescription fluoride supplements.

Q Are there other factors to consider when recommending fluoride treatment?

A Within these age groups, there are low risk, high risk, and very high risk individuals. Dry mouth is a particularly high risk problem that can occur for several different reasons. If a child or an adult has open carious lesions, it goes without saying that they’re at high risk. Poor plaque control creates high risk. People who frequently eat fermentable carbohydrates and live in low fluoride water communities are at risk.

For high risk patients, a fluoride varnish should be applied in office. Fluoride varnish has the highest concentration of fluoride available—22,600 ppm. Varnish also sticks to teeth for a prolonged period (see Table 1 for information on fluoride varnish products). Fluoride varnish currently is not approved by the Food and Drug Administration (FDA) for caries prevention, making this use off-label. It is currently FDA-approved for treatment of dentin hypersensitivity.
Is fluoride varnish useful for low risk individuals?

Lower risk patients can benefit from fluoride varnish but less frequent application is appropriate. For high risk individuals, they should have the varnish applied four times a year. Most dental insurance companies will not pay for four times but patients should understand that the out-of-pocket expense is offset by preventing caries and the dental bills and pain that treatment causes. For low risk patients, fluoride varnish should be applied twice per year. Children and the geriatric population (due to their propensity for root caries) can especially benefit from in-office topical fluoride application.

An alternative to fluoride varnish is fluoride gel. You can use the 1.23% APF fluoride, which contains about 12,300 ppm of fluoride. Studies show that it should be applied in a tray for 4 minutes with suction so it’s not swallowed. Patients need to sit up-right and lean forward so that they drool out of their mouth rather than swallow it. It is, however, not appropriate to use the acid form of fluoride in patients with composite or porcelain restorations. In this case, sodium fluoride is more appropriate in gel or foam. The concentration of sodium fluoride is 2% or about 9,000 ppm of fluoride. These applications should be done twice a year in low risk children, adolescent, and geriatric patients. Low risk adults generally do not need in-office topical fluoride applications because the twice daily fluoride toothpaste use with access to optimal fluoride concentration in community water supply provides sufficient fluoride protection.

References


Table 1. Fluoride varnishes currently on the market.

<table>
<thead>
<tr>
<th>MANUFACTURER NAME</th>
<th>PRODUCT NAME</th>
<th>ACTIVE INGREDIENTS</th>
<th>UNIQUE FEATURES (provided by manufacturers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colgate® Oral Pharmaceuticals</td>
<td>Duraphat® Sodium Fluoride Varnish</td>
<td>5% Sodium fluoride</td>
<td>Releases fluoride for 28 weeks, two-thirds of fluoride is released by 6 months, in use for more than 37 years, single application can increase total enamel fluoride by up to 77%.</td>
</tr>
<tr>
<td>Discus Dental Inc</td>
<td>Fluoridex Lasting Defense™</td>
<td>5% Sodium fluoride</td>
<td>Releases fluoride up to 30 days (22,600 ppm), brush-on application, no mouth trays so no gagging and less ingestion, adheres to moist or dry teeth, sets rapidly in contact with saliva, bubble gum flavor.</td>
</tr>
<tr>
<td>DR Dental Resources</td>
<td>Fluoride Varnish</td>
<td>Sodium fluoride</td>
<td>Economical, individually wrapped dispensing kippops.</td>
</tr>
<tr>
<td>Ivoclar Vivadent</td>
<td>Fluor Protector</td>
<td>0.1% Sodium fluoride</td>
<td>Due to low fluoride concentration, it is suitable for small children, colorless, fast setting.</td>
</tr>
<tr>
<td>Medicom</td>
<td>Duraflor</td>
<td>5% Sodium fluoride</td>
<td>Offered in a variety of packaging and flavors, new formula offers less yellow appearance when dry, thick viscosity allows for precise placement, contains Xylitol.</td>
</tr>
<tr>
<td>OMNII Oral Pharmaceuticals</td>
<td>Vanish® 5% NaF White Varnish</td>
<td>5% Sodium fluoride</td>
<td>The only white varnish, unit dose packaging, includes applicator brush, measurement guide for proper dosing, sweetened with Xylitol.</td>
</tr>
<tr>
<td>OMNII Oral Pharmaceuticals</td>
<td>CavityShield® 5% NaF Varnish</td>
<td>5% Sodium fluoride</td>
<td>Unit dose application, two dosage sizes for different applications, color coded brushes, sweetened with Xylitol.</td>
</tr>
<tr>
<td>Pascal Co</td>
<td>Fluorilaq™</td>
<td>5% Sodium fluoride</td>
<td>High fluoride concentration remains on teeth and releases fluoride for several hours, penetrates plaque eliminating the need for prophylaxis before applying; light yellow color allows for easy identification during application.</td>
</tr>
</tbody>
</table>

This list is inclusive of most fluoride varnishes on the market in the United States. While every attempt is made to be as comprehensive as possible, there may be inadvertent product omissions.