

# Fluoride toothpaste use for young children

## AMERICAN DENTAL ASSOCIATION COUNCIL ON SCIENTIFIC AFFAIRS

At its April 2012 meeting, the American Dental Association (ADA) Council on Scientific Affairs met with stakeholders to discuss differing public messaging on the use of fluoride toothpaste for young children. The participants agreed that a unified recommendation on the use of fluoride toothpaste for young children would be preferable and less confusing to the public. To assess the effectiveness and safety of using fluoride toothpaste for young children, the Council recommended a systematic review of the evidence. The results of the review demonstrated that for children younger than 6 years, fluoride toothpaste use is effective in reducing caries. The evidence also showed that ingesting pea-sized amounts or more can lead to mild fluorosis.

The ADA currently advises caregivers to brush with water, and to consult with a dentist or physician before using fluoride toothpaste, for children younger than 2 years. Use of a pea-sized amount of fluoride toothpaste is recommended for children from 2 to 6 years of age.<sup>1</sup> Other recommendations propose use of a “smear” of fluoride toothpaste (approximately 0.1 gram of toothpaste or 0.1 milligram of fluoride) for children younger than 2 years and a pea-sized amount (approximately 0.25 g toothpaste or 0.25 mg fluoride) for children from 2 to 6 years of age.<sup>2</sup>

The optimal dose of fluoride is 0.05 mg per kilogram per day.<sup>3</sup> Using a pea-sized amount of toothpaste versus a smear more than doubles the amount of fluoride potentially consumed by a child. For example, an average 2-year-old child who weighs 15 kg, brushes his or her teeth twice a day with a smear of toothpaste and swallows all of the toothpaste would ingest 0.2 mg of fluoride, resulting in a dose of 0.013 mg/kg. If this same child were to brush twice per day with a pea-sized amount of toothpaste and swallow all of the toothpaste, he or she would ingest 0.5 mg fluoride, resulting in a dose of 0.033 mg/kg.<sup>4</sup> Children are exposed to fluoride through consumption of food and beverages. Considering these additional potential sources of fluoride and the risk of developing fluorosis at the time of tooth formation, the

Council recommends use of a smear of toothpaste from eruption of the first tooth to age 3 years followed by use of a pea-sized amount for children aged 3 to 6 years. This regimen is intended to maximize the caries-preventive benefits of fluoride while further reducing the risk of developing fluorosis when compared with previous recommendations for use of a pea-sized amount of fluoride toothpaste starting when a child is 2 years of age.

Although the risk of developing fluorosis in the permanent dentition is associated with fluoride exposure beginning at 1 year of age, the risk to the permanent central incisors is greatest at approximately 2 years of age.<sup>5</sup> The toothpaste regimen described previously is consistent with the schedule and dosage used for prescription fluoride supplements recommended for children who have a high risk of developing caries and who live in areas without fluoridated water. The supplement dosage increase goes into effect at age 3 years; previously, an increase in fluoride supplement dosage was recommended at 2 years of age.<sup>6</sup> The recommendation was modified to 3 years of age to reduce the risk of developing dental fluorosis. For children at high risk of developing caries whose primary water supply contains less than 0.3 parts per million fluoride, the recommended systemic dietary fluoride supplementation is 0.25 mg (for children aged 6 months to 3 years) and 0.5 mg (for children aged 3 to 6 years).<sup>7</sup>

Recommending fluoride therapy in children—whether it be fluoride supplements, toothpaste or professional topical applications—typically is tied to caries risk assessment, with fluoride therapies recommended for children who are at high risk of developing caries. All children should undergo a caries risk assessment before their dentists make recommendations associated with preventing or controlling dental caries. This is a critical step in developing a personalized prevention plan. It also is critical that the dentist assess a child’s total fluoride exposure from all sources (beverages, food, toothpaste, supplements, topical applications and so forth) when developing a preventive treatment plan that is directed at optimizing caries control and safety. To address the risks and benefits associated with fluoride toothpaste use in young children adequately, the dentist should aim in conversations with caregivers to assess a child’s

total fluoride exposure on the basis of all potential sources. There are no validated caries risk assessment tools with known sensitivity and specificity for children. This makes it challenging to base therapeutic recommendations on the risk of future disease development.<sup>8</sup> Evaluation of caries risk assessment tools in adults that are validated has shown that the tools are not highly accurate in predicting future disease development.<sup>9,10</sup> The best predictor of a person's developing dental caries in the future is the presence of dental caries. Because most 1-year-old children do not have dental caries, and considering the rate of caries progression, it is difficult to predict which of these children will become the approximately 40 percent of children who experience dental caries in their primary teeth.<sup>11-16</sup> Therefore, considering the best available evidence and the continued high caries rate in children, the Council recommends the following:

■ For children younger than 3 years, caregivers should begin brushing children's teeth as soon as they begin to come into the mouth by using fluoride toothpaste in an amount no more than a smear or the size of a grain of rice (Figure). Brush teeth thoroughly twice per day (morning and night) or as directed by a dentist or physician. Supervise children's brushing to ensure that they use the appropriate amount of toothpaste.

■ For children 3 to 6 years of age, caregivers should dispense no more than a pea-sized amount (Figure) of fluoride toothpaste. Brush teeth thoroughly twice per day (morning and night) or as directed by a dentist or physician. Supervise children's brushing to minimize swallowing of toothpaste.

■ It is especially critical that dentists provide counseling to caregivers that involves the use of oral description, visual aids and actual demonstration to help ensure that the appropriate amount of toothpaste is used. ■

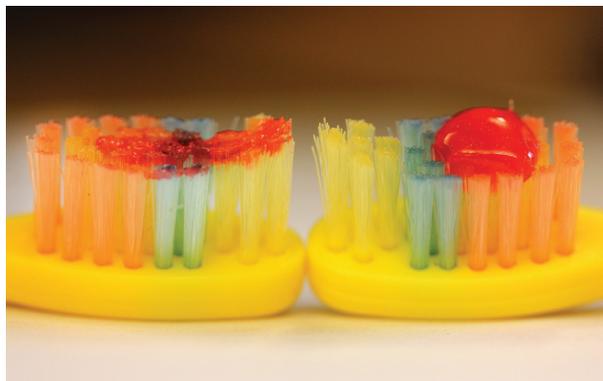
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Address correspondence to the American Dental Association Council on Scientific Affairs, 211 E. Chicago Ave., Chicago, Ill. 60611.

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**Figure.** The toothbrush on the left shows a smear of toothpaste (0.1 milligram of fluoride) and the one on the right a pea-sized amount (0.25 mg of fluoride).

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