

Fighting childhood caries with dental sealants

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Worldwide, approximately 2.43 billion people have dental caries in their permanent teeth. In primary teeth, it affects as many as 620 million children, or 9 percent of the population. Knowing how pervasive this issue can be, the use of dental sealants in combination with other preventive measures becomes an increasingly important (and increasingly accepted) part of treatment planning.

Engaging in conversations with pediatric patients and their parents helps us stress the critical importance of brushing and flossing from an early age, but that's only part of the solution for at-risk patients. We know from clinical studies that dental sealants help play a significant role in reducing pediatric dental decay, even in high caries risk patients.¹ In order to communicate the importance of dental sealant application, we stress to parents how common it is for caries to develop in the pits and fissures of the teeth. When it comes to our younger patients, we liken it to a "tooth paint" that helps make the teeth stronger.

Our practice relies on 3M™ Clinpro™ Sealant for long-lasting protection against caries. For us, it's important that the sealant be easy to apply, and Clinpro Sealant offers a unique color-changing formula and low viscosity for easy flow into pits and fissures. Clinpro Sealant goes on pink for easy-to-use application and cures to a natural white under the 3M™ Paradigm™ DeepCure LED Curing Light. The unique color-changing technology helps us with accuracy and material placement and impresses children during our treatment discussion or demonstration. Applied with an ultrafine syringe tip, the sealant is able to get into tight grooves without flowing over the entire tooth. And, as the material changes color under the curing light, we can check it with an explorer to ensure proper bonding.



3M™ Clinpro™ Sealant



3M™ Vanish™ 5% Sodium Fluoride White Varnish with Tri-Calcium Phosphate (TCP)



3M™ Clinpro™ 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste

With a convenient direct delivery system, Clinpro Sealant also has the potential to remain effective for five years or more, despite heavy pressures endured by teeth during chewing each day. Durable and consistent, the sealant effectively protects against caries and aids in the prevention of caries recurrence, even in high-risk patients.

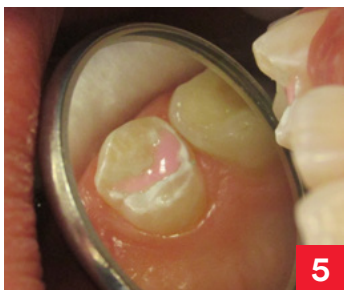
After applying Clinpro Sealant, we often administer 3M™ Vanish™ 5% Sodium Fluoride White Varnish with Tri-Calcium Phosphate to deliver sustained fluoride, calcium and phosphate for extra protection. The steady, prolonged fluoride release is better absorbed into the teeth. Clinical studies show that Vanish Varnish flows to more than twice as many tooth surfaces after application,² and many independent studies show a higher efficacy of fluoride varnish due to its increased contact time.^{3,4} At our six-month recall appointment, we check the sealant and readminister the Vanish Varnish for continued protection.

For higher risk patients who require additional protection, 3M™ Clinpro™ 5000 1.1% Sodium Fluoride Anti-Cavity Toothpaste may be prescribed as an advanced, easy-to-use toothpaste, with four times the fluoride of regular toothpaste, plus tri-calcium phosphate to maintain healthy teeth. The formulation successfully integrates these ingredients in a way that enhances their performance, allowing the tooth to naturally absorb these components so remineralization can occur. With a mild abrasive, the prescription-only toothpaste removes stains to help clean and whiten teeth in high caries risk patients, while remineralizing the tooth enamel to better protect from future cavities.

Case presentation

This 9-year-old male patient presented with deep grooves to be sealed on his newly erupted molars, teeth #5 and #28. The patient had a history of caries on all remaining primary molars; we previously had sealed or filled his six-year molars. He also had generalized gingivitis.

Prior to treatment, we set up our tray with the instruments and products to be used for typical sealant cases, including 3M™ Clinpro™ Sealant, 3M™ Paradigm™ DeepCure LED Curing Light and etchant (Fig. 1). In preparing the teeth, we first thoroughly clean the enamel to remove plaque and debris from the surfaces and fissures (Fig. 2); then we rinse well with water. We isolate and dry the teeth with a cotton roll (Fig. 3) before etching the enamel surfaces to be sealed, so the sealant can bond well to the enamel. We etch for 15–60 seconds, extending beyond the anticipated margin of sealant (Fig. 4). After rinsing the teeth to remove the etchant, we thoroughly dry all etched surfaces and ensure that no surface is contaminated. Using the syringe needle tip, we apply the pink sealant into the pits and fissures (Fig. 5). After curing the sealant for 10–20 seconds with the Paradigm Curing Light, we inspect the sealant for complete coverage and voids. Finally, we check occlusion and adjust as necessary (Fig. 6).



Conclusion

Our team has consistently used sealants in preventive pediatric practice with accurate placement and control, good retention rates and high esthetics. Nearly all of our patients—children and adults—appreciate the painless process, pleasant taste and powerful, long-lasting protection against caries.⁵

Combined with tailored communication about the science behind the product, our patients like to see the pink application process to better visualize and understand the procedure. We appreciate the direct delivery system that easily flows into pits and fissures for accurate coverage.

Dental sealants are quick, easy and relatively cost-effective for preventing cavities. They're quickly becoming the go-to treatment for kids who need extra dental care, and we rely on the trusted 3M brand to deliver comprehensive preventive products that offer the best solutions for our patients.



About the author

Dr. Katie Peterson (“Dr. Katie”) is a graduate of DePauw University and the Indiana University School of Dentistry. She is a member of the American Dental Association, Indiana Dental Association, and an affiliate of the American Academy of Pediatric Dentistry. With more than a

decade of experience, Dr. Katie became enchanted with the pediatric patient population early in her career and has focused on the care and treatment of young patients ever since. She has worked at the westside office since 2005, as an associate then lead dentist, before acquiring both practices. This has allowed her to sharpen her leadership skills and create a staff that shares her vision of “patient first.”

Dr. Katie has received honorarium from 3M Oral Care.

References

- ¹ Vos, T. (Dec 15, 2012). Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*, 380 (9859): 2163–96. doi:10.1016/S0140-6736(12)61729-2
- ² American Dental Association, 2005 (Fluoridation Facts)
- ³ Internal 3M data
- ⁴ Khattak, MF., et al. (2005). Comparison of three topical fluorides using computer imaging. *Journal of Clinical Pediatric Dentistry*, 30(2): 139-144.
- ⁵ The American Dental Association (ADA) and Caries Management by Risk Assessment (CAMBRA) recommend sealants as an aid to prevent caries.

Clinpro™ 5000

1.1% Sodium Fluoride Anti-Cavity Toothpaste

HIGHLIGHTS OF PRESCRIBING INFORMATION INDICATIONS AND USAGE

Clinpro 5000 Anti-Cavity Toothpaste is indicated for use as part of a professional program for the prevention and control of dental caries.

DOSAGE AND ADMINISTRATION

- Use once daily in place of conventional toothpaste unless instructed otherwise by a physician or dentist.
- Apply a thin ribbon or pea-sized amount of Clinpro 5000 Anti-Cavity Toothpaste using a soft-bristled toothbrush and brush teeth for at least two minutes.
- After brushing, adults should expectorate. Children 6 to 16 years of age should expectorate and rinse mouth thoroughly with water.

DOSAGE FORMS AND STRENGTHS

White toothpaste containing 1.1% sodium fluoride

CONTRAINDICATIONS

Do not use in children under 6 years of age unless recommended by a dentist or physician.

WARNINGS AND PRECAUTIONS

- Do not swallow.
- Keep out of reach of children under 6 years of age.
- Repeated ingestion of high levels of fluoride may cause dental fluorosis.

ADVERSE REACTIONS

Allergic reactions and other idiosyncrasies have been rarely reported.

To report SUSPECTED ADVERSE REACTIONS, contact 3M ESPE Dental Products Division at 1-800-634-2249 or www.3MESPE.com, or FDA at 1-800-FDA-1088 or www.fda.gov/medwatch.

USE IN SPECIFIC POPULATIONS

Pregnancy

Prescribing physicians and dentists should consider total fluoride exposure (dental care plus food, water and other sources) when prescribing the product for use in pregnant women or women who may become pregnant.

Nursing Mothers

Prescribing physicians and dentists should consider total fluoride exposure (dental care plus food, water and other sources) when prescribing the product for use in women who are nursing.

Pediatric Use

The primary adverse effects of fluoride are fluorosis of dental enamel and of the skeleton; these effects occur at exposures below those associated with other adverse health effects. The population most at risk for dental fluorosis is children during the period of tooth formation, i.e. from birth to 8 years of age. For this population, the Institute of Medicine (IOM) established Fluoride Upper Limits of intake based on the risk of dental fluorosis. In populations with permanent dentition, skeletal fluorosis is the greatest risk from excessive fluoride. For this population the Institute of Medicine established Fluoride Upper Limits based on the risk of skeletal fluorosis.¹

Population

Infants 0-6 months old
Infants 7-12 months old
Children 1-3 years old
Children 4-8 years old
Children > 8 years old

IOM Fluoride Upper Limit

0.7mg/day
0.9mg/day
1.3mg/day
2.2mg/day
10mg/day

Prescribing physicians and dentists should consider total fluoride exposure (dental care plus food, water and other sources) when prescribing the product for use in children.

Geriatric Use

No studies of Clinpro 5000 Anti-Cavity Toothpaste have been conducted to determine whether subjects aged 65 and over respond differently from younger subjects.

OVERDOSAGE

Ingestion of large amounts of fluoride may result in abdominal pain, stomach upset, nausea, vomiting and diarrhea. These symptoms may occur at overdoses of 5 mg/kg of body weight. Fluoride doses of 16 mg/kg have been fatal.

Treatment for Overdose of Clinpro 5000 Toothpaste

Ingested fluoride dose	Amount for 10kg (22 pound) child*	Recommended action to take
Less than 5mg/kg	This equals less than ½ ounce (or less than and 3 teaspoons).	Do not induce vomiting. Give 1-2 glasses of milk and observe for symptoms of stomach upset. If symptoms persist more than a few hours, seek medical attention or contact a poison control center.
5mg/kg or more	This equals about ½ ounce (about 1 tablespoon) or more.	Do not induce vomiting. Give 1-2 glasses of milk and seek medical attention or contact a poison control center.
15mg/kg	This equals 1 ounce or ¼ of the tube.	Seek immediate medical attention. Do not induce vomiting. Give 1-2 glasses of milk.

*The amount to reach the fluoride dose will be proportionately larger with older children and adults. A thin ribbon or pea-sized amount of Clinpro 5000 Anti-Cavity Toothpaste weighs approximately 0.3 g and contains approximately 1.5 mg of fluoride ion. A 4 oz. tube contains 564 mg of fluoride ion.

1. IOM. Dietary Reference Intakes: The essential guide to nutrient requirements. National Academies Press 2006.

Storage

This product is designed to be stored and used at room temperature. Do not freeze or expose to extreme heat. See outer package for expiration date.

Manufactured for:

3M ESPE
Dental Products
St. Paul, MN 55144-1000 USA
Revision date: 01/11/2012

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