

Fluoride Varnish Application for the Prevention of Dental Caries in Pediatric Patients, in the Primary Care Setting

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A. Abstract:

This project is a quality improvement project which examines how our family medicine clinic is following current published guidelines for fluoride varnish application in our pediatric population. Dental caries disproportionately affects minority and economically disadvantaged children, a population we work with in our clinic. Many lack access to dental care and fluoride varnish application is a service which primary care providers can provide to their patients. Fluoride varnish is recommended in national guidelines for at risk patients. We looked at the number of fluoride treatments done in our clinic in the past, performed interventions for educating, faculty, residents and staff and then looked at the number performed after these interventions. The number of treatments increased as anticipated. Ongoing training and continued implementation into clinical practice will be important to continue to ensure that eligible children are offered fluoride varnish application for prevention of dental caries.

B. Introduction:

- The general objective of this project is to determine how our family medical center clinic is doing following recommendations for fluoride application in our pediatric population.
- The specific objective of this project is to educate residents, faculty and staff about the primary care provider's role in dental caries prevention and guidelines on fluoride varnish application.
- The specific objective of this project is to ensure attending faculty are aware of training and certification required by the state of Illinois to be able to supervise residents and provide fluoride varnish treatment to appropriate patients.

Hypothesis: At baseline, very few fluoride varnish treatments are being done at Uniypoint Health Methodist family medicine center and after training, the number of treatments will increase.

Dental caries is an infectious process that involves the breakdown of tooth enamel.^{1,2} It is the most common chronic disease in children in the U.S., and prevalence is increasing among children aged 2 to 5.^{3,4,5} Early childhood caries is associated with tooth loss, pain, in addition, impaired growth, decreased weight gain, negative effects

on speech, self-esteem, appearance, school performance, and quality of life.^{2,6,7} Dental caries disproportionately impacts minority and economically disadvantaged children.⁵ Screening for dental caries prior to school entry could lead to interventions to treat existing caries at an earlier stage and prevent caries in the future. Young children usually see a primary care provider shortly after their birth, but generally don't see a dentist until they are older. Young children, those in whom prevention is highly effective, are least likely to see a dentist. Approximately just over 45% of children aged 2 to 5 see a dentist at least once per year, suggesting an important role primary care providers may play in prevention of caries.^{8,9}

At UnityPoint Health family medicine center, providers see a large proportion of public aid patients. Early and frequent preventive care visits, characteristic of pediatric and family medicine, are readily accessible and commonly utilized. Greater than the majority of children that are insured by Medicaid/Children's Health Insurance Program (CHIP) receive a well-child check yearly. Providing oral health care preventive services in the medical setting has the advantage of treating children where they are regularly seen and by professionals that are accustomed to managing their care. In Illinois, Medicaid reimburses for fluoride varnish, for children under age 3. There is a training and certification process involved to provide this service.¹⁰

Fluoride varnish in children under 5 years of age is effective to reduce the incidence of caries.^{11,12,13} Application of fluoride varnish twice per year in moderate to high risk children has been shown to prevent caries in demineralized enamel.¹⁴ There are often many barriers to dental care, including cost, availability of dentists, parental oral health knowledge and many others. Most parents are familiar with their primary care physician and if this service could be provided in the same location, this could greatly help patients who have not yet established a dental home. It is also remarkable that application of fluoride varnish, either on the permanent *or* primary dentition is associated with a substantial reduction in caries.^{4,15,16} Our residency clinic is a unique setting, keeping new residents and faculty apprised of new evidence in this field would be beneficial to our patient population and fluoride varnish is already utilized in other primary care settings in the area.

C. Study Method:

This is a retrospective review of diagnosis codes for application of fluoride varnish at UnityPoint Health Family Medical center. Data was collected with the assistance of our IT department. Recorded data included: date of service, procedure code, ordering and performing physician's name. No identifying information like name, age, date of birth, or gender will be collected. Education was provided to residents, faculty and staff regarding fluoride varnish treatment. Faculty attending providers completed a course and received certification through the Illinois Chapter, American Academy of Pediatrics (ICAAP) education program, Bright Smiles from Birth (BSFB). Education was provided in the form of noon conference education by pediatric general dentist for residents, training and certification course for faculty and meetings with nursing and office staff. Outcome

measures looked at the number of times fluoride varnish was coded in subsequent months following teaching, training and education.

Inclusion/Exclusion criteria for subjects:

Inclusion criteria:

Those who had billing code D1206. Faculty certified in fluoride varnish application as supervising physician.

Patients at UnityPoint Health family medical center, fluoride varnish will be offered at 18 month and 2 year well child checks.

Exclusion Criteria:

Those who do not meet above criteria, billing (supervising) physician must be certified in fluoride varnish application.

D. Results:

Prior to interventions, there were twenty four fluoride applications done over the course of thirteen months. Following interventions, there were sixty four applications done over the course of nine months.

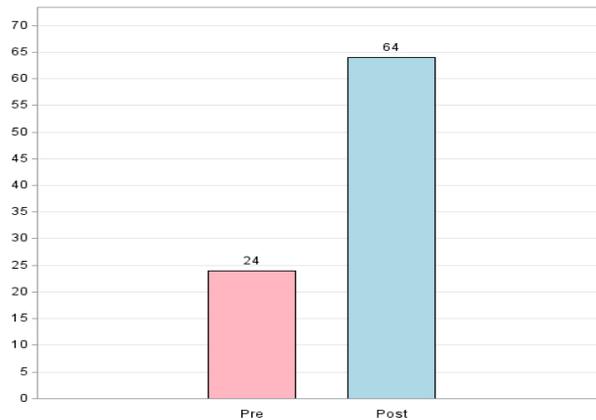


Figure 1: Results of Pre and Post Intervention—number of fluoride varnish applications performed at UnityPoint Health Methodist Family Medical Center

E. Conclusion:

The number of treatments increased as anticipated following teaching and training.

There is room for further improvement, to improve the number of children eligible for this treatment to receive this. This would involve future efforts such as talking to parents about it prior to the day treatment will occur, having the treatment added to the reason for visit in EMR, having support staff place supplies consistently in door for visit. Many of these changes have started to occur but will take continued effort and training. The residency clinic is also a unique setting, with new residents every year, education will need to be ongoing. In addition, oral health education is also a good time to talk about nutrition and integrate this into our practice, this has also been an emphasis by the dental

community as well, this collaboration of efforts will be beneficial for our patients and their future well-being.

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