

Evaluation of Fluoride Varnish Implementation for Well Child Visits in a Family Practice Residency Clinic

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BACKGROUND

- Dental caries and dental decay are the most common chronic diseases in children.¹
- Untreated dental caries are present in a much higher proportion of children who are African American, Hispanic, or living in poverty.¹
- Access to dental care for these patients is often limited due to low acceptance rates of Medicaid patients to dental offices where Medicaid reimbursement rates are extremely low.
- Ultimately, the costs of treating dental decay (fillings, extractions, etc.) far outweigh the costs of prevention.
- Dental fluoride varnish (**Figure 1 and 2**) is a protective coating that can be painted on teeth and it:
 - Helps prevent and reverse demineralization caused by plaque forming bacteria
 - Requires no special equipment
 - Can be applied in less than 2 minutes



Figure 1. Application of fluoride varnish in a pediatric patient with dental caries
Source: Smiles for Life, Joanna Douglass, BDS, DDS



Figure 2. Example of fluoride varnish packaging
Source: Net32 Dental Supplies

- Per the United States Preventative Services Task Force and American Academy of Pediatrics dental varnish application should be considered a routine part of well child exams,² along with proper dental hygiene and oral health regardless of presence of fluoride in drinking water or other risk factors.
- However, barriers to implementation include:
 - Concerns about cost-effectiveness
 - Excess burden of work for staff
 - Level of training and comfort with oral exams and fluoride application
 - Lack of a referral process when advanced dental decay is identified

PURPOSE

To evaluate the incorporation of fluoride varnish applications as standard of care into routine well child visits ages 6 months to 6 years at St Luke's Family Practice Center (FPC) and Aurora Sinai Family Care Center (FCC).

METHODS

- A dental varnish application protocol was created for 6 month to 6 year well child visits and implemented in July – September 2019 at both clinics.
 - Exclusion criteria included no teeth or varnish application ≤ 6 months ago.
 - All providers including nurses, medical assistants (MAs), family medicine residents, and attendings (approximately 45 providers) were required to complete a free online training from the STFM Smiles for Life module 6, titled "Course 6: Caries Risk Assessment, Fluoride Varnish and Counseling."
- Parents were given an oral health intake questionnaire during the rooming process of well-child visit to evaluate risk for dental caries and a child's clinical eligibility for varnish application.
- Pre/post-surveys were conducted to identify changes in provider's opinions including importance, sustainability, and barriers of the protocol.
- Application was determined based on billing diagnoses and codes (**Figure 3**).

| Billing diagnoses | Billing codes |
|--|---------------------------------------|
| Encounter for routine child health examination (with or without abnormal findings) | Z100.129 or Z100.121 |
| Encounter for prophylactic fluoride administration | Z29.3 |
| Application of topical fluoride varnish | 25 modifier "procedure order" varnish |

Figure 3. Billing diagnoses and codes used for data/tracking purposes

Analysis

- Data from 7/1/19 - 1/15/20 (period 1) and 1/16/20 - 12/31/20 (period 2; representing present COVID pandemic) was compared for both clinics regarding rates of preventative visits with varnish applied.
- A Z test for Equality of Two Proportions was used to compare rates as appropriate.
- Pre/post-survey answers were analyzed using 2-sample T-tests.

Results

- Of the 1,984 well child visits, 369 (19%) were coded as including varnish application (99188; **Figure 4**).

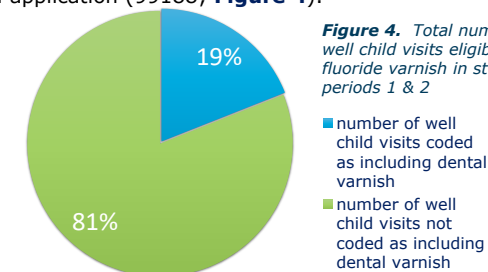


Figure 4. Total number of well child visits eligible for fluoride varnish in study periods 1 & 2

- During period 1, 25% of visits at FPC and 16% of visits at FCC included a varnish application; no significant difference in application rates between the 2 study periods (22% visits at FPC and 15% at FCC).
- During the Covid-19 pandemic, varnish applications decreased from 18.6 to 8.1 per month at FPC ($p < 0.01$) but increased from 12.5 to 15.2 per month at FCC ($p = 0.18$).
- The pre/post-surveys identified the same barriers to application Note sure where to find supplies, not enough time, note enough training.
 - Except for percentage of eligible patients seen for well child exams including varnish (63% v. 35% $p < 0.01$), no other survey responses were significantly different

CONCLUSIONS

Dental fluoride varnish application can be successfully implemented into academic primary care clinics to reach children most at risk, but not without challenges. Addressing barriers with future surveys may streamline protocols for sustainability. Optimized processes may be adapted by others to decrease health disparities (**Figure 5**).

Limitations regarding result calculation included well child visits with children who did not have teeth, well child visit sooner than 6 months in between, already following with a dental provider, visits billed as varnish, varnish + caries, varnish + application, caries but not associated with well child visit.



Figure 5. Five actions primary care teams can take to protect and promote their patients' oral health
Source: Smiles for Life