

Use of the Fluoride Varnish Billing Code in a Tertiary Care Center Setting

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Peter Kim^{1,2} , Jeanette M. Daly², Sharon Berkowitz², and Barcey T. Levy²

Abstract

Introduction: Dental caries is the most common chronic disease in children from birth through 5 years of age. Application of fluoride varnish (FV) is recommended for children younger than 6 years every 3 to 6 months by the United States Preventive Services Task Force. The purposes of this study were to (1) assess use and reimbursement of Current Dental Terminology (CDT) D1206 and Current Procedural Terminology (CPT) 99188 codes, which are the billing codes for FV application; (2) determine when and by whom each FV code was used; and (3) summarize the associated clinical notes.

Methods: Using the electronic medical record data warehouse from a single tertiary teaching hospital and its affiliated primary care clinics, the dates of service, departments, provider names, and patient identifiers associated with codes CDT D1206 and CPT 99188 were collected. The content of clinical notes was reviewed and summarized. The study period was from May 1, 2009 through May 17, 2019. **Results:** During the 10-year time period, CDT D1206 was used 5 times and CPT 99188 was used 35 times. FV was applied exclusively during well-child visits. Only pediatricians, and no family physicians, applied FV in this setting. **Discussion:** A single pediatrician championing for FV application increased both the completion of procedure and the appropriate billing in 2019. **Conclusion:** FV application has been likely underutilized in this Midwestern tertiary teaching hospital and its affiliated clinics. For both family medicine and pediatric offices, an advocate for caries prevention is likely needed for successful implementation of FV application at well-child visits.

Keywords

Current Procedural Terminology, data warehousing, dental caries, electronic health records, health policy, Medicaid, oral health, pediatrics, teaching hospital, tertiary care centers, topical fluoride varnish, well-child visits

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Introduction

Dental caries is the most common chronic disease in children worldwide.¹ Untreated dental caries may lead to complications such as infection, impaired chewing and nutrition, increased caries risk in permanent dentition and need for dental work under general anesthesia.^{2,3} In the period 2015 to 2016, the prevalence of dental caries in 2- to 5-year-old children was 21.4%, and the prevalence of untreated caries in that age group was 8.8%.⁴ In 2014, the US Preventive Services Task Force (USPSTF) recommended primary care clinicians apply fluoride varnish (FV) to the primary teeth of all infants and children through age 5 (<72 months of age) to reduce the risk of dental caries.⁵ This was a grade B recommendation (moderate certainty that the net benefit is moderate to substantial).⁶ Application of FV is a preventive measure for caries and can also reverse early caries white

spot lesions.⁷⁻⁹ It has also been known to decrease caries in permanent dentition.¹⁰

Common barriers for medical offices to implement the use of topical FV include the difficulty integrating the dental procedure into practice routines, the application of the FV, and lack of the physician's time.^{11,12} To help prevent dental caries, Iowa Medicaid began reimbursing physicians and nurse practitioners in 2009 for the topical application of FV for children up to 36 months of age.¹³ At that time, Current Dental Terminology (CDT) code D1206 could be

¹Genesis Health System, Davenport, IA, USA

²University of Iowa, Iowa City, IA, USA

Corresponding Author:

Peter Kim, Genesis Quad Cities Family Medicine Residency Program, 1345 West Central Park Avenue, Davenport, IA 52804, USA.
Email: peter-kim@uiowa.edu



Table 1. Demographics of Subjects Who Received Topical Fluoride Varnish Where the Medical Provider Used Billing Codes D1206 or CPT 99188 (n = 39).

Demographic	n (%)
Gender	
Male	18 (46.2)
Female	21 (53.8)
Race	
African/American	16 (41)
White	16 (41)
Latino of any race	3 (7.7)
Multiracial	4 (10.3)
Ethnicity	
Hispanic	5 (12.8)
Non-Hispanic	34 (87.2)

billed when the FV is applied in conjunction with an early and periodic screening, diagnosis, and treatment (EPSDT) examination.^{13,14} In 2016, the federal Patient Protection and Affordable Care Act (ACA) authorized that all private insurers cover FV application in children younger than 6 years.^{15,16} In January, 2017, code D1206 was replaced with Current Procedural Terminology (CPT) 99188 code to reduce administrative burden on providers, by no longer having to use both medical and dental codes.¹⁷

The application of FV at pediatric and family medicine clinics affiliated with a Midwestern academic health center in the United States is unknown. The purposes of this study were to (1) assess use and reimbursement of CDT D1206 and CPT 99188, which are the billing codes for FV application; (2) determine the types of providers (physician, physician assistant, or nurse practitioner) and dates each FV code was used; and (3) summarize key points of the associated clinical notes.

Methods

A retrospective chart review in the electronic medical record (EMR), Epic (Verona, WI), was conducted on May 17, 2019. The study period ranged from the inception of the Epic EMR from May 1, 2009 through May 17, 2019, at this tertiary teaching hospital and its associated primary care clinics within the university health system—the largest health system and the only university hospital in this Midwestern state. The codes CDT D1206, CPT 99188 and ICD-10 (International Classification of Diseases, 10th Revision) diagnosis code, Z29.3, were pulled from Epic's enterprise Data Warehouse. CDT D1206, as maintained by the American Dental Association, is a dental procedural code for topical application of FV. The CPT 99188 code, as maintained by American Medical Association, is a medical procedural code under the range—Other Medicine Services and Procedures, so it is not designated specifically for

application of FV but does include other medical procedural codes. The ICD-10 medical diagnosis code Z29.3 is for an encounter for prophylactic fluoride administration.

Output from Epic included codes D1206 and CPT 99188 charged, associated ICD-10 codes for medical diagnoses, dates of service, departments where service was provided, provider names, medical record numbers, patients' date of birth, and patients' gender. Descriptive statistics was used to quantitatively summarize the results. Two reviewers (JMD and PK) performed a review of all clinical notes where codes D1206, CPT 99188, or Z29.3 were charged.

There are 4 family medicine and 5 general pediatric clinics at this health care system where FV application could occur at well-child visits (WCVs). The family medicine clinics have approximately 3300 WCVs annually for children up to 4 years of age and the pediatric clinics have about 5500 WCVs when FV could be applied. One of the pediatricians providing the FV at WCVs was interviewed regarding her experience. The study and methods were approved by the University of Iowa Institutional Review Board.

Results

From the EMR data pull with its 10-year study time frame, CDT D1206 was charged 5 times between September 2014 and September 2015, and 35 times for CPT 99188, all between January 2019 and May 2019, for a total of 39 unique pediatric patients. The ICD-10 code, Z29.3, an encounter for prophylactic fluoride administration, was used most often at 33 (82.75%) times. Table 1 shows the demographics of patients who received the FV. The age of children at the time of receiving the FV application ranged from 9-months to 68-months of age with a mean age of 21 months. Fifty percent of subjects were white and 13% were Hispanic.

Table 2 summarizes the clinic and procedure notes documented in the EMR when codes D1206 or CPT 99188 were charged. All 40 FV applications were performed during a WCV. During the oral examination, medical providers documented in the physical exam portion of their clinic notes that 36 (92.3%) children had good dentition, while 3 (7.7%) subjects had multiple teeth with erosion or dental decay. Thirteen (33%) children had been seen by a dentist sometime prior to receiving the topical FV application by a medical provider. The mean age of the 13 children who had prior dental visits was 23.2 months (range 9-39 months). Regarding the children's primary water source being fluoridated, parents of 10 children (25.6%) responded with "no," 4 (10.3%) with "unsure," and 14 (35.9%) with "yes." This information was not documented in the clinic notes of 11 children (28.2%). In one instance when a parent responded "yes," the pediatrician was notified that the family had well water. On further inquiry, the pediatrician found the fluoride amount to be insufficient and prescribed

Table 2. Summary of Clinical Notes Where Codes D1206 or CPT 99188 Were Charged.

ID	Age, mo	Gender	Race	Ethnicity	Visit	Physical Exam of the Mouth	Prior Dental Visit ^a	Fluoridated Primary Water Source ^a
<i>D1206</i>								
1	12	F	AA	Non-H	12-month WCV	“MOUTH: normal mouth and throat, good dentition”	No	Not documented
2	26	M	Latino of any race	H	2-year WCV	“MOUTH: normal mouth and throat, good dentition”	No	No
3	12	F	AA	Non-H	12-month WCV	“MOUTH: normal mouth and throat, Good dentition”	No	Yes
4	25	F	AA	Non-H	2-year WCV	“Mouth/Throat: Moist mucous membranes. Posterior pharynx without erythema or exudates.”	No	Not documented
5	24	M	White	Non-H	2-year WCV	“MOUTH: normal mouth and throat, good dentition”	Yes	Not documented
<i>CPT 99188</i>								
6	9	F	AA	Non-H	9-month WCV	“MOUTH: normal mouth and throat, good dentition”	No	Not documented
7	12	M	White	Non-H	12-month WCV	“MOUTH: normal mouth and throat, good dentition”	No	Yes
8	12	M	AA	Non-H	12-month WCV	“MOUTH: normal mouth and throat, good dentition” “No evidence for cavities”	No	No
9	36	F	Multiracial	H	3-year WCV	“MOUTH: normal mouth and throat, mild plaque on teeth.”	No	No
10	15	F	White	Non-H	15-month WCV	“MOUTH: normal mouth and throat, good dentition”	No	Not documented
11	44	M	Latino of any race	H	4-year WCV	“MOUTH: normal mouth and throat, good dentition” “ Areas of erosion around the front teeth. ”	No	Yes
12	36	F	AA	Non-H	3-year WCV	“MOUTH: normal mouth and throat, poor dentition, marked decay in upper 4 central incisors ” “ Teeth examined, severe decay on four upper incisors, black and broken. ”	Yes	Yes
13	15	F	Multiracial	Non-H	15-mo WCV	“MOUTH: normal mouth and throat, good dentition. 4 upper, 4 lower incisors, lower premolars just starting to emerge along with right lower canine”	No	Not documented
14 ^b	18	M	Multiracial	H	18-month WCV	“MOUTH: normal mouth and throat, good dentition”	No	Unsure [parent responded “yes” at the following visit]
14 ^b	24	M	Multiracial	H	2-year WCV	“MOUTH: normal mouth and throat, good dentition” “Teeth were without caries or plaque.”	No	Yes
15	12	F	White	Non-H	12-month WCV	“MOUTH: normal mouth and throat, good dentition” “5 teeth, no plaque or decay.”	Yes	Yes
16	22	F	White	Non-H	2-year WCV	“MOUTH: normal mouth and throat, good dentition”	No	Unsure
17	15	M	White	Non-H	15-month WCV	“MOUTH: normal mouth and throat, good dentition”	No	Not documented

(continued)

Table 2. (continued)

ID	Age, mo	Gender	Race	Ethnicity	Visit	Physical Exam of the Mouth	Prior Dental Visit ^a	Fluoridated Primary Water Source ^a
18	26	M	AA	Non-H	2-year WCV	"MOUTH: normal mouth and throat, good dentition"	No	No
19	18	F	White	Non-H	18-month WCV	"Oral cavity: MMM [moist mucous membrane], no oral lesions, nl [normal] dentition—premolars in place x4, emerging canines, lateral and central incisors x4 upper and x3 lower—missing left lower lateral incisor. Fhx [family history] father's GM [grandmother] with missing tooth"	Yes	Yes
20	30	F	AA	Non-H	30-month WCV	"MOUTH: normal mouth and throat, good dentition"	Yes	Yes
21	31	F	White	Non-H	30-month WCV	"Oral cavity: MMM [moist mucous membrane], no oral lesions. OP [oropharynx] without tonsillar enlargement/exudate. Dentition without obvious caries"	No	Yes
22	68	F	AA	Non-H	5-year WCV	"MOUTH: normal mouth and throat, good dentition" "Exam: ½ cm papule on gum next to tooth with caries over half of tooth"	No	Not documented
23	12	F	White	Non-H	12-month WCV	"MOUTH: normal mouth and throat, good dentition"	No	Yes
24	15	F	AA	Non-H	15-month WCV	"MOUTH: normal mouth and throat, good dentition"	No	Not documented
25	24	M	White	Non-H	2-year WCV	"MOUTH: normal mouth and throat, good dentition"	Yes	Yes
26	9	F	Latina of any race	H	9-month WCV	"MOUTH: normal mouth and throat, good dentition" "6 teeth, no plaque or decay."	Yes	Not documented
27	39	M	AA	Non-H	3-year WCV	"MOUTH: normal mouth and throat, good dentition" "Teeth with mild plaque along gums."	Yes	No
28	18	M	AA	Non-H	18-month WCV	"MOUTH: normal mouth and throat, good dentition"	Yes	No
29	12	F	White	Non-H	12-month WCV	"Oral cavity: MMM [moist mucous membrane], no oral lesions, nl [normal] dentition—two upper, two lower incisors. Small piece of gum hanging over emerging left upper incisor"	No	Yes
30	35	M	AA	Non-H	3-year WCV	"MOUTH: normal mouth and throat, good dentition"	Yes	Yes
31	30	F	White	Non-H	30-month WCV	"Oral cavity: MMM [moist mucous membrane], no oral lesions. OP [oropharynx] without tonsillar enlargement/exudate. Dentition without obvious caries."	No	Yes
32	25	F	AA	Non-H	2-year WCV	"MOUTH: normal mouth and throat, good dentition" "Teeth had plaque along gums."	No	No

(continued)

Table 2. (continued)

ID	Age, mo	Gender	Race	Ethnicity	Visit	Physical Exam of the Mouth	Prior Dental Visit ^a	Fluoridated Primary Water Source ^a
33	24	F	AA	Non-H	2-year WCV	“Oral cavity: MMM [moist mucous membrane], no oral lesions. OP [oropharynx] without tonsillar enlargement/exudate. Dentition without obvious caries—has 8 incisors, 4 premolars, canines not in place yet.”	Yes	Unsure
34	30	M	White	Non-H	30-month WCV	“Oral cavity: MMM [moist mucous membrane], no oral lesions. OP [oropharynx] without tonsillar enlargement/exudate. Dentition: Has all central and lateral incisors, canines, premolars and 2-year molars. No enamel defects noted”	No	Unsure
35	12	M	White	Non-H	12-month WCV	“MOUTH: normal mouth and throat, good dentition”	No	No
36	12	M	White	Non-H	12-month WCV	“MOUTH: normal mouth and throat, good dentition”	No	No
37	24	F	AA	Non-H	2-year WCV	“MOUTH: normal mouth and throat, good dentition” “Teeth without decay”	Yes	No
38	12	M	Multiracial	Non-H	12-month WCV	“MOUTH: normal mouth and throat, good dentition”	Yes	Unsure
39	52	M	White	Non-H	4-year WCV	“MOUTH: normal mouth and throat, good dentition” “No evidence for decay.”	No	Not documented

Abbreviations: AA, African American; CPT, Current Procedural Terminology; F, female; H = Hispanic; M, male; Non-H, non-Hispanic; NR, not recorded; WCV, well-child visit.

^aBright Futures previsit questionnaire as answered by parent (https://brightfutures.aap.org/Bright%20Futures%20Documents/BF4_POCKETGUIDE.pdf).

^bIndicates the same patient.

fluoride supplement. The physician documented in this clinical scenario as follows:

Fluoridated primary water source: Yes

They have well water. Their water supply by Poweshiek Association. During the visit we looked up in the CDC and has very low amount of fluoride measured at 0.05 ppm.

Plan: They have well water. Their water supply by Poweshiek Association. Very low levels of fluoride in his drinking water. Prescribed low-dose Pediaflor half an mL a day which would equal 0.25 mg a day. Discussed pros and cons. Mother agrees. She will also see the dentist and discuss fluoride. We can give another treatment in 6 months here as well.

Table 3 summarizes the reimbursement status of codes D1206 and CPT 99188. For D1206, the code was first used in September 2014, which was nearly 5 years after Medicaid began to reimburse topical application of FV. D1206 was used in only one outlying pediatric clinic. Three different pediatricians, and no family physicians, used code D1206

after applying the FV. The ICD-9 code used for the visits was V20.2, routine child health check. For the D1206 code, the \$33 charge was reimbursed at \$13.95 from Medicaid.

For CPT 99188, the code was first used in November 2018, which is nearly 22 months after Medicaid began allowing coverage in Iowa for this new CPT code and about 2 years since the ACA coverage allowance for children through 5 years of age (<72 months old). Of the 9 family medicine and pediatric clinics in this university healthcare system, only 1 outlying pediatric clinic used the code. A total of 3 pediatricians, distinct from the 3 pediatricians who used D1205 in years 2014-2015, used the CPT code, with a single pediatrician responsible for 66% of the applications. Z29.3 was used most frequently as the primary diagnosis associated with topical FV application. Other ICD-10 codes were used to clinically associate the dental findings on oral exam in 2 instances; Z91.843, high risk for dental caries, and Z00.121, encounter for routine child health examination with abnormal findings. The medical diagnosis code Z29.3 was also used 3 times with WCVs, but no corresponding CPT code was documented; thus, there were no charges

Table 3. Summary of Reimbursement Status of Topical Fluoride Varnish (FV) Codes D1206 and CPT 99188 as of May 22, 2019.

ID	Payor	Topical FV Code Used	Primary Diagnosis Associated With topical FV Code (ICD-9/-10 codes)	Billed Amount for FV (\$)	Paid Amount for FV (\$)
1	Medicaid	D1206	Well Child Check [V20.2]	33.00	13.95
2	Medicaid HMO	D1206	V20.2	33.00	13.95
3	Medicaid	D1206	V20.2	33.00	13.95
4	Medicaid	D1206	V20.2	33.00	13.95
5	Medicaid	D1206	V20.2	33.00	13.95
6	BCBS	CPT 99188	Prophylactic fluoride administration [Z29.3]	35.00	21.00
7	BCBS	CPT 99188	Z29.3	35.00	21.00
8	Medicaid MCO (AMG)	CPT 99188	Z29.3	35.00	13.95
9	Medicaid MCO (AMG)	CPT 99188	Z29.3	35.00	13.95
10	BCBS	CPT 99188	Z29.3	35.00	21.00
11	Medicaid MCO (UHC)	CPT 99188	Z29.3	35.00	Denied; child is 36 months or older outside the payable window
12	Medicaid MCO (UHC)	CPT 99188	Z29.3	35.00	Denied; child is 36 months or older outside the payable window
13	BCBS	CPT 99188	Z29.3	35.00	21.00
14 ^a	Medicaid MCO (AMG)	CPT 99188	Z29.3	35.00	13.95
14 ^a	Medicaid MCO (AMG)	CPT 99188	Z29.3	35.00	13.95
15	BCBS	CPT 99188	Z29.3	35.00	26.00
16	BCBS	CPT 99188	Z29.3	35.00	21.00
17	BCBS	CPT 99188	At high risk for dental caries [Z91.843]	35.00	21.00
18	Medicaid MCO (UHC)	CPT 99188	Z29.3	35.00	13.95
19	BCBS	CPT 99188	Z29.3	35.00	21.00
20	Medicaid MCO (AMG)	CPT 99188	Z29.3	35.00	13.95
21	Medicaid MCO (AMG)	CPT 99188	Z29.3	35.00	13.95
22	Medicaid MCO (UHC)	CPT 99188	Encounter for routine child health examination with abnormal findings [Z00.121]	35.00	Denied; child is 36 months or older outside the payable window
23	UHC Commercial	CPT 99188	Z29.3	35.00	35.00
24	Self Pay	CPT 99188	Z29.3	35.00	Balance at collections
25	BCBS	CPT 99188	Z29.3	35.00	21.00
26	Medicaid MCO (UHC)	CPT 99188	Z29.3	35.00	13.95
27	Medicaid MCO (UHC)	CPT 99188	Z29.3	35.00	Denied; child is 36 months or older outside the payable window
28	Medicaid MCO (AMG)	CPT 99188	Z29.3	35.00	Balance transferred to patient due to noncompliance with request for a signed authorization and assignment form
29	Medicaid MCO (UHC)	CPT 99188	Z29.3	35.00	13.95
30	BCBS	CPT 99188	Z29.3	35.00	21.00
31	BCBS	CPT 99188	Z29.3	35.00	35.00
32	Medicaid MCO (UHC)	CPT 99188	Z29.3	35.00	13.95
33	Medicaid MCO (UHC)	CPT 99188	Z29.3	35.00	13.95
34	UHC Commercial	CPT 99188	Z29.3	35.00	35.00
35	UHC Commercial	CPT 99188	Z29.3	35.00	35.00
36	UHC Commercial	CPT 99188	Z29.3	35.00	35.00
37	Medicaid MCO (AMG)	CPT 99188	Z29.3	35.00	35.00
38	Medicaid MCO (AMG)	CPT 99188	Z29.3	35.00	35.00
39	BCBS	CPT 99188	Z29.3	35.00	35.00

Abbreviations: AMG, Amerigroup; BCBS, Blue Cross Blue Shield; CPT, Current Procedural Terminology; HMO, health maintenance organization; MCO, managed care organization; UHC, United Healthcare.

^aIndicates the same patient.

for reimbursement for these instances despite FV being applied. Pediatricians who successfully charged these out, all used a similar template that covered key components for reimbursement, including the statements such as “moderate caries risk” or “high caries risk” (see Appendices A and B).

For the CPT 99188 code charge of \$35, it was reimbursed in full 4 times by United Healthcare Commercial, reimbursed at \$13.95 by Medicaid, 10 times for \$21.00 by Blue Cross Blue Shield (BCBS) and 2 times for \$26.00 by BCBS. Four charges in 2019 were denied and then appealed to Medicaid. The appeal of the denial was denied since the children were all older than 36 months of age, 2 charges for FV application are in collections.

The single pediatrician who billed the CPT 99188 code the most in 2019 was interviewed regarding the process of initiation and implementation of routine FV application at her clinic. When she moved to Iowa from New York, where FV application in pediatric clinics was recommended by the state health department and mandated by her clinic manager, FV was not being used in the pediatric clinic at Iowa. The topical FV kits were also not available for use in the clinic. The pediatrician then established a FV team consisting of the medical director, nurse manager, coding specialist, Epic programmer, administrator and lead physician. The pediatrician built a template in Epic using Bright Futures as a guideline for easy and thorough documentation of the procedure.¹⁸

The Physician Documentation Team added the procedure order to the Pediatric Procedure Notewriter in Epic. Once that procedure order was live, then providers were able to appropriately charge for the procedure. Prior to that, clarification for the provider of who would be applying the FV had to be ascertained and confirmed by the clinic staff for appropriate billing. In Iowa, nurses or medical assistants are not allowed or unable to bill for this. Implementation was done in conjunction with the providers being educated on the procedure and having the FV ordered and be made available for use in clinic. Educational materials for patients was important and were created by the pediatrician champion during this process. The entire implementation process took the pediatrician about 9 months. The process is ongoing with revised patient educational materials and launching the process in other clinics at the institution.

Discussion

Several articles have been published on how to appropriately document and then bill for application of FV in a family physician office.^{11,16,19-21} While initiatives such as “Into the Mouth of Babes” in North Carolina demonstrated that dental caries rates were reduced in children when physicians provided FV application,²² no studies have assessed use of FV application billing codes or their reimbursement for the procedure in academic family medicine and pediatric clinics

affiliated with a tertiary care center in the Midwest. At our institution, CDT D1206 has rarely been used since Medicaid coverage was initiated in 2009. The CPT 99188 code likewise has rarely been used since it was accepted by Medicaid in 2017. Surprisingly, Iowa Medicaid only reimbursed FV application for children up to 36 months of age while commercial insurance reimbursed children up to 72 months of age. Three of the 4 children (patient IDs 11, 12, 22) whom Medicaid declined reimbursement for FV application due to age were unfortunately also the ones with obvious erosion, caries, and marked decay of teeth on oral exam by the pediatrician. In 2004, Wisconsin Medicaid initiated coverage for medical providers to be reimbursed for FV application. Following this policy change, claims increased from 3631 to 28303 in Wisconsin.²³ It is unknown how much impact the differences in state Medicaid policies have on the number of claims and reimbursement for FV application.

Children are recommended to have at least 7 preventive health care visits in their first year of life (the first week of life, 1 month, 2 months, 4 months, 6 months, 9 months, and 12 months old), 3 in the second year of life (15 months, 18 months, and 24 months old), 2 in the third year of life (30 months, 36 months), and then 1 per year at age 4 and older (4 years and 5 years old).^{24,25} These visits offer an opportunity for health care providers to initiate and continue throughout their childhood application of FV. In 2012, 89% of children received at least 1 WCV in the prior year.²⁶ From the National Survey of Children’s Health 2016-2017 date, 89% of children 0 to 5 years old had 1 or more preventive visits.²⁷ In 2016, 80% of children aged 1 year had not seen a dentist. That percentage decreased as children grew older to 50% at age 2 years, 29% at age 3 years, and 18% at age 4 years.²⁸ Given that physicians see children frequently more than dentists, it is appropriate for them to be applying the FV, especially at the younger ages when they are not seeing a dentist.²⁶

To initiate the application of FV in nondental offices, barriers need to be overcome. Administrative support is crucial for the endeavor which then would facilitate the availability of supplies and codes for appropriate documentation in the medical record for billing.²⁹ Training requirements for those applying the FV vary from online modules to in-person training.³⁰ It is unknown whether and how the different modalities of training influence implementation of oral health services in medical practices. The Iowa I-Smile program (<https://ismile.idph.iowa.gov/education/medical-providers>) provides information regarding training for nondental health care providers. Available for anyone, family medicine physicians can access a comprehensive oral health curriculum entitled Smiles for Life developed by the Society of Teachers of Family Medicine to ensure the integration of oral health in primary care (<https://resourcelibrary.stfm.org/viewdocument/smiles-for-life-a-national-oral-he>). Oral health education for medical providers has to be a priority.³¹

In 2003, the Office of the Surgeon General released a national call to action to promote oral health.³² Findings from the report, *Oral Health in America*, were the main impetus for the call³³; dental caries was the single most common chronic childhood disease with 50% of 5- to 9-year-old children had at least 1 cavity or filling, and with striking disparities in dental disease by household income.³³ Family physicians and pediatricians are well-situated to provide oral health care for their patients as promoted by reliable source including the American Dental Association, the USPSTF, the American Academy of Pediatrics, and the American Academy of Pediatric Dentistry.^{6,34,35} Children who have received FV application have fewer decayed, filled, and missing teeth.^{5,36} All children regardless of risk are recommended to have FV applications.⁵

In the state of Iowa, the report from the Iowa Department of Public Health demonstrates a negligible effect of such reimbursement policy on physician behavior to provide oral health services. The Iowa Department of Public Health in its yearly report reviewed Medicaid paid claims for FV application. In 2018 alone, EPSDT Dental Services Report for ages 0 to 5 years showed that there were 108 510 children eligible for this service. Only about 50% of eligible children received any oral health service, and more sobering, only 1.35% received oral health service from a nondental provider, which is similar to that of the previous 2 years (year 2017: 1.56%; year 2016: 1.30% for ages 0-5 years).³⁷⁻³⁹ Overall, however, there was an increase in FV application for children less than 2 years of age from 2017 (326 applications) to 562 applications in 2018, and up dramatically from 17 children in 2005. This was partially due to the help of a medical-dental initiative called “Cavity Free Iowa” launched by the Iowa Department of Public Health (I-Smiles) and Delta Dental in 2017.^{40,41}

A single pediatrician champion pushed for the use of FV in 1 pediatric clinic and was successful. The physician’s endeavor has now moved forward to assist the other pediatric and family medicine clinics to begin the transition.¹⁹ One study found that a practice was more likely to be successful in implementing FV when staff were included in the FV decision making and planning process.²¹ While further research to compare the efficacy of training modality among nondental providers can provide insight into the best strategy to increase integration of oral health in the primary care setting, there is enough biological, clinical and public health evidence on the benefits of topical FV to warrant increased emphasis to expand topical FV application by medical providers for children in the United States.

Our study shows there are numerous opportunities for improvement for family physicians and pediatricians in improving the oral health of children that they care for. Physicians in this healthcare system are underutilizing CPT 99188 code, which may be an indication that physicians are not applying FV despite the evidence reported from the

CDC and USPSTF statements that it is critical to reducing caries.⁶ There is also good potential to recoup the time of personnel and expense of the FV at the current reimbursement rates. Over time, Medicaid reimbursement for CPT 99188 has stayed the same at \$13.95. BCBS reimbursement at this institution in Iowa ranged from \$21 to \$35 for FV application over the 10-year period. The encounter charge for FV application has only increased slightly from \$33 to \$35 during this time. In fiscal year 2017-2018, our family medicine clinics had approximately 750 WCVs in total for the 6-, 9-, and 12-month visits combined. In the same time-period, there were 1543 one-to-four-year-old WCVs. The actual cost of FV in individual packets is about \$1 per packet and the average duration of the procedure is about 3 to 5 minutes.⁴² Dental caries are largely preventable, yet remain an underaddressed public health issue.

Conclusion

Family medicine physicians and pediatricians at the primary care offices affiliated with this university health system have largely not been providing FV to children. Only 6 different pediatricians have used the FV billing codes for a total of 40 times at WCVs in pediatric clinics in the past 10 years. These codes were never used by family medicine physicians. The FV application was successfully reimbursed most of the time. Iowa Medicaid reimbursed FV applied to children up to 36 months of age; commercial insurance provided coverage up to 72 months of age. For both family medicine and pediatric offices, an advocate for caries prevention is likely needed for successful implementation of FV application at WCVs.

Appendix A

Procedure Note for Topical Fluoride Varnish Application During a Well-Child Examination: Example 1

Fluoride Varnish Application. After discussion of risk and benefit and rationale for use of fluoride varnish, including recommendations from the US Preventive Services Task Force and the American Academy of Pediatrics; consent for varnish application was obtained from parent/guardian. 0.25 mL of sodium fluoride varnish 5% was applied to all erupted teeth according to manufacturer’s directions. The procedure was well tolerated by the child. Aftercare instructions were provided to the parent/guardian and all questions addressed.

Staff Comments

Fluoride Varnish After-Care Instructions

- * Do not brush your child’s teeth until tomorrow morning

- * Do not give your child hard or sticky foods such as apples, carrots, raisins, gummy candy or vitamins
- * Give your child a soft diet for the rest of the day and avoid hot/warm beverages

It is normal for the teeth to temporarily have a thin white, yellow or brown film after fluoride varnish treatment. This will be removed by normal tooth brushing in the following day or two.

Teaching Statement. “I discussed the care of this patient with the resident providing service, during or immediately after the patient’s visit, and was directly responsible for the patient’s management. I have assured that the services provided are appropriate, and I was immediately available had the need arose.”

Appendix B

Procedure Note for Topical Fluoride Varnish Application During a Well-Child Examination: Example 2

Fluoride Application

Additional Procedure Detail.

Indications: Moderate to high carries risk.

Description of Procedure: The risks, benefits, indications, potential complications, and alternatives were explained to the patient/parent/guardian and informed consent obtained. ABN [*advance beneficiary note*] was signed. There is no history of previous adverse reactions to fluoride varnish.

Child was positioned for varnish application. Teeth were dried. Fluoride varnish was applied.

Complications: The patient tolerated the procedure well and there were no complications.

Plan: Fluoride counseling was given. The parent/guardians were provided a Fluoride Information Sheet and given the chance to ask questions. All questions were answered. We discussed the risks and benefits of Fluoride varnish as well as any previous reactions, and possible contraindications to the varnish.

Dental Care:

Dental provider - Yes, No, or Other: referral made today

Brushing by parent twice a day

Fluoride toothpaste, small smear/rice sized

Serve water or milk in between meals

Limit 100% juice to 4-6 ounces a day

Next fluoride application: 6 months if no dental appointment

Staff Procedure Presence:

Staff Only: I was present for and participated in the entire procedure

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ORCID iD

Peter Kim  <https://orcid.org/0000-0001-9501-615X>

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