

**Baltimore City Fluoride Varnish Pilot Program  
Progress Report**



Baltimore City Health Department  
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## TABLE OF CONTENTS

Executive Summary .....	1
Background .....	3
Pilot Project.....	4
Methods.....	5
Results.....	6
✓ All participating clinics have widely adopted the application of fluoride varnish.....	6
✓ Approximately two-thirds of eligible children at well-child visits received varnish during the first 10 weeks of full data collection at each site.....	6
✓ Applying fluoride varnish is feasible for pediatric clinics.....	9
✓ Clinicians and parents strongly support applying fluoride varnish in primary care.....	12
✓ The successful implementation of a web-based registry allows convenient monitoring of fluoride applications by individual clinicians and by health departments.....	13
✓ Fluoride varnish application by medical providers is ready for Medicaid adoption.....	14
Conclusion and Recommendations.....	14
Notes .....	15
Appendix A: Baltimore City Fluoride Varnish Program Training Protocol.....	16
Appendix B: Baltimore City Fluoride Varnish Program Application Protocol.....	17
Appendix C: Baltimore City Fluoride Varnish Pilot Program Staff Questionnaire .....	20
Appendix D: Baltimore City Fluoride Varnish Pilot Program Staff Interview/Focus Group Questions .....	21
Appendix E: Baltimore City Fluoride Varnish Pilot Program Parent Interview Questions.....	22

## EXECUTIVE SUMMARY

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Tooth decay is a chronic disease that affects hundreds of thousands of Maryland children. It causes pain, impairs nutrition, interrupts learning, and may require surgery if left unchecked.

Yet tooth decay is largely preventable. Appropriate diet and oral hygiene practices, such as regular brushing and flossing, can significantly reduce tooth decay. In addition, fluoride varnish applied regularly between the ages of 6 months to 5 years can reduce tooth decay in primary teeth by 30 to 60%.

Fluoride varnish is a low-cost liquid formulation of concentrated fluoride that is painted directly onto teeth every four to six months. However, few children under 5 see the dentist regularly, and there are not enough dental providers for all children at risk to receive regular fluoride treatments at dental practices.

Young children are regularly seen at pediatric medical practices. If these practices were to incorporate fluoride varnish into regular well-child care, major improvements in oral health could result. Several other states have pursued this strategy with success.

To determine the feasibility of this strategy in Maryland, the Baltimore City Health Department, in partnership with the University of Maryland School of Dentistry, has implemented a pilot program to apply fluoride varnish to at-risk children in primary care.

To reflect the various sites where children covered under Medicaid receive care in Maryland, we chose for our pilot practices an academic center, two community health centers, and a private practitioner.

The practices received special training from dental experts in coordination with the University of Maryland Dental School. They apply varnish every four to six months to children between 12 and 27 months of age. Each application of fluoride varnish is added to a web-based registry. Children with indications of caries or oral abnormalities are referred to dentists for further evaluation and treatment.

The pilot project is funded by the Harry & Jeanette Weinberg Foundation, the Abell Foundation, CareFirst BlueCross BlueShield, the Leonard and Helen R. Stulman Foundation, the Aaron and Lillie Straus Foundation and by in-kind contributions from the Baltimore City Health Department. It is coordinated by Baltimore Healthcare Access, Inc.

This initial progress report is based on data collected between November 5, 2007 and April 15, 2008. We find that:

- **All participating clinics have widely adopted the application of fluoride varnish.** Across our four pilot sites, 91 clinicians have participated in applying fluoride varnish. At least 809 children have received varnish treatments.

- **Approximately two-thirds of eligible children at well-child visits received varnish during the first 10 weeks of full data collection at each site.** This high rate of adoption during the startup phase compares well with the adoption rate of new immunizations and demonstrates that a population-wide impact is possible.
- **Applying fluoride varnish is feasible for pediatric clinics.** Each practice has developed an effective system to identify candidates for fluoride varnish, obtain consent, and apply the varnish. On average, staff used a total of about four minutes to prepare the patient's chart and gather supplies, explain fluoride varnish to parents and obtain consent, apply the varnish, and document the application.
- **Clinicians and parents strongly support applying fluoride varnish in primary care.** Staff at all four pilot sites positively rated the fluoride varnish program. Dr. Ralph Brown, a private practitioner, stated, "It's a simple procedure and parents are accepting of it. It's a win-win." Parents were generally pleased to be offered the opportunity for their children to receive the treatment at their pediatrician's office.
- **The successful implementation of a web-based registry allows convenient monitoring of fluoride applications by individual clinicians and by health departments.** The registry, modeled after the Baltimore Immunization Registry, allows clinicians to check when or if varnish was last applied to a specific child. Users are assigned a personal login and password and can enter varnish treatments or view the most recent treatment or next possible treatment date (calculated by the registry to be at least four months after the last treatment date). Reports are available by practice.
- **Fluoride varnish application by pediatric practices is ready for Medicaid adoption.** At least ten other states reimburse primary care providers who apply fluoride varnish through Medicaid. Maryland's Dental Action Committee has recommended that physicians be trained to apply fluoride varnish. Our project has demonstrated that the procedure is indeed feasible across the varied pediatric practice types in our state.

By covering the application of fluoride varnish in pediatric primary care, Maryland could, at low cost, quickly and significantly improve the health status of low-income children across the state. Attention to training, establishment of a registry, adequate reimbursement to pediatric practices for varnish application, and coordination with the dental system are recommended for statewide expansion.

## BACKGROUND

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Tooth decay is a chronic disease that affects thousands of Maryland children.<sup>1</sup> It causes pain, impairs nutrition, and interrupts learning. In 2001, the Office of Oral Health conducted a survey of the oral health status of nearly 3,500 Maryland school children from kindergarten through the 10<sup>th</sup> grade. The survey found that 42% of all children had untreated decay, with rates highest on the Eastern Shore and in Baltimore City.<sup>2</sup>

Tooth decay frequently starts early in life, and reducing decay in primary teeth is an important health priority. An evidence-based review conducted for the Agency for Healthcare Research and Quality found:

Dental caries in primary teeth have both short- and longer-term negative consequences. Caries lesions often cause pain because they can progress rapidly in primary teeth and involve the pulp before they are either detected or treated... Young children with untreated, symptomatic carious teeth often present to emergency departments of hospitals for their first dental visit...[C]hildren 5 to 7 years of age in the United States have been estimated to lose more than 7 million school hours annually because of dental problems and/or visits....Longer-term consequences of dental caries in primary teeth include an increased probability of caries in the permanent dentition and possible loss of arch space.<sup>3</sup>

Yet primary tooth decay is largely preventable. Good oral hygiene practices and appropriate diet can reduce the factors that lead to decay. In addition, fluoride varnish applied every four to six months between the ages of 6 months to 5 years can reduce tooth decay in primary teeth by 30 to 60%.<sup>4,5,6,7,8</sup>

Fluoride varnish is a low-cost liquid formulation of concentrated fluoride that is painted directly onto teeth. As with other fluoride vehicles, varnish works by slowing demineralization and fighting decay-causing bacteria. It is safe, easy to apply, has an inoffensive taste, and uses smaller amounts of fluoride than gel applications.<sup>9</sup>

However, few children under 5 see the dentist regularly, and there are not enough dental providers for all children at risk to receive regular fluoride treatments at dental practices.

Young children are regularly seen at pediatric medical practices. If these practices were to incorporate fluoride varnish into regular well-child care, substantial reductions in tooth decay could result. Several other states have pursued this strategy with success. The Medicaid programs of California, Nevada, North Carolina, North Dakota, Ohio, Texas, South Carolina, Virginia, Washington, and Wisconsin all support primary care providers applying fluoride varnish.

In Maryland, the Dental Action Committee, in its September 2007 report *Access to Dental Services for Medicaid Children in Maryland*, agreed that physicians should be trained to apply fluoride varnish and should be able to bill Medicaid for the procedure.

To determine the feasibility of applying fluoride varnish in pediatric practices, the Baltimore City Health Department, in partnership with the University of Maryland School of Dentistry, has implemented a pilot program to apply fluoride varnish to at-risk children.

## **PILOT PROJECT**

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We chose four practices representative of the various sites where children covered under Medicaid receive care in Maryland. Our pilot practices are an academic center (The Pediatric Ambulatory Center at the University of Maryland School of Medicine), two community health centers (the Highlandtown and Belair-Edison sites of Baltimore Medical System, Inc.), and a private practitioner (the medical office of Dr. Ralph Brown).

The goal is to apply fluoride varnish during as many well-child visits as possible. Practices are given the option to also apply fluoride varnish at sick visits.

Each practice has developed its own:

- flow system for organizing implementation;
- protocol for determining which staff members would be involved in each aspect of applying the varnish; and
- method of tracking varnish applications.

Clinicians and staff at each practice have received training from dental experts on oral risk assessment and varnish application, early childhood caries, and dental emergencies. (See Appendix A for the Training Protocol.)

Each practice is applying varnish, following a protocol to give applications every four to six months to children between 12 and 27 months old. Children with evidence of caries or other oral abnormalities are referred for further evaluation and treatment with a dentist.

The protocol also suggests that three educational questions be asked of parents during the visit:

- 1) “Does the child go to sleep with a bottle containing something other than water?”
- 2) “Does the child drink undiluted juice or soda during the day?”
- 3) “Have you started brushing your child’s teeth in the morning and at night?”

(See Appendix B for the Application Protocol.)

Each application of fluoride varnish is added to a web-based registry modeled on the Baltimore City Immunization Registry. Once an application is in the registry, the pilot program pays the clinic a \$30 reimbursement. This amount is in the mid-range of reimbursements offered by other states, which ranged from \$17 to \$53.

The pilot project is funded by the Harry & Jeanette Weinberg Foundation, the Abell Foundation, CareFirst BlueCross BlueShield, the Leonard and Helen R. Stulman Foundation, and the Aaron and Lillie Straus Foundation. It also receives in-kind support from the Baltimore City Health Department. It is coordinated by Baltimore Healthcare Access, Inc.

Prior to initiation, the Maryland State Board of Dental Examiners, the Maryland Board of Nursing, and the Maryland Board of Physicians reviewed and supported the project.

## **METHODS**

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This initial progress report was designed by the Baltimore City Health Department in consultation with Dr. Lindsey Grossman of the University of Maryland. The project team developed Likert-based staff and parent surveys as well as focus group questions to use at each practice.

The project team spent several days at each practice collecting data on four aspects of the project: the flow-system used to implement the new procedure, the time the procedure required, staff response to the procedure, and parent response to the procedure.

**Flow-system.** The project team recorded the system used to implement varnish applications at each practice, including how age eligibility was determined, which staff members attended to each part of the varnish application, and how the procedure was documented within the practice.

**Time Studies.** The project team observed and timed each part of the varnish application: preparing the chart, gathering supplies, explaining the treatment and obtaining consent, applying the treatment, and documenting the application. Eight to 10 varnish applications were observed at each pilot site. Observation began when the patient's chart was pulled, and ended when the appointment was documented.

**Staff Surveys.** The project team conducted formal and informal individual interviews or focus groups with 17 clinic staff members across the four pilot sites. This was a chance for the providers and their clinical staff members to ask questions, voice concerns and suggestions, and to provide feedback on the program in general. In addition, 29 questionnaires were collected from physicians, nurse practitioners, nurses and medical assistants after the appointment (Appendices C and D).

**Parent Interviews.** While on site, the project team also interviewed a convenience sample of parents who were present. A Spanish speaker interviewed Spanish-speaking parents after the appointment by phone (Appendix E).

The Institutional Review Board at the University of Maryland School of Medicine classified the project as exempt.

## RESULTS

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- ✓ **All participating clinics have widely adopted the application of fluoride varnish.**

Across the four pilot sites, 91 clinicians have participated in applying fluoride varnish. Physicians, nurse practitioners, nurses, and medical assistants have worked together to implement all the aspects of the treatment.

Clinic staff have collaborated to screen for age eligibility and prepare the charts; to explain the treatment and obtain consent; to apply the varnish; and to document application.

Between November 5, 2007 and April 15, 2008, 809 children successfully received varnish treatments (Table 1). We have had no adverse reactions reported.

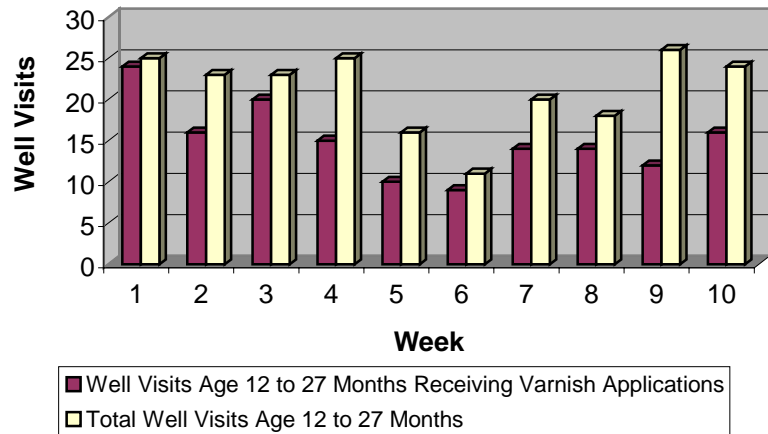
	Academic Center	Community Health Center #1	Community Health Center #2	Private Practice	Total
Children	261	355	102	91	809

- ✓ **Approximately two-thirds of eligible children at well-child visits received varnish during the first 10 weeks of full data collection at each site.**

Overall, across all four sites, 355 of 557 children (64%) in the designated age group attending well-child visits received fluoride varnish during the first 10 weeks of full data collection at each site. This compares well with the adoption rate of new immunizations.<sup>10</sup> Three out of four practices also apply varnish at sick-child visits when appropriate.

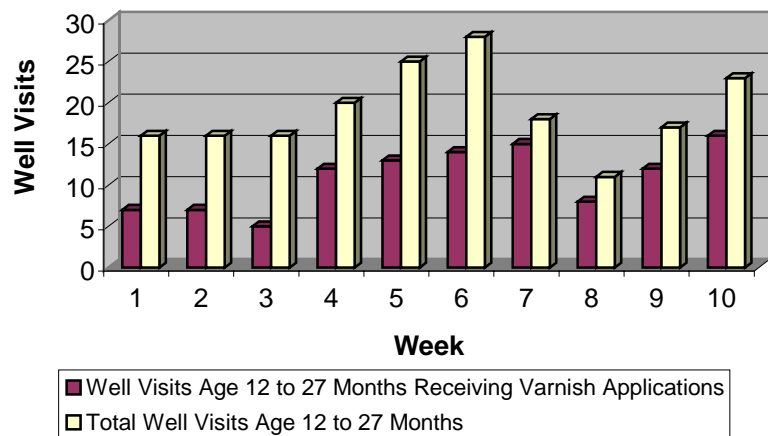
**Academic Center.** After completing training in December, the academic center began applying varnish on January 2, 2008. The first full week of data collection began January 6, 2008. After the first 10 weeks of implementation, 71% of children ages 12 to 27 months attending well-child visits received a varnish application. The practice also applied varnish at sick visits to this age group at a rate of 31% (Figure 1).

**Figure 1: Fluoride Varnish Applications in Eligible Children at Academic Center During 10 Weeks Starting 1/6/2008**

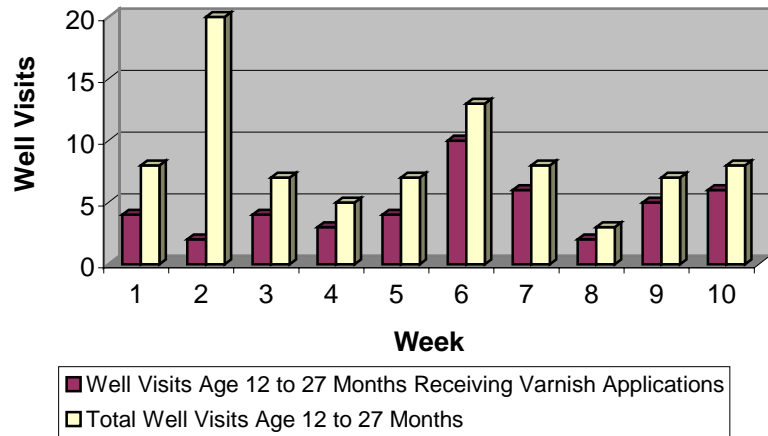


**Community Health Centers.** After training in late October, both community health centers began applying varnish on November 5, 2007. After the first 10 weeks of implementation, an average of 57% of children at Community Health Clinic #1 and 53% of children at Community Health Clinic #2 who attended well-child visits received a varnish application (Figures 2 and 3). The practices both applied varnish at sick visits when appropriate at an average rate of 10% at Community Health Clinic #1 and 4% at Community Health Clinic #2.

**Figure 2: Fluoride Varnish Applications in Eligible Children at Community Health Center #1 During 10 Weeks Starting 11/5/2007**

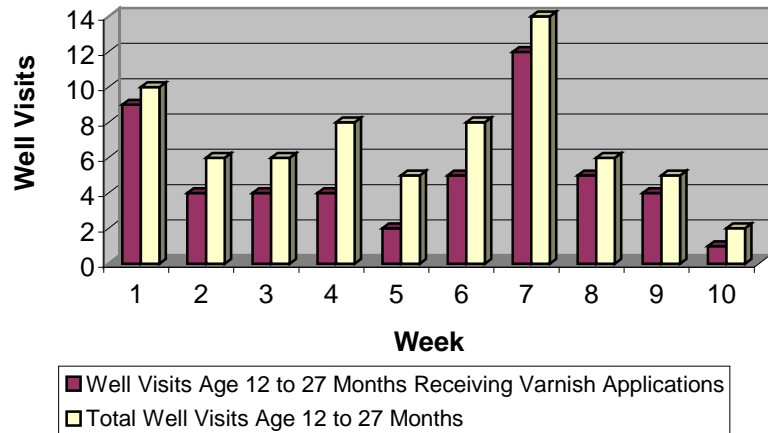


**Figure 3: Fluoride Varnish Applications in Eligible Children at Community Health Center #2 During 10 Weeks Starting 11/5/2007**



**Private Practice.** After completing training in early December, the private practice began applying varnish on December 17, 2007. Data collection from the private practice began 6 weeks after the program started there due to the practice’s adoption of a new computer system. After the first 10 weeks of full data collection, an average of 71% of children attending well-child visits received a varnish application. The practice rarely applies varnish at sick visits.

**Figure 4: Fluoride Varnish Applications in Eligible Children at Private Practice During 10 Weeks Starting 1/28/2008**



✓ **Applying fluoride varnish is feasible for pediatric clinics.**

The four clinics vary in size, clients served, and methods of record keeping and patient flow. Each practice has developed an effective system to identify candidates, obtain consent, and apply the varnish.

**Protocols: Academic Center.** The academic center is located in downtown Baltimore. The majority of patients are African-American and receive Medical Assistance. The staff is comprised of 12 attending physicians, 49 residents in training, one licensed practical nurse, two medical assistants, one laboratory technician and one registered nurse for triage. The average patient volume is between 45 and 50 well- and sick-child appointments per week for children in the target age range.

At the academic center, which trains residents, record keeping is done on paper charts, medical assistants determine whether a child is in the eligible age range, physicians explain the treatment to parents and apply the varnish, and medical assistants document the application. The academic center pays its medical assistants \$1 to prepare each cart and an additional \$1 if the procedure is completed.

The academic center tracks declinations and dental referrals for each patient. Twenty of 261 children (8%) received referrals to dentists at the time of their varnish application because doctors saw evidence of dental caries.

**Protocols: Community Health Centers.** Community Health Center #1 is a busy practice serving a majority Spanish-speaking patient population. In addition, a notable percentage of the families served are resettled refugees, primarily from Somalia, Sudan, Burma, Bhutan and Iraq. As a result, many languages are spoken in the clinic, with the assistance of in-house Spanish and non-Spanish interpreters. The head nurse at the clinic reports that most of the parents served have attained a high school or lower level of education. She estimates that about 80% of the patients receive Medical Assistance, 10% are on a sliding fee scale, and 10% or less are covered by commercial insurance.

Community Health Center #1 has four full-time physicians on staff: three pediatricians and one general practitioner. The clinic has five medical assistants and two nurses. Patient volume is high; in November and December 2007, there was an average of 53 well- and sick-child appointments per week for children in the target age range. Schedules are set so that each provider should see 16 patients every 4 hours; however, the medical assistants report that it is not uncommon for providers to over-schedule and exceed this number.

The smaller Community Health Center #2 has a pediatric patient population that is 91% African-American. Seventy-five percent of patients receive Medical Assistance, while 18% have private insurance. The clinic has three full-time family practice physicians and one part-time physician. There are two full-time nurse practitioners and four medical assistants. For the target age range, during November and December of 2007 there were an average of 20.5 visits of children within the target age range (both well and sick-child) per week.

At the community health centers, record keeping is done electronically and age group eligibility screening is done by computer program. Physicians explain the treatment to parents and answer questions, and physicians, nurse practitioners or medical assistants apply the varnish and document the application.

Initially, providers at the community health centers were reluctant to start applying varnish until they had observed an application in person. Once this was arranged through site visits by a dental expert, implementation proceeded smoothly.

**Protocols: Private Practice.** The practice serves a majority white population with a sizable minority of patients, approximately 30%, being African American, Hispanic or Asian. The staff estimates that 20% of patients receive Medical Assistance and 80% of patients have private insurance. There is a large range in education and income levels among families. The practice consists of one doctor, one nurse practitioner, and two medical assistants who see approximately 20 well-child and sick visits within the target age range per week.

At the private practice, record keeping is done on paper charts, medical assistants screen for age eligibility, the physician or nurse practitioner explains the treatment and answers questions, and medical assistants apply the varnish and document the application. The private practice pays its medical assistants an extra \$5 per treatment.

<b>Table 2: Type of Staff Responsible for Each Step of Fluoride Varnish Process</b>				
	Academic Center	Community Health Center #1	Community Health Center #2	Private Practice
Preparing Chart	MA	EMR	EMR	MA
Gathering Supplies	MA	MA	MA	MA
Explaining Treatment/Consent	MD	MD or NP	MD or NP	MD or NP
Applying Treatment	MD	MA	MD or MA	MA
Documenting Treatment	MA	MA	MA	MA
Abbreviations: MA=medical assistant; EMR=electronic medical record; MD=medical doctor; NP=nurse practitioner				

**Time Studies.** On average, across all four sites, staff used a total of about four minutes to prepare the patient’s chart and gather supplies, explain the treatment to parents and obtain consent, apply the varnish; and document the application.

<b>Table 3: Average Time in Minutes For Each Step in Fluoride Varnish Process</b>					
	Academic Center	Community Health Center #1	Community Health Center #2	Private Practice	Average
Preparing Chart	0.73	EMR	EMR	0.29	0.51
Gathering Supplies	0.13	0.07	0.14	0.10	0.11
Explaining Treatment/Consent	1.06	1.86	1.75	1.11	1.44
Applying Treatment	2.08	1.06	0.73	2.13	1.50
Documenting Treatment	0.46	1.00	0.25	0.63	0.58
Total	4.46	3.98	2.87	4.25	3.89

Notes: The community health centers use electronic medical records, which are automatically flagged with a fluoride varnish alert for all children in the target age group. "Treatment Application" includes opening varnish kit, positioning child, and applying varnish. At the community health centers, "Documentation" includes logging into the patient's EMR and updating it to reflect varnish treatment. The average equally weights each clinical setting.

The total time required for all aspects of varnish application held relatively consistent across all three settings despite different methods of record keeping and the type of staff handling the varnish application. As the project progresses, additional time may be required to determine eligibility for second applications.

**Missed Opportunities.** The practices reported very low rates of parental declination. At the academic center where this was specifically tracked, only 7 parents declined fluoride varnish over a period when there were 261 applications.

Similarly, few families reported having received fluoride treatment in dental practices, which would also make them ineligible for the pilot. At the academic center, only 7 children were considered ineligible for this reason.

Clinicians cited two main causes of missed opportunities, including that in-clinic personnel missed the training, making them ineligible to apply the varnish, and not having enough time to apply the varnish, especially at the 12-month visit.

- ✓ **Clinicians and parents strongly support applying fluoride varnish in primary care.**

Staff members were in favor of the program. Our survey found that, when asked how difficult it was to apply fluoride varnish, 17 out of 24 providers answered 1 or 2 on a Likert scale where 1 was “very easy” and 5 was “very difficult.”

When asked “What is your impression of the varnish program overall?” 21 out of 29 providers responded, “This is a great service to our patients” (See Table 4).

Dr. Ralph Brown, a private practitioner, stated, “It’s a simple procedure and parents are accepting of it. It’s a win-win.” Dr. Susan Feigelman, from the University of Maryland Pediatric Ambulatory Center said, “Actually, putting on the varnish is easy.”

<b>Table 4: Average Response to Staff Survey Questions</b>					
	Academic Center	Comm. Health Center #1	Comm. Health Center #2	Private Practice	Average
How difficult do you think it is to administer fluoride varnish? ( <i>1 – Very Easy, 5 – Very Difficult</i> ) (N=24)	2.25	2.17	2.50	1.67	2.15
What is your impression of caregivers’ attitudes towards varnish treatment? ( <i>1 – Very Eager to Participate, 5 – Refusing to Participate</i> ) (N=29)	1.13	2.00	1.94	1.25	1.58
What is your impression of the varnish program overall? ( <i>1 – This is a great service to our patients, 5 – I do not think we should be doing this</i> ) (N=29)	1.13	1.94	1.72	1.00	1.45
Notes: The average equally weights each clinical setting.					

Parents were also satisfied with the program. While visiting each site, the project team also interviewed a convenience sample of parents who were present. When asked whether they would be likely to request varnish at their child’s next visit to the doctor, the average score of 21 parents interviewed was 1.4 on a Likert scale with 1 being “very likely.”

- ✓ **The successful implementation of a web-based registry allows convenient monitoring of fluoride applications by individual clinicians and by health departments.**

All varnish applications are entered into a searchable web-based registry modeled after the Baltimore Immunization Registry and populated by children within the target age range who are already in the registry. Users are assigned a personal login and password and can enter varnish treatments or view the most recent treatment or next possible

treatment date (calculated by the registry to be at least four months after the last treatment date). Reports are available by practice.

✓ **Fluoride varnish application by medical providers is ready for Medicaid adoption.**

Our pilot program finds that applying fluoride varnish in pediatric primary care can be:

- Relatively low-cost
- High impact
- Feasible among different types of practices
- Highly accepted by both patients and providers

At least ten states reimburse physicians for applying fluoride varnish to children through Medicaid. Maryland's Dental Action Committee has recommended that physicians be trained to apply fluoride varnish. By covering the application of fluoride varnish in primary care, Maryland could quickly and significantly improve the health status of low-income children across the state.

## **CONCLUSION AND RECOMMENDATIONS**

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Fluoride varnish has the potential to contribute to major public health advances in Maryland by reducing the prevalence of cavities in primary teeth. The experiences of the pilot project suggest several recommendations for statewide adoption.

First, standard and convenient training modules should be made available to clinicians. Other states have allowed providers to train online. Continuing medical education with in-person demonstrations would also be helpful.

Second, establishment of a web-based varnish registry based on the model of an effective immunization registry can help ensure that children receive regular varnish applications at the recommended time, without duplication. A next step would be to provide dental clinics access to the registry. A registry could also allow a convenient way to notify parents when their child is next due for a varnish application or could be used to trigger reimbursement.

Third, adequate support for pediatric practices is critical. The reimbursement of \$30 per application, while less than many other states, was sufficient for the four sites in the pilot program.

Fourth, coordination with the local dental community is critical. Information about nearby dental services should be made available to assist pediatric practices in making referrals.

## NOTES

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10. Newman, RD, Taylor JA, Reactions of pediatricians to the recommendation for universal varicella vaccination, Archives of Pediatrics and Adolescent Medicine (1998), pages 792-6.

## **APPENDIX A: BALTIMORE CITY FLUORIDE VARNISH PROGRAM TRAINING PROTOCOL**

1. Training will be overseen by dental experts Dr. Norman Tinanoff of the University of Maryland Dental School and Dr. Patricia Bell-McDuffie of the Baltimore City Health Department.
2. All trainees will receive three hours of training, which will include written materials and oral presentations.
3. Fluoride varnish will be applied only by eligible clinicians and clinical staff who have received direct training. Trainees will not be allowed to train others.
4. Training at Baltimore Medical System will all take place on one day and practitioners will begin applying varnish after completing the 3 hours.
5. At the University of Maryland Pediatric Ambulatory Center, Medical Residents will start applying varnish after one hour of training focused on varnish application with consultation from on-site Dental Residents for the first week of implementation. Residents will receive the second and third hours of training within 3 months.

## **APPENDIX B: BALTIMORE CITY FLUORIDE VARNISH PROGRAM APPLICATION PROTOCOL**

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Fluoride varnish is a liquid formulation of concentrated fluoride that is painted directly onto teeth. It is safe, easy to apply, has an inoffensive taste, and uses smaller amounts of fluoride than gel applications. Fluoride varnish applied regularly between the ages of 6 months to 5 years can reduce tooth decay by 46%. It is only contraindicated in children who receive regular fluoride varnish treatments through their dentist.

### **A. Before Application:**

1. Fluoride varnish application is encouraged at all well-child visits if indicated and at sick visits when appropriate. The goal is to apply varnish every six months, although it can be done as frequently as every four months, for children between the ages of 12 and 27 months.
2. When a child arrives for a well-child or sick visit between 12 and 27 months, staff members, when taking vitals, should clip a single application varnish kit to the chart. Clinics that use electronic records will need other reminders.

### **B. Examination and Education:**

1. Eligibility: The doctor or nurse practitioner should determine whether the child is eligible and due for varnish application. Children are eligible if they have not received fluoride varnish in the last four months.
2. Consideration of dental referral: The doctor or nurse practitioner should review the mouth. A referral to a dentist is indicated if any cavities or oral abnormalities are found. Varnish may still be applied.
3. Before applying, either at the end of exam or before vaccinations, three educational questions can be asked of the parent or guardian:
  - Does the child go to sleep with a bottle containing something other than water? (If yes, help parent think of alternative ways to put the child to sleep.)
  - Does the child drink undiluted juice or soda during the day? (If yes, advise parents to avoid soda and dilute juice by ½ or to avoid altogether.)
  - Have you started brushing your child's teeth in the morning and at night? (If no, discuss the importance of making a habit of brushing early, using an infant brush and a pea-sized amount of non-fluoridated toothpaste for children under 2 years-old.)
4. After discussion and consent, give parents an information sheet.

### **C. Assemble:**

1. Single application pack of fluoride varnish
2. Gloves
3. Gauze

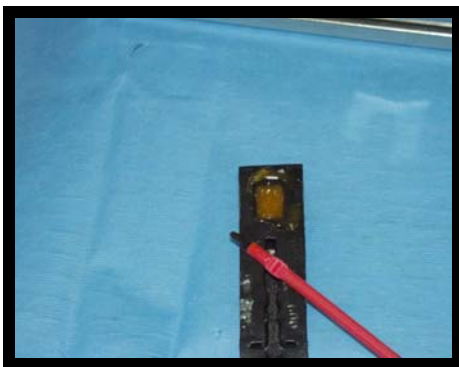
**D. Position the Child:**

1. The varnish is most easily applied to children in the "knee-to-knee" or "lap-to-lap" position, with the child facing the parent and the staff member in a chair with knees facing toward parent's knees. Parent lowers child's head onto the staff member's lap, keeping the legs on the parent's lap while holding the child's arms



**D. Apply Varnish:**

1. Wearing gloves, tear open the varnish kit.
2. Dip the brush in varnish.
3. Using gentle finger pressure, open the child's mouth.
4. Working in sections, wipe teeth dry with gauze and then apply a thin layer of varnish to inside, outside, and chewing surfaces of all teeth.
5. Once varnish is applied, it settles quickly. Saliva is not a problem.



**E. Afterwards:**

1. Tell parents not to brush the child's teeth until the next day.
2. The discoloration will wear off in 6-8 hours.
3. The child can leave immediately after the application.

**F. Send Records:**

1. Fax the attached form to the Baltimore City Health Department Fluoride Varnish Registry at 410.396.1617.
2. Or: logon to the online varnish registry (site and instructions will be available early December)
3. Staff may fax forms or enter records at the end of the week if more convenient.
4. Your practice may have a separate arrangement with the Health Department for transmitting the information.

Further Information:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm> *Recommendations for Using Fluoride to Prevent and Control Dental Caries in the United States*

**APPENDIX C: BALTIMORE CITY FLUORIDE VARNISH PILOT PROGRAM STAFF  
QUESTIONNAIRE**

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Date: \_\_\_\_/\_\_\_\_/2008

Name: \_\_\_\_\_  MD/DO (attending)  
 MD/DO (resident)  
 NP/PA  
 RN/LPN  
 MA/nurse assistant

Site:  University of Maryland PAC  
 Baltimore Medical System, Highlandtown  
 Baltimore Medical System, Belair-Edison  
 Ralph Brown- Private practice

How long have you been involved in applying varnish?

- less than 1 month
- $\geq 1$  month but  $< 3$  months
- $\geq 3$  months

What position do you use most often to administer the varnish?

- knee to knee/lap to lap
- standing
- in caregiver's arms
- lying on exam table
- Other: \_\_\_\_\_

How long do you think it takes you, on average, to inform parents about the varnish and answer any questions? \_\_\_\_\_ minutes

How long do you think it takes you, on average, to administer the varnish? \_\_\_\_\_ minutes  
How difficult do you think it is to administer fluoride varnish?

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_  
Very easy Very difficult

What is your impression of parents'/caregivers' attitudes towards varnish treatments?

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_  
Very eager to participate, Refusing to participate

What is your impression of the varnish program overall?

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_  
This is a great service to our patients I do not think we should be doing this

**APPENDIX D: BALTIMORE CITY FLUORIDE VARNISH PILOT PROGRAM STAFF  
INTERVIEW/FOCUS GROUP QUESTIONS**

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DATE: \_\_\_\_/\_\_\_\_/2008

- Site:  University of Maryland PAC  
 Baltimore Medical System, Highlandtown  
 Baltimore Medical System, Belair-Edison  
 Ralph Brown - Private practice

1. In your practice, who is actually applying varnish? Is that appropriate?
2. Do you feel you had sufficient training? If not, what more was needed?
  - a. How long/how many applications did it take until you felt comfortable in administration?
3. What position(s) do you use? Why? How does that work?
  - a. If you require assistance in applying the varnish, who helps you?
4. To what percentage of children are you able to apply the varnish? Are you applying it during both well and sick children visits?
  - a. What prevents you from administering varnish to all eligible children?
5. What questions do parents typically have? (eg: safety of the procedure, taste/feel for the child, other steps to prevent cavities, etc)
  - a. Have you had any parents refuse the procedure? What reasons did they give?
6. How does the documentation process work in your office? Would you prefer using an online registry like Immunet? If not, why not?
7. In your practice, which staff members most support the varnish program: physicians (attendings), residents, nurse practitioners, RNs, MAs, nurse assistants, clerical staff, others?
8. Overall, what is your impression of parents'/caregivers' attitudes towards varnish treatments?
9. What is your overall impression of the program?
  - a. What concerns do you have about the program? What concerns have you heard others voice?  
What suggestions do you have for improving the program?

**APPENDIX E: BALTIMORE CITY FLUORIDE VARNISH PILOT PROGRAM PARENT INTERVIEW QUESTIONS**

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Date: \_\_\_/\_\_\_/2008

Name of Parent: \_\_\_\_\_

Name of Patient: \_\_\_\_\_

Site: \_\_\_\_\_

Date of application: \_\_\_/\_\_\_/\_\_\_\_\_

1. How important do you feel your child's oral health is in regards to their overall health?

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_  
Very important Not at all important

2. Do you feel that the physician provided enough information to you about the fluoride varnish and the overall importance of oral health?

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_  
More than enough Not nearly enough

3. How beneficial do you feel the fluoride varnish was to your child's oral health?

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_  
Very beneficial Not at all beneficial

4. How likely are you to request a fluoride varnish at your child's next visit to the doctor?

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_  
Very likely Will not request the varnish again