Fluoride Varnish Pilot Program

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Executive Summary

The fluoride varnish project will initiate and establish oral health programs in the local health department. Dental screening, application of fluoride varnish, and oral health education are preventive measures to reduce the incidence of Early Childhood Caries. This project will broaden the ownership for improving dental access beyond the dental professional by involving trained non-dental professionals. Routine dental care along with proper oral hygiene could results in a decrease of dental caries and loss of teeth. Proper oral hygiene must be associated with good health.

Fluoride varnish is a simple, safe, painless, cost affordable compound that can be applied to children's teeth by trained non-dental professionals. The varnish has been approved by the Federal Drug Administration for use in the United States since 1997. Early results are encouraging in a number of states that are currently using fluoride varnish.

To meet our objectives, time was spent researching and reviewing models from other states. Planning was done by effectively using those models. After sending written letters and making presentations to the dental and nursing boards, they had no objection to non-dental professionals applying fluoride varnish, as long as the professionals completed a training course. This course would include how to screen children, apply varnish, and make proper referrals. The WIC program agreed that fluoride varnish could be administered during a WIC visit as long as application was within the provider's scope of practice and did not require WIC funding.

Assessment of the survey that was sent to local health department directors revealed a need for this program especially in rural areas for children of high risk due to socioeconomic status. Finding dentists that accept these children as patients, transportation issues, and reimbursement problems are a list of factors that health departments must face.

This change master project prepared an innovative pilot project model of preventive oral health care to be used in the Kentucky Public Health setting for Early Childhood Caries. The Kentucky KIDS' SMILES fluoride dental pilot project will begin in 2003 funded by KIDS' NOW. The funds will be used to select pilot sites, provide dental screening, purchase dental fluoride varnish, oral health education, follow up of dental screening, and program evaluation. The fluoride varnish pilot project can make a difference in the oral health of Kentucky children.

Fluoride Varnish Pilot Program

Introduction/Background

Poor oral health in Kentucky especially those children at risk due to disparities within our communities are at a higher risk than the United States at large. Early Childhood Caries (ECC) is one of the most prevalent health problems of infants and toddlers. It usually develops by repeated exposure of children's teeth to carbohydrates, such as sugar in milk, juice, or infant formula. If oral health and general health are viewed as separate issues the incidences of this disease in our children and adults will continue to increase. Early Childhood Caries is a preventable disease at an affordable cost. Nearly one-third of a 2-4 year old sample population will be affected by ECC according to the 2001 Kentucky Children's Oral Health Survey.

The purpose of this project is to reduce the rates of Early Childhood Caries of all Kentucky children. It is our hope to facilitate the awareness and importance of oral health within our local and state policy makers. A fluoride varnish program that will implement a training course for dentists and non-dental professionals will be provided. The providers will be trained to perform dental screenings for Early Childhood Caries, application of fluoride varnish, oral education of caregivers, and proper referrals when children need follow-up oral and/or general health care.

The fluoride varnish program is a safe and cost efficient program. There is a need to develop the association of proper oral hygiene in conjunction with good health. Dental caries can be prevented by a combination of community professional and individual measures including but not limited to professionally applied fluoride varnish. This intervention would make a significant change and enhance the awareness of parents and children on the importance of oral health.

Children from moderate and poor income families suffer from dental caries that go untreated. Nationally children from low-income families have 3 times more tooth decay than do children from middle to high-income families. Dental decay in young children can lead to poor nutrition, missed school days, needless pain, and medical complications. Childhood oral disease has significant health consequences that are detrimental to a child's well being. This goes unnoticed because of the historical separation of medicine and dentistry.

Fluoride varnish, a sticky fluoride compound, is somewhat like fingernail polish. It can be brushed or painted on newly erupted teeth to prevent early childhood caries. This is a relatively new product in the United States that contains a higher concentration of fluoride than our current gels, foams, rinses and pastes. Fluoride varnish quickly adheres to the teeth. The fluoride is released slowly into the tooth surface, enhancing tooth hardness and increasing mineral content aiding in warding off bacteria and preventing cavities. The use of fluoride varnish can reduce cavities by approximately fifty percent.

The varnish is a simple, safe, painless, cost efficient way to decrease caries in early childhood. The fluoride is applied from prepackaged fluoride varnish using a small brush, much like an artist brush. Manufacturers now have available a "lollipop like" applicator to apply varnish on children's teeth. The varnish is hydrophilic, thus keeping the teeth absolutely dry is not critical for successful application. It has a likable taste and is less toxic to children because less of the product is swallowed during application so children do not become nauseated. They can rinse their mouths after one hour and resume brushing the next morning. Some children have a slight discoloration of their teeth for about two weeks. The cost is comparable to current fluoride gels and foams. Physicians and nurses can easily provide this service with proper training.

Europe and Canada began using fluoride varnish in the 1970's. The Federal Drug Administration approved the product for use in the United States in 1997. Since that approval, the states of Arizona, North Carolina, Ohio, Maine, South Carolina, and California have begun using fluoride varnish in their early childhood programs, especially for children of low socioeconomic status. The Public Health administrations have performed studies, set up pilot programs, and established partnerships with dentists, dental hygienists, physicians, nurses, and nurse practitioners to assist them in providing this service. Prevention of ECC can cost less than $500 per child if parents comply with scheduled dental screenings and fluoride applications. The cost of rehabilitating and restoring just one case of early childhood caries can cost from $2000 to $5000. Presently, North Carolina is conducting a demo for HRSA using nurses and physicians to provide the care. Early results are encouraging.

This project will initiate and establish oral health programs within local health departments. The purpose of screening and applying a fluoride varnish to pediatric clients is to reduce the incidence of baby bottle tooth decay or Early Childhood Caries. The application is a safe and inexpensive initiative, when compared to thousands of dollars spent on a single hospital visit for the treatment of this disease. The fluoride varnish program trainers will train non-dental professionals to screen and administer varnish two times a year. The involvement of non-dental professionals in this project should reduce the barriers that have existed between these two initiatives thus increasing referrals and access to dental care. Geographically dentists are not evenly distributed across the state. Dental professionals are in short supply with only a small number of dentists that participate in the Medicaid program further limiting access for needy children. A potential benefit would be the developed perception among both children and parents that proper oral hygiene is important to good health. Enhancing good habits, joined with routine dental care could lead to the reduction in levels of dental caries and loss of teeth.

Project Description

The project goal was to implement a fluoride varnish pilot program that could be effectively used in the local health departments to prevent early childhood caries and provide better access to dental care in diverse and under served communities. The 2000

KPHLI survey revealed that 92% of respondents said they would be interested in a fluoride varnish program. All Kentucky children between the ages of 1-5 years and their caregivers will be the program targets. Oral health education will be provided for dentists, physicians, Local Health Departments, nurses, HANDS home visitors, Healthy Start in Childcare consultants, WIC program workers, and others who provide care for the target population.

Fiscal Year One

Initiate the following in the first six months:

- Purchase training materials, oral health education materials, demonstration materials, fluoride varnish, and instruments
- Select first-year pilot sites
- Develop training cycle plan
- Provide initial training to selected target providers to include:
  - Screening of children for early childhood caries and other oral conditions
  - Oral health education and promotion for caregiver's and oral care of children
  - Application of fluoride vanish for indicated children age 1-5 years
  - Referral to dental care providers for treatment if necessary
  - Follow-up screening, varnish application, oral health education refresher, and referral at six months intervals
  - Use the web-site for renewal training
  - Small training groups using lecture, video, and demonstration format

The second six months to include:

- Select a sampling of WIC, HANDS, Healthy Start in Childcare, and Local Health Department sites willing to pilot the ECC prevention program for six months.
- Provide screening, application of fluoride varnish, oral health education for caregivers, and proper referral for follow-up care if needed for children ages 1-2 at pilot sites (target number of children 10,000).
- Evaluate the program by measuring issues in conducting screenings, application of fluoride, providing oral health education, and materials.
- Evaluate effectiveness of the program by monitoring caries attack rate in children who receive program elements compared to similarly aged children who do not receive program elements.

Objectives

- To lower the rates of Early Childhood Caries (baby bottle tooth decay) by using . preventive fluoride varnish.
- Increase the proportion of low-income children who receive preventive dental services.
- Increase the proportion of Local Health Department programs than have oral health components by providing access to dental care.
- Reduce the proportion of children who have dental caries in their primary teeth.
- Identify and analyze policy issues and alternatives related to the prevention of dental caries by the use of fluoride varnish especially in diverse and under served

communities.

- Broaden the ownership for improving dental access beyond the dental profession.
- Educate and make available resources to implement prevention/education programs that include oral health screening and training non-dental professionals to apply fluoride varnish.
- Provide and promote dental referral and follow-up screening.

Methodology

Research and review established fluoride varnish programs that are presently being used by other states (California, Ohio, and North Carolina).

Plan effectively using the fluoride varnish models of other states (Ohio and North Carolina).

Write letters to the dental, nursing, medical, and dietitian boards requesting their position on non-dental professionals screening children, applying dental varnish, and making dental referrals.

Make a presentation at the Dental Board meeting on November 2001 so they can act on our request.

Meet with State WIC Program Director and Chief Dietitian to better understand their program position.

Prepare and e-mail survey to all LHD directors with a deadline date of Dec. 1, 2001. Compile the survey results.

Attend the Nursing Board meeting on March 14, 2002 to present additional information requesting they reconsider the role of nurses in the application of fluoride varnish.

Prepare an innovative pilot project model of preventive oral health care to be used in the Kentucky Public Health setting for Early Childhood Caries. Obtain funding to institute pilot sites.

Essential Public Health Service #1

Monitor health status to identify community health problems.

Essential public health service #1 would be met by:

- Screening 1-5 year old children for dental caries
- Monitoring results of the screenings

Essential Public Health Service #5

Develop policies and plans that support individual and community health efforts.

Policies and plans to be addressed by the fluoride varnish pilot program

- Partner with state and local health departments on the policy for the delivery of fluoride varnish
- Use existing infrastructure to provide fluoride varnishing
- Find funding for the pilot study

Essential Public Health Service # 7

Link people to needed personal health services and assure the provisions of health care when otherwise unavailable.

The fluoride varnish pilot would link and provide services as follows:

- Application of a fluoride varnish to primary teeth
- Perform dental screenings as dentists do not normally see children under age four
- Proper referral to a dentist, if appropriate

Essential Public Health Service #8

Assure a competent public health care workforce.

The dental varnishing pilot will assure a competent workforce by:

- Assuring that all public health staff that provide dental screening are trained
- Assuring that all public health staff applying fluoride varnish are trained
- Assuring that a qualified trainer provides all training

Essential Public Health Service #9

Evaluate effectiveness, accessibility, quality of personnel, and population-based health service.

We will address effectiveness, accessibility, and quality of personal by:

- Collecting all appropriate data
- Requiring periodic refresher training for staff
- Evaluating children enrolled in the dental varnish program on their progress

Results

The Fluoride Varnish pilot program is a continuation project began by 2000 KPHLI scholars. Their work on the project was instrumental in the creation of a fluoride varnish program. Many months were spent reviewing and researching the established fluoride programs of other states hoping to find a model for Kentucky.

A number of obstacles stood in the way of this project. It was brought to our attention that the WIC program had been cited as a point of delivery for the fluoride varnish application but this issue had not been discussed with the program. We met with the WIC program director and chief dietitian to talk about their concerns. The program agreed that fluoride varnish could be administered during a WIC visit as long as it was within the provider's scope of practice and did not require WIC funding. They recommended that fluoride varnish be offered to all children not just WIC participants. The knowledge gained from this meeting was used to develop our survey and pilot project.

As we investigated the possibility of screening and varnishing being performed by non-dental health professionals some barriers were identified. Letters were sent to the dental, medical, and nursing boards for clarification. The dental board indicated they had no objection to non-dental professionals screening children, applying fluoride varnish when appropriate, and making proper referral to dentists for children that needed follow up care if the appropriate training course was provided. The Nursing Board practice committee has made a recommendation to the Board of Nursing that LPN and RN's upon completion of a training course can screen and apply fluoride varnish to the teeth of children. Our public health administrators were supportive by attending and answering questions at both of these board meetings. We had one member on the nursing board that was very interested in our project and had spent a good deal of time gathering information to support our request.

In December 2001 we e-mailed a survey to all district and local health department directors. A 65% response rate was received with over all support of a fluoride varnish program for local health departments. Ninety four percent replied that if given proper training and funding they would implement a dental screening fluoride varnish application program in their health departments. Most respondents agreed that the dental varnish had merit and should be done by the current staff. One local health department would be willing to participate with or without funding. All others required additional funding to provide the service. A summary of the survey results can be found in Table 1.

TABLE 1
Dental Varnish Survey Summary

QUESTON	**RESPONSE**
Would you be interested in learning more about dental health and dental varnish?	Yes-35 No-1
If given proper funding and training would you implement dental screening and application of dental varnish in your Local Health Department?	Yes-34 Maybe-2
If dental screening and dental varnish application were performed during another visit how much additional time would be needed?	5 min. 0 15 min. 14 Unknown 6 10 min 2 20 min. 11
What programs do you think should be targeted to provide this service?	KCHIP 7 WIC 18 Other 6 Well Child/EPSDT 20
From your clients perspective please rate the importance of their children's dental health.	Extremely important 10 Somewhat important 3

	Not very important 8
From your perspective please rate the importance of dental health for children 2-4 years of age	Extremely important 32 Somewhat important 3 Not very important 1
Is there a dentist in your community that you can use for referrals?	Yes- 24 No- 4 Sometimes- 1 Unknown 2
Is transportation provided at no charge to the patient?	Yes- 3 No-17 Unknown 1

The comments from the survey revealed that many health departments experience problems with transportation issues and finding dentists that will accept children of low socioeconomic status and the present Medicaid reimbursement rates. Most of our responders expressed a need for this type of program in their health department.

By instituting the fluoride varnish pilot program, children in Kentucky, particularly those at high risk due to socioeconomic status, family status, isolation status, and other special conditions that suffer from early childhood caries (baby bottle tooth decay), will experience a decline in this disease. As we look to the future, this KPHLI team believes that the KIDS' SMILES pilot program funded by KIDS NOW will make a difference in the oral health of our children.

Conclusions

- Model Funded
    - Funding by KIDS NOW
    - Starting date of 2003
    - Funds will be used to:
        - Select pilot sites
        - Provide dental screenings
        - Provide dental fluoride varnish
        - Dental health education
        - Follow up of dental screening and dental fluoride varnish participants

Leadership Development Opportunities

C. Ann Bray: When I started with the Kentucky Public Health Leadership Institute I was not sure what to expect. It had been a long time since I had taken a class. I soon found out that the opportunities for learning about public health and leadership were almost endless. This learning experience has opened three doors of learning; public health, leadership, and dental varnishing. I have enjoyed all three.

My Change Master team embarked on a journey that I knew was important but also one I knew little about. During the past year, I have learned what a slow process it is to change

policy as well as dealing with turf issues. We started with a big dream of saving Kentucky's children's teeth by getting their teeth varnished. As we traveled through the policy, law, lack of funds, and lack of knowledge about dental varnishing we learned that we would not be able to accomplish it all. Event though we had to regroup more that once, I feel that our project will make a difference in not only Kentucky's children's dental health, but their over all well being.

Meloney Russell: It has been a wonderful learning experience to participate in the design of a fluoride varnish program. I approached this project realizing that changing policy and bringing forth a relatively new idea of dental health prevention would be a challenging task. Many times during this past year, I made mistakes, lost patience, took risks, but stayed focused to move in a positive direction, always keeping in mind that this program could make a difference in the lives of Kentucky children.

Working with my Change Master team and mentors has taught me to value and appreciate the expertise and ideas each member has to offer. I hope to use the wealth of knowledge and guidance acquired from the KPHLI to become a better Public Health leader and aspire to share the experience with others that have the same goal.

Ryan O. Irvine: This Change Master Project has been a great undertaking that seemed to be so simple when we began. It appeared to our group that the previous KPHLI group had laid out this beautiful project for us and all we had to do was implement it. Being a dental hygienist I felt this project would take off like a rocket, and assist our communities in such a positive way. Thus far this has not been the case. Our group has had many obstacles thrown at us, although we have handled most of them. We have learned to become leaders, risk takers, and advocates for assisting the needs of our communities. We have also become mediators for health and dental providers by trying to open new doors and offer innovative ideas to assist our communities maintain their health.
During this next year I hope to use the KPHLI experience to further my leadership abilities and make a noticeable change in our local health department. Whether it will be changing policy or writing a grant, I am completely committed to my new responsibility.

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