Dental Public Health Activities & Practices

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SECTION I: PRACTICE OVERVIEW

Name of the Dental Public Health Activity:

Klamath County Early Childhood Cavities Prevention Program

Public Health Functions:

Policy Development – Collaboration and Partnership for Planning and Integration
Assurance – Population-based Interventions
Assurance – Oral Health Communications
Assurance – Building Linkages and Partnerships for Interventions
Assurance – Building State and Community Capacity for Interventions
Assurance – Access to Care and Health System Interventions

Healthy People 2010 Objectives:

21-1 Reduce dental caries experience in children
21-2 Reduce untreated dental decay in children and adults
21-5a Reduce gingivitis among adults
21-5b Reduce periodontal disease among adults
21-10 Increase utilization of oral health system
21-12 Increase preventive dental services for low-income children and adolescents
21-14 Increase number of community health centers & local health departments with oral health component

State:	**Federal Region:**	**Key Words for Searches:**
Oregon	Northwest Region X	Early childhood oral health, early childhood caries prevention, preventive dental services, early prevention, prerinatal oral health, prenatal care, pregnant women, dental care, dental utilization

Abstract:

Klamath County, Oregon is a scenic rural county that is home to approximately 70,000 people in 6,135 square miles. The Klamath County Department of Public Health (KCPHD) provides a wide range of services to its residents, including an innovative program that approaches a common public health issue in a non-traditional way. The Early Childhood Cavities Prevention Program (ECCPP) aims to eliminate early childhood cavities among low-income children up to three years of age by integrating preventive oral health services into Women, Infants and Children (WIC) clinical services. Pregnant women receive home/WIC visits and are assigned to a dental home under a dental managed care program with two Dental Care Organizations (DCOs). Initial care was provided at the Oregon Institute of Technology Dental Hygiene Clinic under contract with the DCOs. Care included emergency, preventive, and restorative services. This community-based collaboration has also successfully provided low-income pregnant women and their young children in Klamath County with essential oral health education and oral health tool kits (including parent education brochures, toothbrushes, floss, sippy cups, and children's fluoride toothpaste). Ninety-three percent of all infants reaching their 2nd birthday in the ECCPP were found to be cavity-free. The community health partnership supporting the ECCPP had established a successful and sustainable model extending dental care to pregnant women and promoting preventive services for both new mothers and their young children.

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SECTION II: PRACTICE DESCRIPTION

History of the Practice:

Klamath County **Early Childhood Cavities Prevention Program (ECCPP)** is a community-based intervention providing a dental home for pregnant women and their young children who are covered by Medicaid in Klamath County, Oregon. The ECCPP started in 2004.

The ECCPP setting is Klamath County in the rural southcentral region of Oregon. The population in 2006 was 66,438, and growth from 2000 to 2006 was 4.2 percent. The county in 2005 was 83.7 percent White (non-Hispanic), 8.6 percent Hispanic, 4.0 percent American Indian or Alaska Native, and less than one percent Asian, Black, or Pacific Islander. Per capita income in 2005 was $25,997. In Klamath County, there is no community water fluoridation and natural fluoride concentration in the water systems is below optimal level for prevention of tooth decay.

Over half (52.0 percent) of the 836 births in Klamath County in 2003 were covered by the Oregon Health Plan (OHP), the state Medicaid program. Pregnant low-income women were eligible for the OHP Plus package and did not have to pay a premium. The women were covered for the duration of their pregnancy, the month of delivery, and two months afterwards. Mothers were eligible to re-apply for coverage (before benefit expiration) for another six month increment of coverage and as long as they were income-eligible, they could continue to apply for coverage.

To improve dental care for pregnant women and prevent early childhood cavities, the Klamath County Department of Public Health (KCPHD) obtained funding from Robert Wood Johnson Foundation to initiate the ECCPP.

Justification of the Practice:

Mother-to-Child Transmission of Tooth Decay-Causing Bacteria

Dental caries (tooth decay) in infants and children is an infectious disease and is spread from parents/caregivers to infants. Tooth decay is preventable. Studies have shown that children from low-income families (those with incomes below 200 percent of the federal poverty level) are more likely to have unmet dental needs and are less likely to receive dental care than children from higher income families. Additionally, low-income children have nearly twelve times more restricted activity days because of dental-related illness than children from higher income families. Children with pain and suffering due to untreated tooth decay may have problems eating, speaking, paying attention, and performing well at school.

Healthy People 2010 objectives address the need to reduce oral health disparities among preschool children. However, programs aimed at reducing disparities focusing solely on children will fail to address mother-to-child transmission of tooth decay-causing bacteria. When low-income pregnant women and mothers with infants have regular dental visits, both mother and child should experience benefits.

The concept of mother-to-child transmission of tooth decay-causing bacteria has been known since the 1970s. Work by Kohler and Andreen in Sweden demonstrated that treating the mother was an effective strategy to prevent early childhood cavities.[1] Similarly, recent data from the North Carolina Medicaid program confirmed that children who receive preventive dental care early in life have lower overall treatment costs. Early prevention, such as preventing mother-to-child transmission, is a cost-effective strategy.

Community-Based Intervention

The predominant approach for most dental public health programs in the United States is to focus on or give priority to the care of children from low-income families. A model of dental prevention and disease control is needed that conceptualizes dental caries as an infectious process. From this perspective, dental care would aim to reduce pathogens as well as promote oral hygiene and a diet protective against the disease. This means adopting a focus on the mother–child dyad, rather than the child alone, and intervening before the child is born.

A focus on the oral health of new mothers is appropriate, especially for the woman having her first child. Several states are making this effort. Examples include: (1) in 2006 New York State issued a set of comprehensive guidelines on oral health care during pregnancy and early childhood, and (2) Massachusetts extended Medicaid dental benefits to mothers from pregnancy to three years after the birth of the child.

In Oregon, the proportion of low-income pregnant women enrolled in Medicaid who saw a dentist in 2001 was only 8.8 percent. A community-based intervention was needed to provide dental services for low-income pregnant women. The Klamath County ECCPP was established to address this need.

Inputs, Activities, Outputs and Outcomes of the Practice:

Purpose of the ECCPP

The ECCPP aims to promote preventive oral care for both mothers and their infants. The intervention program shifted the focus of dental professionals and their clients from the existing paradigm of providing dental services to a model in which the mother was treated in order to prevent infection and disease in her child. The program consisted of outreach and anticipatory guidance provided to pregnant women enrolled in Medicaid and their placement with a dentist to establish a dental home. Follow-up with the mothers was made to assure that the newborns see a dentist by age one.

The ECCPP targets the following:

- Educate and treat pregnant women to improve oral health during pregnancy and its effect on the baby after birth.
- Establish a dental home for pregnant women before 32 weeks gestation and for the newborn infant.
- Provide oral health education and assistance to pregnant women, mothers or caregivers that result in infants receiving dental care by their first birthday.

Administration and Staffing

The ECCPP is administered by the KCPHD. With the funding from Robert Wood Johnson Foundation, the KCPHD hired a dental hygienist to serve as the Early Childhood Cavities Prevention Services Coordinator.

The ECCPP staffing:

- Staffing the program is a collaborative effort involving various community partners.
- The Coordinator is considered the point resource for all activities. The Coordinator presently works part-time (up to eight hours per week) and is responsible for program development, data collection, and being a liaison for dental provider offices (prevent and resolve any issues that create barriers for the client to access care). The salary of the Coordinator was initially covered by the grant but is now sustained by local funding sources.
- A public health nurse with extensive maternal-child health experience provides case management to ensure clients access dental care.
- WIC staff provides nutrition and oral health instruction to pregnant women through their program.
- The University of Washington Northwest/Alaska Center to Reduce Oral Health Disparities provides technical assistance.

The ECCPP Community Coalition Committee

To support and coordinate the ECCPP services, the KCDPH developed a community health partnership called the ECCPP Community Coalition Committee. The partnership included the Oregon Institute of Technology (OIT), the Women, Infant and Children (WIC) program, Klamath Tribal Health Services, local safety net medical providers, the Dental Care Organizations (DCOs), local dentists, and other community agencies working with Medicaid families.

During the planning phase, a greater time commitment was required from the partners. The ECCPP Community Coalition Committee met monthly to address implementation issues. After the planning phase, the Committee held quarterly meetings to review the progress, guide activities, and avert problems.

Target Population

The target population for the ECCPP is the women enrolled in both Medicaid and the WIC program and their children from birth to two years of age.

In Klamath County, low-income pregnant, breastfeeding and non-breastfeeding postpartum women and infants/children up to age five who are found to be at nutritional risk, can go to a WIC clinic to obtain food vouchers, obtain health referrals, and receive health education on a regular basis. The WIC program provides an opportunity to access the target population without devoting additional resources to outreach. By integrating the ECCPP oral preventive health services into the existing WIC services at the clinics, at-risk women and children can be reached in an environment that is convenient and trusted.

Intervention Strategies and Activities

The initial years of the ECCPP established and implemented the following intervention strategies and activities.

(a) Program Participation

The ECCPP enlisted the support of obstetricians and dental providers. The ECCPP educated obstetricians and dental care providers about the need to provide dental care to pregnant women/young mothers attending WIC.

Eligible pregnant women enrolled in the Oregon Health Plan were identified and referred by WIC or other partners on a daily basis to a central clearinghouse staffed by the ECCPP staff. Eligible clients were scheduled visits with the Early Childhood Cavities Prevention Services Coordinator at the WIC office. Initial contact with each pregnant woman focused on participation in the program. Once enrolled, the ECCPP clients received subsequent home/WIC visits and provided information encouraging the clients to see a dentist and on preventing mother-child transmission of tooth decay-causing bacteria.

(a) Dental Care

The Medicaid program has two contracted Dental Care Organizations (DCOs) to provide dental care services in Klamath County: the Northwest Dental Services (NWDS) and Capitol Dental. In 2004 when the ECCPP started, there were 28 active dentists, most in NWDS. To increase capacity, the DCOs contracted with the dental hygiene program at the Oregon Institute of Technology (OIT). The two DCOs negotiated a flat fee of $38 per client treated by the dental hygiene program. When school was not in session, faculty members and volunteer hygiene students provided care. The DCOs' central staff reviewed many of the treatment plans for dental care. The second trimester was chosen as a starting point for dental care that included restorative, periodontal, and oral surgical services. Case management aimed to reduce no-shows for dental appointments. The focus of treatment was on eliminating reservoirs of disease with the extraction of hopeless teeth and filling of open cavities.

The ECCPP staff contacted each client and scheduled a home or office visit. The visit was made by a dental hygiene student from the OIT together with one of the pilot project personnel. During the visit, educational material, including an oral health toolkit, was provided in English or Spanish to all interested clients. Clients eligible for Medicaid prenatal dental care were offered support and advice on how to get the most out of a dental visit by eliminating barriers to care. Clients were then scheduled for two visits for assessment at the dental hygiene school at Oregon Institute of Technology Dental Hygiene Clinic (OIT), or at Klamath Open Door Dental Clinic as needed.

Each participating pregnant woman is assigned to an ECCPP dental provider. A Medical Clearance form was sent by the OIT student to the obstetrician and followed up to ensure that the form was returned before the scheduled appointment. All initial diagnostic and preventive care for the pregnant women was provided at the OIT. The OIT dental hygiene program collected baseline oral health examination data for the mothers, communicated with the treating obstetrician, and provided diagnostic and preventive services: assessment, radiographs, prophylaxis, topical fluoride, and chlorhexidine mouth rinse.

During pregnancy, additional preventive measures were provided to the ECCPP clients. Xylitol chewing gum was dispensed to mothers at the WIC office to be used for 6 months. Fluoridated

toothpaste was provided in the tool kit. The cost of the preventive agents not covered in a typical Medicaid program was underwritten by the DCOs.

When the OIT completed services for a client, the ECCPP staff picked up the patient chart and delivered it to the assigned dental office, the client's dental home. Follow-up contacts with each client and her dental home were maintained to ensure a successful completion of dental care. When the client delivered, the newborn child was assigned to the same dental home to receive fluoride varnish every six months after the eruption of the first tooth.

(b) Oral Health Education and Tool Kits

The ECCPP developed four different oral health tool kits for the pregnant women/mothers (distributed during prenatal period, at 6-weeks post partum, at 6-months, and at 1-year). These kits were developed by adapting the curriculum and educational messages of the Cowlitz Community Health Partners' Teeth Under Construction (TUC) program in Washington State. The ECCPP also added a new "RX for Good Oral Health" component to the kit. The kits are an essential part of the program. The kits, or toolboxes, contain age-specific brochures and promotional materials, infant/toddler safety toothbrushes, child and adult toothbrushes, dental floss, adult and child toothpaste with fluoride, and useful and fun gifts such as "sippy" cups, teddy bears, and stickers. The content of each kit is listed in the "Available Information Resources" section below.

The Coordinator conducted three separate one-hour training sessions for the WIC staff addressing oral health messages and instructions for the oral health tool kits. WIC staff provided nutrition and oral health instruction to the pregnant women and distributes tool kits as part of their program.

Continuing Education Activities

The ECCPP offered a continuing education (CE) program to promote practice changes based on the best available scientific evidence for perinatal and early childhood oral health. As part of a public health program, sixteen dentists and nine dental hygienists attended a CE course. Also, continuing medical education was offered through Grand Rounds at the local hospital. These Grand Rounds informed the medical community of the need for dental treatment during pregnancy, identified the goals of dental treatment and prevention, and specified the drugs/procedures used and their safety. About 30 physicians participated.

Collaborations

The ECCPP established community collaborations with dental, medical and social service providers to promote model practices and provide services that included:

- Liaison services for dental providers and for pregnant women and children with Medicaid coverage;
- Case management to ensure access to a dental home and patient compliance in completing dental treatment plans;
- Provision of appropriate dental education and treatment to reduce dental disease during pregnancy;
- Early dental screening of infants and toddlers; and
- Use of fluoride to prevent tooth decay.

Outputs and Outcomes

Between February 2004 and January 2006, 503 pregnant women were identified; 421 women were contacted. Of the women contacted, 339 received home visits (339/421, 80.5 percent) and 235 received care (235/339, 69.3 percent). Overall, 55.8 percent of eligible women received care (235/421). Most of the women who did not have a visit have moved or were not the primary caretaker of the baby. The missed appointment rate was 9 percent.

Oral health assessment data was collected during the dental hygiene visit. The typical pregnant woman had eight decayed, missing, or filled teeth (range 0 to 24). Ninety percent of the pregnant women had one or more untreated cavities with an average of six (range 0 to 19). The majority had gingivitis (generalized 1- to 4-mm pockets and bleeding). Fifteen percent had at least one tooth with pocket depths greater than 5 mm.

The ECCPP has documented positive program outcomes:

- Ninety-three percent of all participating infants reaching their second birthday were 100 percent cavity-free.
- Eighty percent of enrollees received oral health education and the oral health tool kits.
- Sixty-nine percent of participating women received dental care from a dental home during pregnancy.
- Oral health messages are now more consistent among the WIC, dental and medical providers in the community.

The program has been successful in reducing childhood disease rates.[2] Adjusting for age and race differences, children enrolled in the Klamath County ECCPP were 40% more likely to have no tooth decay than a comparative control group subsequently demonstrated. The utilization rate for the mothers exceeded the prevailing rate for Medicaid mothers throughout the state by five- to six-fold, and even exceeded the 48 percent rate for all pregnant women regardless of income.

Word of this program has spread throughout the state and interest in replicating the program has been expressed from several areas in Oregon, including the Tri-County Health Coalition areas (south Deschutes County, east Lake County, and north Klamath County) along with Harney County, east of Klamath County, and several counties in central Oregon.

Program Sustainability

The community health partnership established for the ECCPP led to a successful and sustainable model extending dental care to pregnant women, and to promote preventive care for both new mothers and their young children. Support is now provided by KCPHD funding, WIC funding, and in-kind support from the dental and medical communities. The Coordinator's salary is jointly funded by KCPHD and a local dental managed care organization. WIC staff provides the oral health instruction and distributes the oral health tool kits as part of their program. Community stakeholders have maintained their commitment. The ECCPP Community Coalition Committee continues to meet quarterly. The director of the dental managed care organization convenes annual meetings to update medical and dental partners on the program. The dental care providers stayed involved.

The ECCPP has been designed as a sustainable delivery model so that the program continues long after grant support has ceased. The ECCPP has:

1. Folded a large part of the enrollment and education into a pre-existing and established agency (WIC);
2. Involved over 20 different agencies in the advisory committee and subcommittees;
3. Distributed sample ECCPP tool kits and literature to other agencies that work with the target population and encouraged those agencies to use and replicate the materials;
4. Partnered with local medical and dental professionals to deliver oral health messages and services;
5. Involved dental providers from Northwest Dental Services, Klamath Open Door, and Oregon Institute of Technology in ECCPP training and communication; and
6. Continued development of a fundraising campaign to sustain the program after the Robert Wood Johnson Foundation grant ends.

Budget Estimates and Formulas of the Practice:

The Robert Wood Johnson Foundation grant provided funding of $167,824 for all costs to implement ECCPP.

Lessons Learned and/or Plans for Improvement:

The initial years of this new program were successful in addressing the philosophical change needed to bring about more effective control of caries in children of low-income families and in increasing access to care for low income pregnant women.

The program demonstrated the collaboration between the public (public health and dental education) and private sector care providers. A community health partnership is now in place to serve as the champion of this change. Dentists, dental hygienists and physicians were trained. An outreach and case management system was put in place that identified and served pregnant women. All of the women were assigned to a dentist.

The community health partnership identified sustainability as an important issue to be addressed during the early part of the grant support. Major progress has been made in that support for the outreach staff position is likely to be covered by the DCOs. The WIC staff can also assume greater responsibility for some aspects of the outreach. As long as the adult benefits in Oregon's Medicaid program are maintained, provision of care for the pregnant women can be sustained. However, the ECCPP stakeholders and participants are vigilant because adult dental coverage is often viewed as elective by state legislators.

Available Information Resources:

ECCP oral health tool kits were adapted from the Teeth Under Construction (TUC) program with permission from Cowlitz Community Health Partners, Cowlitz County, WA. TUC curriculum teaches parents to prevent dental disease in their children. There are six different kits, four of which were used during the ECCPP.

Prenatal tool kit includes:

- Healthy Mouth for Your Baby Brochure
- Immunization Schedule
- Tooth/Gum Brushing and Flossing Chart
- Baby T-shirt
- Adult Toothbrush
- Adult Fluoride Toothpaste
- Dental Floss
- "Rx for Good Oral Health" Educational Insert
- Tooth Under Construction (TUC) Prenatal Educational Insert

Post partum 6-week tool kit includes:

- Preventing Nursing Bottle Mouth Brochure
- Immunization Schedule
- Tenders (finger toothbrush)
- Infant/Toddler Safety Toothbrush
- Adult Toothbrush
- Dental Floss
- Children's Fluoride Toothpaste
- "Rx for Good Oral Health" Educational Insert
- Tooth Under Construction (TUC) 6-week Education Insert

Post partum 6-month tool kit includes:

- Preventing Nursing Bottle Mouth Brochure
- Immunization Schedule
- Mouth Mirror
- Sippy Cup
- Adult Toothbrush
- Child Toothbrush
- Children's Fluoride Toothpaste
- Dental Floss
- "Rx for Good Oral Health" Educational Insert
- Tooth Under Construction (TUC) 6-month Educational Insert

Post partum 1-year tool kit includes:

- Preventing Nursing Bottle Mouth Brochure
- Immunization Schedule
- Kick the Bottle Habit Brochure
- Teddy Bear
- Adult Toothbrush
- Child Toothbrush
- Children's Fluoride Toothpaste
- Dental Floss
- "Rx for Good Oral Health" Educational Insert
- Tooth Under Construction (TUC) 1 year Educational Insert

The Teeth Under Construction Curriculum has a copyright; permission to replicate must be obtained from the Cowlitz Community Health Partners for a small fee. Information on the materials and how to purchase them is available on the University of Washington Website at http://depts.washington.edu/nacrohd/teeth-under-construction.

SECTION III: PRACTICE EVALUATION INFORMATION

Impact/Effectiveness

How has the practice demonstrated impact, applicability, and benefits to the oral health care and well-being of certain populations or communities (i.e., reference scientific evidence, outcomes of the practice and/or evaluation results)?

To bring about more effective control of caries in children of low-income families and increase access to care for pregnant low-income women, the ECCPP has demonstrated achieving these positive outcomes:

- Ninety-three percent of all participating infants reaching their second birthday were 100 percent cavity-free.
- Eighty percent of enrollees received oral health education and the oral health tool kits.
- Sixty-nine percent of participating women received dental care from a dental home during pregnancy.

The utilization rate for the ECCPP mothers exceeded the prevailing rate for Medicaid mothers throughout the state by five- to six-fold, and exceeded the 48 percent rate for all pregnant women regardless of income.

Efficiency

How has the practice demonstrated cost and resource efficiency where expenses are appropriate to benefits? How has the practice demonstrated realistic and reasonable staffing and time requirements? Provide unit cost analysis or cost-benefit analysis if appropriate.

The ECCPP demonstrated cost efficiency in using strategies that leverage community assets and resources such as:

- Partnering with local medical and dental professionals to deliver oral health messages and services;
- Persuading physicians and dentists through the trainings to tell their patients about the importance of using fluoride toothpaste and to deliver other oral health messages; and
- Involving dental providers at Northwest Dental Services, Klamath Open Door, and Oregon Institute of Technology in training and delivering ECCPP messages.

Demonstrated Sustainability

How has the practice showed sustainable benefits and/or how has the practice been sustainable within populations/communities and between states/territories? What mechanisms have been built into the practice to assure sustainability?

The ECCPP has demonstrated sustainability with continued support beyond the initial grant, including funding from KCPHD, funding from the WIC program, and in-kind support from the dental and medical communities. The ECCPP has integrated a large part of the enrollment and education activities into a pre-existing and established agency (WIC) and has involved over 20 different agencies which have maintained their commitment to implement the ECCPP.

Collaboration/Integration

How has the practice built effective partnerships/collaborations among various organizations and integrated oral health with other health projects and issues? What are the traditional, non-traditional, public and private partnerships/collaborations established by the practice for integration, effectiveness, efficiency and sustainability?

The Klamath County Health Department developed a community health partnership to support ECCPP. The partnership included the Oregon Institute of Technology, the Women, Infant and Children program, Klamath Tribal Health Services, local safety net medical providers, the Dental Care Organizations, local dentists, and other community agencies working with Medicaid families.

Objectives / Rationale

How has the practice addressed HP 2010 objectives, met the National Call to Action to Promote Oral Health, and/or built basic infrastructure and capacity for state/territorial/community oral health programs?

Healthy People 2010 established objectives to reduce disparities among preschool children. The ECCPP contributes to achieving HP 2010 including these objectives:

- Reduce dental caries experience in children
- Reduce untreated dental decay in children and adults
- Reduce gingivitis and periodontal disease among adults
- Increase utilization of oral health system
- Increase preventive dental services for low-income children and adolescents
- Increase number of community health centers and local health departments with oral health component

Extent of Use Among States

Describe the extent of the practice or aspects of the practice used in other states.

The Klamath County Health Department does not have any information regarding the number of programs similar to the ECCPP in other states.

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References:

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