The OAK Project

Proposal

Oral Health for **A**ppalachian **K**entucky **(OAK)**

A joint project of the Eastern Regional Oral Health Coalition and Delta Dental of Kentucky

The mission of the **OAK** project is to
*improve the **O**ral health of **A**ppalachian **K**entuckians (OAK).*

Overview

The Eastern Region Oral Health Coalition chose to tackle three oral health issues, *urgent dental care, untreated tooth decay, and dental sealants* through the creation of:

1. A **data infrastructure** to promote continuous, coordinated data collection in a common repository.
2. A **training infrastructure** to provide the region with the toolkits needed to implement projects in their communities such as
    a. oral health literacy projects
    b. school-based sealant programs
    c. other oral health outreach programs.

<u>The OAK Project Theme</u>:

We know that there are several hundred different species of oaks in Kentucky.

> *As such, we expect that there are likewise hundreds of different possible approaches to oral health in the various local communities of Kentucky, each will be different and distinct based on local climate, resources, and circumstances.*

We know that oaks thrive in the state of Kentucky!

> *We also know that there are some well-established oral health programs that have thrived and succeeded in Kentucky, and we can learn many lessons from those.*

It takes an acorn 6–18 months to mature, depending on the species, and oak trees live an average of 150 years.

> *As such, we know that the development of new oral health programs will take some time to develop, but that once grown, with a well-established root system, they will thrive for generations, leaving a legacy.*

We also know that oaks are considered a "keystone" species in Kentucky. This means that oaks have a disproportionately large effect on the environment relative to their abundance. Such species are described as playing a critical role in maintaining the structure of the ecological community, affecting many other organisms in the ecosystem and helping to determine the types and numbers of various other species in the community.

> *As such, we know now that poor oral health has a similar "keystone" effect on the entire human body and all of her systems, as the oral-systemic links have been reported on extensively. Poor oral health can contribute to heart disease, diabetes, stroke, respiratory disease, osteoarthritis, pre-term and low birth weight babies, and Alzheimer's. And since poor oral health is disproportionately severe in our state, it may in fact be exerting such an effect on all of the other general health disparities that Kentucky suffers from.*
>
> *Likewise, if we invest in developing a network of abundant, strong, well-nourished and well-established oral health programs across Kentucky, we can be assured that they will exert a long-lasting, positive effect on the local ecosystems, by bringing oral health literacy levels up in the community, by reducing oral health disparities, and by improving the* ***O****ral health of* ***A****ppalachian* ***K****entuckians!*

<u>The OAK Project Framework for Partnership</u>:

Engaged partners, either as groups or as individuals, may progress in their level of involvement and achievement in The OAK Project from "acorn" to "sApLiNg" to "OAK" affiliate.

"acorn"

"sApLiNg"

"OAK"

These tiered designations will be structured as follows and will include incentives:

1. acorn –
    a. oral health **literacy** campaign in community
2. sApLiNg –
    a. oral health **literacy** campaign in community
    b. **service** component such as a school-based sealant program
3. OAK –
    a. oral health **literacy** campaign in community
    b. **service** component such as a school-based sealant program
    c. annual collection of county-level oral health **data** submitted to central repository database

<u>The OAK Project Infrastructure</u>:

The Eastern Regional Oral Health Coalition will help develop the following infrastructure to support the OAK Project:

1. **Data** Infrastructure (developed first and included in all training programs):
    a. Common Measures and Definitions
        i. Utilizing the 2001 and 2016 Kentucky Surveillance Measures
            1. Urgent Dental Care
            2. Untreated Tooth Decay
            3. Dental Sealants
    b. Common Timeframe for Collection and Reporting (annual data dump)
    c. Common Repository (common database accessible to all partners)

2. **Training** Infrastructure (initial and annual in-person regional training sessions and development of web-based modules):
    a. Oral Health Literacy Campaigns
    b. Oral Health Outreach Service Models
        i. Lap-to-Lap Preschool Prevention
        ii. School-based Sealant Program
            1. Portable Dental Equipment Delivery Model
            2. Mobile Dental Unit Delivery Model
            3. Fixed Dental Equipment Delivery Model (inside school or other location)
        iii. Comprehensive Dental Outreach Program
            1. New dental program within an FQHC
            2. New dental program within a health department
            3. Other
    c. Other Oral Health Trainings
        i. Silver Diamine Fluoride, etc.

The Background:

In 2000, the US Surgeon General issued the first-ever Report on Oral Health, stating that "You can't be healthy without oral health."

In 2003, he issued a "Call to Action for Oral Health" including five actions: 1. change perceptions of oral health, 2. overcome barriers by replicating effective programs and proven efforts, 3. build the science base and accelerate science transfer, 4. increase oral health workforce diversity, capacity, and flexibility, and 5. increase collaborations.

In response, HealthyPeople published target goals for oral health to achieve by 2010. Most goals were not achieved, so they were revised with 2020 targets.

Many other national foundations and state oral health advocates such as the Kaiser Foundation, Pew Foundation, Kentucky Youth Advocates, and the Foundation for a Healthy Kentucky began campaigns to increase awareness about the issues surrounding oral health in America, including statements like:

- Tooth decay is the most common chronic illness among school-age children, but it is almost entirely preventable.
- Dental care remains the greatest unmet need among US children.
- About 1 in 4 children have untreated tooth decay. The rate among low-income and racial/ethnically disadvantaged children is more than double and those children are also less likely to receive care.
- Children with untreated tooth decay suffer pain, infection, trouble eating, socializing, sleeping, and learning, all of which impair school performance. Low-income children with toothaches are 6X more likely to miss school and 4X more likely to have a grade point average below 2.8.
- Oral health is an integral part of overall health.
- Kentucky has the third highest rate of "toothlessness" in the national among older adults.
- Poor oral health stems from multiple factors including lack of access to care, lack of importance placed on oral health, low oral health literacy, poverty and many others.
- Less than 25% of high-need schools in Kentucky have sealants programs, and Kentucky is not on target to meet the HealthyPeople 2020 sealant objective.
- Dental sealants can reduce tooth decay by 80% in the two years after placement and continue to be effective for nearly five years.
- Dental sealants are one-third the cost of a filling, and school-based sealant programs are an optimal, evidence-based way to reach children, especially low-income children.
- There are some successful and well-established dental outreach and school-based sealant programs in Kentucky, and these could be replicated across the state with proper leadership and community engagement.

In 2001, a state-wide survey of children's oral health in Kentucky was conducted and published. As expected, the Eastern Region fared worst in nearly every measure.

Later, in 2011, Kentucky received a grade of "C" from the Pew Foundation for its ability to provide oral health care to children. Then in 2015, the grade was changed to a "D."

In 2016, after a long period (fifteen years) without another state-wide survey, Delta Dental of Kentucky partnered with the Kentucky Youth Advocates to fund the first state-wide children's oral health surveillance since 2001. The four "Key Findings" were as follows:

1. The percentage of 3rd and 6th graders in need of early or urgent dental care has increased.
2. Two out of five 3rd and 6th graders have untreated cavities.
3. More than half of 3rd and 6th graders do not have sealants.
4. Socioeconomic status is a significant factor in 3rd and 6th graders' oral health.

Again, the Eastern Region fared worst on most measures. Findings specific to the Eastern Region include:

- The greatest need for urgent dental care, nearly 20% of children.
    - **Highest rate in the state.** ☹
- The rate of untreated cavities was significantly greater where 53% (more than half) of 3rd and 6th graders – roughly 15,200 children – had untreated cavities.
    - **Highest rate in the state.** ☹
- The largest decline in the number of children without sealants, only 44% of children lack sealants.
    - **Lowest rate in the state!** ☺
- Parents cited pain and previous conditions as the reason for their child's last dental visit with greater frequency than those in other regions.

Just as HealthyPeople included a set of recommendations in their Call to Action report, Delta Dental also included five recommendations in their 2016 publication:

1. Develop comprehensive goals and objectives for a statewide oral health plan,
2. Launch regional networks to develop local, data-driven solutions,
3. Establish school-based sealant programs in all high needs schools,
4. Promote oral health literacy campaigns, and
5. Regularly collect state and county-level oral health data.

Recommendations 1 and 2 are already underway in Kentucky, and the Eastern Region Oral Health Coalition proposes to tackle recommendations 3 through 5 in this proposal.

The Eastern Region includes 49 counties, the boundaries of which were established in the 2001 survey and replicated in the 2016 project. In both the 2001 and the 2016 surveys, the Eastern Region had the poorest oral health, overall. One interesting finding in the 2016 survey was the fact that the Eastern Region had the highest rates of sealants in the entire state; an outstanding positive note in an otherwise grim regional report. This may reflect the fact that more efforts have taken place in the Eastern Region to establish school-based

sealant programs since the poor findings in the 2001 study were published. However, with only 318 students examined in the entire 49 county region, encompassing nearly half the state, it is hard to gauge the region as a whole by such a small sample. More county-level data is definitely needed. Furthermore, with a span of fifteen years between surveys and no one strategically tracking interventions, it is impossible to tell what efforts are actually working to improve oral health in the region.

This proposal hopes to develop the infrastructure needed to be sure that data is collected in a continuous, coordinated manner, and kept in a common repository for regular, on-going analysis. This proposal further hopes to present in-person and web-based trainings and toolkits to promote wide-spread use of evidence-based, gold standard interventions aimed at improving the oral health of the entire population in the region. The coordination of these two efforts should allow for strategic analysis of which interventions are working most effectively so that participants can reasonably choose projects wherein they will receive the "most bang for their bucks."

As the Eastern Region's Oral Health Coalition met to discuss ideas for a grant proposal, it became apparent that no one seemed to know what efforts were currently underway in the region in the way of dental outreach for children. So, after the second convening, a preliminary survey was conducted in August 2017 in which a web-based survey was sent to all FRYSCs (family resource youth service workers) in the region. The survey asked what types of oral health outreach were occurring in their schools and who was providing those services.

The results showed an astonishing amount of dental outreach going on already in the region! At least one school in 45 of the 49 total counties in the region responded to the survey, 92%. There are approximately 394 public schools in the 49 counties, but there are only 296 FRYSC centers and the surveys were completed by the FRYSCs. The survey had a total of 167 respondents which equates to about 42% of schools, and each respondent may have represented more than one school, so the total response rate may actually be higher.

The results showed that:

148 schools had dental screening programs (92.5%)
115 schools had dental sealant programs (71.88%)
46 schools had comprehensive dental services provided such as fillings (28.75%)

104 schools received services via a dental van/bus/portable equipment (62.65%)
36 schools have in-school dental clinics (21.69%)

Also noteworthy was that the biggest reported provider of dental outreach into schools were the local FQHC/PCC/RHC (federally qualified health center, primary care center, or rural health center), in 46 schools. The next biggest provider was a tie between the local health department and a national dental outreach program called Big Smiles (34 schools each), who claim to be the nation's largest school-based dental program, located in 20 states. A Kentucky-based dental outreach program, Kids First, based in Barbourville, was in 25 schools, and the Elgin Foundation or a local dental provider were in 20 more schools,

according to the survey results. Finally, the remaining 26 schools reported being served by a variety of in- or out-of-state groups, some based in Indiana or Michigan. Several schools reported being served by more than one of the groups.

From these findings, we can glean that there is a tremendous potential for data collection, there are many dental providers who could benefit from continuing education aimed at dental public health, and there is a possibility for strategic, coordinated efforts to locate geographic gaps in service provision for targeted efforts; all of which will be possible with this proposal.

<u>The OAK Project Timeline and Phases</u>:

The entire project will involve three phases, PLAN (plant the acorn!), ENGAGE (water the sapling!), and SUPPORT (nourish the oak tree!):

- In phase one, we will PLAN the project as follows (3-6 months):
  - We will invest in the technical support needed to develop a common database that is simple, user-friendly, and based upon the common data measure elements collected in the 2001 and 2016 statewide oral health surveillance projects.
  - We will identify a centralized repository within the region for the new database that will include on-going technical support.
  - We will analyze and study successful oral health programs and projects across the region and beyond, identify evidence-based, gold standard protocols, and engage with experts to help develop training manuals and toolkits for use in phase two.
  - We will engage with the SmilesforLife curriculum developers at the University of Kentucky to replicate their free, web-based training modules.
  - We will work with Delta Dental's marketing department to develop an approach that will allow partners to feel a distinct and positive connection to Delta Dental and the Eastern Region Oral Health Coalition.
  - We will conduct surveys to determine what incentives for participation would be most desirable and effective to encourage full participation.

- In phase two, we will ENGAGE communities and network partners in county clusters, and will approach each area in one of two ways (starting at 6 months and continuing through to the end of the 12 months):
  1. We will strengthen the **current** local oral health initiatives by serving as an information resource, by providing coordinated infrastructure, and by offering expertise, toolkits, and training in evidence-based models and programs and encouraging and incentivizing the utilization of the common database.
  2. We will facilitate development of **new** local oral health projects by engaging and educating community partners and offering them access to both training and data infrastructure.

  These engagement efforts will be accomplished initially through:
  - Building upon the preliminary survey of the FRYSCs by collecting more detailed data and by also surveying other groups (Head Starts, health departments, WIC and HANDS programs, county extension agents, etc.) as well as identifying a coalition champion in each county and asking each county to submit a list of oral health efforts.
  - Using all of this survey data, we will create a list of potential partners in the OAK Project and make contact with each of them to gauge interest in participation.
  - Offering an initial regional training session with free dental continuing education credits followed by other tiered training sessions with increasing incentives for participation.

- In phase three, we will continue to SUPPORT, strengthen, and nourish these community partners and networks via active collaborative engagement efforts, focusing on continuous quality improvement as they provide oral health services in their local communities. This should also include continued annual trainings and as well as access to the web-based training modules. (beginning in the 12th month and continuing indefinitely into the future)

Resources Needed and Budget Justification:

This proposal plans to utilize as many human resources from within the region as possible, as well as drawing from the University of Kentucky's expertise. UK has a Center of Excellence in Rural Health located within the region in Hazard, Perry County. The CERH offers the opportunity for a central database repository, on-going technical support, and a beautiful modern facility in which to hold in-person trainings. The University has a similar center in Morehead and these two centers in tandem could provide the physical and personnel infrastructure to carry out the proposal and to provide on-going support as the years go by.

In order to carry out the activities of this proposal, one 0.50 FTE individual (Eastern Regional Oral Health Project Coordinator) will be needed to provide coordination of the entire project including, but not limited to, (1) creating an accurate list of all dental outreach activities in the region by county, (2) creating a list serve of all individuals in the region who are potential participants, (3) recruitment for participation in the program, (4) coordinating the development of the database (soliciting technical expertise and on-going tech support and acting as a liaison with Delta Dental to ensure accuracy and replicability of data measures), (5) coordinating the development of the training sessions and toolkits (soliciting experts in each module, coordinating payment for services, collating all materials in a cohesive training program, printing and distributing materials, etc.), (6) coordinating the development of the web-based trainings (soliciting expertise and replicating the SmilesforLife web structure), and (7) organizing all training sessions and incentive distributions (arranging meeting space, food, parking, travel reimbursements, etc.).

In addition, several other individuals within and without the region will be needed to help develop and maintain the database as well as developing and teaching the training modules.

Two information technologists will be needed at 0.25 FTE each during the first 6 months of the project to help develop the database and web-based training platform, and then both of them will be needed at 0.15 FTE for the remaining 6 months of the project to provide on-going technical support as needed, sporadically.

Up to eight different experts will be needed at 0.10 FTE each during the first 6 months of the project to help develop the training materials, and then all of them will be compensated for providing two separate two-day regional trainings in Hazard and in Morehead, including hotels (if needed), mileage, and per diem.

Tiered incentives will be provided to all participants in the trainings as well as for database utilization. Incentives will include mileage, meals, hotel (if needed), notebook/binder, tote bag, t-shirt, lanyard with thumb drive, and an iPad to utilize for data entry into the database. Assume 30 participants at each of two training sessions located in Morehead and Hazard.

Two-Day In-Person Training Sessions with Tiered Incentives:

DAY ONE OF TRAINING		
TIME	**TRAINING SUBJECT**	**INCENTIVE**
8:00-12:00	(Travel Time)	Mileage
10:00-12:00	Introduction and Invitation to Join the OAK Project	Binder Notebook
12:00-1:00	Lunch Keynote	Free Lunch
1:00-2:00	Oral Health Literacy – Community	Toolkit & Tote Bag
2:00-4:00	Oral Health Literacy – Individual	"
4:00-6:00	Reception Networking	Heavy Hors D'Ouerves
		Hotel

DAY TWO OF TRAINING		
TIME	**TRAINING SUBJECT**	**INCENTIVE**
7:30-8:00	Breakfast	Free Breakfast
8:00-10:00	Outreach to Pre-school Children	T-shirt & Lanyard
10:00-12:00	Outreach to Elementary School Children	"
12:00-1:00	Lunch Keynote	Free Lunch
1:00-3:00	Database Training	iPad
3:00-5:00	(Travel Time)	Mileage

Budget:

ITEM/INDIVIDUAL	DESCRIPTION	TOTAL COST
Project Coordinator	1.00 FTE at $60,000	$60,000
Information Technology Experts x 2	0.25 FTE for 6 months of $60,000 = $7,500 0.15 FTE for 6 months of $60,000 = $4,500	$12,000 ea x 2 = $24,000
Faculty Experts x 8	0.10 FTE for 6 months of $100,000 = $5,000 Honorarium for Speaking at Trainings x 2 = $1,500	$6,500 ea x 8 = $52,000
Training & Incentives, per Participant x 60 (30 Hazard area participants and 30 Morehead area participants)	Mileage Roundtrip 100 miles x 0.55 = $110 Binder & Printed Training Materials = $20 Lunch $15 Tote Bag $15 Reception $15 Breakfast $10 T-shirt $15 Lanyard & Thumb Drive $10 Lunch Day Two $15 iPad $800	$1,025 ea x 60 = $61,500
Web-based Training Modules	Costs of establishing a web-based domain and associated fees	$1,000
Hotel Rooms	Some speakers and some participants may require hotel rooms. Assume 5 hotel rooms per training x 2 = 10 hotel rooms total x $150 = $1,500	$1,500
TOTAL COSTS		**= $200,000**

<u>The OAK Project Measurable Goals are</u>:

1. Promote oral health literacy.
    - # of oral-health-focused meetings, workshops, and trainings provided annually *to* active OAK Project partners
        - Currently at 0
    - # of oral-health-focused activities provided annually *by* OAK Project partners to their communities
        - Currently at 0

2. Reduce oral health disparities by increasing the proportion of children aged 6 to 9 years who have received dental sealants on one or more of their permanent first molar teeth.
    - Compare current and on-going annual surveillance data to 2001 and 2016 statewide surveillance data and HealthyPeople2020 targets and monitor % changes annually, specifically looking at:
        - % of children in 3rd and 6th grades who need urgent dental care
            - Current baseline at 19% in Eastern Region (n=318) and national baseline does not exist
            - Goal: 10% improvement to 17.1% by 2020
        - % of children in 3rd and 6th grades with untreated tooth decay
            - Current baseline at 53% in Eastern Region (n=318)and national baseline of 28.8%
            - Goal: 10% improvement to 47.7% by 2020
        - % of children age 6-9 with sealants on permanent molars
            - Current baseline at 44% in Eastern Region (n=318) and national baseline of 17.1%
            - Goal: 10% improvement to 48.4% by 2020

3. Collaboratively engage and network with community partners across the Eastern (Appalachian) Region of Kentucky.
    - # of community partners who are collaboratively engaged with the OAK Project and the # at each level of involvement from "acorn" to "sApLiNg" to "OAK" affiliates:
        - # of "acorn" affiliates
            - Currently at 0, no baseline data
        - # of "sApLiNg" affiliates
            - Currently at 0, no baseline data
        - # of "OAK" affiliates
            - Currently at 0, no baseline data
    - NOTE: Preliminary survey of FRYSC's-family resource youth service centers in 45 of 49 counties in the Eastern Region show that the majority of counties have some type of dental program in at least one school, including 92.5% of counties reporting screening programs,

73.13% with cleanings offered, 71.88% with sealants offered, and 28.75% with comprehensive care (fillings, etc.) offered.

4. Increase the proportion of schools with an oral health component including a sealant program.
    - Current national baseline at 17.1%
    - Goal: 10% improvement to 18.81% by 2020
    - NOTE: Current baseline of *counties* in Eastern Region reporting at least one school in the county with a sealant program is an astonishing 71.88% (preliminary data collected from FRYSCs-family resource youth service centers in 45 of 49 counties in the Eastern Region). Need more data on exact number of *schools* with sealant programs.

“The creation of a thousand forests is in one acorn.” --Ralph Waldo Emerson