**The Problem**

Dental decay is the most common chronic disease of childhood – five times more common than asthma. According to the 2014 Smile Survey, more than half of Sonoma County kindergarten and third grade students have decay experience and 18% have untreated tooth decay, with 4% in need of urgent treatment.¹ There are also significant disparities in dental health, with lower-income children and children of Hispanic/Latino background experiencing significantly more decay and a higher need for treatment. Poor dental health affects adults as well – approximately 25% of adults age 60 years and older no longer have any natural teeth.² Adults and children with poor dental health are more likely to experience pain, have trouble concentrating, and struggle to eat and sleep. Left untreated, dental decay causes infection of the teeth and gums and tooth loss.

It would cost approximately $127 million to treat the estimated 450,000 new cavities in both children and adults that develop each year in Sonoma County. This amount does not include the costs of treating more advanced disease. Severe dental decay can lead to emergency department visits, hospitalization, and surgery. The average cost of surgery for a child treated at PDI Surgery Center is $1,400; more than 200 children under the age of 7 currently have surgery at PDI each month and demand continues to grow.

**The Five Pillars of Dental Health**

Dental disease is preventable. The Department of Health Services (DHS) is actively engaged in programs and campaigns to promote 5 key strategies, or Pillars, to improve dental health in Sonoma County. These Pillars are complementary and most effective when implemented together.

1. **Access to Dental Care**: Regular visits to a dental health professional are a cornerstone to disease prevention and early treatment.

2. **Community Education**: Educating the community about the importance of dental health to overall health and about good dental hygiene and dietary practices is essential.

3. **Fluoride Varnish**: Applied to teeth of children age 3-18 twice a year by a health professional, fluoride varnish prevents disease, especially to those at medium to high-risk for decay.

4. **Sealants**: Dental clinicians apply sealants to chewing surfaces of permanent molars in children age 7-16 to provide long-term protection against tooth decay.

5. **Community Water Fluoridation (CWF)**: Adjusting the amount of naturally-occurring fluoride in drinking water to the optimal effective level prevents tooth decay for an entire community in two ways: 1) systemically by making teeth stronger even before they are through the gums and, 2) topically, by providing teeth with frequent contact of fluoride throughout each day and throughout life.

DHS currently supports and implements activities related to the first four Pillars. Since 2012, DHS has invested $2.27 million to increase dental care access throughout the County, including support for a mobile dental clinic for children, expansion of existing safety net clinics, and the creation of a community dental health clinic. The Healthy Teeth for Healthy Life campaign, launched in 2013, promotes good dental health practices to the community. Sealants are currently provided to children at dental clinics and through the WIC Dental Days and School Smiles Sealant programs. DHS has been working with Community Action Partnership and various schools to implement a school-based dental sealant program. The program delivers classroom education, dental assessments, sealants and referrals for treatment to low-income schools.
What Sonoma County is missing is the very effective, safe and economical public health measure of community water fluoridation (CWF). CWF continues to be the most effective and socially equitable means of reducing tooth decay at the population level among both children and adults. An increasing number of communities are ensuring that their residents receive this public health benefit. Currently 74% of U.S. public water customers receive fluoridated drinking water. In California, 24 million residents, 63.7% of the state’s population receive the benefits of fluoride, compared to only 17 percent in the late 1990s. Systematic reviews have found that optimal levels of CWF reduce tooth decay by an average of 29% among children and 27% among adults and have no adverse health effects. There is a slight increased risk of mild dental fluorosis, which is typically classified as cosmetic. By providing fluoridated water to an entire community, dental health disparities are also reduced. The Centers for Disease Control and Prevention recognizes CWF as one of the top ten public health achievements of the 20th century and estimates a cost savings of $38 for every $1 spent on fluoridation.

Comparison of Annual Cost and Individuals Reached for Each Pillar of Dental Health if Fully Implemented

<table>
<thead>
<tr>
<th>Pillars of Dental Health</th>
<th>Annual Cost</th>
<th>Annual Reach</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Access to Dental Care*</td>
<td>$23.2 million</td>
<td>105,000 children and adults</td>
</tr>
<tr>
<td>2. Community Education**</td>
<td>$0.5 million</td>
<td>~50,000 children and adults</td>
</tr>
<tr>
<td>3. Fluoride Varnish</td>
<td>$7.5 million</td>
<td>94,000 children</td>
</tr>
<tr>
<td>4. Sealants</td>
<td>$2.4 million</td>
<td>10,500 children</td>
</tr>
<tr>
<td>5. Community Water Fluoridation***</td>
<td>$0.58 million</td>
<td>308,300 children and adults</td>
</tr>
</tbody>
</table>

*Estimates are based upon current Medi-Cal enrollees and the operation and maintenance cost of dental chairs at community clinics in Sonoma County. The approximate annual operation and maintenance cost for each chair is $285,000. The annual reach of each chair at full capacity is 1,300 if individuals are allotted one annual visit.

**It is difficult to estimate the cost and reach of community education. These values are approximations. The cost includes DHS program staff, administration, marketing and printing, and contracts.

***The annual cost includes operation and maintenance and capital share. The reach estimate is for Sonoma County only. The annual reach including Marin is 369,300 children and adults.

Assessing Community Water Fluoridation in Sonoma County

In Sonoma County, CWF has been recommended to the Board of Supervisors as a primary means of preventing tooth decay and improving dental health by the 2011-2014 Community Health Needs Assessment, the Sonoma County Smile Survey, and the Oral Health Task Force. DHS has been assessing the possibility of community water fluoridation in Sonoma County since directed by the Board in 2010.

Initial assessment of how to achieve CWF in Sonoma County revealed that the most cost-effective way to fluoridate the major population centers would be to begin with fluoridation of the wholesale supplier, Sonoma County Water Agency (Water Agency). Using this method, areas which receive the bulk of their water from the Water Agency, such as Santa Rosa, Petaluma, Rohnert Park, Cotati, Forestville, Sonoma, and the Valley of the Moon Water District would receive optimal or near optimal fluoride levels. Windsor receives a lesser percent of its water from the Water Agency and would therefore receive a lower level of fluoride. Other areas of the County would receive less benefit.

DHS has conducted community outreach regarding CWF through a variety of channels, including: individual and group meetings of the public with the Health Officer, community dialogues, presentations to local agencies and leadership groups, and informational booths at community health events.

In 2013, the Board of Supervisors directed DHS to convene a Fluoridation Advisory Committee (FAC) to gather and review relevant information on public health, the environment, engineering, engineer costs, and planning related to CWF in Sonoma County. The FAC has a diverse membership of stakeholders.
including representatives from the Sonoma County Water Agency, Department of Health Services, community health centers, nonprofits, hospitals, and environmental groups as well as physicians and dentists. The FAC convened nine times from May 2013 to March 2015. All meetings were open to the public and allowed time for public comment.

All presentations and reports given to the FAC can be found on the FAC’s website. Two of the findings are:

- The Assessment of Potential Impacts to Federally Listed Salmonids Report concluded that fluoridation at the recommendation concentration of 0.7ppm poses no threats to the listed salmonids in the local waterways.
- The Fluoridation Preliminary Engineering Design Report estimated the capital costs for the Water Agency to be $4.5 million and the annual operation and maintenance cost to be $581,000.

Upon reviewing all reports and presentations, the FAC formally recommended that DHS move forward to develop a funding plan and a final engineering design. Complete recommendations be found on the FAC’s website.

Next Steps

DHS will return to the Board of Supervisors with the information from the FAC in May 2015 for further direction which may include instruction for DHS: to continue to work on all Five Pillars of Dental Health, to broaden and continue community outreach and education on both dental health and fluoridation, and to evaluate potential funding options as well as the impact on existing agreements.

Sonoma County Department of Health Services Websites

- Fluoridation Advisory Committee [http://www.sonoma-County.org/health/meetings/fac.asp](http://www.sonoma-County.org/health/meetings/fac.asp)

---