



# Best Practice Approaches for State and Community Oral Health Programs

## I. Best Practice Approach

### School-based Dental Sealant Programs

#### Summary of Evidence Supporting School-based Dental Sealant Programs

Research	+++
Expert Opinion	+++
Field Lessons	++
Theoretical Rationale	+++

See **Attachment A** for details.

## II. Description

### A. Dental Sealants

Dental sealants are clear or opaque plastic materials applied to the pit-and-fissure surfaces of teeth to prevent decay (dental caries). Sealants provide a physical barrier that prevents debris and decay-causing bacteria from collecting in the pits and fissures of vulnerable teeth (mainly molars). These areas are often the first and most frequent sites to be affected by tooth decay in children and adolescents. National estimates show that as much as 90% of all dental caries in schoolchildren occurs in pits and fissures (1). The permanent first and second molars are at the highest risk for tooth decay (2).

To be most effective, sealants should be placed on teeth soon after they erupt. Sealants are helpful for persons at increased risk for tooth decay such as those with medical conditions associated with higher caries rates, children who have experienced extensive caries in their primary teeth, and children who already have incipient caries in a permanent molar tooth (2).

Sealants are clinically effective in preventing tooth decay as long as the sealant is retained on the tooth (2-4). Sealants may need to be evaluated periodically and re-applied as necessary (3).

Studies have evaluated the placement of sealants on tooth surfaces with caries (2). Heller et al. (5) evaluated the effect of sealants placed on permanent first molar teeth through a school-based program after five years. The 5-year tooth decay rate was lower for sealed tooth surfaces with incipient caries compared to unsealed tooth surfaces (10.8 percent versus 51.8 percent). Mertz-Fairhurst et al. (6) reported a 10-year study that showed caries did not progress under a dental sealant placed over cavitated lesions that were no more than halfway through the dentin of the tooth.

The most recent National Health and Nutrition Examination Survey (NHANES) showed that during 1988-1991, 18.5% of U.S. children, ages 5-17, had one or more sealed permanent teeth. Molar teeth were the most frequently sealed. A significantly higher percentage of non-Hispanic whites had sealants in comparison with their non-Hispanic black and Mexican-American counterparts (7).

## B. Dental Sealant Programs

Dental sealant programs generally provide sealants to vulnerable populations less likely to receive private dental care, such as children eligible for free or reduced-cost lunch programs (2).

There are variations in how dental sealant programs are designed:

- **School-based programs** are conducted completely within the school setting, with teams of dental providers (dentists, dental hygienists and dental assistants) utilizing portable dental equipment or a fixed facility within the school setting.
- **School-linked programs** are connected with schools in some manner but deliver the sealants at a site other than the school (i.e., a clinic or private dental office). School-linked programs may present information, distribute consent forms and conduct dental screening at schools.
- **Hybrid programs** incorporate school-based and school-linked components (some schools have school-based and some have school-linked services).

Synopses of State and Territorial Dental Public Health Programs showed that in 2001-2002, 35 states and 4 territories reported having programs for dental sealants (in one or more of the program design variations described above). The states include: AL, AZ, CA, CO, CT, GA, ID, IL, IN, IA, KY, LA, ME, MD, MA, MN, MO, NE, NV, NH, NJ, NM, NY, NC, ND, OH, OK, OR, RI, UT, VT, VA, WV, WI, and WY. The territories include American Samoa, Guam, N. Mariana Islands, and Republic of Palau (8).

The 2003 Oral Health Report Card (9), published by the Oral Health America National Grading Project to call greater policy attention to oral health needs, graded states on their statewide sealant programs. The grading is based on the percentage of a population of caries-risk children (e.g., minority, low-income, Medicaid eligible, lunch program eligible and/or without insurance) served by the sealant program. The following was reported for the states and District of Columbia:

- 4 states have a statewide sealant program targeting and serving over 35% of a distinct population of caries-risk children [Grade=A]
- 12 states have a statewide sealant program targeting and serving 20-35% of a distinct population of caries-risk children [Grade=B]
- 9 states have a statewide sealant program targeting and serving 5-19% of a distinct population; or a substantial targeted regional program exists and is reaching over 30% of the caries-risk population [Grade=C]
- 12 states have a statewide sealant program targeting and serving less than 5% of a distinct population of caries-risk children [Grade=D]
- 12 states have no existing statewide sealant program [Grade=F]
- 2 states without information

## C. School-based Dental Sealant Programs

A school preventive oral health program may incorporate several elements, such as oral health education, dental screenings, referral for dental treatment, fluoride mouthrinsing and sealant applications. Primary dental care programs in school settings will also apply sealants as part of basic

restorative and preventive dental treatment. This best practice approach report, however, will describe only school-based programs for which sealant application is the primary program objective.

**School-based dental sealant programs** seek to assure that children receive a highly effective but underutilized dental prevention service through a proven community-based approach. School-based sealant programs generally are designed to maximize effectiveness by targeting high-risk children. High-risk children include vulnerable populations less likely to receive private dental care, such as children eligible for free or reduced-cost lunch programs. Children and their parents are made aware of dental sealants, their value and the availability of sealants through the school program. Once signed parental consent forms have been returned, children are evaluated for their sealant needs and dental professionals place the sealants. Usually dentists examine the children and dental hygienists apply the sealants. School-based sealant programs need to address the unmet dental care needs of the children seen and assure quality of care by providing follow-up evaluation and repair of the sealants placed through the program.

A state dental program's role in school sealant programs may take the form of: (a) providing direct service delivery, (b) funding grants or contracts to deliver sealants, (c) managing a state-level program that does not provide direct service but pay for services such as through vouchers, (d) setting standards for local direct service sealant programs, and/or (e) facilitating and promoting private-public sealant program partnerships (e.g., schools and dental societies).

The following description of a school-based dental sealant program shows the attributes of a direct service delivery program, whether operated by a state or local agency or an organization:

**1. Delivers sealants to large numbers of high-risk children with susceptible permanent molar teeth.**

There are three elements to this attribute:

- The program, as a whole, should serve an area that has a critical mass of children that meet its eligibility criteria. Such areas would include urban neighborhoods or rural counties.
- The children served by the program should be high-risk. Generally, eligibility for the free or reduced cost school lunch program (185% of the federal poverty guideline) has been used as a proxy for income and increased risk of untreated decay. Children from low income families have been shown to be less likely to receive dental care than children whose families do not meet the lunch program criteria. Local standards will determine the acceptability of targeting children rather than schools. In many locales, offering a sealant program to only children on the lunch program is viewed as stigmatizing and, therefore, unacceptable. Targeting schools based on the proportion of lunch program-eligible children, however, is generally acceptable. A minimum of 50 percent of the student enrollment being eligible for the lunch program is a common benchmark for school eligibility.
- Typically, sealant programs target children in the second grade (for sealing the first permanent molars) and sixth grade (for sealing the second permanent molars). Targeting these grades maximize the availability of susceptible molar teeth. In this scenario, sixth grade is a compromise between maximizing participation (which drops off dramatically in Middle School and Junior High School) and maximizing the number of erupted, caries-free second molars.

**2. Maximizes program efficiency.**

There are two elements to efficiency:

- The program establishes an adequate supply of available children and maintains their flow into the sealant placement process. School-based programs may be more efficient than school-linked programs in that they minimize the amount of time away from class and tend to maximize parent willingness to enroll children in the program. Furthermore, if a child is absent from school, no time is lost in calling the next child out of class. These elements work together to ensure a continuous flow of children into the sealant placement process.
- The program operates the sealant placement process in the least expensive and most productive fashion possible while delivering a quality product. Experienced school-based dental sealant program teams can generally provide sealants for 20 or more children per day. Programs must comply with state laws regarding delegable procedures and the need for dentists to provide the initial screening to determine which teeth are to be sealed. Efficient use of resources generally directs a program to hire the least expensive personnel category permitted under state law. The program, however, must provide adequate training and quality assurance. Sealants are more efficiently applied by a 4-handed technique that requires a 2-person team (e.g., a dental hygienist and a dental assistant).

**3. Re-examines children within one year after initial sealant placement. At this time, newly erupted teeth may be sealed, and previously placed sealants may be repaired or reapplied, as necessary.**

Sealant failure (full or partial loss of the sealant) generally results from salivary contamination at the time of sealant placement. Such failure occurs soon after sealant placement (within months). Typically children who received sealants in grade 2 are re-screened in grade 3. Likewise 6th graders are re-screened in grade 7.

**4. Maintains a quality assurance system.**

A quality sealant program will assure confidentiality and treat children and families respectfully. Two primary elements of quality assurance are:

- Assuring technical quality of the sealants applied. Technical quality generally refers to a high rate of retention for sealants placed and can be assessed through analyzing sealant retention data from follow-up screenings. Also, retention may be assessed on a short-term basis by returning to a sample of schools within 1-2 months of sealant placement or during the next school year and re-checking a small number of children (e.g., 10-15 children).
- Assuring appropriateness of the program. Appropriateness can be evaluated by analyzing program participation to ensure children and schools in the program meet its eligibility criteria. Additionally, programs should assure compliance with applicable laws and professional standards and guidelines, including infection control.

**5. Identifies children with treatment needs and assures that they receive appropriate dental care.**

When assessing the need for sealants, examiners in school-based sealant programs typically identify children with treatment needs, such as untreated decay, and notify parents and school nurses. Assuring that the children receive appropriate dental care is, perhaps, the most difficult aspect of a school-based sealant program. It is not uncommon for a sealant program to find 30-50% of the children screened to be in need of dental care (e.g., restorative, orthodontic) that is

beyond the scope of the sealant program. Ideally, these treatment needs will be met through linkages to public clinics or private providers. In reality, this is a difficult situation because many children in school-based sealant programs have limited access to care. In addition, some families may place a low priority on seeking dental care for their children in light of other competing demands.

#### **6. Maintains descriptive program data.**

Program data should reflect the program's ability to reach its goals and objectives. Descriptive program data can include:

- An estimate of the number and percentage of all high-risk children in the state who receive sealants through the program.
- An estimate of the percentage of eligible schools (e.g., 50% of students on lunch program) in the state served by sealant programs.
- An estimate of the cost per child screened (including costs of referrals for care) and cost per child who receives sealants will give good benchmarks for program efficiency. Methods used by states to estimate cost per child or per sealant are not standardized (e.g., cost of equipment, travel and/or administrative time may or may not be included in estimating cost). Note that depending on the tooth selection criteria, assessment of the number of teeth sealed or the cost per tooth sealed should identify if low risk teeth, such as premolars, are routinely sealed.
- Rates of participation or parental consent received.
- A comparison of the percentage of children in grades targeted for sealant applications who need dental care with the percentage of the same cohort the following year who need dental care (e.g., comparing grade 2 with grade 3 or grade 6 with grade 7).

#### **7. Is sustainable.**

The program's sustainability can be demonstrated by the program having an established track record or a reasonable plan for covering program expenses. This may include a line item in the state or municipal budget, a mechanism for collecting Medicaid income, or recurring grant funding. Some state agencies may enter into creative partnerships in order to sustain the program.

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### **III. Guidelines & Recommendations from Authoritative Sources**

Healthy People 2010 Oral Health Objective 21-8 calls for 50 percent of eight and 14 year-old children to have sealants on their permanent molar teeth (10). The Healthy People 2010 sealant objective and sealant programs focus on permanent molars because caries risk on other teeth with pits and fissures is considerably lower. Although sealants can be placed on children's premolars, maxillary incisors and primary molars, the situations in which such use would be appropriate are limited.

The Surgeon General's Report on Oral Health found that studies suggest that sealants are an efficient use of resources when used in populations with higher-than-average disease incidence rates and when sealants are placed on teeth at highest risk for caries (2).

The 1995 Workshop on Guidelines for Sealant Use distinguished community-based sealant programs (including school-based and school-linked programs) from individual care programs (private practice and public clinics). People treated in community programs are more likely to be episodic users of primary dental care services. Furthermore, community sealant programs do not provide continuous care nor do they have access to a full array of caries diagnostic and treatment options (11).

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## IV. Research Evidence

In its systematic review of the literature, the Task Force on Community Preventive Services (2002) found that school sealant programs are effective in reducing tooth decay. The median decrease in caries on the occlusal (chewing) surfaces of posterior teeth in children was 60%. Based on this review, the Task Force issued a strong recommendation that school sealant programs be included as part of a comprehensive population-based strategy to prevent or control tooth decay in communities (3).

A literature review of pit and fissure sealant in 2002 included 1,465 peer-reviewed publications from 1971 to October 2001 and reported that (12):

- It is clear that sealants are safe, effective and underused (in the United States), and
- Pit and fissure sealant is best applied to high-risk populations by trained auxiliaries using sealant that incorporates the benefit of an intermediate bonding layer, applied under the rubber dam or with some alternative short-term and effective isolation technique, and placed on tooth enamel (outer tooth surface) that has been cleaned and etched.

An analysis of nine clinical studies with a randomized, half-mouth, clinical trial design and seven studies with observational study designs found good evidence that sealants are efficacious and effective in high-caries-risk children as long as the sealant is retained (4). Sealants are more effective in preventing further caries and providing cost savings in a shorter time span if placed in children who have high rather than low caries risk.

Another comparison on the costs of sealant delivery strategies also showed that **among high-risk populations for dental caries**, less cost and reduced caries results from placing sealants on all children of a high-risk population versus only placing sealants for those children assessed to be at risk by individual screening (13). **Among low-risk populations for dental caries**, less cost results from placing sealants only for children assessed to be at risk by individual screening, compared to the strategies of placing sealants on all children or not providing any sealants.

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## V. Best Practice Criteria

For the best practice approach of **School-based Dental Sealant Programs**, the ASTDD Best Practices Committee has proposed the following **initial review standards** for five best practice criteria:

### 1. Impact/Effectiveness:

- The program delivers to large numbers of high-risk children with susceptible permanent molar teeth.
- The program maintains a quality assurance system that includes technical quality (the sealants placed have a high rate of retention) and appropriateness (the children receiving sealants are at high caries risk).

### 2. Efficiency:

- The program uses the least expensive personnel permitted by state laws to screen children and deliver dental sealants with adequate training and quality assurance.

### 3. Demonstrated Sustainability:

- The program demonstrates sustainability by establishing a track record or a reasonable plan for covering program expenses.

### 4. Collaboration/Integration:

- Collaborative partnerships are established to administer and sustain the program.

### 5. Objectives/Rationale:

- The program's goals and objectives are linked to the state and/or national oral health goals and objectives.

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## VI. State Practice Examples

During the first phase of the ASTDD Best Practices Project, states submitted descriptions of their successful practices to share their experiences and implementation strategies. The following practice examples illustrate various elements or dimensions of the best practice approach for **School-based Dental Sealant Programs**. These reported success stories should be viewed in the context of the state's and program's environment, infrastructure and resources. End-users are encouraged to review the practice descriptions (click on the links of the practice names) and adapt ideas for a better fit to their states and programs.

### A. Summary Listing of Practice Examples

In FY 2001-2002, four states submitted practice descriptions of their **school-based dental sealant programs** to the ASTDD Best Practices Committee. The Arizona, Illinois, New Mexico and Ohio sealant programs illustrate substantial elements of the model school-based sealant program described in Section II. See **Figure 1**. Each practice name is linked to a detailed description report.

**Figure 1.**

**State Practice Examples of  
School-based Dental Sealant Programs**

<b>Item</b>	<b>Practice Name</b>	<b>State</b>	<b>Practice #</b>
1	<a href="#">Arizona Dental Sealant Program</a>	AZ	04006
2	<a href="#">Illinois Dental Sealant Grant Program</a>	IL	16004
3	<a href="#">School Based Dental Sealant Program</a>	NM	34001
4	<a href="#">The Ohio Department of Health Dental School-Based Sealant Program</a>	OH	38002

**B. Highlights of Practice Examples**

AZ [Arizona Dental Sealant Program](#) (Practice #04006)

Arizona's program began in 1987. The school-based sealant program contracts with counties and private providers, delivers standards/training, and requires standardized data reporting of the contractors. Program providers include dentists, dental hygienists and dental assistants and they use portable dental equipment that is set up at the schools. The dentists screen and prescribe sealants and the dental hygienists apply the sealants. The program requires participating schools to have a minimum of 65% of the students in a free or reduced lunch program and targets grades 2 and 6. Follow-up screenings of children treated are made during the next school year and 25% of third and seventh graders are assessed for sealant retention. Recently, Arizona's program made provisions to receive Medicaid reimbursement (\$24.52 for each sealant). In addition, the program is making efforts to incorporate appropriate referrals and provide case management assistance to families in obtaining care.

IL [Illinois Dental Sealant Grant Program](#) (Practice #16004)

Illinois's program began in 1985. The program gives over 60 grants to local agencies but the structure of these grants is much like that of contracts. The program provides standards and training and requires standardized data reporting of their grantees. Program providers include dentists, dental hygienists and dental assistants. Portable dental equipment is set up on-site at the schools. The dentists screen and determine the teeth to be sealed and the dental hygienists apply the sealants. Illinois offers the program only to those children who are on the free or reduced lunch program and targets grades 2 and 6. The program provides follow-up screenings during the next school year. Illinois' program, which reimburses on a fee-for-service basis, only will pay for sealants on permanent molars and dental examinations (reimburses \$10.50 per dental examination and \$15 per sealant on first and second permanent molars). The MCH Preventive Block Grant funds the grants. Grantees are required to treat Medicaid children and obtain Medicaid reimbursement.

NM [School Based Dental Sealant Program](#) (Practice #34001)

New Mexico's program started in 1978. Since the state has no local health department infrastructure, the state health department operates the program with its own staff. The program

has dentists, dental hygienists and dental assistants on staff. Portable dental equipment is used. The program dentists screen the children and prescribe sealants. The New Mexico program is unique in that dental assistants are permitted to place sealants under the supervision of a dentist or dental hygienist; therefore, both dental hygienists and dental assistants in the New Mexico sealant program place sealants. The program requires participating schools to have a minimum is 50% of the students in a free or reduced lunch program. New Mexico's program targets 2<sup>nd</sup> and 3<sup>rd</sup> graders but serves children in grades 1 through 6. Furthermore, the program offers follow-up screenings to check sealant retention.

- OH [The Ohio Department of Health Dental School-Based Sealant Program](#) (Practice #38002)  
Ohio's program began in 1984 with a demonstration program. Presently, the program is administered through grants to approximately 20 local agencies (e.g., health departments, community action agencies and hospitals). Ohio's program provides standards/training and requires standardized data reporting of their local agencies. The program has dentist-dental hygienist-dental assistant teams and uses portable dental equipment. The program dentists provide dental screenings and the dental hygienists apply the sealants. Participating schools must have a minimum of 50% of the students in a free or reduced lunch program and rural areas qualify for the program when their school districts have a median household income of no more than 150% of the federal poverty guideline. The program targets grades 2 and 6 and offer follow-up screening during the next school year to all third and seventh graders. An average of approximately four teeth are sealed per child treated in the program. Ohio has reported a cost per child receiving sealants in the range of \$35-\$40 compared to a typical private practice cost for four sealants of over \$120. The Ohio program includes Medicaid billing as a key element of its business plan for sustainability. In addition, Ohio has undertaken efforts to fund case management pilot projects to assist the children in the program to access other needed dental care.

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## ATTACHMENT A

### Strength of Evidence Supporting Best Practice Approaches

The ASTDD Best Practices Committee took a broader view of evidence to support best practice approaches for building effective state and community oral health programs. The Committee evaluated evidence in four categories: research, expert opinion, field lessons and theoretical rationale. Although all best practice approaches reported have a strong theoretical rationale, the strength of evidence from research, expert opinion and field lessons fall within a spectrum. On one end of the spectrum are promising best practice approaches, which may be supported by little research, a beginning of agreement in expert opinion, and very few field lessons evaluating effectiveness. On the other end of the spectrum are proven best practice approaches, ones that are supported by strong research, extensive expert opinion from multiple authoritative sources, and solid field lessons evaluating effectiveness.

<u>Promising</u> <u>Best Practice Approaches</u>					<u>Proven</u> <u>Best Practice Approaches</u>	
Research	+		⇒		Research	+++
Expert Opinion	+		⇒		Expert Opinion	+++
Field Lessons	+				Field Lessons	+++
Theoretical Rationale	+++				Theoretical Rationale	+++

#### Research

- + A few studies in dental public health or other disciplines reporting effectiveness.
- ++ Descriptive review of scientific literature supporting effectiveness.
- +++ Systematic review of scientific literature supporting effectiveness.

#### Expert Opinion

- + An expert group or general professional opinion supporting the practice.
- ++ One authoritative source (such as a national organization or agency) supporting the practice.
- +++ Multiple authoritative sources (including national organizations, agencies or initiatives) supporting the practice.

#### Field Lessons

- + Successes in state practices reported without evaluation documenting effectiveness.
- ++ Evaluation by a few states separately documenting effectiveness.
- +++ Cluster evaluation of several states (group evaluation) documenting effectiveness.

#### Theoretical Rationale

- +++ Only practices which are linked by strong causal reasoning to the desired outcome of improving oral health and total well-being of priority populations will be reported on this website.