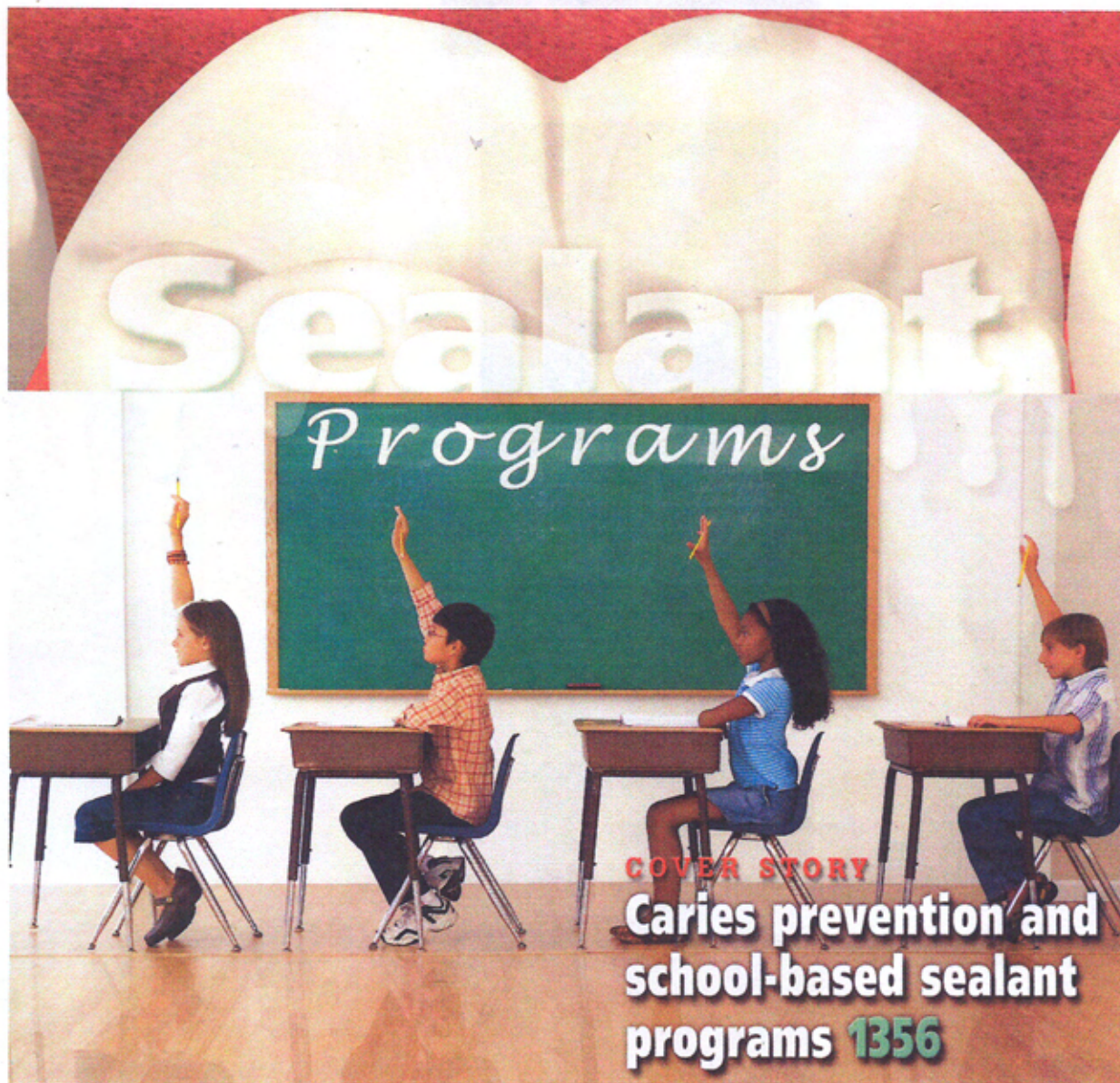


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Preventing dental caries through school-based sealant programs

Updated recommendations and reviews of evidence

Barbara F. Gooch, DMD, MPH; Susan O. Griffin, PhD; Shellie Kolavic Gray, DMD, MPH; William G. Kohn, DDS; R. Gary Rozier, DDS, MPH; Mark Siegal, DDS, MPH; Margherita Fontana, DDS, PhD; Diane Brunson, RDH, MPH; Nancy Carter, RDH, MPH; David K. Curtis, DMD; Kevin J. Donly, DDS, MS; Harold Haering, DMD; Lawrence F. Hill, DDS, MPH; H. Pitts Hinson, DDS, MS; Jayanth Kumar, DDS, MPH; Lewis Lampiris, DDS, MPH; Mark Mallatt, DDS, MSD; Daniel M. Meyer, DDS; Wanda R. Miller, RN, MA, NCSN, FNASN; Susan M. Sanzi-Schaedel, RDH, MPH; Richard Simonsen, DDS, MS; Benedict I. Truman, MD, MPH; Domenick T. Zero, DDS, MS

Health care professionals often provide prevention services in schools to protect and promote the health of students.¹

School programs can increase access to services, such as dental sealant placement, especially among vulnerable children less likely to receive private dental care.² In addition, school programs have the potential to link students with treatment services in the community and facilitate enrollment of eligible children in public insurance programs, such as Medicaid and the Children's Health Insurance Program.³

In 2001, the independent, non-governmental Task Force on Community Preventive Services completed a systematic review of published scientific studies demonstrating strong evidence that school sealant programs were effective in reducing the incidence of caries.^{4,5} The median decrease in occlusal caries in posterior teeth among children aged 6 through 17 years was 60 percent. On the basis of these findings, the task force recommended that school sealant programs be part of a comprehensive community strategy to prevent dental caries.^{4,5} These programs typically are implemented in schools that serve children from low-income families and focus primarily on those

ABSTRACT



Background. School-based sealant programs (SBSPs) increase sealant use and reduce caries. Programs target schools that serve children from low-income families and focus on sealing newly erupted permanent molars. In 2004 and 2005, the Centers for Disease Control and Prevention (CDC), Atlanta, sponsored meetings of an expert work group to update recommendations for sealant use in SBSPs on the basis of available evidence regarding the effectiveness of sealants on sound and carious pit and fissure surfaces, caries assessment and selected sealant placement techniques, and the risk of caries' developing in sealed teeth among children who might be lost to follow-up. The work group also identified topics for which additional evidence review was needed.

Types of Studies Reviewed. The work group used systematic reviews when available. Since 2005, staff members at CDC and subject-matter experts conducted several independent analyses of topics for which no reviews existed. These reviews include a systematic review of the effectiveness of sealants in managing caries.

Results. The evidence supports recommendations to seal sound surfaces and noncavitated lesions, to use visual assessment to detect surface cavitation, to use a toothbrush or handpiece prophylaxis to clean tooth surfaces, and to provide sealants to children even if follow-up cannot be ensured.

Clinical Implications. These recommendations are consistent with the current state of the science and provide appropriate guidance for sealant use in SBSPs. This report also may increase practitioners' awareness of the SBSP as an important and effective public health approach that complements clinical care.

Key Words. Caries; evidence-based dentistry; pit-and-fissure sealants; preventive dentistry; public health/community dentistry. *JADA 2009;140(11):1356-1365.*

in second and sixth grades, because high percentages of these children are likely to have newly erupted permanent molars.⁶

Available data show that children aged 6 through 11 years from families living below the federal poverty threshold (approximately \$21,800 annually for a family of four in 2008)⁷ are almost twice as likely to have developed caries in their permanent teeth as are children from families with incomes greater than two times the federal poverty threshold (28 percent versus 16 percent).⁸ Overall, about 90 percent of carious lesions are found in the pits and fissures of permanent posterior teeth, with molars being the most susceptible tooth type.^{9,10} Unfortunately, only about one in five children, or 20 percent, aged 6 through 11 years from low-income families has received sealants, a proportion that is notably less than the 40 percent of children from families with incomes greater than two times the poverty threshold.⁸ Significant disparities also exist according to race/ethnicity, with non-Hispanic African American (21 percent) and Mexican American (24 percent) children aged 6 through 11 years less likely to have received sealants than non-Hispanic white children (36 percent).⁸

School sealant programs can be an important intervention to increase the receipt of sealants, especially among underserved children. For example, the results of a study in Ohio confirmed that programs directed toward low-income children substantially increased the use of dental sealants.¹¹ Furthermore, sealant programs could reduce or eliminate racial and economic disparities in sealant use if programs were provided to all eligible, high-risk schools,¹¹ such as those in which 50 percent or more of the children are eligible for free or reduced-price meals.⁶

Differences of opinion among clinicians regarding the management of caries, caries assessment and sealant placement procedures¹²⁻¹⁴ have led some to question the effectiveness of certain practices, such as sealing teeth that have incipient caries or sealing without first obtaining diagnostic radiographs. Partly on the basis of the need to address these questions, the Association of State and Territorial Dental Directors asked the Centers for Disease Control and Prevention (CDC), Atlanta, to review and update sealant guidelines last revised in 1994.¹⁵ Staff members of CDC agreed to undertake this review, especially because new information had become available regarding the effectiveness of sealants, the preva-

lence of caries and sealants in children and young adults in the United States, and techniques for caries assessment and sealant placement.

This report provides updated recommendations for sealant use in school-based sealant programs (SBSPs) (that is, programs that provide sealants in schools).² We also inform dental practitioners about the evidence regarding the effectiveness of SBSPs and practices. This evidence provides the basis for the updated recommendations.

Practitioner awareness is important because dentists in private practice likely will see children who have received sealants in school-based programs and might themselves be asked to participate in or even implement such programs. In addition, this report can help address questions from parents, school administrators and other stakeholders. Finally, we discuss the consistency between these recommendations for SBSPs and evidence-based clinical recommendations for sealant use developed recently by an expert panel convened by the American Dental Association (ADA) Council on Scientific Affairs¹⁶ (the ADA sealant recommendations).

METHODS

The CDC supported two meetings (in June 2004 and April 2005) of a work group consisting of experts in sealant research, practice and policy, as well as caries assessment, prevention and treatment. The work group also included representatives from professional dental organizations. The work group addressed questions about the following topics (Box):

- effectiveness of sealants on sound and carious pit and fissure surfaces;
- methods for caries assessment before sealant application;
- effectiveness of selected placement techniques;
- risk of developing caries in sealed teeth among children who might be lost to follow-up and for whom sealant retention cannot be ensured.

Based in part on the content of the meeting presentations and discussions, the work group drafted recommendations and identified areas in which additional evidence review was necessary.

The work group used published findings of systematic reviews when available. Since the last

ABBREVIATION KEY. **ADA:** American Dental Association. **CDC:** Centers for Disease Control and Prevention. **IFUs:** Instructions for use. **RCTs:** Randomized controlled trials. **SBSPs:** School-based sealant programs.