

POSITION STATEMENT

INTEGRATING ORAL HEALTH SERVICES INTO COLORADO SCHOOL-BASED HEALTH CENTERS

September 2011

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ACKNOWLEDGEMENTS

This position statement was researched and written for the Colorado Association for School-Based Health Care by Maureen Daly, M.D., M.P.H., with assistance from Neil Daly, M.Ed. We would like to thank those who contributed time and knowledge to inform the findings of this report, including: Erin Major, R.D.H., Clinic Manager, Summit Youth Services Center; Marcy Bonnet, M.P.M, Policy Specialist, Colorado Department of Health Care Policy and Financing; Alan S. Kislowitz, M.S.H.A., Health Plan Manager, Colorado Department of Health Care Policy and Financing; Theresa Anselmo, M.P.H, R.D.H., former Director, Oral Health Unit, Colorado Department of Public Health and Environment; and Deborah Borek, R.D.H, Child and School Oral Health Program Coordinator, Colorado Department of Public Health and Environment.

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INTRODUCTION

Dental decay is nearly 100 percent preventable, and yet, it is the most prevalent unmet health care need of children and adolescents in this country. Poor and minority children are disproportionately affected by this disease. Left untreated, dental decay has immense health, economic, education, and social implications. School-based health centers (SBHCs) can be instrumental in diminishing the burden of this disease. This paper will outline cost effective and evidence-based approaches for integrating preventive oral health services in Colorado SBHCs.

DOCUMENTING THE NEED FOR PREVENTIVE ORAL HEALTH SERVICES

DENTAL CARIES

Dental caries disease is an infectious disease in which simple sugars in the mouth are processed into acid by bacteria. The acid erodes the enamel of teeth and causes decay. Although nearly 100 percent preventable, dental caries disease is the most prevalent unmet health care need of children.³ It is five times more common in children than asthma and seven times more common than hay fever.⁴ Over 50 percent of children ages 5 to 9 years, and 78 percent of children under 17 years of age, have had at least one cavity.⁵

ORAL HEALTH DISPARITIES

Poor and minority children are disproportionately affected by this disease. Nationally, poor children have about twice the rate of *untreated* decay as their more affluent peers.⁶ It is estimated that low-income children account for 80 percent of total childhood tooth decay.⁷ Forty-nine percent of Mexican-American school-aged children have had caries, compared to 40 percent of non-Hispanic white children the same age. Mexican-American and black school-aged children are more likely to have untreated tooth decay than their white peers.⁸

These disparities hold true in Colorado. Among students attending schools where more than half the students qualify for the National School Lunch Program, 58 percent of kindergartners and 72 percent of third-graders have experienced dental decay compared to 34 percent and 47 percent (respectively) of students attending more affluent schools.⁹ Among Hispanic children, nearly 60 percent of kindergartners and over 70 percent of third-graders have experienced dental decay compared to 34 percent and 48 percent (respectively) of white, non-Hispanic kindergartners and third graders.¹⁰ Poor and minority students in Colorado are also more likely to have untreated dental decay.¹¹

Nationally:¹

- ✓ 41% of children ages 2 to 11 years have had caries in their primary teeth and 21% have untreated caries.
- ✓ 42% of children ages 6 to 19 years have had caries in their permanent teeth and 14% have untreated caries.

In Colorado:²

- ✓ 45% of kindergartners and 57% of third graders have had caries.
- ✓ 23% of kindergartners and 25% of third graders have untreated caries.

Children without dental insurance are two and one-half times less likely to receive dental care than insured children. However, having dental insurance does not assure dental care. Nationally, in 2004, only about 30 percent of children enrolled in Medicaid received dental services, compared with 55 percent of children who have access to commercial dental insurance.¹² In Colorado, only 44 percent of Colorado's Medicaid-enrolled children received dental services in 2009.¹³

In many communities in Colorado, there is a paucity of dental providers. Forty-three counties or sub-county regions are designated as geographic or population-based Dental Health Professional Shortage Areas with nine counties having no practicing dentist.¹⁴ Additionally, only 20 percent of dentists in both urban and rural Colorado accept Medicaid patients.¹⁵

IMPACT OF DENTAL DECAY

HEALTH AND SOCIAL WELFARE

Untreated dental caries can result in substantial suffering. In addition to pain, infection, and tooth loss, untreated dental caries can also impair speech development, affect eating, and lead to poor self esteem.¹⁶ In a study published in *Pediatric Dentistry* in 2006, Edelstein et. al. found that "parents of children seeking emergency dental care reported that 19 percent of the children experienced interference with play, 32 percent with school, 50 percent with sleeping, and 86 percent with eating."¹⁷ Additionally, oral diseases have been linked to other serious health conditions. The Surgeon General's report on oral health, published in 2000, documented linkages between oral diseases and ear and sinus infections, weakened immune systems, diabetes, heart and lung disease, and other serious health conditions.¹⁸

EDUCATIONAL

Nationally, more than 51 million school hours are lost each year to dental-related illness.¹⁹ "An estimated 7.8 million hours of school are lost annually in Colorado due to acute oral pain and infection."²⁰ These figures do not account for the millions of Colorado students who attend school but are unable to concentrate, communicate effectively, and learn due to poor dental health.²¹

ECONOMIC

Americans spent an estimated \$102 billion annually on dental services in 2009.²² In 2003, Coloradans spent well over a billion dollars on services provided in dental offices. These estimates did not include dental service expenditure in other settings, such as hospitals.²³ Substantial savings could be realized through early prevention of oral diseases. The Centers for Disease Control and Prevention (CDC) estimates that "the average dental costs of children who receive early preventive care are 40 percent lower than those of children who do not receive early care."²⁴

SCHOOL-BASED HEALTH CENTERS HELP PREVENT DENTAL DISEASE IN CHILDREN

COMMUNITY AND SCHOOL-WIDE APPROACHES

Community Water Fluoridation

The most effective way to prevent and even reverse early dental decay is fluoridation of the water supply. Fluoridation has been shown to reduce dental caries in primary teeth by 40 to 50 percent and permanent teeth by 50 to 60 percent.²⁵ Fluoridation also decreases cavities in adults. The per capita cost of

fluoridation over a lifetime is less than the cost of a single filling²⁶ and yet more than 100 million Americans do not have an optimally fluoridated water supply.²⁷ In Colorado, 71 percent of the population lives in communities with a fluoridated water supply.²⁸

Fluoride works through a variety of mechanisms. Through ingestion, it is incorporated into the enamel of teeth before they erupt. Topically it inhibits demineralization, enhances re-mineralization, and inhibits bacterial activity in dental plaque.²⁹

At times there has been controversy over the fluoridation of community water systems because of health concerns. In a report published by the Public Health Service in 1991, the agency concluded that “optimal fluoridation of drinking water does not pose a detectable cancer risk to humans as evidenced by extensive human epidemiological data,” nor is it associated with birth defects.³⁰ Chronic, excessive exposure to fluoride during tooth development can cause fluorosis, a discoloration or white mottling of the teeth. Therefore, care should be taken to minimize this risk. Fluorosis, however, is only a cosmetic concern and does not have a functional effect.³¹

Colorado SBHCs can determine if their county water system(s) is optimally fluoridated by contacting their local water utility. Up-to-date water system level information regarding fluoridation can also be found through the National Center for Chronic Disease Prevention and Health Promotion. For areas that are not fluoridated, SBHCs can take an active role in promoting water fluoridation in their community.

School Sealant Programs

Sealant application is an evidence-based strategy for preventing dental decay among school-aged children. The vast majority (90 percent) of caries occur in the chewing surfaces of permanent molars.³² Sealants are thin plastic coatings applied to the chewing surfaces. School-based sealant programs have been shown to be a cost effective and a proven evidence-based way to reduce the incidence of caries in school-aged children. They have been shown to decrease caries by 60 percent in the posterior teeth.³³ They also can prevent progression of the severity of the disease.³⁴ Claims data has shown that placement of sealants on first and second permanent molars in children and adolescents reduce the need for subsequent restorative services.³⁵ Yet only 37 percent of Colorado third-graders and 27 percent of low-income third-graders have dental sealants, far below the *Healthy People 2010* goal of 50 percent.³⁶

In Colorado, sealants can be applied by either a dentist or dental hygienist. A dentist may delegate the application of sealants to dental assistants but the dentist must still first perform the oral health assessment. The four-handed technique is recommended for the application of sealants. Therefore, dentists and hygienists usually work with an assistant when applying sealants.

Portable dental equipment is needed to implement a school-based sealant program, including a dental unit, air compressor, dental chair, dental light, dental hygienist and assistant stools, sterilizer, and ultrasonic cleaner.³⁷ “Portable dental equipment may exhibit more variation in cost and quality than traditional dental equipment.”³⁸ Cost of dental equipment can range from \$7,600 to \$18,000.³⁹ Sealant material and supplies average about \$4.75 per child.⁴⁰

Sealant programs targeting high-risk schools have been shown to reduce racial and economic disparity in sealant use.⁴¹ School-based sealant programs often are implemented in schools where at least 50 percent of the students are eligible for the National School Lunch Program. Second graders are typically targeted because this is when it is most likely that the first permanent molars have erupted but are not yet carious.

Sealant retention is assessed one year later and reapplied if lost. Second molars generally erupt between sixth and eighth grade and therefore it is less clear-cut as to which grade to target. Sixth graders (age 12 years) are usually selected because of higher rates of participation than seventh and eighth graders.

School-wide or Classroom-based Oral Hygiene and Nutrition Education

Providing school-wide or classroom-based health education is a successful method for teaching children about the importance of oral hygiene and the impact of good nutrition. For younger children, oral health education should include information on how and when to brush as well as the relationship between refined carbohydrates and cavities. "Frequent exposure to small amounts of fluoride each day is the best way to reduce the risk for dental caries."⁴² Therefore, twice daily brushing with fluoride toothpaste should be recommended. As "adolescence can be a critical period in the human being's periodontal status,"⁴³ the importance of flossing as a preventive measure is an important topic to include for this age group. In addition, the oral and systemic consequences of tobacco use should be included as part of oral health education. There are many dental health educational materials that can be obtained at no cost for classroom use.

PATIENT-CENTERED APPROACHES

According to the American Academy of Pediatrics, every child should be seen regularly by a dentist for oral health care starting six months after the first tooth erupts or by 12 months of age.⁴⁴ However, the reality is this is not always possible. Many families do not have the financial means to pay for dental care. In addition, particularly in rural areas, there is a shortage of dental providers. Geographical and cultural barriers can also prevent children from getting needed care.

With funding, training and the necessary supplies, SBHC personnel are ideally positioned to positively impact the oral health of children and decrease the incidence of caries among the students they serve. Oral health risk assessments and exams, dental hygiene instruction, dietary counseling, the application of fluoride varnishes, and consideration of the need for fluoride supplements can easily be integrated into a well-child exam.

Getting Started: Setting up a Dental Referral Network

In planning for preventive oral health services, it is advisable to partner with a local dental provider (dentist and/or hygienist) to serve as a consultant and guide. Likewise, before implementing preventive oral health services, it is necessary to set up a referral network of community dental providers. This is essential so that students found to need restorative care can be referred for appropriate dental treatment.

Incorporating Oral Health Exam, Risk Assessment, Hygiene Instruction, and Case Management into Clinic Visits

Oral health is an integral part of general health. Well-child/well-adolescent visits should include an oral health exam and risk assessment. The well-child exam is also an opportunity to provide age-appropriate dental health education and hygiene instruction (anticipatory guidance) based on the risk assessment and oral health exam. The exam and risk assessment guide treatment that may be necessary. Risk status can change over time so children should be evaluated regularly.

An oral health exam takes less than two minutes to conduct. The purpose of the exam is to identify any problems needing treatment, assess the risk of future problems, and provide anticipatory guidance.⁴⁵ Equipment needed includes a good lighting source, gloves, tongue depressor, gauze, and a mouth mirror (which is helpful but not required).⁴⁶

In addition to inspecting the face and palpating the neck for adenopathy, the provider does a visual exam, looking in the child's mouth with a tongue depressor. The gums, teeth (front and back), tongue, palate and posterior pharynx are assessed. Any plaque, white spots or other discoloration, gingivitis, and damaged teeth are noted. The presence of dental fillings and/or dental sealants is noted and oral hygiene assessed. The child is classified as to the urgency of dental care needed based on the conditions present in the mouth.

In addition to visualization of the mouth, nonclinical risk factors are considered in assessing risk. There are different tools available for assessing and classifying a child's risk for caries. For children found to be low risk for caries, fluoridated water and fluoride toothpastes may be enough to prevent dental decay. For children and adolescents who are moderate to high-risk for caries, topical fluoride should be applied at least every six months (see below).⁴⁷

Case Management: Referral and Follow-up

As resources permit, SBHCs can partner with local dental practices, federally qualified health centers, public health departments, and local dental associations to ensure that students without a source of dental care receive needed services. Formal partnerships facilitate the establishment of referral systems, care coordination and communication. During the oral health exam, students will be identified who need dental referral. Through referral and case management, SBHCs can ensure the timely receipt of restorative care (fillings, extractions, etc.) and orthodontia.

Applying Fluoride Varnishes

For those at moderate to high risk for dental caries, the regular application of fluoride varnishes also helps reduce risk. The application of fluoride varnishes has been found to be "effective in preventing caries in the primary and permanent dentition of children and adolescents."⁴⁸ Studies have shown that twice a year application of fluoride decreased caries by 25 percent in the permanent teeth of children living in non-fluoridated communities.⁴⁹ Fluoride varnishes have been widely used in Europe since the 1980s.⁵⁰ The varnish enables a high concentration of fluoride to remain in close contact with the teeth for several hours. This strengthens tooth enamel preventing the initiation of disease and even reversing early dental decay.⁵¹

Risk factors for dental caries include:

Dental

- Dental caries within last 2 to 3 years
- Many multi-surface restorations
- Enamel or dentin defects
- Active orthodontic treatment

Medical

- Special health care needs
- Eating disorders
- Drug or alcohol abuse

Behavioral

- Poor oral hygiene
- Poor family dental health
- Frequent consumption of refined carbohydrates

Socio-environmental

- Low socioeconomic status
- Suboptimal systemic or topical fluoride exposure
- Irregular dental care

Fluoride varnishes are advantageous to other topical fluoride vehicles, such as gels, rinses, and foams. They are inexpensive and safe, particularly in younger children, who are less likely to swallow varnish than gel. The risk of fluorosis with varnish application is minimal.⁵² Varnishes are also better tolerated, without an offensive taste.^{53 54} There is no waiting period for eating and drinking after the application.

Varnishes do not require special preparation of the teeth and application is quick and easy, taking less than 5 minutes to apply. Minimal equipment is needed and includes: toothbrush and toothpaste; fluoride varnish; disposable applicator (included with the product); gauze sponges; disposable tongue depressor or mouth mirrors (optional); gloves; and a good light source. “The average cost of fluoride varnish application is four dollars, thus making it one of the most cost-effective fluoride treatments available.”⁵⁵

The benefit of applying varnishes every six months has been well established for children and adolescents at moderate to high risk for caries. Those at low risk “may not receive additional benefit from professional topical fluoride application.”⁵⁶ Fluoride varnishes, although approved by the Federal Drug Administration (FDA) for the treatment of dentin hypersensitivity, are not yet approved for the prevention of caries. However, fluoride varnishes are endorsed by the American Dental Association for use in cavity prevention.⁵⁷ “A prescribing practitioner can use fluoride varnish for caries prevention as an off-label use, based on professional judgment.”⁵⁸

In Colorado, physicians, nurse practitioners and physician assistants may apply varnishes in the primary care setting. Trained medical personnel may also apply varnishes under the supervision of a prescribing practitioner. In order to provide this service and receive reimbursement under Medicaid, medical providers must have participated in on-site training from Cavity Free at Three or Smiles for Life.⁵⁹

Prescribing Fluoride Supplements

Dietary fluoride supplements are used when the fluoride in the drinking water is suboptimal. There is good evidence to support its use in preventing dental caries among school-aged children (6 to 16 years of age). The body of evidence for prescribing supplementation for children older than six years of age is less well established.⁶⁰

Prescribing supplements requires the provider to know the fluoride content of the child’s primary drinking water. If the fluoride content of the main source of water for cooking and drinking cannot be determined, supplemental fluoride should not be prescribed because it can increase the risk for fluorosis.⁶¹

“Consideration should also be given to other sources of water (e.g., home, child care settings, school, or bottled water) and to other sources of fluoride (e.g., toothpaste or rinses), which can complicate the prescribing decision.”⁶² Supplements are expensive and compliance can be an issue. For all these reasons, the benefit must be carefully weighed before prescribing supplements.

The currently recommended fluoride schedule (see Figure 1), was jointly established by the American Dental Association (ADA), the American Academy of Pediatric Dentistry (AAPD), and the American Academy of Pediatrics (AAP) in 1994.

Figure 1: Recommended Fluoride Supplement Schedule⁶³

AGE	Fluoride Concentration in Community Drinking Water		
	<0.3 ppm*	0.3-0.6 ppm	>0.6 ppm
0–6 months	None	None	None
6 months–3 years	0.25 mg/day	None	None
3 years–6 years	0.50 mg/day	0.25 mg/day	None
6 years–16 years	1.0 mg/day	0.50 mg/day	None

*parts per million

REIMBURSABLE SERVICES UNDER MEDICAID AND CHP+

Colorado Medicaid will reimburse trained *medical providers* (physicians, nurse practitioners, and physician assistants) for a risk assessment/oral health evaluation and fluoride varnish application *provided to children birth through four years of age* (see Figure 2) in conjunction with a well-child visit. Medical providers are currently not reimbursed when these services are rendered to older children. The Cavity Free at Three risk assessment form must be completed and included as part of the medical record. Medical providers are reimbursed for an oral evaluation (D0145 or D1330/D0999) and varnish (D1206) when provided together, or an oral evaluation when provided alone. However, they are not reimbursed for application of varnish in the absence of an oral exam. Other trained medical personnel employed by the SBHC can provide these services and bill using the Medicaid provider number of a supervising physician or nurse practitioner. Varnishes may be applied up to three times a year per eligible and high risk child enrolled in Medicaid.

Under Child Health Plan *Plus* (CHP+), when a medical provider performs an oral evaluation and applies varnish it is considered a medical service; when a dental hygienist or dentist performs an oral evaluation and applies varnish, it is considered a dental service. Billing for medical services and dental services are distinct. In addition, CHP+ enrollees receive care either through a contracted managed care plan or through the state’s managed care network depending on where they live. For those assigned to the state’s managed care network, the Medicaid rules regarding medical services cited above apply, except that varnish is a benefit only two times a year. For managed care network members, fluoride varnish application is built into the capitation rate (per member per month fee) received by primary care providers, and therefore, there is no additional reimbursement for rendering that service.

Figure 2: Dental Services Provided By Trained Medical Providers

Procedure	Procedure Code	Medicaid Fees as of 7/1/11 ⁶⁴	Medicaid Criteria
Topical fluoride varnish (risk assessment must be included)	D1206	\$14.96	Children ages birth to 5 years who have moderate to high caries risk
Oral evaluation for children under 3 years of age and counseling with primary caregiver	D0145	\$28.41	Children ages birth to 3 years
Unspecified diagnostic procedure	D0999*	\$14.85	Children ages 3 to 4 years

* The code D1330 was replaced with D0999, dental screening, as of July 1, 2011.

Under CHP+, Delta Dental of Colorado administers all dental benefits when provided by a dental hygienist or dentist. There is no distinction in the administration of benefits between children enrolled in a

contracted managed care plan, or through the state’s managed care network. The CHP+ benefit is capped at a maximum of \$600 allowable per child per calendar year.

Unsupervised dental hygienists (licensed hygienists without the supervision of a licensed dentist) can provide dental care within their scope of practice and bill both Medicaid and CHP+ (through Delta Dental of Colorado) for dental screenings, topical fluoride application, and sealants for children and adolescents.⁶⁶ No additional training is required, but is encouraged. Medical and dental personnel are strongly encouraged to communicate with one another.

Figure 3: Dental Services Provided By Dental Hygienists in the School Setting

Procedure	Procedure Code	Medicaid Fees as of 7/1/11) ⁶⁵	Medicaid Criteria
Sealant (per tooth-benefit only for the occlusal surface of permanent molar teeth)	D1351	\$22.42	Children ages birth to 21 years Permanent, non-carious & unrestored molars only
Topical fluoride varnish(risk assessment must be included) For children over age 6 any type of topical fluoride may be used	D1206	\$14.96	Children ages birth to 21 years who have moderate to high caries risk
Oral evaluation for children under 3 years of age and counseling with primary caregiver	D0145	\$28.41	Children ages birth to 3 years
Unspecified diagnostic procedure	D0999*	\$14.85	Children ages birth to 21 years

* The code D1330 was replaced with D0999 as of July 1, 2011.

Hygienists employed by a private office or clinic may also bill Medicaid under their employer’s Medicaid provider number for covered services rendered to Medicaid enrollees, or Delta Dental of Colorado for covered services provided to CHP+ members.

CONCLUSION

An oral health exam with risk assessment and age-appropriate dental health education and hygiene instruction (anticipatory guidance) should be incorporated into routine well-child and well-adolescent visits as well as other care visits when appropriate. SBHCs should assure that students with identified needs receive treatment in a timely manner. This can only be done by establishing a formal referral network in the community, and managing cases to ensure that appointments are made and kept.

Fluoride varnishes and school-based sealant programs are cost effective and proven strategies for preventing dental decay among school-aged children. With training and funding for basic supplies, SBHC providers should apply fluoride varnishes every six months to students found to be at moderate to high risk for dental caries. With additional funding and in partnership with dental providers, school-based health centers should facilitate sealant programs to prevent dental decay among students.

Currently, Medicaid only reimburses trained medical providers for oral health evaluations and fluoride varnish application provided to children aged birth through four years. The Colorado Association for School-Based Health Care, in partnership with SBHCs, should advocate for reimbursement of these services when delivered to at risk school-aged children as well. Lastly, SBHCs should understand their community’s water fluoridation policy, and be strong advocates for fluoridation where none exists.

HELPFUL WEBSITES

Oral Health Awareness Colorado!

<http://www.beasmartmouth.com/>

Oral Health Awareness Colorado! is a Colorado coalition of federal, state, and community organizations. Educational materials are available for parents and children on their website.

Colorado Department of Public Health and Environment

www.cdphe.state.co.us/pp/oralhealth/oralhealth.html

The Oral Health Program has many great resources on their website.

National Assembly on School-Based Health Care

<http://www.nasbhc.org/oralhealth>

Center for Health and Health Care in Schools: School-Based Dental Health

<http://www.healthinschools.org/Health-in-Schools/Health-Services/School-Based-Dental-Health.aspx>

National Maternal and Child Oral Health Resource Center

<http://www.mchoralhealth.org/>

Educational materials/brochures for consumers as well as factsheets and practice guides for providers can be ordered (at no cost) from this site.

Cavity Free at Three

www.cavityfreeatthree.org

Smiles for Life: A National Oral Health Curriculum

<http://www.smilesforlife2.org/default.aspx?tut=555&pagekey=62948&s1=1186276>

American Academy of Pediatrics

<http://www.aap.org/healthtopics/oralhealth.cfm>

American Academy of Pediatric Dentistry

<http://www.aapd.org>

American Dental Association

<http://www.ada.org>

Bright Smiles, Bright Futures

<http://www.colgate.com/app/BrightSmilesBrightFutures/US/EN/HomePage.cvsp>

This is a Colgate-sponsored website. It contains free educational materials for teachers and dental professionals.

Colorado Health Foundation

http://www.coloradohealth.org/school-based_health_care.aspx

Caring for Colorado

<http://www.caringforcolorado.org/>

CDC's My Waters Fluoride:

<http://apps.nccd.cdc.gov/MWF/Index.asp>

This site includes fluoride levels for local water systems.

REFERENCES

- ¹Beltrán-Aguilar, E., Barker, L., Canto, M., Dye, B., Gooch, B., Griffin, S., Hyman, J., Jaramillo, F., Kingman, A., Nowjack-Raymer, R., Selwitz, R., Wu, T. (2005). *Surveillance for dental caries, dental sealants, tooth retention, edentulism, and enamel fluorosis — United States, 1988–1994 and 1999–2002*, (MMWR 54(03)). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5403a1.htm>
- ²Christensen, M. (2007). *Colorado Oral Health Survey 2006-2007 School Year Preliminary Results October 12, 2007*. Denver, CO: Colorado Department of Public Health and Environment. Available from: <http://www.cdphe.state.co.us/hs/oral/BSS%2006-07%20Report.pdf>
- ³U.S. Department of Health and Human Services. (2000). *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health. Available from: <http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf>
- ⁴U.S. Department of Health and Human Services. (2000). *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health. Available from: <http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf>
- ⁵U.S. Department of Health and Human Services. (2000). *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health. Available from: <http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf>
- ⁶Paradise, J. and the Kaiser Commission on Medicaid and the Uninsured. (2008, July). *Dental Coverage and Care for Low-Income Children: The Role of Medicaid and SCHIP*. Washington, DC: The Henry J. Kaiser Family Foundation. Available from: <http://www.kff.org/medicaid/upload/7681-02.pdf>
- ⁷Filling the gap: Strategies for improving oral health. (2001). Washington, D.C.: Grantmakers in Health. Available from: http://www.gih.org/usr_doc/oralhealthid.pdf
- ⁸Beltrán-Aguilar, E., Barker, L., Canto, M., Dye, B., Gooch, B., Griffin, S., Hyman, J., Jaramillo, F., Kingman, A., Nowjack-Raymer, R., Selwitz, R., Wu, T. (2005). *Surveillance for dental caries, dental sealants, tooth retention, edentulism, and enamel fluorosis — United States, 1988–1994 and 1999–2002* (MMWR 54(03)). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5403a1.htm>
- ⁹Christensen, M. (2007). *Colorado Oral Health Survey 2006-2007 School Year Preliminary Results October 12, 2007*. Denver, CO: Colorado Department of Public Health and Environment. Available from: <http://www.cdphe.state.co.us/hs/oral/BSS%2006-07%20Report.pdf>
- ¹⁰Christensen, M. (2007). *Colorado Oral Health Survey 2006-2007 School Year Preliminary Results October 12, 2007*. Denver, CO: Colorado Department of Public Health and Environment. Available from: <http://www.cdphe.state.co.us/hs/oral/BSS%2006-07%20Report.pdf>
- ¹¹Christensen, M. (2007). *Colorado Oral Health Survey 2006-2007 School Year Preliminary Results October 12, 2007*. Denver, CO: Colorado Department of Public Health and Environment. Available from: <http://www.cdphe.state.co.us/hs/oral/BSS%2006-07%20Report.pdf>
- ¹²Oral Health Environmental Scan: Final Report. (2005, September). Colorado Health Institute. Available from: <http://www.cdphe.state.co.us/pp/oralhealth/OralHeathScan.pdf>
- ¹³Colorado Department of Public Health and Environment, Maternal and Child Health County Datasets (2010). *Medicaid Dental Services: State Performance Measure 2*. Denver, CO: Colorado Department of Public Health and Environment, Maternal and Child Health Program. Available from: <http://www.cdphe.state.co.us/ps/mch/mchadmin/mchdatasets2010/Medicaid%20dental%20map%20and%20list%20for%202010%20Rel.pdf>
- ¹⁴The practice of dentistry in Colorado: Are there differences between urban and rural practicing dentists? (2010, March). Colorado Health Institute. Available at: <http://www.coloradohealthinstitute.org/Publications/2010/03/Urban-Rural-Dentist.aspx>
- ¹⁵The practice of dentistry in Colorado: Are there differences between urban and rural practicing dentists? (2010, March). Colorado Health Institute. Available at: <http://www.coloradohealthinstitute.org/Publications/2010/03/Urban-Rural-Dentist.aspx>

-
- ¹⁶ Colorado Department of Public Health and Environment. (2005). *The Impact of Oral Disease on the Health of Coloradans*. Denver, CO: Colorado Department of Public Health and Environment, Oral Health Program. Available from: <http://www.cdphe.state.co.us/pp/oralhealth/impact.pdf>
- ¹⁷ Casamassimo, P., Thikkurissy, S., Edelstein, B., & Maiorini, E. (2009). Beyond the dmft: The human and economic cost of early childhood caries. [Electronic version]. *Journal of the American Dental Association*, 140, 650-657. Available at: <http://jada.ada.org/cgi/content/full/140/6/65>
- ¹⁸ U.S. Department of Health and Human Services. (2000). *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health. Available from: <http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf>
- ¹⁹ U.S. Department of Health and Human Services. (2000). *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health. Available from: <http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf>
- ²⁰ Colorado Department of Public Health and Environment. (2005). *The Impact of Oral Disease on the Health of Coloradans*. Denver, CO: Colorado Department of Public Health and Environment, Oral Health Program. Available from: <http://www.cdphe.state.co.us/pp/oralhealth/impact.pdf>
- ²¹ Colorado Department of Public Health and Environment. (2005). *The Impact of Oral Disease on the Health of Coloradans*. Denver, CO: Colorado Department of Public Health and Environment, Oral Health Program. Available from: <http://www.cdphe.state.co.us/pp/oralhealth/impact.pdf>
- ²² Centers for Disease Control and Prevention. (2010). *Oral Health Preventing Cavities, Gum Disease, Tooth Loss, and Oral Cancers: At A Glance 2010*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Oral Health Program. Available from: <http://www.cdc.gov/chronicdisease/resources/publications/AAG/doh.htm#aag>
- ²³ Brunson, D., O'Connell, J., Anselmo, T., & Sullivan, P. (2005). Costs and Savings Associated With Community Water Fluoridation Programs in Colorado. [Electronic version]. *Preventing Chronic Disease*, v.2(Special Issue). Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1459459/>
- ²⁴ Paradise, J. and the Kaiser Commission on Medicaid and the Uninsured. (2008, July). *Dental Coverage and Care for Low-Income Children: The Role of Medicaid and SCHIP*. Washington, DC: The Henry J. Kaiser Family Foundation. Available from: <http://www.kff.org/medicaid/upload/7681-02.pdf>
- ²⁵ U.S. Department of Health and Human Services. (2000). *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health. Available from: <http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf>
- ²⁶ Centers for Disease Control and Prevention. (2009, September). *Cost savings of community water fluoridation*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Oral Health Program. Available from: http://www.cdc.gov/fluoridation/fact_sheets/cost.htm
- ²⁷ Centers for Disease Control and Prevention. (2010, August). *2008 Water fluoridation statistics*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Oral Health Program. Available from: <http://www.cdc.gov/fluoridation/statistics/2008stats.htm>
- ²⁸ Centers for Disease Control and Prevention. (2010, August). *2008 Water fluoridation statistics*. Atlanta, GA: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Oral Health Program. Available from: <http://www.cdc.gov/fluoridation/statistics/2008stats.htm>
- ²⁹ U.S. Department of Health and Human Services. (2000). *Oral Health in America: A Report of the Surgeon General*. Rockville, MD: U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health. Available from: <http://silk.nih.gov/public/hck1ocv.@www.surgeon.fullrpt.pdf>
- ³⁰ U.S. Department of Health and Human Services. (1991, February). *Review Of Fluoride Benefits And Risks: Report Of The Ad Hoc Subcommittee On Fluoride*. U.S. Department of Health and Human Services, Public Health Service Committee to Coordinate Environmental Health and Related Programs. Available from: <http://health.gov/environment/ReviewofFluoride/default.htm>

-
- ³¹Centers for Disease Control and Prevention. (2001). *Recommendations for using fluoride to prevent and control dental caries in the United States*. (MMWR,50(RR-14):1-42). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>
- ³²Beauchamp, J., Caufield, P., Crall, J., Donly, K., Feigal, R., Gooch, B., Ismail, A., Kohn, W., Siegal, M., & Simonsen, R. (2008). Evidence-based clinical recommendations for the use of pit-and-fissure sealants: A report of the American Dental Association Council on Scientific Affairs. [Electronic version]. *Journal of the American Dental Association*, 139(3), 257-267. Available from: <http://jada.ada.org/cgi/reprint/139/3/257>
- ³³Gooch, B., Griffin, S., Gray S., Kohn, W., Rozier, G., Siegal, M., Fontana, M., Brunson, D., Carter, N., Curtis, D., Donly, K., Haering, H., Hill, L., Hinson, H., Kumar, J., Lampiris, L., Mallatt, M., Meyer, D., Miller, W., Sanzi-Schaedel, S., Simonsen, R., Truman, B., & Zero, D. (2009). Preventing dental caries through school-based sealant programs: Updated recommendations and reviews of evidence. [Electronic version]. *Journal of the American Dental Association*, 140, 1356-1365.
- ³⁴Beauchamp, J., Caufield, P., Crall, J., Donly, K., Feigal, R., Gooch, B., Ismail, A., Kohn, W., Siegal, M., & Simonsen, R. (2008). Evidence-based clinical recommendations for the use of pit-and-fissure sealants: A report of the American Dental Association Council on Scientific Affairs. [Electronic version]. *Journal of the American Dental Association*, 139(3), 257-267. Available from: <http://jada.ada.org/cgi/reprint/139/3/257>
- ³⁵Beauchamp, J., Caufield, P., Crall, J., Donly, K., Feigal, R., Gooch, B., Ismail, A., Kohn, W., Siegal, M., & Simonsen, R. (2008). Evidence-based clinical recommendations for the use of pit-and-fissure sealants: A report of the American Dental Association Council on Scientific Affairs. [Electronic version]. *Journal of the American Dental Association*, 139(3), 257-267. Available from: <http://jada.ada.org/cgi/reprint/139/3/257>
- ³⁶Christensen, M. (2007). *Colorado Oral Health Survey 2006-2007 School Year Preliminary Results October 12, 2007*. Denver, CO: Colorado Department of Public Health and Environment. Available from: <http://www.cdph.state.co.us/hs/oral/BSS%2006-07%20Report.pdf>
- ³⁷Carter, N. (2007) *Seal America: The Prevention Invention (2nd ed.)* with the American Association for Dental Programs and the National Center for Education in Maternal and Child Health. Washington, D.C.: National Maternal and Child Oral Health Resource Center Available from: <http://www.mchoralhealth.org/seal/index.html>
- ³⁸Carter, N. (2007) *Seal America: The Prevention Invention (2nd ed.)* with the American Association for Dental Programs and the National Center for Education in Maternal and Child Health. Washington, D.C.: National Maternal and Child Oral Health Resource Center Available from: <http://www.mchoralhealth.org/seal/index.html>
- ³⁹Carter, N. (2007) *Seal America: The Prevention Invention (2nd ed.)* with the American Association for Dental Programs and the National Center for Education in Maternal and Child Health. Washington, D.C.: National Maternal and Child Oral Health Resource Center Available from: <http://www.mchoralhealth.org/seal/index.html>
- ⁴⁰Carter, N. (2007) *Seal America: The Prevention Invention (2nd ed.)* with the American Association for Dental Programs and the National Center for Education in Maternal and Child Health. Washington, D.C.: National Maternal and Child Oral Health Resource Center Available from: <http://www.mchoralhealth.org/seal/index.html>
- ⁴¹Centers for Disease Control and Prevention. (2001). *Impact of targeted, school-based dental sealant programs in reducing racial and economic disparities in sealant prevalence among schoolchildren: Ohio, 1998-1999*. (MMWR 50(34):736-738). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5034a2.htm>
- ⁴²Barzel, R., Holt, K., with Association of State and Territorial Dental Directors. (2010). *Fluoride Varnish: An Effective Tool for Preventing Dental Caries*. Washington, D.C.: National Maternal and Child Oral Health Resource Center. Available from: www.mchoralhealth.org/PDFs/FIVarnishFactsheet.pdf
- ⁴³Guideline on Adolescent Oral Health Care. (2010). American Academy of Pediatric Dentistry, Clinical Affairs Committee. Available at: http://www.aapd.org/media/Policies_Guidelines/G_Adoleshealth.pdf
- ⁴⁴American Academy of Pediatrics, Section of Pediatric Dentistry. (2003). Policy Statement: Oral health risk assessment timing and establishment of the dental home [Electronic version]. *Pediatrics*, 111(5), 1113-1116. Available from: <http://aappolicy.aappublications.org/cgi/reprint/pediatrics;111/5/1113.pdf>
- ⁴⁵Douglass, A. (2010, June). *Course 7: The Oral Examination*. Smiles for Life: A national oral health curriculum. Available from: <http://www.smilesforlife2.org/default.aspx?tut=555&pagekey=62948&s1=1186276>

-
- ⁴⁶ Douglass, A. (2010, June). *Course 7: The Oral Examination*. Smiles for Life: A national oral health curriculum. Available from: <http://www.smilesforlife2.org/default.aspx?tut=555&pagekey=62948&s1=1186276>
- ⁴⁷ American Dental Association Council on Scientific Affairs. (2006). Professionally applied topical fluoride: Evidence-based clinical recommendations. [Electronic version]. *Journal of the American Dental Association*, 137(8), 1151-1159. Available from: <http://jada.ada.org/cgi/content/full/137/8/1151>
- ⁴⁸ American Dental Association Council on Scientific Affairs. (2006). Professionally applied topical fluoride: Evidence-based clinical recommendations. [Electronic version]. *Journal of the American Dental Association*, 137(8), 1151-1159. Available from: <http://jada.ada.org/cgi/content/full/137/8/1151>
- ⁴⁹ Centers for Disease Control and Prevention. (2001). *Recommendations for using fluoride to prevent and control dental caries in the United States*. (MMWR,50(RR-14):1-42). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>
- ⁵⁰ Beltran-Aguilar, E., Goldstein, J., and Lockwood, S. (2000). Fluoride Varnishes: A Review of Their Clinical Use, Cariostatic Mechanism, Efficacy and Safety. [Electronic version]. *Journal of the American Dental Association*, 131, 589-596. Available from: <http://jada.ada.org/cgi/reprint/131/5/589>
- ⁵¹ Centers for Disease Control and Prevention. (2001). *Recommendations for using fluoride to prevent and control dental caries in the United States*. (MMWR,50(RR-14):1-42). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>
- ⁵² Barzel, R., Holt, K., with Association of State and Territorial Dental Directors. (2010). *Fluoride Varnish: An Effective Tool for Preventing Dental Caries*. Washington, D.C.: National Maternal and Child Oral Health Resource Center. Available from: www.mchoralhealth.org/PDFs/FIVarnishFactsheet.pdf
- ⁵³ Beltran-Aguilar, E., Goldstein, J., and Lockwood, S. (2000). Fluoride Varnishes: A Review of Their Clinical Use, Cariostatic Mechanism, Efficacy and Safety. [Electronic version]. *Journal of the American Dental Association*, 131, 589-596. Available from: <http://jada.ada.org/cgi/reprint/131/5/589>
- ⁵⁴ Lewis, C., Lynch, H., Richardson, L. (2005). Fluoride Varnish Use in Primary Care: What Do Providers Think? [Electronic version]. *Pediatrics*, 115(1), Ppe69-e76. Available from: <http://pediatrics.aappublications.org/cgi/content/abstract/115/1/e69>
- ⁵⁵ Oral Health Environmental Scan: Final Report. (2005, September). Colorado Health Institute. Available from: <http://www.cdphe.state.co.us/pp/oralhealth/OralHeathScan.pdf>
- ⁵⁶ American Dental Association Council on Scientific Affairs. (2006). Professionally applied topical fluoride: Evidence-based clinical recommendations. [Electronic version]. *Journal of the American Dental Association*, 137(8), 1151-1159. Available from: <http://jada.ada.org/cgi/content/full/137/8/1151>
- ⁵⁷ American Dental Association Council on Scientific Affairs. (2006). Professionally applied topical fluoride: Evidence-based clinical recommendations. [Electronic version]. *Journal of the American Dental Association*, 137(8), 1151-1159. Available from: <http://jada.ada.org/cgi/content/full/137/8/1151>
- ⁵⁸ Centers for Disease Control and Prevention. *Recommendations for using fluoride to prevent and control dental caries in the United States*. MMWR 2001;50(RR-14):1-42. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>
- ⁵⁹ Colorado Department of Health Care Policy and Financing. (2011). *Provider Bulletin Feb 2011*. (Reference: B1100297). Denver, CO: Colorado Department of Health Care Policy and Financing. Available from: <http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobkey=id&blobtable=MungoBlobs&blobwhere=1251694417468&ssbinary=true>
- ⁶⁰ Centers for Disease Control and Prevention. (2001). *Recommendations for using fluoride to prevent and control dental caries in the United States*. (MMWR,50(RR-14):1-42). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>
- ⁶¹ Centers for Disease Control and Prevention. (2001). *Recommendations for using fluoride to prevent and control dental caries in the United States*. (MMWR,50(RR-14):1-42). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>

⁶²Centers for Disease Control and Prevention. (2001). *Recommendations for using fluoride to prevent and control dental caries in the United States*. (MMWR,50(RR-14):1-42). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>

⁶³Centers for Disease Control and Prevention. (2001). *Recommendations for using fluoride to prevent and control dental caries in the United States*. (MMWR,50(RR-14):1-42). Atlanta, GA: Centers for Disease Control and Prevention. Available from: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5014a1.htm>

⁶⁴The Department of Health Care Policy and Financing. (2011, January). *Medicaid Fee Schedules*. Denver, CO: The Department of Health Care Policy and Financing, Provider Services. Available at: <http://www.colorado.gov/cs/Satellite/HCPF/HCPF/1197969485906>

⁶⁵The Department of Health Care Policy and Financing. (2011, January). *Medicaid Fee Schedules*. Denver, CO: The Department of Health Care Policy and Financing, Provider Services. Available at: <http://www.colorado.gov/cs/Satellite/HCPF/HCPF/1197969485906>

⁶⁶*Colorado Revised Statutes. Title 12: Professions and Occupations. Article 13: Dentists and Dental Hygienists. Effective July 1, 2010*. Available from: <http://www.dora.state.co.us/dental/Statute.pdf>

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