

Dental Sealants: An Effective State Strategy to Prevent Dental Caries in Children

CMS Learning Lab: Improving Oral Health Through Access

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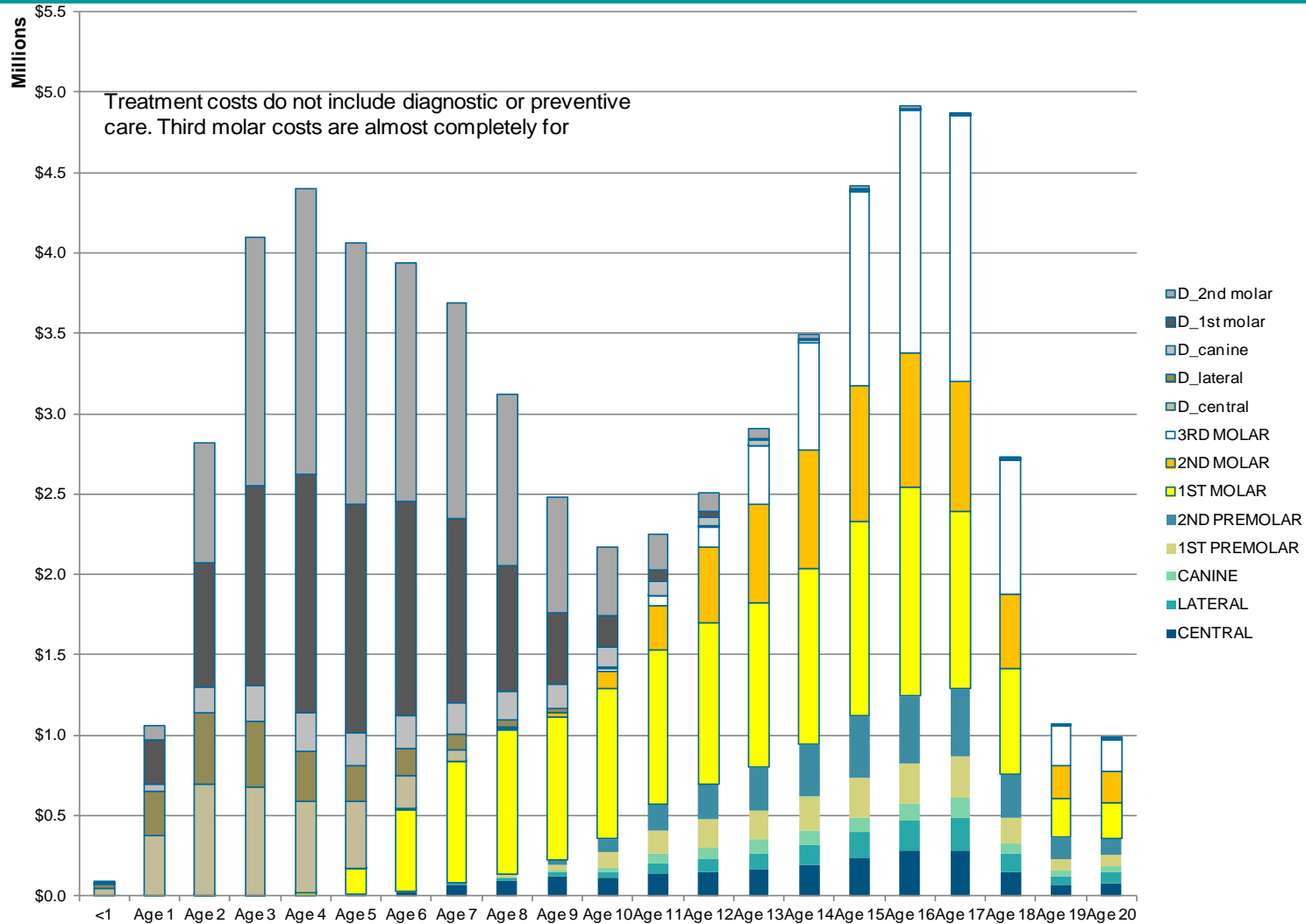
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The CMS Perspective

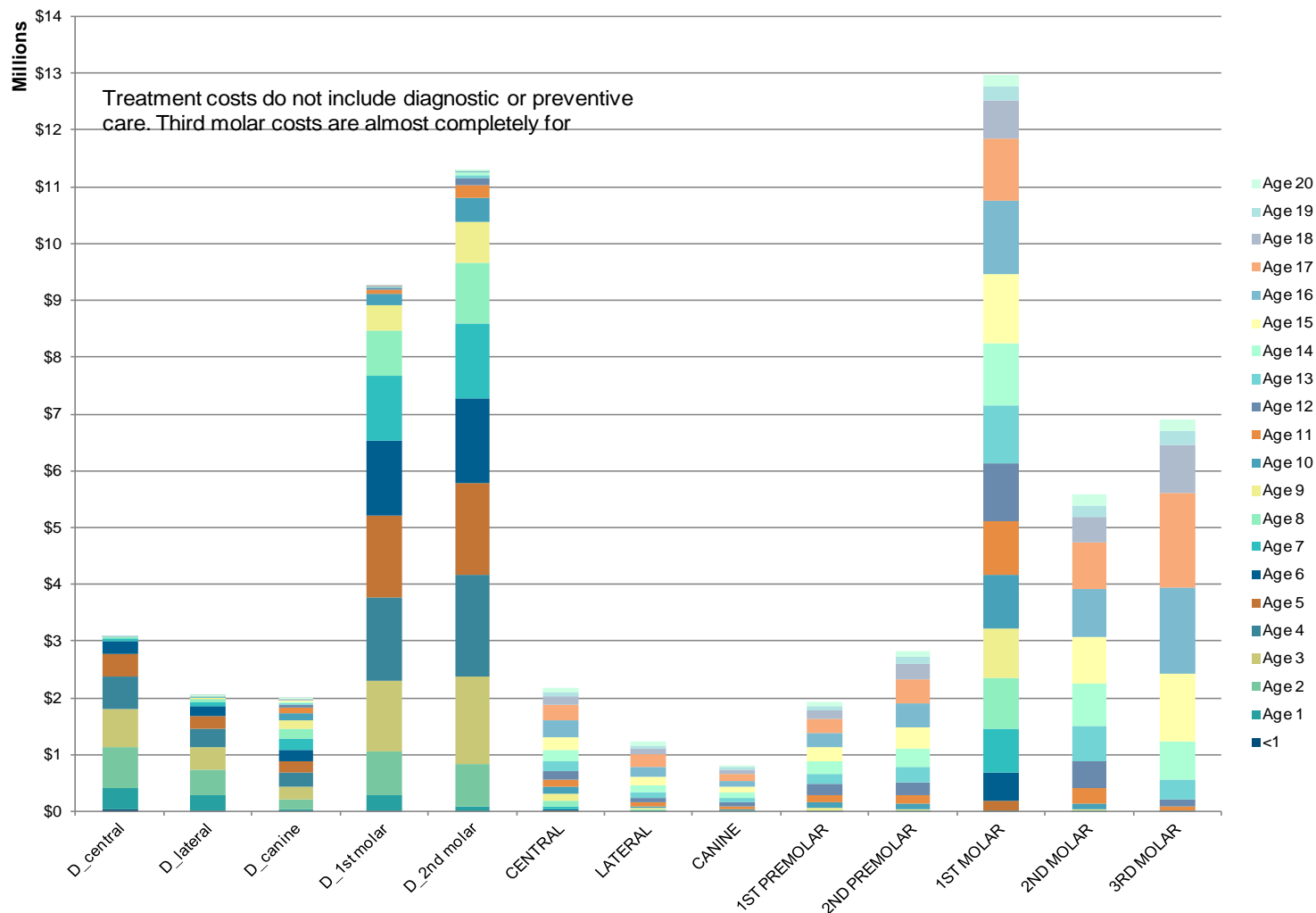
- Disproportionate levels of disease and sealant utilization
- Dental Sealants and the CMS Form 416
- 85% dental caries occurs on the occlusal surfaces of teeth
- Dental caries experience in the primary dentition is a significant predictor of disease in the permanent dentition
- Preventing dental caries in the primary dentition can prevent, reduce and/or delay onset of disease in permanent dentition
- Potential savings to Medicaid and CHIP

Treatment Costs by Age by Tooth Type



*Courtesy of the DentaQuest Institute

Treatment Costs by Tooth Type by Age



*Courtesy of the DentaQuest Institute

Dental Sealants

Evidence-Based Recommendations

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The findings and conclusion of this presentation are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention

Presentation Overview

- Review evidence-based recommendations for sealant use
 - Key questions
 - Findings
 - Current recommendations

Why Evidence?

- Constant or shrinking resources require that public health programs and publicly-funded healthcare delivery programs focus on effective and efficient practices
- “Evidence-based” approaches incorporate the best available scientific information into decision-making*

Based on Sackett et al., BMJ 1996

Systematic Reviews

- Preferred method for identifying available knowledge; determining what is “best”; and summarizing it in a useful manner*
- Explicit rule-based process reduces bias in collecting and synthesizing findings

Bader et al, JADA (2004)

Mulrow et al, American College of Physicians (1998)

Hierarchy of Evidence

Systematic Reviews and Meta-Analyses



Randomized Controlled Trials



Cohort Studies



Case Control Studies



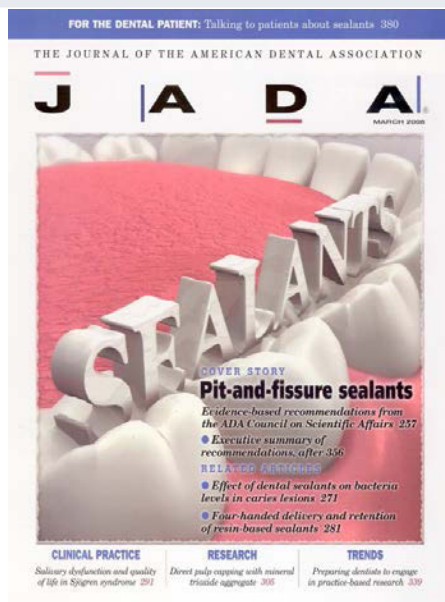
Case Reports



Expert Opinion

Sealant Guidelines

Clinical settings	School-based programs
Published 2008 - JADA	Published 2009 - JADA
Clinical settings	School-based programs
Expert panel	Work group
ADA	CDC-Supported



Questions and Findings

1. What is the effectiveness of sealants in preventing caries initiation?

Existing systematic reviews confirm effectiveness

Llodra JC, CDOE (1993);
Rozier RG, JDE (2001); Ahovuo-Saloranta A, Cochrane (2013)

Findings of Systematic Reviews

Strong evidence for sealant effectiveness for prevention of caries initiation on “sound” surfaces

- Effect of large magnitude
- Positive effect across included studies

Questions and Findings

2. What is the effectiveness of sealants in preventing caries progression?

A 2008 systematic review found that sealants are effective in reducing the percent of non-cavitated carious lesions that progress to cavitation



Griffin SO, J Dent Res (2008)

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Journal of Dental Research 2008 87(2): 169-174

Sealants reduced the percentage of non-cavitated caries lesions that progressed by 71%.

RESEARCH REPORTS

Clinical

S.O. Griffin^{1*}, E. Oong¹, W. Kohn¹,
B. Vidakovic², B.F. Gooch¹, and CDC
Dental Sealant Systematic Review Work
Group: J. Bader³, J. Clarkson⁴,
M.R. Fontana⁵, D.M. Meyer⁶, R.G. Rozier⁷,
J.A. Weintraub⁸, and D.T. Zero⁵

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The Effectiveness of Sealants in Managing Caries Lesions

INTRODUCTION

There is strong evidence that sealants are effective in both clinical and school settings for preventing caries in children at various levels of risk (Truman *et al.*, 2002; Ahovuo-Saloranta *et al.*, 2004). The evidence for sealant effectiveness

Questions and Findings

3. What is the effectiveness of sealants in reducing bacteria levels in caries lesions?

A systematic review found that sealants are effective in lowering bacteria levels.

Oong E, JADA (2008)

Sealants lowered bacteria levels by at least 100-fold.

The effect of dental sealants on bacteria levels in caries lesions

A review of the evidence

Ella M. Oong, DMD, MPH; Susan O. Griffin, PhD; William G. Kohn, DDS; Barbara F. Gooch, DMD, MPH; Page W. Caufield, DDS, PhD

Strong evidence shows that sealants are effective in preventing caries in children at varying degrees of risk.^{1,2} Despite this evidence of effectiveness, sealant prevalence among lower-income children (who are at higher risk of

ABSTRACT

Background. Concern about inadvertently sealing over caries often prevents dentists from providing dental sealants. The objective of the authors' review was to examine the effects of sealants on bacteria levels within caries lesions under dental



ADA Clinical Recommendations

- Sealants should be placed in pits and fissures of children's primary teeth when it is determined that the tooth or patient is at risk of developing caries
 - ADA expert panel accepted sealant retention as a proxy for caries prevention
 - More than 70% of sealants were retained on primary molars up to 3 years after placement

Beauchamp JADA (2008)

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Caries Risk Assessment

- No universally accepted assessment tool
- Commonly used indicators include:
 - Active or untreated tooth decay
 - Poor oral hygiene
 - Low socioeconomic status
 - Limited use of dental services
- Assists clinical decision making, particularly for planning preventive and treatment services

Recommendations for School-Based Sealant Programs

- Seal sound pit and fissure surfaces
- Seal non-cavitated pit-and-fissure surfaces



Gooch et al, JADA (2009)

School-Based Sealant Programs

Risk assessed at community level to reach vulnerable children:

- At high risk schools
- At risk for caries and untreated caries
- Less likely to receive sealants and other preventive services
- Less likely to receive timely dental care

Gooch et al, JADA (2009)

Questions and Findings

4. Does the addition of mechanical preparation with a bur improve sealant retention?

Limited evidence cannot determine effect (systematic review & clinical studies)

Beauchamp J, JADA 2008; Muller-Bolla M, CDOE (2006); Lygidakis NA, J Clin Pediatr Dent (1994); Shapira J, Pediatr Dent (1986)

Questions and Findings

5. Does surface cleaning by toothbrush or dental handpiece result in similar retention rates?

Limited evidence cannot determine effect. (systematic review). One clinical study suggests no difference.

Gillcrist JA, JPHD (1998); Griffin SO, JADA (2008);
Gray, JADA (2009); Muller-Bolla M, CDOE (2006)

Toothbrushing was associated with similar, if not higher sealant retention than handpiece cleaning

CLINICAL PRACTICE CRITICAL REVIEW

A comparison of the effects of toothbrushing and handpiece prophylaxis on retention of sealants

Shellie Kolavic Gray, DMD, MPH; Susan O. Griffin, PhD; Dolores M. Malvitz, DrPH; Barbara F. Gooch, DMD, MPH

In the placement of pit-and-fissure sealants, a clean tooth surface facilitates direct contact between acid etchant and enamel. The etched enamel, in turn, provides microporosities into which resin-based material flows to form a mechanical bond that retains the sealant against the tooth surface.¹ Pumice prophylaxis

ABSTRACT

Background. Tooth surface cleaning before acid etching is considered to be an important step in the retention of resin-based pit-and-fissure sealants.

Methods. The authors reviewed and summarized instructions for cleaning tooth surfaces from five manufacturers of 10 unfilled resin-based sealants marketed in the United States. The authors also searched electronic databases for studies that directly compared the effects of different

JADA 2009; 140(1);38-46

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Recommendations

Sealant Placement:

- Clean tooth surface; toothbrush can be used
- Additional preparation with a dental bur is not recommended

Gooch et al, JADA (2009); Beauchamp et al, JADA (2008)

Questions and Findings

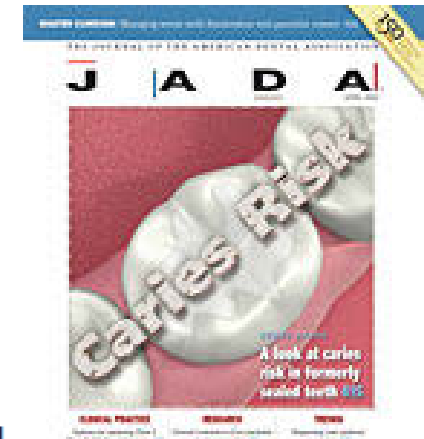
6. Are teeth that lose sealants at higher risk of tooth decay than teeth that were never sealed?

A meta-analysis indicates that caries risk is similar.

Griffin et al, JADA (2009)

Caries Risk: Formerly vs. Never-Sealed Teeth

C O V E R S T O R Y



Caries risk in formerly sealed teeth

Susan O. Griffin, PhD; Shellie Kolavic Gray, DMD; Dolores M. Malvitz, DrPH; Barbara F. Gooch, DMD, MPH

Almost 70 percent of youth have experienced dental caries by late adolescence.¹ Available data show that children and youth from low-income families (those with an income of less than 200 percent of the federal poverty guidelines) are more than twice as likely to have untreated caries in their permanent teeth as are their

ABSTRACT

Background. The authors examined the risk of caries development in teeth with partially or fully lost sealant (formerly sealed [FS] teeth) relative to the risk in teeth that never have received sealants (never-sealed [NS] teeth).

Methods. The authors searched the population of studies used in five reviews of sealant effectiveness as established in split-mouth design



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ADA Clinical Recommendation

Monitor and reapply sealants as needed to maximize effectiveness

Beauchamp et al, JADA (2008)

Recommendations for School-Based Sealant Programs

Seal teeth of children, even if follow-up cannot be assured

Gooch et al, JADA (2009)
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Key Messages

- Evidence supports effectiveness of sealant use in clinical care and school sealant programs.
- CDC and ADA recommendations are consistent on topics addressed by both.
- Caries risk assessment recommended prior to placing sealants on sound surfaces in clinical settings.

Thank you



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Wyoming Medicaid Sealant Policy

CMS Learning Lab: Improving Oral Health Through Access
September 19, 2013

April Burton
Medicaid Dental Manager
Wyoming Department of Health
Division of Healthcare Financing, Medicaid

History

Prior to 2008

Wyoming Medicaid covered sealants on permanent, posterior teeth only.

2008

Wyoming Medicaid added primary 2nd molars to the list of teeth covered for sealants.

History

- The addition of primary 2nd molars was based on the following:

American Academy of Pediatric Dentistry stated : Any tooth, including primary teeth and permanent teeth other than molars, may benefit from sealant application due to fissure anatomy and caries risk factor. Third party coverage for sealants should not be based upon a patient's age. Timing of the eruption of teeth can vary widely. Furthermore, caries risk may increase at any time during a patient's life.

http://www.aapd.org/media/Policies_Guidelines/P_3rdPartSealants.pdf

Policy

- Wyoming Medicaid Sealant Policy
 - D1351- The application of dental sealants for permanent molar teeth and primary second (2nd) molars (a,j,k,t) are allowed.
 - Sealants are allowed once/18 months for each covered tooth for clients age 0-20
 - Each sealant will be reimbursed at \$28.00- This fee is based on Wyoming's methodology for pricing dental codes. 75% of the average billed charge for sealants by Wyoming dentists.

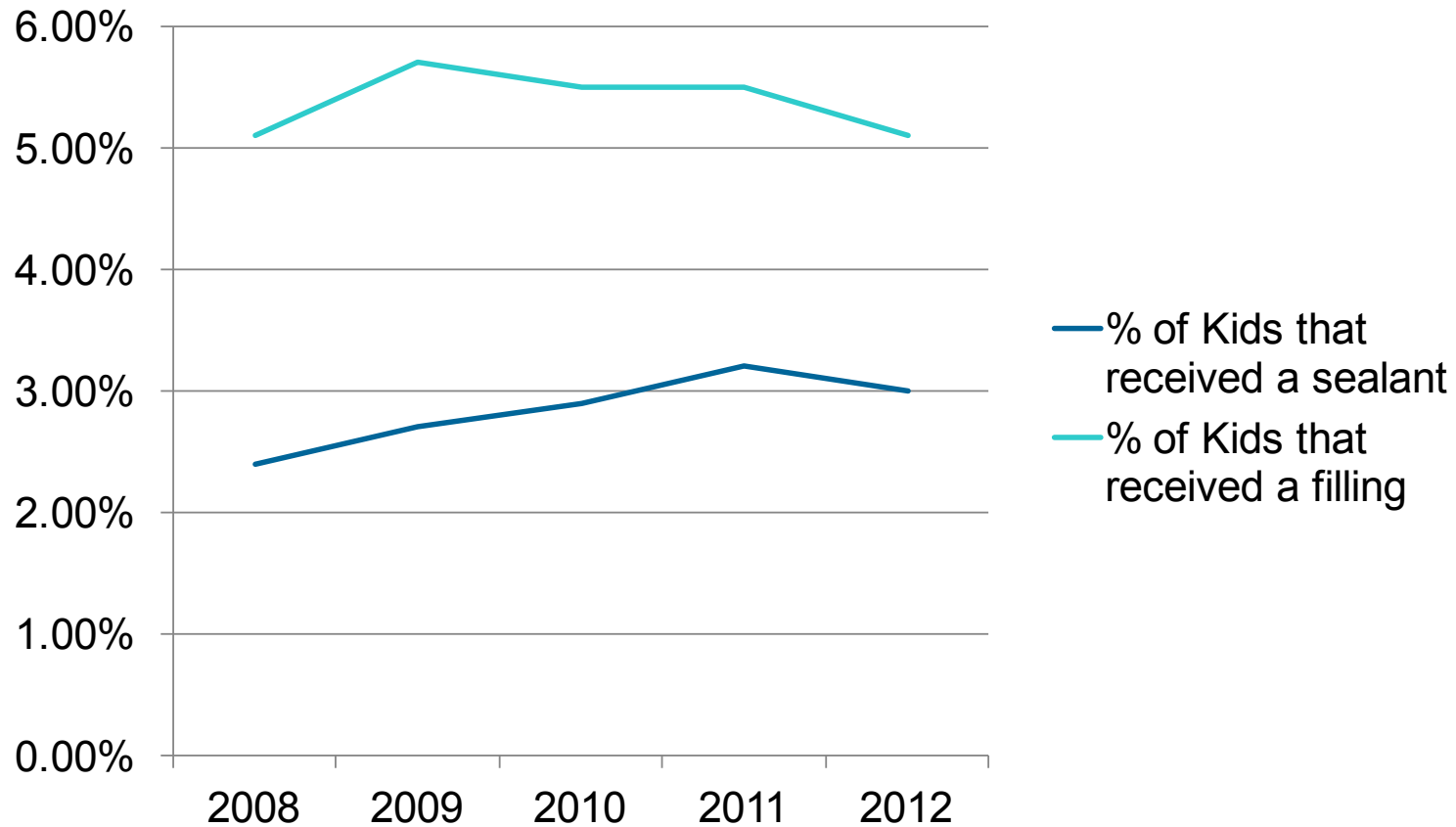
Cost To The Medicaid Program

Type of Service	2008-2012	Cost to Medicaid
Sealants on a,j,k,& t	10018	\$280,497.62
Potential Cost Avoidance of 1-surface fillings on a,j,k,& t	5009*	\$390,702.00

Source: Wyoming MMIS

*Figure based on ½ of these teeth potentially being fillings if not sealed; estimate only

Sealant Placement vs. 1-Surface Fillings on Primary 2nd Molars: 2008-2012



These percentages are based on the number of kids that were seen for a dental visit, not total eligible's.

Source: Wyoming MMIS

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Lessons Learned

To understand the decline in sealant placement from 2011 to 2012 we have to look at the % of newly eligible clients

- 2008-2009 An increase of 12.4% (3170 new clients)
- 2009-2010 An increase of 8.3% (2307 new clients)
- 2010-2011 An increase of 3.0% (857 new clients)
- 2011-2012 An increase of 1.1% (313 new clients)

With a decrease in the percentage of newly eligible clients over the 5 year period, the amount of new clients that came onto the program has decreased and therefore the number of kids eligible for sealants has declined.

Source: Wyoming MMIS

Lessons Learned

Wyoming Medicaid's policy to reimburse providers for sealants placed on primary teeth benefits our program by:

- Preventing costly restorative treatment
- Protecting children from potential dental emergencies
- Maintaining the health of primary molars for space maintenance (potential prevention of orthodontic cases later)

Conclusion

- With implementation of sealant coverage on primary 2nd molars in 2008, Wyoming has seen 3 years of decline in the # of 1-surface, occlusal fillings being done. We will continue to monitor this decline and savings to our program.

Montana: Dental Sealant Utilization

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September 19, 2013

Presented by:

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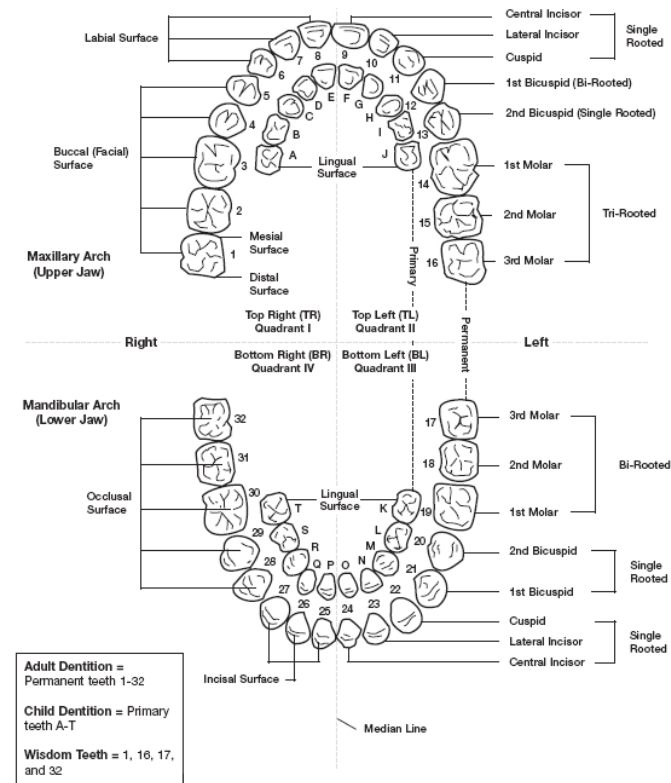
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Dental Sealant Policy

Based upon the ADA evidence-based clinical recommendations for the use of pit-and-fissure sealants published in 2008, MT reimburses procedure code D1351 on first and second molars in the primary and permanent arch.

- Tooth letters: A, B, I, J, K, L, S, T
- Tooth numbers: 2, 3, 14, 15, 18, 19, 30, 31
- Ages 0-20



Source: <http://www.ada.org/3135.aspx>

Other Influencing Factors

- This new practice standard was brought to our attention by many local dentists. We are strong partners with the MT Dental Association and we value their professional recommendations.
- The cost of sealants, paired with the future savings that would be realized with implementing this comprehensive dental sealant policy made the decision right for Montana.
- Under the EPSDT program guidance, states have the authority to provide services that are determined medically necessary.
- Early intervention means starting with primary teeth.
- Prevention involves both primary and permanent teeth.

Eruption Chart

Erupt: come in... Shed: fall out

PRIMARY TEETH

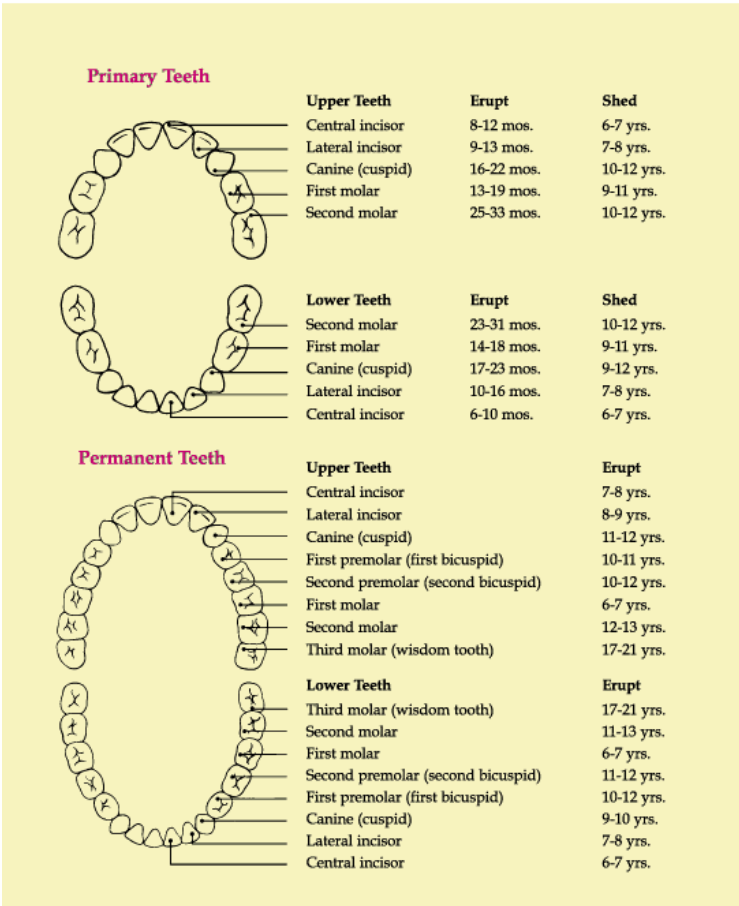
Upper Teeth	Erupt	Shed
First molar	1-2 yrs.	9-11 yrs.
Second molar	2-3 yrs.	10-12 yrs.
Lower Teeth	Erupt	Shed
First molar	1-2 yrs.	9-11 yrs.
Second molar	2-3 yrs.	10-12 yrs.

PERMANENT TEETH

Upper Teeth	Erupt
First molar	6-7 yrs.
Second molar	12-13 yrs.
Lower Teeth	Erupt
First molar	6-7 yrs.
Second molar	11-13 yrs.

Primary molars are potentially in for 8-9 years!

The Developing Smile: Tooth Eruption Charts



Sealing Primary and Permanent Molars

CMS-416

	Age 1-2	Age 3-5	Age 6-9	Age 10-14
.	Primary 1 st molar comes in	Primary 2 nd molar comes in	Primary's fall out, perm come in	Perm 2 nd molar comes in
MT data SFY12	411 kids 1463 sealants	1259 kids 3976 sealants	1814 kids 5926 sealants	1256 kids 3930 sealants

“What If” Chart

	Sealants provided SFY12	Projection if NO sealant applied	
		Filling	Stainless Steel Crown
Total Units	15,885	4932	4932
Distinct Members Age 1-20 (total eligibles 78,155)	4932	4932	4932
Costs	\$392,707	\$665,820	\$779,256
Notes	Average 3/person cost \$25 each	1/person Ave cost \$135	1/person Ave cost \$158

Source: MMIS paid claims data

Conclusion

- The cost per person to prevent decay ranged from \$25 to \$200, for the application of 1-8 sealants.
- The costs to treat decay ranges from \$65 - \$200 per tooth up to \$520 - \$1600 for all 8 molars.
- Sealants are effective in reducing occlusal caries in children, adolescents and adults.
- The cost of preventing decay is dwarfed when looking at the cost of treating decay.

What's Happening In Big Sky Country

- Partnership with MT Dental Association.
- Montana kids are asking...Who's my dentist?
<http://whosmydentist.com/>
- Outreach to New Providers, expanding our network.
- Provider Training; Spring and Fall, strengthen our current providers.
- Annual letter to families informing them of services.
- Support school-based dental sealant programs, which has a strong start.
- Support the practice standard of kids getting to the dentist by age 1.
 - AbCd program, Access to Baby and Child Dentistry.
- Encourage families to have a dental home.
- Transportation reimbursement.

Office Hours: Your Chance to Ask Questions of our Speakers

- Speakers
 - Barbara F. Gooch, DMD, MPH, Associate Director for Science Division of Oral Health, Centers for Disease Control and Prevention
 - April Burton, Medicaid Dental Manager Wyoming Dept. of Health, Div. of Healthcare Financing
 - Jan Paulsen, Dental Program Officer, Montana Department of Public Health and Human Services

Thank You

- Thank you for attending this month's CMS Learning Lab.
- Please take a few moments to answer some questions on this webinar. We appreciate the feedback!