

# Oral Health Care in CSHCN: State Medicaid Policy Considerations

## abstract

**OBJECTIVE:** Low dental care service utilization among Medicaid-enrolled children has often been attributed to low Medicaid reimbursement levels. The purpose of this study was to provide estimates of preventive dental care utilization by Medicaid-enrolled children with special health care needs (CSHCN) and investigate the association of Medicaid preventive dental care reimbursement levels with the receipt of preventive dental care.

**METHODS:** We analyzed data for 40 256 CSHCN (1–17 years of age). Unadjusted estimates of not needing, needing and receiving, and needing but not receiving preventive dental care are presented. Multilevel logistic regression models were fitted to examine associations between state Medicaid dental-procedure reimbursement and receipt of preventive dental care.

**RESULTS:** Some significant associations were found between state-level Medicaid dental-procedure reimbursements and receipt of preventive dental care. The strongest individual-level factor associated with not receiving needed preventive dental care was not receiving needed preventive medical care. Parents of Medicaid-enrolled CSHCN were less likely to report receiving needed preventive dental care and more likely to report not needing or not receiving preventive dental care than non-Medicaid-enrolled CSHCN.

**CONCLUSIONS:** Medicaid-enrolled CSHCN received less needed preventive dental care than non-Medicaid-enrolled CSHCN. An important link to receiving appropriate dental care may be the primary care provider. Raising the level of preventive dental care reimbursement along with other policy changes should increase the frequency of CSHCN receiving preventive dental services. State Medicaid agencies must develop models of medical-dental care management for CSHCN in their programs to ensure the most appropriate care. *Pediatrics* 2009; 124:S384–S391

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### KEY WORDS

children with special health care needs, National Survey of Children With Special Health Care Needs 2005–2006, preventive dental care, oral health policy, Medicaid

### ABBREVIATIONS

CSHCN—children with special health care needs

NS-CSHCN—National Survey of Children With Special Health Care Needs

SCHIP—State Children's Health Insurance Program

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Receipt of timely dental services is of particular importance to children with special health care needs (CSHCN) because of the higher prevalence of structural irregularities, infections, and disease among these children compared with those in the general population.<sup>1,2</sup> Preventive dental care has been recommended at yearly intervals by the American Academy of Pediatrics<sup>3</sup> and the American Academy of Pediatric Dentistry<sup>4</sup> for all CSHCN beginning at 6 months of age. Despite this recommendation, dental care was the most commonly reported unmet need by parents of CSHCN according to the 2001 National Survey of Children With Special Health Care Needs (NS-CSHCN) and the 1994–1995 National Health Interview Survey.<sup>5,6</sup> The prevalence rate for receiving needed (ie, parent-perceived) preventive dental care among CSHCN with public insurance is less than that for privately insured CSHCN.<sup>7</sup>

Medicaid has played an important role in maintaining the health of children with disabilities, insuring ~25% of all CSHCN and covering a broad range of services that meet their complex needs.<sup>8</sup> Benefits of the Medicaid program include the Early and Periodic Screening, Diagnosis, and Treatment services that are mandated for categorically qualified people younger than 21 years. Mandated dental services include oral screening; preventive services including instruction in self-care for oral hygiene, cleanings, and sealants to prevent pit and fissure caries; general dental care needed for the relief of pain, infections, tooth restoration, and maintenance of dental health; and other, more advanced procedures.

The utilization of dental care among Medicaid-enrolled CSHCN is not known, although dental care utilization rates are lower and rates of dental caries are higher among Medicaid-enrolled

children overall. A recent study of Medicaid recipients in North Carolina indicated that children enrolled in Medicaid or the State Children's Health Insurance Program (SCHIP) were 1.7 times more likely to have untreated dental caries than nonenrolled children and that those enrolled in Medicaid were significantly more likely than those enrolled in the SCHIP to have untreated dental caries.<sup>9</sup> The low level of service use among Medicaid-enrolled children in general has been attributed to a number of different reasons, but an often-cited reason is the lack of dentist participation in the program, which has its roots in multiple sources.<sup>10–12</sup>

Some have cited a shortage of dentists for the general population as a factor; however, even when there is an adequate supply of dentists, Medicaid participation may still be a problem.<sup>13</sup> Another frequently cited reason is the low reimbursement rates paid by Medicaid for rendered dental services. Several states have reported improvements in utilization resulting from policy changes focused on increasing provider participation.<sup>10–12,14–16</sup> However, service gaps remain, as indicated by the relatively high rate of unmet dental need of the lowest-income CSHCN.<sup>17</sup> Despite pressures to cut costs across a wide spectrum of public programs, low utilization of preventive oral health services among CSHCN will result in more costly, long-term expenditures for systemic illnesses and emergency interventions that are documented sequelae to oral health problems.<sup>18,19</sup> States would benefit from gaining a broader understanding of the individual- and state-level factors that influence whether Medicaid-enrolled CSHCN receive preventive dental care. The purpose of this study was to examine the hypothesis that states will vary significantly in the rates at which Medicaid-enrolled CSHCN receive pre-

ventive dental care and that CSHCN will be more likely to receive preventive dental care in states with higher reimbursement levels for preventive dental procedures.

## METHODS

### Variables

#### *Individual-Level Variables*

The independent individual-level variables included in this analysis have demonstrated or hypothesized associations with the dependent variables (Table 1).<sup>20,21</sup> All CSHCN in the analysis were categorized as either receiving or not receiving Medicaid insurance coverage at the time of the survey and/or at any time during the previous 12 months. For states with Medicaid expansion programs for children above the federal Medicaid upper income level, current Medicaid coverage was determined by responses (yes or no) to a question that asked if the child was covered by Medicaid. Parents in the remaining states were asked if the child was covered by Medicaid or the SCHIP (yes or no response). The Medicaid population among the latter respondents was determined by using an income-screening algorithm that was based on published state Medicaid upper income eligibility levels.<sup>22</sup> CSHCN in households at or below the upper income eligibility levels were included in the Medicaid population. When survey income bands did not match those in the eligibility criteria, the eligibility thresholds were lowered to correspond to the survey income band.

#### *State-Level Variables*

Data for state-level variables (Table 1) included in this study were obtained for the year 2005 if available; otherwise, data from the closest year were used. State Medicaid dental reimbursement fees were obtained from the American Dental Association na-

**TABLE 1** Individual- and State-Level Variables: NS-CSHCN, 2005–2006

Individual-level control variables	
Gender	1 Male
	2 Female
Functional limitations	1 Child's condition "never" affects his or her ability to do things children of the same age do
	2 Child's condition "sometimes" affects his or her ability to do things children of the same age do or it affects his or her ability to do things to a "moderate" degree
	3 Child's condition "usually" or "always" affects his or her ability to do things other children of the same age do or it affects his or her ability to do things "a great deal"
Language	1 English is the household language
	2 A language other than English is the household language
Age	1 Child is 1–5 y of age
	2 Child is 6–11 y of age
	3 Child is 12–17 y of age
Education	1 Highest level of education in household is less than high school
	2 Highest level of education in household is high school
	3 Highest level of education in household is beyond high school
Race/ethnicity	1 Hispanic
	2 Non-Hispanic white
	3 Non-Hispanic black
	4 Non-Hispanic other
Personal doctor	1 Child has $\geq 1$ person whom the parent thinks of as the child's doctor or nurse
	2 Child has no one whom the parent thinks of as the child's doctor or nurse
Preventive medical care	1 Parent reported that the survey child needed preventive medical care in the previous 12 mo and received all the care that was needed
	2 Parent reported that the survey child needed preventive medical care in the previous 12 mo but did not receive all the care that was needed
	3 Parent reported that the survey child did not need preventive medical care in the previous 12 mo
Dependent variables	
Preventive dental care	Parent reported that the survey child needed preventive dental care in the previous 12 mo and received all the care that was needed Parent reported that the survey child needed preventive dental care in the previous 12 mo but did not receive all the care that was needed Parent reported that the survey child did not need preventive dental care in the previous 12 mo
State-level control variables	
Dentists	Dentists per 100 000 people according to state, 2003
Medicaid spending	Medicaid spending per child according to state, 2005
Income	Median income according to state, 2005
Significant providers	Percentage of dentists who treated $\geq 50$ patients or submitted \$10 000 or more in claims according to state, 2002
State-level predictor variables <sup>a,b</sup>	
Dental procedures	Comprehensive oral exam, 2003
	Comprehensive radiographs, 2003
	Prophylaxis (cleaning), 2003
	Application of dental sealants, 2003

<sup>a</sup> Obtained from the American Dental Association national claims database, which contains reimbursement fees in dollars for diagnostic, preventive, restorative, endodontic, and oral surgery procedures and the corresponding percentile rank of the Medicaid reimbursements based on claims for the same procedures submitted by dentists to commercial insurers and other payers in each of the 50 states and the District of Columbia. The listed percentile ranks for dental procedures varied from <1 (which was rounded up to 1) to 99.

<sup>b</sup> Delaware's policy of reimbursing 85% of each dentist's submitted dental charges prevented its inclusion in all dental-procedure data sets.

tional claims database.<sup>23</sup> Because of data skew, the range of state percentile rank values for each dental procedure was divided into quintiles after exploring a variety of categorizing strategies that yielded equivalent results in the final multilevel analyses. State-level control variables were also divided into quintiles.<sup>24–27</sup>

### Outcome Variable

The outcome or dependent variable (Table 1) for the current analyses was the receipt of preventive dental care. Parents were first asked whether the child needed preventive dental care such as checkups or dental cleanings (yes or no responses) at any time in the previous 12 months and, if so, whether they received all the preventive dental care they needed. The 3 outcome (dependent) variables listed in Table 1 were derived from these 2 questions.

### Data Collection

Details of the survey methodology are presented elsewhere in this supplemental issue of *Pediatrics*.<sup>28</sup> From the main sample of 40 723 cases in which item nonresponse led to missing income values, the National Center for Health Statistics imputed values by using multiple imputation techniques. These multiply imputed values were used in all analyses. Although the American Academy of Pediatrics and American Academy of Pediatric Dentistry recommend beginning preventive services for CSHCN at the age of 6 months, estimates from the NS-CSHCN are available at yearly increments only.<sup>3,4</sup> Of the original sample, a total of 467 subjects younger than 1 year were excluded from the analysis.

### Analytic Approach

Unadjusted national estimates of needing and receiving preventive dental care, needing but not receiving preventive dental care, and not needing

preventive dental care were calculated as a function of selected child and family characteristics (individual-level variables) among the Medicaid versus non-Medicaid-enrolled populations. Multilevel logistic regression models based on a logit-link function were fitted by using generalized linear and latent mixed models (GLLAMM) in Stata 9.2.<sup>29</sup> The following describes the multilevel modeling strategy:

- Model 1: To determine the significance of state-level variability in receiving preventive dental care in Medicaid-enrolled CSHCN, a 2-level model was estimated with only a

constant term in the fixed and random parts (null model).

- Model 2: To estimate state-level variation in preventive dental care after controlling for individual effects, the second model included all individual-level variables that were significant in bivariate analysis ( $P \leq .05$ ).
- Model 3: To identify state-level characteristics that accounted for state variation in receiving preventive dental care, state variables were entered into the model if they achieved significance in bivariate analysis ( $P \leq .05$ ).

All individual-level estimates were statistically weighted to reflect population totals by using sample weights provided by the data-collection agency. The state-level weight was assigned a value of 1 because all states were included in the analysis.

**RESULTS**

Approximately 66% of parents with CSHCN enrolled in Medicaid (Table 2) reported needing and receiving all needed preventive dental care compared with ~79% of parents of non-Medicaid-enrolled CSHCN (ie, uninsured or with other insurance coverage). Higher pro-

**TABLE 2** Prevalence of Routine Preventive Dental Care as a Function of Medicaid Coverage and Selected Demographic Characteristics: NS-CSHCN, 2005–2006

Covariates	Needed and Received Preventive Dental Care		Needed, but Did Not Receive Preventive Dental Care		Did Not Need Preventive Dental Care	
	Medicaid, % (SE)	Non-Medicaid, % (SE)	Medicaid, % (SE)	Non-Medicaid, % (SE)	Medicaid, % (SE)	Non-Medicaid, % (SE)
Total population (N = 40 028)	66.3 (0.87)	78.7 (0.41)	8.8 (0.51)	5.6 (0.24)	24.9 (0.80)	15.7 (0.36)
Age, y						
1–5	48.3 (1.93)	53.0 (1.17)	6.0 (1.05)	3.8 (0.45)	45.7 (1.92)	43.1 (1.16)
6–11	75.2 (1.21)	85.6 (0.54)	8.1 (0.73)	5.1 (0.34)	16.7 (1.07)	9.3 (0.45)
12–17	69.2 (1.29)	83.3 (0.58)	11.3 (0.83)	6.8 (0.42)	19.6 (1.12)	9.9 (0.45)
Gender						
Male	66.0 (1.09)	78.1 (0.55)	8.1 (0.62)	5.7 (0.32)	25.9 (1.02)	16.2 (0.49)
Female	67.3 (1.31)	79.6 (0.61)	9.9 (0.80)	5.4 (0.36)	22.8 (1.19)	15.0 (0.53)
Race/ethnicity						
Non-Hispanic white	69.1 (1.09)	81.6 (0.43)	9.4 (0.69)	4.6 (0.22)	21.4 (0.96)	13.8 (0.39)
Non-Hispanic black	64.5 (1.70)	70.7 (1.47)	7.0 (0.78)	8.4 (1.01)	29.0 (1.70)	20.9 (1.26)
Hispanic	62.7 (2.42)	70.3 (1.64)	10.0 (1.66)	8.5 (1.21)	27.2 (2.20)	21.2 (1.36)
Non-Hispanic other	67.9 (2.66)	75.4 (1.72)	10.1 (1.75)	6.0 (0.87)	22.5 (2.47)	18.7 (1.58)
Language						
English	66.9 (0.88)	79.4 (0.41)	8.8 (0.49)	5.5 (0.24)	24.3 (0.81)	15.0 (0.36)
Non-English	59.3 (4.00)	59.1 (2.86)	8.5 (2.99)	7.7 (1.28)	32.3 (3.68)	33.2 (2.77)
No. of children in household						
1	65.9 (1.36)	75.7 (0.71)	9.0 (0.89)	5.7 (0.37)	25.1 (1.22)	18.6 (0.66)
2	63.8 (1.50)	80.5 (0.62)	11.6 (1.01)	5.1 (0.35)	24.7 (1.36)	14.4 (0.55)
3	72.1 (1.72)	80.7 (0.99)	6.1 (0.83)	6.1 (0.74)	21.8 (1.58)	13.2 (0.77)
4–6	64.8 (2.38)	78.8 (1.51)	7.1 (1.14)	4.9 (0.67)	28.1 (2.31)	16.3 (1.41)
Education						
<High school	58.0 (2.41)	62.6 (2.74)	8.8 (1.24)	6.9 (1.29)	33.2 (2.35)	30.5 (2.62)
High school	62.9 (1.44)	69.3 (1.22)	8.8 (0.83)	8.3 (0.78)	28.2 (1.36)	22.4 (1.08)
>High school	72.3 (1.07)	81.9 (0.42)	8.8 (0.69)	4.8 (0.24)	19.0 (0.92)	13.3 (0.36)
Functional limitations						
Never	65.6 (1.77)	82.2 (0.60)	6.1 (0.80)	3.2 (0.27)	28.4 (1.70)	14.6 (0.56)
Somewhat/moderate	67.2 (1.29)	78.9 (0.64)	8.7 (0.75)	5.8 (0.35)	24.1 (1.17)	15.3 (0.57)
Usually/always/a great deal	66.2 (1.42)	71.1 (1.05)	10.8 (0.94)	10.4 (0.80)	23.0 (1.29)	18.6 (0.85)
Has personal doctor						
Yes	67.8 (0.89)	79.6 (0.41)	8.4 (0.49)	5.4 (0.25)	23.8 (0.83)	15.1 (0.36)
No	52.9 (3.20)	64.7 (2.01)	12.4 (2.52)	9.0 (1.11)	34.7 (3.00)	26.3 (1.91)
Preventive medical care						
Needed and received	73.4 (0.97)	82.6 (0.43)	7.7 (0.58)	4.3 (0.25)	19.0 (0.86)	13.1 (0.38)
Needed, but did not receive	27.7 (4.53)	32.6 (3.43)	45.7 (5.48)	40.5 (3.70)	26.7 (5.12)	27.0 (3.31)
Did not need	52.8 (1.75)	67.6 (0.99)	7.9 (0.85)	7.6 (0.59)	39.4 (1.73)	24.8 (0.91)

portions of CSHCN with Medicaid received needed preventive dental care if they were white, 6 to 11 years of age, English-speaking, from a 3-child family with a higher educational background, had a personal doctor, and reported needing and receiving preventive medical care. Medicaid-enrolled CSHCN with greater functional limitations were nearly as likely to receive needed preventive dental care as those with fewer limitations. For those in the non-Medicaid-enrolled group, similar patterns were observed except that preventive dental care varied to a greater extent with functional limitations, although the level of care was higher for non-Medicaid-enrolled CSHCN regardless of the level of functional limitations.

Parents of Medicaid-covered CSHCN were more likely to report not receiving needed preventive dental care if their child was 12 to 17 years old, Hispanic or non-Hispanic other, more functionally limited, had no personal doctor, were from a family with 2 children, and had needed but not received preventive medical care. The principal difference between the non-Medicaid-enrolled and Medicaid-enrolled groups was that those in the latter group were more likely not to receive preventive dental care when it was needed.

Parents of Medicaid-covered CSHCN who reported not needing preventive dental care were more likely to have CSHCN who were 1 to 5 years old and Hispanic or non-Hispanic black, had fewer functional limitations, had 4 or more siblings and no personal doctor, spoke a language other than English at home, and were reported not to need preventive medical care. For non-Medicaid-covered CSHCN, similar relationships were noted. Parents of non-Medicaid-enrolled children were less likely overall to report not needing preventive dental care.

Table 3 lists the multilevel multivariate results for Medicaid-enrolled CSHCN

**TABLE 3** Multilevel Odds Ratios for Not Receiving Needed Preventive Dental Care Among Medicaid-Enrolled CSHCN: NS-CSHCN, 2005–2006

Parameters	Model 1 (Null)	Model 2 OR (95% CI)	Model 3a OR (95% CI)	Model 3b OR (95% CI)
<b>Individual level</b>				
<b>Age, y</b>				
1–5		Reference	Reference	Reference
6–11		1.36 (0.94–1.96)	1.40 (0.96–2.04)	1.37 (0.94–1.99)
12–17		1.90 (1.27–2.85)	1.91 (1.26–2.89)	1.91 (1.27–2.88)
<b>Gender</b>				
Male		0.76 (0.64–0.91)	0.77 (0.65–0.92)	0.76 (0.63–0.90)
Female		Reference	Reference	Reference
<b>Functional limitations</b>				
Never affected		Reference	Reference	Reference
Sometimes/moderately affected		1.39 (0.99–1.97)	1.39 (0.97–1.97)	1.39 (0.98–1.97)
Affected usually/always/a great deal		1.82 (1.22–2.71)	1.81 (1.21–2.73)	1.81 (1.21–2.70)
<b>Total No. of children in household</b>				
1		1.45 (1.12–1.89)	1.47 (1.12–1.92)	1.45 (1.12–1.88)
2		1.97 (1.49–2.61)	1.97 (1.47–2.64)	1.97 (1.48–2.61)
3		Reference	Reference	Reference
4–6		1.21 (0.71–2.05)	1.26 (0.75–2.14)	1.22 (0.72–2.07)
<b>Personal doctor</b>				
Has personal doctor		Reference	Reference	Reference
No personal doctor		1.40 (0.79–2.47)	1.45 (0.82–2.55)	1.41 (0.80–2.48)
<b>Preventive medical care</b>				
Received needed care		Reference	Reference	Reference
Needed but did not receive		9.41 (5.86–15.1)	9.72 (6.09–15.5)	9.43 (5.88–15.1)
Did not need		0.99 (0.73–1.34)	1.01 (0.75–1.37)	0.99 (0.73–1.34)
<b>State-level reimbursement</b>				
<b>Prophylaxis</b>				
First quintile			Reference	
Second quintile			1.25 (0.95–1.63)	
Third quintile			1.45 (1.14–1.84)	
Fourth quintile			1.01 (0.42–2.45)	
Fifth quintile			2.12 (1.64–2.74)	
<b>Sealants</b>				
First quintile				Reference
Second quintile				1.14 (0.85–1.54)
Third quintile				1.27 (0.67–2.38)
Fourth quintile				1.08 (0.80–1.45)
Fifth quintile				1.02 (0.42–2.45)
Between-state variance <sup>a</sup>	0.1059 (3.07)	0.1023 (3.10)	0.0652 (2.25)	0.0715 (2.38)

CI indicates confidence interval. OR indicates odds ratio.

<sup>a</sup> The variance estimate divided by the SE is shown in parentheses.

who did not receive needed preventive dental care. In the null model, there was a statistically significant variation in not receiving preventive dental care across states ( $S^2 = 0.1059$ ,  $SE = 0.035$ ;  $P < .002$ ). Model 2 shows the independent effect of gender, functional limitations, number of children in the household, having a personal doctor, and receiving preventive medical care on receiving preventive dental care. Controlling for individual characteristics only slightly reduced the variance between states, which remained statistically significant ( $S^2 = 0.1023$ ,  $SE =$

$0.033$ ;  $P < .002$ ). CSHCN who needed but did not receive preventive medical care had  $>9$  times greater odds of not receiving preventive dental care than those who received needed medical care. After adjusting for all covariates, CSHCN who were 12 to 17 years of age, had the greatest functional limitations, and had 1 to 2 siblings also had significantly greater odds of not receiving preventive dental care.

To construct model 3, only the independent variables that showed a statistically significant association with re-

ceiving preventive dental care were considered along with the 4 state-level control variables. Because of the lack of significance or issues of collinearity, the following predictor and control variables were excluded from the analysis: comprehensive oral examination; comprehensive radiographs; number of Medicaid dentists; and dollars per Medicaid-enrolled child.

Separate models (model 3a and model 3b) were constructed for each of the remaining 2 procedures: prophylaxis and sealant application. Table 3 shows that the adjusted odds of the individual-level variables were not altered appreciably by the addition of state-level variables. Also shown is that, to some extent, receiving preventive dental care was associated with Medicaid reimbursement for prophylaxis. Although the relationship between receiving needed preventive dental care and reimbursement was not monotonic, there was some indication that a higher reimbursement level for oral prophylaxis was associated with higher prevalence of receiving needed preventive dental care. However, the between-state variances for models 3a and 3b indicate that statistically significant variances remained ( $S^2 = 0.0652$ ,  $SE = 0.029$  and  $S^2 = 0.0715$ ,  $SE = 0.030$ , respectively;  $P < .02$ ), although reduced in size, which indicates that the effects of other factors were unaccounted for in these models. No association between sealant-application reimbursement rates and receipt of preventive dental care was noted.

## DISCUSSION

Our study supports the hypothesis that states vary significantly in the rate at which their Medicaid-enrolled CSHCN receive needed preventive dental care. The fact that all children enrolled in Medicaid are eligible to receive preventive dental care would suggest that factors other than personal finances are either actual or perceived impediments to accessing preventive care.

Although each child enrolled in Medicaid is covered by the Early and Periodic Screening, Diagnosis, and Treatment mandate regardless of state of residence, several studies have indicated that dentists generally regard participation in the Medicaid system as problematic.<sup>10–16</sup> Louisiana dentists cited broken appointments, low fees, patient noncompliance, unreasonable denial of payments, slow payment, and complicated paperwork as prevalent problems.<sup>12</sup> Dentists in Connecticut who did not rank Medicaid reimbursement rates as acceptable/equivocal were less likely to accept new Medicaid-enrolled children into their practices.<sup>14</sup> Alabama dentists participated significantly less if they did not perceive Medicaid reimbursement as generous.<sup>10</sup>

In this study we determined the association between receiving preventive dental care and state-level Medicaid reimbursement levels. It was shown that although individual-level characteristics of the child and family were significantly associated with receiving preventive dental care, the between-state variance was unaffected by accounting for these variables. However, higher levels of Medicaid reimbursement for oral prophylaxis were associated with lower rates of not receiving preventive dental care, although significant variance remained, suggesting that other factors were unaccounted for.

These findings comport with state demonstration projects that exemplified the benefits of enhancing Medicaid's fee structure. For example, Alabama increased provider participation (~39%) and the number of children receiving dental services (~58%) by increasing reimbursement rates and streamlining administrative requirements.<sup>15</sup> Michigan offered rates identical to private dental insurance plans and increased utilization 39%.<sup>16</sup> Dental case management, which in-

cluded training in claims procedures, educating clients in the use of dental services and keeping appointments, linking clients to dental offices, identifying potential barriers to care, and helping clients obtain transportation, allowed a county in New York to increase the use of preventive dental care among its Medicaid population from 9% to 41%.<sup>30</sup>

However, it can be concluded from these various findings that state Medicaid policy changes should not rely on simple enhancement to fee structures. There were several examples in the current data set of states that had relatively high reimbursement rates on some procedures with relatively low preventive care rates. State reports of increasing preventive dental care prevalence in the Medicaid population have included multipronged efforts to address the major difficulties expressed by dentists. Particularly appropriate to the population of CSHCN is the inclusion of case management with care coordination by the primary care provider within a medical home.<sup>17</sup> Dental care for CSHCN in some cases presents issues that require the judgment of a medical provider.

Another notable finding in the current analysis is that nearly 25% of all parents of Medicaid-enrolled CSHCN did not perceive a need for preventive dental care compared with ~9% who did not receive needed care. Others have found that perceived need for prescription medications, therapy, and specialty services varies with income and educational status of the parent, with lower-income and less educated parents of CSHCN reporting a lack of need for medications and services regardless of activity limitations or severity of the child's condition.<sup>31,32</sup> The results of this study indicate that preventive dental care is an additional service for which a fairly large number of parents of CSHCN do not recognize a

need. The Medicaid-enrolled CSHCN in this study were the poorest children, and the parents were the least educated. Previous research has indicated that failure to utilize benefits may be related to a lack of awareness of their benefit or availability.<sup>33</sup>

With this study we also found that parents of CSHCN who did not perceive a need for preventive medical care were more likely not to perceive a need for preventive dental care. This clustering of characteristics (ie, lacking a perceived need for medical and dental care) has led to the suggestion that Medicaid pro-

grams explore models for increasing emphasis on oral health in primary care and integrating preventive dental and medical care by using a public health case management model.<sup>34,35</sup> Although CSHCN are eligible for case management in many state Medicaid programs, there is little information about the extent to which it is actually implemented or the extent to which dental referral, follow-up, and coordination of medical and dental care exist.

### LIMITATIONS

This study has certain limitations. Estimates of preventive dental visits were

obtained through parent report, possibly resulting in bias introduced by poor recall or socially desirable responses. Apart from the median state income and state-level distribution of dentists, state-level variables were drawn from years other than the one in which the survey was administered and may not have captured the changes in reimbursements states may have made between 2003 and 2005. The data were limited and not representative of the full breadth of state Medicaid policy considerations that affect receipt of preventive dental care.

### REFERENCES

1. Foster H, Fitzgerald J. Dental diseases in children with chronic illness. *Arch Dis Child*. 2005;90(7):703–708
2. Weddell J, Sanders B, Jones J. Dental problems of children with disabilities. In: McDonald RE, Avery DR, Dean JA, eds. *Dentistry for the Child and Adolescent*. St Louis, MO: Mosby; 2004:524
3. American Academy of Pediatrics, Section on Pediatric Dentistry. Oral health risk assessment timing and establishment of a dental home. *Pediatrics*. 2003;111(5 pt 1):1113–1116
4. American Academy of Pediatric Dentistry. Guideline on periodicity of examination, preventive dental services, anticipatory guidance/counseling, and oral treatment for infants, children, and adolescents. Available at: [www.aapd.org/media/Policies\\_Guidelines/G\\_Periodicity.pdf](http://www.aapd.org/media/Policies_Guidelines/G_Periodicity.pdf). Accessed March 14, 2008
5. Lewis C, Robertson A, Phelps S. Unmet dental care needs among children with special health care needs: implications for the medical home. *Pediatrics*. 2005;116(3). Available at: [www.pediatrics.org/cgi/content/full/116/3/e426](http://www.pediatrics.org/cgi/content/full/116/3/e426)
6. Newacheck P, McManus M, Fox H, Hung Y, Halfon N. Access to health care for children with special health care needs. *Pediatrics*. 2000;105(4 pt 1):760–766
7. Kenney MK, Kogan MD, Crall JJ. Parental perceptions of dental/oral health among children with special health care needs. *Ambul Pediatr*. 2008;8(5):312–320
8. Tang MH, Hill KS, Boudreau AA, Yucel RM, Perrin JM, Kuhlthau KA. Medicaid managed care and the unmet need for mental health care among children with special health care needs. *Health Serv Res*. 2008;43(3):882–900
9. Brickhouse TH, Rozier RG, Slade GD. Effects of enrollment in Medicaid versus the State Children's Health Insurance Program on kindergarten children's untreated dental caries. *Am J Public Health*. 2008;98(5):876–881
10. Al Agili DE, Pass MA, Bronstein JM, Lockwood SA. Medicaid participation by private dentists in Alabama. *Pediatr Dent*. 2007;29(4):293–302
11. Morris PJ, Freed JR, Nguyen A, Duperon DE, Dickmeyer J. Pediatric dentists' participation in the California Medicaid program. *Pediatr Dent*. 2004;26(1):79–86
12. Shulman JD, Ezemobi EO, Sutherland JN, Barsley R. Louisiana dentists' attitudes toward the dental Medicaid program. *Pediatr Dent*. 2001;23(5):395–400
13. Guay AH. Access to dental care: the triad of essential factors in access-to-care programs. *J Am Dent Assoc*. 2004;135(6):779–785
14. Nainar SM. Dentists' ranking of Medicaid reimbursement rates as a measure of their pediatric Medicaid participation. *ASDC J Dent Child*. 2000;67(6):422–424, 375, 407
15. Greene-McIntyre M, Finch MH, Searcy J. Smile Alabama! initiative: interim results from a program to increase children's access to dental care. *J Rural Health*. 2003;19(suppl):407–415
16. Eklund SA, Pittman JL, Clark SJ. Michigan Medicaid's Healthy Kids dental program. *J Am Dent Assoc*. 2003;134(11):1509–1515
17. Lewis C, Robertson AS, Phelps S. Unmet dental health care needs among children with special health care needs: implications for the medical home. *Pediatrics*. 2005;116(3). Available at: [www.pediatrics.org/cgi/content/full/116/3/e426](http://www.pediatrics.org/cgi/content/full/116/3/e426)
18. Pettinato ES, Webb MD, Seale NS. A comparison of Medicaid reimbursement for non-definitive pediatric dental treatment in the emergency room versus periodic preventive care. *Pediatr Dent*. 2000;22(6):463–468
19. Navazesh M, Mulligan R, Sorbel S. Toxic shock and Down syndrome in a dental patient: a case report and review of the literature. *Spec Care Dentist*. 1994;14(6):246–251
20. Szilagyi P, Shenkman E, Brach C, et al. Children with special health care needs enrolled in the State Children's Health Insurance Program (SCHIP): patient characteristics and health care needs. *Pediatrics*. 2003;112(6 pt 2). Available at: [www.pediatrics.org/cgi/content/full/112/6/SE1/e508](http://www.pediatrics.org/cgi/content/full/112/6/SE1/e508)
21. Newacheck P, Hung Y, Wright K. Racial and ethnic disparities in access to care for children with special health care needs. *Ambul Pediatr*. 2002;2(4):247–254
22. National Academy for State Health Policy. Income eligibility levels and cost sharing for children in Medicaid and SCHIP and other populations covered with SCHIP funds: July 2005. Available at: [www.nashp.org/Files/Elig\\_and\\_cost\\_sharing\\_Aug\\_2005.pdf](http://www.nashp.org/Files/Elig_and_cost_sharing_Aug_2005.pdf). Accessed March 6, 2008
23. American Dental Association. State innovations to improve dental access for low-income children: a compendium update. Available at: [www.ada.org/prof/resources/topics/medicaid\\_reports.asp#reports](http://www.ada.org/prof/resources/topics/medicaid_reports.asp#reports). Accessed March 6, 2008

24. American Dental Association. Distribution of dentists in the United States by region and state, 2005. Available at: [www.researchandmarkets.com/reports/544221](http://www.researchandmarkets.com/reports/544221). Accessed September 25, 2009
25. US Census Bureau. Two-year-average median household income by state: 2003–2005. Available at: [www.census.gov/hhes/www/income/income05/statemhi2.html](http://www.census.gov/hhes/www/income/income05/statemhi2.html). Accessed April 20, 2008
26. Urban Institute; Kaiser Commission on Medicaid and the Uninsured. Medicaid payments per enrollee, FY 2005. Available at [www.statehealthfacts.org](http://www.statehealthfacts.org). Accessed April 17, 2008
27. Oral Health America. Keep smiling: oral health in America. Available at [www.oralhealthamerica.org/pdf/2003ReportCard.pdf](http://www.oralhealthamerica.org/pdf/2003ReportCard.pdf). Accessed April 19, 2008
28. Kogan MD, Strickland BB, Newacheck PW. Building systems of care: findings from the National Survey of Children With Special Health Care Needs. *Pediatrics*. 2009; 124(suppl 4):S333–S336
29. Rabe-Hesketh S, Skrondal A. *Multilevel and Longitudinal Modeling using Stata*. College Station, TX: Stata Press; 2005
30. Greenberg BJ, Kumar JV, Stevenson H. Dental case management: increasing access to oral health care for families and children with low incomes. *J Am Dent Assoc*. 2008; 139(8):1114–1121
31. Porterfield SL, McBride TD. The effect of poverty and caregiver education on the perceived need and access to health services among children with special health care needs. *Am J Public Health*. 2007;97(2): 323–329
32. Mayer ML, Slifkin RT, Skinner AC. The effects of rural residence and other social vulnerabilities on subjective measures of unmet need. *Med Care Res Rev*. 2005;62(5): 617–628
33. Nagahama SI, McNabb K, Vanderlinde M, et al. Improving utilization of preventive dental services by Medicaid-enrolled children: focus on the parents. *ASDC J Dent Child*. 2002;69(3):325–331
34. Mouradian WE, Wehr E, Crall JJ. Disparities in children's oral health care and access to dental care. *JAMA*. 2000;284(20):2625–2631
35. Wysen KH, Hennessy PM, Lieberman MI, Garland TE, Johnson SM. Kids get care: integrating preventive dental and medical care using a public health case management model. *J Dent Educ*. 2004;68(5): 522–530

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