Dentists’ participation and children’s use of services in the Indiana dental Medicaid program and SCHIP
Assessing the impact of increased fees and administrative changes


Lack of access to dental Medicaid services (Title XIX of the Social Security Act) is a significant problem in most states. According to a report by the inspector general of the U.S. Department of Health and Human Services, only one in five Medicaid-enrolled children receive any dental services annually. Yet, the Medicaid program is the most important source of dental insurance for low-income Americans. Most children living below the poverty level who receive dental care do so through the Medicaid program.

One of the primary barriers to receiving dental care through the Medicaid program is low dentist participation in the program. Numerous studies have documented that as few as 30 percent of licensed dentists in a state allow more than 10 percent of their patients to be Medicaid enrollees, and only one of six dentists who participate in the program receive $10,000 or more in Medicaid payments per year. Reasons for the low dentist participation rate include program-related issues such as complicated paperwork, slow reimbursement, payment delays often...
due to paperwork issues and claims denials, as well as patient-related issues such as the perception that Medicaid-enrolled patients break appointments more frequently than others and are less compliant with treatment recommendations.3,5,6,8,9 However, the problem most frequently reported by dentists is low reimbursement rates.3,5,6,8,9

Another program designed to improve access to care for low-income children is the State Children’s Health Insurance Program (SCHIP) (Title XXI of the Social Security Act). Like Medicaid, SCHIP is funded partly by the federal government and partly by the states. However, SCHIP is intended for children in families with income above the threshold for Medicaid eligibility—up to 200 percent of the federal poverty level (FPL) (that is, the working poor).10 The 1998 law authorizing SCHIP gave states flexibility in how they could implement their SCHIP.10 State SCHIPs can be

- expansions of their existing Medicaid program;
- separate programs, often using private managed care organizations to provide services;
- combinations of an expanded Medicaid program and a separate program.

The intent of both SCHIP and Medicaid programs is to provide lower-income children with the same quality health care that privately insured children receive.10

In an effort to improve access to care, a number of states (for example, South Carolina, Georgia, Vermont and Indiana) have been experimenting with innovations to their state Medicaid programs.11 Indiana has made significant improvements in its reimbursement rates and program administration in an effort to improve access to dental Medicaid services.

Reforms to the Indiana dental Medicaid program began in July 1996 when payment was changed from a capitation-based system to a fee-for-service system. In September 1997, prior authorization requirements were eliminated for dental services. In August 1998, dental services were removed entirely from the risk-based managed care organizations. The most significant change occurred, however, in May 1998, when dental reimbursement rates were increased to 100 percent of the 75th percentile of usual and customary fees.

Overall, the increased reimbursement rates resulted in a 147 percent increase in fees, doubling the reimbursement for many procedures. For example, the mean payment (that is, the total cost of all procedures divided by the number of procedures) for a diagnostic procedure (for example, examinations or radiographs) increased from $15.48 to $30.25, an increase of 95 percent. The mean payment for restorative procedures (for example, amalgam and resin-based composite restorations and stainless steel crowns) increased from $38.94 to $90.38, an increase of 132 percent.

With the implementation of a Medicaid expansion-type SCHIP (M-SCHIP) program in 1998, eligibility for the Indiana Medicaid program also was changed. M-SCHIP expanded to include children whose family incomes were up to 150 percent of the FPL (package A) and then, in January 2000, to include children whose family incomes were from 150 to 200 percent of the FPL (package C). Dentists enrolled in the Medicaid program are automatically eligible to treat children enrolled through M-SCHIP.

The purpose of this study was to evaluate whether administrative changes in the Indiana dental Medicaid program—including higher fee schedules for dental services that began in 1998—increased the level of participation by Indiana dentists, increased the utilization of dental services by children enrolled in the program, or both.

**METHODS**

We evaluated the relationship between administrative changes and increased reimbursement in the Indiana dental Medicaid program and dentists’ participation and children’s utilization of services by comparing data from two years before the reimbursement changes were made with data from two years after the changes were made. We used Indiana Medicaid administrative data in this study, with utilization of services serving as a proxy for access to dental care. The Indiana Department of Family and Social Services Administration provided the requested data from Medicaid claims and enrollment files for these analyses, and it was reimbursed for the data processing costs.

We received a list of dentists (according to identification number) with the number of claims they submitted and the dollar amounts they received during fiscal years 1997, 1998, 1999 and 2000, as well as the number of procedures provided to children according to procedure code for each of the four years. Indiana’s fiscal year runs from July 1 to June 30. We used computer...
spreadsheets to complete these analyses. We used data only for patients younger than 21 years who resided in Indiana.

We used the number of licensed dentists in Indiana as the denominator for calculating rates of dentist participation. The Indiana Department of Public Health provided us with this information. Information from general dentists, pediatric dentists, endodontists, oral surgeons, periodontists and dental clinics was included in the analyses. We considered group practices and dental clinics to be single providers in the analysis, which may have underestimated the exact number of dentists participating; however, the number should be relatively consistent before and after the fee increase.

For the analysis of dental utilization, we determined the types of services and their associated costs from billed procedures and net expenditures in each fiscal year. The dental procedures and associated expenditures then were grouped into major dental treatment categories according to procedure codes. We selected 46 ADA procedure codes to represent the most common dental procedures performed in children (that is, diagnostic: 00110 through 00330; preventive: 01120 through 01330 and 04355; restorative: 02110 through 02931; other: 03220, 07110, 07120, 01510 through 01525 and 09420).12

RESULTS

Two years after reimbursement rates were increased, we found an increase in both the level of dentist participation in the Indiana dental Medicaid program and the number of children utilizing dental services.

Dentist participation in Medicaid. From the beginning of the study period (FY 1997) through FY 2000, the number of licensed dentists in Indiana remained relatively constant. However, between 1997 and 2000, the number of dentists enrolled in Medicaid (that is, had a Medicaid provider number and was able to treat a Medicaid-enrolled child) increased by 378 (Table 1).

The number of dentists who participated in the program (that is, billed for at least one Medicaid patient visit) increased from 770 in 1997 to 1,096 in 2000 (Table 1), a 42.3 percent increase. Thus, the percentage of all dentists who participated in Medicaid rose from 21.9 to 30.6 percent, while the percentage of Medicaid-enrolled dentists who treated a Medicaid-enrolled child rose from 57.2 to 63.6 percent during the four-year study period (Table 1).

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**TABLE 1**

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>NUMBER (PERCENTAGE) OF DENTISTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before the Fee Increase</td>
</tr>
<tr>
<td>Number of Licensed Dentists in Indiana†</td>
<td>3,517</td>
</tr>
<tr>
<td>Indiana Dentists Enrolled in Medicaid</td>
<td>1,345 (38.2)</td>
</tr>
<tr>
<td>Indiana Dentists Participating in Medicaid</td>
<td>770 (21.9)</td>
</tr>
<tr>
<td>Enrolled Dentists Participating in Medicaid</td>
<td>770 (57.2)</td>
</tr>
</tbody>
</table>

* FY: Fiscal year.
† The authors used an average of the number of dentists in two calendar years to determine the number of dentists in each fiscal year (for example, the number of dentists in FY 1997 is based on 1996 and 1997 numbers).
‡ This is the number of dentists in early January 1997 instead of the number of dentists for FY 1997.
through Medicaid and children enrolled through the higher-income M-SCHIP.

**Type and intensity of dental services.** The total number of dental visits for all Medicaid-enrolled children increased by more than 160,000 during the study period (Table 3). The number of visits per child who had at least one visit remained relatively constant at about two visits per year during the four-year period. In 2000, the mean number of dental visits for children in the traditional Medicaid program was the same as that for children in M-SCHIP.

For children with at least one dental visit, the number of procedures per patient actually declined about 17 percent from 1997-1998 to 1999-2000 (Table 4). By 2000, the total number of procedures increased by about 560,000—more than twice the annual number before the rate increase. The mix in the types of dental services provided to this population did not change significantly after the fee increase. About 33 percent of the procedures were diagnostic (for example, examinations, radiographs), about 40 percent were preventive (for example, prophylaxis, sealants) and about 20 percent were restorative. Future studies should examine the 17 percent decline in service intensity.

**Costs of dental care.** From 1997 to 2000, total dental Medicaid expenditures for children rose from $7.8 million to $37.7 million. For children receiving dental services, the annual cost of care was $113 per child in 1997 ($9 per month), and it increased to $255 per child ($21 per month) in 2000. On a per–enrolled-child basis, annual dental costs were $20 per child in 1997 ($1.70 per month), increasing to $80 per child in 2000 ($6.70 per month). Costs by service category shifted slightly over time, with 5 percent more of the money spent in 2000 devoted to restorative services (40 percent) than in previous years (Figure 2, page 522).
DISCUSSION

The purpose of this descriptive study was to evaluate whether an association existed between higher dental reimbursement rates and improved access to care in the Indiana dental Medicaid program for children. All key process measures related to access to dental care increased, including the number of dentists enrolled in Medicaid, the number of dentists participating in Medicaid and the number of children that participating dentists were willing to treat.

Although the concurrent administrative changes made it impossible in this study to estimate the impact of the fee increase alone, we found a positive relationship between the fee increase and dentist participation and enrollee dental care utilization. This finding supports the results of previous studies that showed that the perceived low payment rates were one of the most important predictors of—if not the number 1 factor in determining—whether a dentist participates in Medicaid.3,5,8

Despite the increase in dentist enrollment and participation, however, by the end of the study period, more than 50 percent of dentists in Indiana were not enrolled in the Medicaid program, and fewer than one-third billed for even one Medicaid patient in their practices annually. Overall, three-fourths of dentists in the state either were not participating at all or were seeing fewer than 10 Medicaid-enrolled children during 2000.

This limited participation increases the burden on those dentists who are willing to accept Medicaid patients in their practices. If every licensed dentist in Indiana, however, were willing to participate, each dentist would need to accept an average of 2.5 new Medicaid-enrolled children per week for all of these children to have a regular source of dental care (assuming that the geographical distribution of dentists statewide matches the distribution of Medicaid-enrolled children). This number actually overestimates the potential burden on dentists, because not all Medicaid-enrolled children will attempt to access dental services in any given year.

On the basis of a recently released report of a demonstration program in Michigan that provided private dental insurance to Medicaid enrollees in select counties, one might expect a 40 to 45 percent utilization rate for Medicaid-enrolled children if they had similar access to care as a privately insured population.11 Thus, a more realistic expectation might be an average of one to two patients per week if all dentists in Indiana participated.

<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>NUMBER OF DENTAL VISITS PER CHILD WITH A VISIT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGRAM</td>
<td>MEAN NO. OF VISITS PER CHILD (TOTAL NO. OF VISITS)</td>
</tr>
<tr>
<td></td>
<td>Before the Fee Increase</td>
</tr>
<tr>
<td>M-SCHIP†</td>
<td>NA‡</td>
</tr>
<tr>
<td>Medicaid</td>
<td>1.81 (124,398)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1.81 (124,398)</td>
</tr>
</tbody>
</table>

* FY: Fiscal year.
† M-SCHIP: Medicaid-State Children’s Health Insurance Program.
‡ NA: Not applicable (because the M-SCHIP program had not yet begun).

<table>
<thead>
<tr>
<th>TABLE 4</th>
<th>NUMBER OF DENTAL PROCEDURES PER CHILD WITH A VISIT, BY SERVICE CATEGORY.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TYPE OF PROCEDURE</td>
<td>MEAN NO. OF PROCEDURES PER CHILD (TOTAL NO. OF PROCEDURES)</td>
</tr>
<tr>
<td></td>
<td>Before the Fee Increase</td>
</tr>
<tr>
<td>Diagnostic</td>
<td>2.11 (145,315)</td>
</tr>
<tr>
<td>Preventive</td>
<td>2.55 (174,945)</td>
</tr>
<tr>
<td>Restorative</td>
<td>1.29 (88,645)</td>
</tr>
<tr>
<td>Other</td>
<td>0.37 (25,097)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>8.25 (434,002)</td>
</tr>
</tbody>
</table>

* FY: Fiscal year.
Utilization of services. As dentist participation improved and the number of children enrolled in Medicaid increased, indicators of realized access to care also increased, such as the number of children with a dental visit and the number of dental procedures performed for the population of Medicaid-enrolled children. This increase in utilization of services demonstrates that the dental care delivery system has the ability to expand to accommodate new Medicaid-enrolled patients. It is not clear, however, if the system can expand enough to absorb all Medicaid-enrolled children who desire dental care.

The 32 percent utilization rate in 2000 is favorable when compared with the national average of 17 percent. The rate would be higher still if one were to evaluate only children who were eligible for Medicaid or M-SCHIP for an entire year. Children who are eligible for only part of a year have less time in which to try to access dental services. Even though only about one-third of enrolled children had a dental visit, the total number of children with a dental visit more than doubled during the period studied. Thus, about 80,000 more children had a dental visit annually after the fee increase than did before.

Utilization for children in M-SCHIP versus Medicaid. Of particular note is that there were few differences between the rates of utilization for children enrolled through M-SCHIP (that is, children in higher-income households) and those for children enrolled through the traditional Medicaid program by 2000. Thus, program barriers faced by enrollees (for example, difficulty in locating participating dentists) appear to have been relatively more important than socioeconomic barriers. Dentists also did not appear to be preferentially allowing M-SCHIP patients into their practices at the expense of lower-income Medicaid patients.

In addition, the mean number of visits, the mean number of procedures performed and the types of services provided did not change drastically with the addition of new patients to the program. We might have expected a significant amount of pent-up demand for dental services because of the previous barriers to care, which would have created an increase in the proportion of restorative services provided. However, from a population perspective, this was not evident.

Program costs. As might be expected, program costs increased substantially as a result of increases in reimbursement and subsequent increases in utilization. Total dental Medicaid expenditures were 4.8 times higher at the end of the four-year period than at the beginning. Thus, to achieve the increase in access to care, the state spent approximately 2.25 times more per child with a dental visit than it had before the reimbursement rate to dentists was increased. However, the cost per child is lower when we consider the cost per child enrolled in the program, as is done with most private insurance programs. Thus, for less than $7 per child per month, the Indiana Medicaid program was able to provide comprehensive dental care to almost 150,000 enrolled children in 2000.

Although the percentage of dollars spent on restorative services increased after the fee increase, this was influenced by the higher increase in fees for restorative services relative to other service areas. For example, fees for restorative services increased a mean of 132 percent compared with 91 percent for diagnostic and preventive services.

Study limitations. Because this study was an evaluation of a natural experiment, a number of factors were beyond our control that could have influenced dentists’ participation and the utilization of dental services. Although the fee increase occurred in May 1998, other program changes took place at about the same time that could have influenced dentist participation in the program (for example, eliminating prior authorization in September 1997 and taking dental care out of the purview of managed care plans in August 1998). In addition, M-SCHIP was begun in July 1998 and expanded in January 2000. Along with its introduction of this new program, the state increased...
its efforts to locate eligible children.

The resulting increased demand for services may have caused some dentists to begin accepting children who were enrolled in Medicaid and M-SCHIP. M-SCHIP also introduced a higher income level for eligibility, which might have encouraged participation by some dentists in both programs.\textsuperscript{3,5,6,8,9} The low participation rates for dentists after the experiment with capitation may have allowed for some natural progression of dentists back into the program once capitation was eliminated. Previous research, however, suggests that the most important factor encouraging dentists to participate was the increase in fees.\textsuperscript{3,5,6,8,9}

The use of insurance claims data for research purposes always involves some limitations (for example, coding errors); however, no systematic bias would be expected before or after the fee increase. Another limitation of the data, as received in aggregate form, was the inability to match services provided with individual enrollees. This would have provided a better indication of who was receiving services and who was not— a good topic for future research.

Ultimately, although the amount of dental care delivered increased, the majority of dentists were not participating in Medicaid, and the majority of Medicaid-enrolled children still did not receive any dental care after the increase in reimbursement rates. There are issues outside the control of the program that this study did not address (for example, dentists' perception of more frequent broken appointments by children in Medicaid and the distribution of dentists in the state) that need to be considered in future studies. It is possible that some dental care providers may be holding off on participating until reimbursement rates remain consistently close to usual-and customary fees for several years. Since 1998, there has been no increase in dental fees in the Indiana Medicaid program for inflation or otherwise. Although the initial fee increase may have been enough to sustain participation for awhile, future increases are necessary to maintain dentist participation and access to care for children over time.

**CONCLUSION**

In this study, we found that increasing dental fees in the Indiana dental Medicaid program was associated with increased dentist participation and improved access to dental care for Medicaid-enrolled children. The improvement was similar for children in the traditional Medicaid program and higher-income children in M-SCHIP by 2000. Although improvements occurred, the majority of dentists still were not accepting children enrolled in Medicaid and M-SCHIP even after the fee increase, and about two-thirds of enrolled children did not have a dental visit during the year. 

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