Restorative cost savings related to dental sealants in Alabama Medicaid children
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
The use of dental sealant in children aged 5 to 7 years was examined.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised children aged 5 to 7 years old.

Setting
The setting was secondary care. The economic study was carried out in the USA.

Dates to which data relate
The clinical and economic data were gathered from October 1989 to September 1998 (1990-1997 fiscal years). The price year was not reported.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

Link between effectiveness and cost data
The costing was carried out retrospectively on the same sample of patients as that used in the clinical study.

Study sample
Power calculations were not reported. Eligible patients were identified among all Alabama Medicaid children aged 5 to 7 years who were continuously enrolled in Medicaid over the study period. Of the 9,549 children initially identified, 7,708 had at least one dental claim (for any procedure) and were included in the final study sample. There were 2,077 children who had at least one sealant claim and were included in the sealant group (52% female; 72% African American). There were 5,631 children who had no sealant claims and were included in the non-sealant group (46% female; 78% African American).

Study design
This was a retrospective cohort study that was carried out in multiple centres. Data were extracted from the Alabama...
Medicaid administrative database. The children were followed over the fiscal years 1990-1997. No patients were lost to the follow-up assessment.

**Analysis of effectiveness**
All of the patients included in the initial study sample were accounted for in the analysis of effectiveness. The primary outcome measure was the proportion of children who underwent subsequent restorative care. A baseline comparison of the two groups revealed that sealant use among whites was higher than that of African American and other racial groups.

**Effectiveness results**
The proportion of children who underwent subsequent restorative care was 11% in the sealant group and 33% in the non-sealant group (odds ratio 4.2, 95% confidence interval, CI: 3.6 - 4.9).

**Clinical conclusions**
The effectiveness analysis showed that the use of dental sealant led to a significant reduction in restorative care in comparison with patients who did not receive dental sealant.

**Measure of benefits used in the economic analysis**
No summary benefit measure was used in the economic analysis. In effect, a cost-consequences analysis was carried out.

**Direct costs**
The cost analysis was carried out from the perspective of the third-party payer. The costs associated with dental sealant and restorative care were included in the analysis. The unit costs were not presented separately from the quantities of resources used, and a detailed breakdown of the cost items was not reported. The costs were initially estimated using charges for sealant and restorative care, but the actual Medicaid reimbursement was used in the analysis. The resource use data were obtained from the sample of patients included in the clinical study. The price year was not reported. Discounting was not performed, although it was unclear whether it would have been relevant.

**Statistical analysis of costs**
A regression analysis was carried out to assess the impact of baseline factors (child's age, race, gender, and availability of a participating provider within the country of residence) on the total costs.

**Indirect Costs**
The indirect costs were not included in the economic evaluation.

**Currency**
US dollars ($).

**Sensitivity analysis**
Sensitivity analyses were not performed.

**Estimated benefits used in the economic analysis**
See the 'Effectiveness Results' section.
Cost results
The reimbursed cost per patient was $55.50 ($20.03 for sealant and $35.47 for restorative care) in the sealant group and $71.90 (all for restorative care) in the non-sealant group. Thus, the use of sealant led to about $17 (unadjusted for inflation) cost-savings to Medicaid in subsequent restorative costs per child.

The statistical analysis showed that the costs were lower in the sealant group after controlling for baseline factors. Race, gender and age at entry also had independent effects on the cost of subsequent restorative care.

Synthesis of costs and benefits
A synthesis of the costs and benefits was not relevant since a cost-consequences analysis was carried out.

Authors' conclusions
The use of sealant significantly reduced the rate of restorative care, and also resulted in a modest reduction of costs from the perspective of the third-party payer.

CRD COMMENTARY - Selection of comparators
The selection of the comparator was appropriate since children receiving dental sealant were compared with those who did not receive it. You should decide whether they are valid comparators in your own setting.

Validity of estimate of measure of effectiveness
The effectiveness analysis was based on a review of data extracted from a large administrative database, where two cohorts of patients were compared. The use of a randomised and prospective design would have been more appropriate to limit the impact of selection bias and confounding. However, the authors stated that the use of a prospective study would be unethical because some children would not be offered dental sealant. The study groups were not well balanced at baseline, but a regression analysis was not performed to adjust for such differences with respect to clinical outcomes. No loss to follow-up occurred because only patients with complete charts were included in the analysis. The study sample was representative of the study population because the individuals were selected from a large database. Further, the evidence came from multiple centres. The sample size was quite big, although no justification was provided for the number of patients involved in the analysis. Since administrative data were used, some key information, such as the teeth that were involved, could not be extracted from the database.

Validity of estimate of measure of benefit
No summary benefit measure was used in the analysis because a cost-consequences analysis was conducted. Please refer to the comments in the 'Validity of estimate of measure of effectiveness' field (above).

Validity of estimate of costs
The costs included were consistent with the perspective adopted in the study, although they were restricted to direct medical costs. A detailed breakdown of the cost items was not provided and the costs were presented as macro-categories. Thus, no information on the unit costs or quantities of resources used was provided. The cost data came from patient claims and reimbursed costs were used. The dates during which the resources used and costs were gathered were reported, although an explicit price year was not given. Statistical analyses of the costs were carried out, but the cost estimates were specific to the study setting.

Other issues
The authors reported the details and results of some studies and stated that their findings were consistent with those published already. The issue of the generalisability of the study results to other settings was not addressed and no sensitivity analyses were carried out. This limits the external validity of the analysis. The authors stated that it was implicitly assumed that participating children had not received dental care from providers that were not participating in
Medicaid. However, based on the authors' experience, this assumption was reasonable and an eventual bias would have affected both groups similarly.

Implications of the study
The study results supported the use of sealant among children aged 5 to 7 years. The authors suggested that careful evaluation and additional research are needed to reduce racial barriers in meeting national objectives for minorities such as African Americans.

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Other publications of related interest


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