Caring for the Uninsured and Underinsured

Impact of a Children’s Health Insurance Program on Newly Enrolled Children

Judith R. Lave, PhD; Christopher R. Keane, ScD, MPH; Chyongchiou J. Lin, PhD; Edmund M. Ricci, PhD; Gabriele Amersbach, MA; Charles P. LaVallee

Context.—Although there is considerable interest in decreasing the number of US children who do not have health insurance, there is little information on the effect that health insurance has on children and their families.

Objective.—To determine the impact of children’s health insurance programs on access to health care and on other aspects of the lives of the children and their families.

Design.—A before-after design with a control group. The families of newly enrolled children were interviewed by telephone using an identical survey instrument at baseline, at 6 months, and at 12 months after enrollment into the program. A second group of families of newly enrolled children were interviewed 12 months after the initial interviews to form a comparison sample.

Setting.—The 29 counties of western Pennsylvania, an area with a population of 4.1 million people.

Subjects.—A total of 887 families of newly enrolled children were randomly selected to be interviewed; 88.3% agreed to participate. Of these, 659 (84%) responded to all 3 interviews. The study population consists of 1031 newly enrolled children. The children were further classified into those who were continuously enrolled in the programs. The 330 comparison families had 460 newly enrolled children.

Main Outcome Measures.—The following access measures were examined: whether the child had a usual source of medical or dental care; the number of physician visits, emergency department visits, and dentist visits; and whether the child had experienced unmet need, delayed care, or both for 6 types of care. Other indicators were restrictions on the child’s usual activities and the impact of being insured or uninsured on the families.

Results.—Access to health care services after enrollment in the program improved: at 12 months after enrollment, 99% of the children had a regular source of medical care, and 85% had a regular dentist, up from 89% and 60%, respectively, at baseline. The proportion of children reporting any unmet need or delayed care in the past 6 months decreased from 57% at baseline to 16% at 12 months. The proportion of children seeing a physician increased from 59% to 64%, while the proportion visiting an emergency department decreased from 22% to 17%. Since the comparison children were similar to the newly enrolled children at enrollment into the insurance programs, these findings can be attributed to the program. Restrictions on childhood activities because of lack of health insurance were eliminated. Parents reported that having health insurance reduced the amount of family stress, enabled children to get the care they needed, and eased family burdens.

Conclusions.—Extending health insurance to uninsured children had a major positive impact on children and their families. In western Pennsylvania, health insurance did not lead to excessive utilization but to more appropriate utilization.

JAMA. 1998;278:1820-1825

From the Department of Health Services Administration, Graduate School of Public Health, University of Pittsburgh (Drs Lave, Keane, Lin, and Ricci and Ms Amersbach), and the Western Pennsylvania Caring Foundation for Children (Mr LaVallee), Pittsburgh.

Reprints: Judith R. Lave, PhD, Department of Health Economics, Graduate School of Public Health, University of Pittsburgh, 130 DeSoto St, Pittsburgh, PA 15261 (e-mail: Lave@pop.pitt.edu).

THE BALANCED BUDGET ACT of 1997 established the State Children’s Health Insurance Program (SCHIP), one of the most significant health system reform initiatives for children since the enactment of the Medicaid program in 1965. Under this legislation, $24 billion will be allocated to the states over a 5-year period to provide health insurance to children who would otherwise be uninsured. The law also gives the states considerable flexibility in how to insure children. They could expand their current Medicaid programs, launch or expand a children’s health insurance program, or engage in some combination of the 2 strategies. Thus, the opportunity exists for the states to take a dramatic step in reducing the number of uninsured children in this country of which there were 9.8 million in 1995.1

While many studies have looked at the difference in the use of services between insured and uninsured children2-5 or have looked at the effect of different levels of cost-sharing on the use of services,6,7 few published studies have looked at the effect of extending health care coverage to uninsured children per se.5 The studies of the effects of the Medicaid expansions that occurred during the late 1980s and early 1990s tended to focus more on the total costs of expansion, the number of children covered, and the effect of these expansions on prenatal care and birth outcomes.8-11 Some researchers have also investigated the extent to which public health insurance has supplanted or “crowded out” private health insurance.12,13

Our study, which examines various effects of insurance designed to cover uninsured children, bridges this information gap. This article, which examines the impact of health insurance programs on newly enrolled children and their families, generated information on the types of benefits that this increased funding could provide to children. Specifically, we look at 2 programs that have been imple-
mented in western Pennsylvania: the Children’s Health Insurance Program of Pennsylvania (called BlueCHIP in western Pennsylvania), which is administered by the Western Pennsylvania Caring Foundation and the Highmark Blue Cross Blue Shield Caring Program (Caring). We used the responses to telephone interviews given at enrollment, 6 months, and 12 months to examine the programs’ effects on factors such as whether the children had a usual source of care, received health care services of different types, experienced unmet need or delay in receiving services, and had childhood activities limited. To control for any underlying trends, we compared the baseline answers of the study families with those of families who were newly enrolled into the program 12 months later.

**METHODS**

**The Health Insurance Programs**

The BlueCHIP and Caring programs provide health insurance coverage to uninsured children. The 2 programs, which are complementary, cover children up to the age of 19 years in families with incomes less than 235% of the federal poverty level. The programs provide the same comprehensive package of impatient, outpatient (including dental and vision services), and preventive health care services to children. With the exception of a small co-payment for prescription drugs, there is no cost sharing. Most children (about 97%) are enrolled in managed care plans in which they are asked to select a primary care physician. The Figure, which presents the eligibility criteria during the study period for the 2 programs as well as for the Medicaid program, shows how the eligibility for each varies by age and family income. (The insurance programs are linked to the Medicaid program in the following way: expenditures paid for hospital care under these programs count toward determining whether a family will spend down their personal resources to a level that makes them eligible for Medicaid.) Neither program is an entitlement program. The programs cover children who live in the 29 counties that make up western Pennsylvania, an area that includes 4.1 million people.

**The Study Population**

We received the names of 5864 children as they were being enrolled in these programs between August and December 1996. We aggregated children to the family level and randomly selected 887 children to be interviewed by telephone by specially trained interviewers. The sample size was chosen to provide statistical power exceeding 90% for detecting expected differences. The families were contacted within 2 weeks after being accepted into either BlueCHIP or Caring but before receiving the insurance cards for their children. Of the 887 families, 783 (88.3%) agreed to participate and were interviewed, 44 (5.0%) refused, and 60 (6.8%) could not be contacted. We then contacted the 783 families again after 6 months and 12 months; 659 families (84.2%) answered all 3 surveys. These 659 families and their 1031 newly enrolled children make up the study population. (These children may have siblings who were not enrolled either because they were young enough to be enrolled in Medicaid or too old to be eligible for the programs.)

The interviewers used an almost identical survey instrument, which used both fixed-response format and open-ended questions, for all 3 interviews. The respondents, usually mothers (87%), were asked about each child in the family. In addition to standard demographic information, respondents were asked how long a child had been without insurance. They were also asked several questions about access and use of health care services. These questions included whether the child had a usual source of medical care, dental care, or both, the number of visits the child made to different types of health care providers, and whether the child had health insurance, the more likely they are to be without a usual source of health care or to experience unmet need, delayed care, or both for 6 types of services (ie, physician services, emergency services, care recommended by the primary physicians, prescriptions, dental and vision care) in the past 6 months. For all questions related to health services utilization, the parents were asked to focus on the 6-month period prior to the interview. The interviewers also asked about the effect health insurance status had on usual childhood activities. In the initial interview, respondents were asked about the impact of lack of health insurance on their families; in the 12-month interview, they were asked about the impact of having insurance. The majority of the questions used in the inter-view were taken from other nationally implemented surveys.

**The Comparison Families**

We received a list of children who were enrolled in BlueCHIP or Caring between August and December 1996. We aggregated the children to the family level and randomly selected 371 families to be interviewed using the same telephone survey: 330 families (89%) who had 460 newly enrolled children agreed to participate. Through the use of this comparison group, we were able to assess whether changes observed in the study group were attributable to the insurance programs rather than to other underlying trends in the environment.

This design, a variation of a recurrent institutional cycle design, rules out a major threat to the internal validity of simple before-after evaluations, namely, the effects of a secular trend.

**Analysis**

We first examined the children’s insurance status at 6 and 12 months and categorized those who were enrolled in the program at 12 months as being continuously enrolled. In this article, we focus primarily on those children. We then compared the children over time along the factors described above. Since research has found that the longer children go without health insurance, the more likely they are to be without a usual source of health care or to experience unmet need, delayed care, or both, we categorized the children by the time period that they were uninsured prior to enrollment. We define children who were uninsured less than 6 months as the children with a shorter period without health insurance (SWI children) and those who were uninsured at least 6 months as the children with a longer period without health insurance (LWI children). We used the Statistical Package for the Social Sciences version 7.5 for the analyses.
We used the appropriate within-subject tests to assess statistical significance of changes from baseline to follow-up assessment for each of the measured variables. We used the McNemar test to assess within-subject changes in dichotomous variables, such as unmet need and delayed care, and matched-pair Wilcoxon rank sum tests (because of nonnormal distributions) to assess within-subject changes of continuous variables such as the number of visits. To limit the number of comparisons, we report the within-subject tests only for the full cohort of continuously enrolled children. We conducted between-subject tests for the 2 subsamples at each time period using chi-squared for dichotomous variables and Mann-Whitney U tests for continuous variables. We also used the between-subject, chi-squared, and t tests to compare the baseline findings for the study children with those of the comparison group of new enrollees. (Within-subject tests look at the changes over time within each subject, whereas between-subject tests compare one group of children with another group.) The Bonferroni correction was used to adjust for multiple comparisons.22

RESULTS

Baseline Characteristics and Health Insurance Status at 12 Months

Information on the study and comparison children is presented in Table 1. In the study families, 40.7% of the newly enrolled children did not have health insurance for at least 6 months prior to enrollment into CHIPs. The vast majority of these families were white (94.4%) and lived in standard metropolitan areas (74.2%), which reflect the characteristics of the region in which they live. Both parents were typically involved in the labor force, with over 60% of the fathers working full time. However, few parents had health insurance coverage. In the comparison families, the children were slightly younger, the average number of newly enrolled children per family was smaller, and a larger proportion of the newly enrolled children were uninsured longer than 6 months, which may reflect the impact of enrollment limits. It is worth noting that these children, as most children, were relatively healthy.

As indicated in Table 1, a total of 750 children (73%) were continuously enrolled, ie, still covered by one of these programs at 12 months. At the end of the study year, 15% were covered by private health insurance, 7% were covered by Medicaid, and 6% were uninsured. We do not know whether the children who shifted to the Medicaid program did so because their family income decreased or because some family member had incurred large enough health care expenditures that the family spent down to Medicaid. We also do not know why some children lost their health insurance. We believe that the children who gained private insurance did so as a result of a change in their parents’ income or work status.

Source of Usual Health Care

The proportion of children having a regular source of medical and dental care increased over the year, as shown in Table 2. At 12 months, 99% of the children had a regular provider, up from 89% at enrollment. As may be expected, the table also indicates that on entry into the programs, the SWI children were more likely to have regular sources for both medical and dental care than were the LWI children. There were no differences at either 6 or 12 months in the proportion of children who had a regular source of medical care, dental care, or both based on the period they had been without health insurance coverage prior to enrollment. At enrollment, a higher proportion of the comparison children (94%) had a regular source of medical care than did the continuously enrolled children (87%), while 7% were covered by Medicaid, and 6% were uninsured. We believe that the children who gained private insurance did so as a result of a change in their parents’ income or work status.

Table 1.—Baseline Characteristics of Study and Comparison Group Families

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All Families (659 Families, 1031 Children)</th>
<th>Families With &lt;1 Newly Enrolled Child (498 Families, 750 Children)</th>
<th>Comparison Group (330 Families, 460 Children)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD), y</td>
<td>50.3 (4.8)</td>
<td>97.7 (4.7)</td>
<td>99.1 (5.1)</td>
</tr>
<tr>
<td>Health status excellent or good, %</td>
<td>92.1</td>
<td>92.3</td>
<td>91.3</td>
</tr>
<tr>
<td>Health status fair or poor, %</td>
<td>7.9</td>
<td>7.7</td>
<td>8.7</td>
</tr>
<tr>
<td>Asthma in the past 6 mo, %</td>
<td>10.0</td>
<td>10.9</td>
<td>9.4</td>
</tr>
<tr>
<td>Uninsured &lt;6 mo, %</td>
<td>40.7</td>
<td>40.4</td>
<td>59.8</td>
</tr>
</tbody>
</table>

*All numbers are percentages.
†Within-subject tests conducted for the full cohort of children only.
‡P<.005 for difference between enrollment and 6-month follow-up.
§P<.05 for difference between 6-month and 12-month follow-up.
¶P<.05 for difference between continuously enrolled and comparison children at enrollment.
#P<.005 for difference between <6 months and ≥6 months without insurance within the column group.
**P<.005 for difference between 6-month and 12-month follow-up.
††P<.005 for difference between enrollment and 12-month follow-up.
‡‡P<.05 for difference between <6 months and ≥6 months without insurance within the column group.
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Table 2.—Children With Reported Regular Source of Care “In Past 6 Months” at Various Time Periods by Duration Uninsured Before Enrollment*

<table>
<thead>
<tr>
<th>Provider Type</th>
<th>Continuously Enrolled Children (n = 750)</th>
<th>Comparison Group (n = 460)</th>
</tr>
</thead>
<tbody>
<tr>
<td>At Enrollment</td>
<td>6 mo After Enrollment</td>
<td>12 mo After Enrollment</td>
</tr>
<tr>
<td>Regular physician</td>
<td>88.6%</td>
<td>97.7%</td>
</tr>
<tr>
<td>Uninsured &lt;6 mo prior to enrollment</td>
<td>92.0%</td>
<td>97.5%</td>
</tr>
<tr>
<td>Uninsured &lt;6 mo prior to enrollment</td>
<td>84.8%</td>
<td>98.3%</td>
</tr>
<tr>
<td>Regular physician</td>
<td>59.4%</td>
<td>63.3%</td>
</tr>
<tr>
<td>Uninsured &lt;6 mo prior to enrollment</td>
<td>84.8%</td>
<td>78.1%</td>
</tr>
<tr>
<td>Uninsured &lt;6 mo prior to enrollment</td>
<td>50.6%</td>
<td>81.7%</td>
</tr>
</tbody>
</table>
percentage with a regular physician between 6 and 12 months of follow-up. However, as demonstrated elsewhere in this article, having a usual source of health care did not imply that the source was regularly or appropriately used.

Reported Unmet Need and Delayed Care

According to Table 3, during the baseline interview, respondents reported that a large proportion of the children had experienced some unmet need, delayed care, or both in the prior 6 months. The proportion of all children who experienced unmet need, delayed care, or both for any of the identified types of care decreased from nearly 60% in the 6-month period prior to enrollment to 16% in the second 6-month period after enrollment. A decrease in unmet need, delayed care, or both was reported for each category of care. With the exception of dental care, all areas of unmet need, delayed care, or both were less than 4% in the 6- and 12-month periods after enrollment. There was no difference between the proportion of continuously enrolled children and the proportion of comparison children who experienced any unmet need, delayed care, or both for these services in the 6 months prior to enrollment. After adjusting with the Bonferroni correction for multiple comparisons, all these outcomes continued to be statistically significant at P < .05.

On entry into the program, the extent to which the children had experienced unmet need, delayed care, or both in the prior 6 months varied with the period of time the children had been uninsured. With the exception of emergency care, a higher proportion of the LWI children than of the SW1 children experienced some unmet need, delayed care, or both for each type of service. However, at 6 and 12 months after enrollment, there were no differences between these 2 groups of children.

Use of Services

There was a significant increase in the proportion of all continuously enrolled children who were reported having any physician visits, dentist visits, and preventive dental visits “in the past 6 months” at both 6 months and 12 months after enrollment into CHIPs, as shown in Table 4. At the same time, there was a significant decrease in the proportion of children visiting an emergency department. There were some differences in utilization rates of these services across time. With respect to medical care, a higher proportion of children saw a physician in the 6 months after enrollment than in the second 6 months after enrollment. With respect to dental care, the proportion of children seeing a dentist increased between the first and second 6-month periods. After adjustment with Bonferroni corrections for multiple comparisons, all but one of these outcomes (percentage with any physician visit from enrollment to 12 months after enrollment) remained statistically significant at the P < .05 level.

Much of the increase is attributable to the increased utilization rates of the children who had been uninsured for a longer period. However, children with a regular source of health care did not necessarily use health services more appropriately, as measured by the number of physician visits sought after the receipt of care.
period of time. With the exception of emergency department visits (where there were no differences), a smaller proportion of the LWI children than the SWI children had made any of these types of visits in the 6-month period prior to entry into the program. However, there were no statistically significant differences in the utilization rates of these groups of children in either the first or second 6-month period after enrollment. In the 6-month period prior to their enrolling in the program, a smaller proportion of the comparison group children than of the continuously enrolled children received any of these services.

While there was a significant increase in the proportion of children who used various services after enrollment in the health insurance programs, there was little change in the number of visits by children who had at least 1 visit. Data on the use of services by children with at least 1 visit are presented in Table 5. After adjustment with the Bonferroni correction for multiple comparisons, the differences between the number of physician visits per child from enrollment to 6 months and from enrollment to 12 months were no longer statistically significant at $P<.05$.

### Impact of Health Insurance Coverage on Usual Activities

There was a significant decrease in the percentage of children whose basic activities were limited because they did not have health insurance. During baseline interviews, participants were asked, “Has [child’s name] health insurance status led you to limit [child’s name] activities in any way?” Respondents reported that 12% of the children were so limited—9.8% of the SWI children and 15.4% of the LWI children. (In the open-ended questions, 3% of the SWI children and 15.4% of the LWI children—15.2% of the SWI children and 20.1% of the LWI children—were limited in their usual activities because they did not have health insurance.

### Effect of Health Insurance Coverage for Children on the Families

In response to the open-ended question, “What has having health insurance meant to you and your family?” parents most frequently answered that lack of insurance was a major stressor in the family; they reported being worried, scared, and stressed out (73.5%). A substantial proportion (36.2%) indicated that lack of insurance led to financial difficulties within the family. Some respondents indicated that they felt that not having had health insurance contributed to their children’s not receiving care or delay in getting care with adverse health consequences (Table 6). The comparison families responded similarly to this question.

Table 7 summarizes the answers to the open-ended question, “What has having health insurance for your kids meant to you and your family?” in the 12-month interviews, the respondents reported essentially no limitations related to health insurance coverage. The comparison group respondents indicated that 18% of the children—15.2% of the SWI children and 20.1% of the LWI children—were limited in their usual activities because they did not have health insurance.
families. We found that enrollment in the programs increased access to care. The pattern of use suggests that there was some point-up demand for care that var-
ied with the time the children had been uninsured prior to enrollment. The main
effect of insurance coverage was to in-
crease the proportion of children who
used services, rather than to increase the
intensity of use by children who used any
services. This finding is consistent with
that of other studies that found that cost
sharing had a larger effect on whether
someone got any care rather than on the
intensity of care received.26,27 Finally, we
also found more appropriate use of ser-
vices after enrollment: children were
more likely to see a physician, were more
likely to see a dentist, and were less likely
to make a visit to the emergency depart-
mint. (Given the data on access to care
and the use of services by the comparison
children, the findings can be ascribed to
the programs rather than to some change
in the health care environment.)

The continuously enrolled children av-
erged 3.5 physician visits during their
first year of coverage, which is slightly
lower than the average number of physi-
cian visits made by insured children in
1987.4 Thus, there is no evidence that
these children used services more heavily
than insured children generally do and,
therefore, that the costs would be higher
for these children. Martin and colleagues8
also reached a comparable conclusion in
their study of use under the Washington
Basic Health Plan, a plan designed to
cover low-income families. They found
that the cost of covering these families
was not higher than the cost of covering
traditionally insured families.

We cannot ascertain the effect of these
programs on children’s health because one
would not expect to observe major changes
during the course of a single year. How-
ever, as noted in Table 5, the par-
ents reported that their children had ex-
perienced a significant amount of unmet
need and delayed care in the 6 months
prior to enrollment in CHIPs. In re-
sponses to open-ended questions, re-
pondents indicated that unmet need,
delayed care, or both sometimes led to
poor health outcomes. For example,
some parents indicated that their chil-
dren were sicker longer than they would
have been had they received the care in
a timely fashion; a few even indicated
that more timely care would have elimi-
nated the need for hospitalization.

With respect to dental care, parents
reported leaving cavities unfilled and ex-
tracting teeth themselves; events they
indicated would not have taken place had
the price of dental care not been a factor.

With respect to vision care, many par-
ents reported that their children had
headaches and difficulties seeing in
school, which had an impact on their
grades. Since some respondents (4.7%)
indicated that they felt guilty because
they did not have health insurance for
their children, it is possible that they un-
derreported some negative outcomes.

We found that, with the exception of den-
tal care, only a very small proportion of
children experienced any unmet need,
delayed care, or both following enroll-
ment in the health insurance programs.

Health insurance had other, less gen-
erally studied effects on the lives of chil-
dren. For instance, it enabled some chil-
dren to live more physically active lives
and to engage in some of the activities
of normal childhood like playing sports in
school or just playing with other children
in the playground. Furthermore, accord-
ing to responses to open-ended questions,
the fact that their children had health in-
surance eliminated for parents a major
source of stress and discord in many of
these families. Consequently, at the end
of the interview, many parents expressed
their strong appreciation of the program.

This study has some limitations. One
major limitation is that it focuses on
children who voluntarily enrolled in a health
insurance program in a small section of
the country. However, the study chil-
dren and their families are similar to
those of uninsured children and families
elsewhere with respect to family size,
family structure, and working status of
the parents.28 Children in the study also
come from families with incomes below
235% of the poverty line (with the ma-
jority being below 185%); thus, they are
similar to the types of children who will
be eligible for care under SCHIP. It is
worth noting that enrollment into
SCHIP will also be voluntary. A second
limitation is that the data are based on
self-reported information. However,
the respondents were asked to provide
information on access and use of services
“in the prior 6 months” during each in-
terview, and it is unlikely that there
would be any differences in the validity
of the recall at each interview.

Our findings show that expanding
health insurance coverage for children
can have a major positive impact on the
children and the family. As one of the
Caring parents stated, “The cost of
health care has become the determining
factor in how you live.” As states de-
velop their plans to provide coverage for
children’s health insurance under the
new federal program, legislators should
be aware of the critical importance of
their deliberations to the lives of un-
insured children and their families. Invest-
ment in children’s health insurance ap-
pares to represent a sound and respon-
sible expenditure of public funds.

This research was supported through a grant
provided by the Western Pennsylvania
Foundation for Children, an affiliate of Highmark
Blue Cross Blue Shield.

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