Effect of the North Carolina State Children’s Health Insurance Program on Beneficiary Access to Care

Rebecca T. Slifkin, PhD; Victoria A. Freeman, RN, DrPH; Pam Silberman, JD, DrPH

Background: In the fall of 1998, North Carolina implemented its State Children Health Insurance Program, North Carolina Health Choice for Children (NCHC). This stand-alone, fee-for-service program quickly enrolled large numbers of children and has been considered one of the State Children Health Insurance Program success stories.

Objective: To explore the perceptions of parents of children enrolled in NCHC regarding their children’s access to health care services before and after enrollment in the NCHC.

Design and Setting: Qualitative and quantitative data analyses are combined to assess program effectiveness. Two waves of surveys were fielded. A baseline survey asked parents of children newly enrolled in NCHC questions about their child’s health experiences before enrollment in NCHC. Parents who responded with baseline data were resurveyed 1 year later to collect information on their child’s experiences while insured by NCHC.

Participants: Parents of 987 children newly enrolled in NCHC in the summer of 2000, randomly chosen within 3 age group strata.

Results: The NCHC has been successful in improving access to health care for low-income children. Parents reported that the program helped make health services financially accessible to their children, enabling them to get needed physician’s care, eyeglasses, or prescription drugs. A significantly higher percentage of children received care in the private sector, increasing from 62% to 75% for well-child care visits and 67% to 78% for acute care. The percentage of children with unmet medical needs dropped significantly from 20% to just 2% after enrollment in NCHC. The improvement in access to care is much more striking for the older age groups and for children who were uninsured prior to NCHC enrollment (rather than those who graduated from Medicaid into the program). Despite these gains, there are still substantial numbers of children who are not receiving age-appropriate well-child care.

Conclusion: The NCHC has successfully improved access to care for its enrollees.

Arch Pediatr Adolesc Med. 2002;156:1223-1229

Medicaid is the single largest health insurer for children in this country. The program, which is jointly supported by the federal and state governments, covered 21 million of the poorest children in 1998—more than 25% of the nation’s children. While Medicaid is available for the poorest children, many families with incomes just above the Medicaid guidelines have been unable to afford private insurance. Between 1989 and 1996, the percentage of children with private health insurance coverage decreased from 73.6% to 66.3%. During this same time, the percentage of children with Medicaid coverage increased from 15.7% to 21.8%. Although the percentage of children on Medicaid increased, it did not completely make up for the loss in private health insurance coverage, leading to an increase in the percentage of children who were uninsured from 13.3% in 1989 to 14.8% in 1996.

For editorial comment see page 1175

Uninsured children have been shown to have less access to care and use fewer health care services. These children are less likely to be treated for injuries (including serious injuries such as broken bones) and are less likely to get care for common childhood illnesses, such as pharyngitis, ear infections, or asthma. If left untreated, these illnesses can lead to more serious conditions and use of more ex-
pensive health care services such as hospitalization for uncontrolled asthma.

To address growing concerns about uninsured children, Congress enacted the State Children Health Insurance Program (SCHIP) in 1997. Congress appropriated approximately $40 billion over 10 years in federal block grant funds to assist states in developing or expanding state-level health insurance programs for uninsured children whose family income was too high to qualify for Medicaid but still too low to purchase private insurance. The SCHIPs were created with the expectation that more low-income children would have health insurance coverage and, consequently, improved access to care. Flexibility was allowed in how states designed their programs to meet this goal. Fifteen states have used the SCHIP funds to expand their Medicaid programs; 16 created stand-alone state-designed SCHIPs; and 19 created programs combining different public insurance models.

In the fall of 1998, the state of North Carolina implemented its SCHIP, North Carolina Health Choice for Children (NCHC). Under this program, uninsured children in families with incomes above the Medicaid threshold but at or below 200% of the federal poverty level (FPL) qualify for coverage. North Carolina Health Choice for Children is a stand-alone, fee-for-service, state-designed SCHIP that is administered jointly by the NC Division of Medical Assistance (the Medicaid agency), and the NC Teachers and State Employees’ Comprehensive Major Medical Plan. At the time of this study, children were required to be uninsured for at least 2 months before they were eligible for enrollment in NCHC, unless they had just graduated from Medicaid or had lost private insurance coverage because of a change in parental employment or discontinuance of insurance by the employer.

The study reported here used preenrollment and postenrollment survey data to evaluate the effect of the NCHC on enrolled children’s access to health care services by examining parental reports of use of services and barriers to services before and after enrollment in the program. Studies of 2 pre-SCHIP state-run child health insurance programs found that insured children were more likely to use health care services and it was important to determine if the successes of pre-SCHIP state-run child health insurance programs were replicated by SCHIPs, to assess if SCHIPs are meeting the original goals of improving access to services and health status, and if not, to identify areas for improvement. These results are particularly timely as federal funding for the SCHIP is scheduled to drop by more than $1 billion annually from fiscal years 2002 through 2004, which would avoid sample size inflation. Therefore, statistical significance is presented only for comparisons within age cat-

METHODS

This study used 2 waves of surveys to evaluate NCHC effectiveness. In the summer of 1999, 9 months after program implementation, a survey that collected baseline data about health care experiences prior to receipt of NCHC was mailed to parents of newly enrolled children. Parents of sample children who provided baseline data were resurveyed 11 months later, before their child’s first year of eligibility for NCHC insurance ended, and asked similar questions about their child’s health status and health care experiences while covered by NCHC insurance.

To survey parents immediately after enrollment, the sample was drawn from weekly enrollment data over 5 consecutive weeks. Each weekly subsample was stratified by age to ensure adequate representation of different age groups. In total, 600 children were chosen from each of 3 age groups: babies and preschoolers (aged 0-5 years at the time of acceptance into NCHC, hereafter referred to as “babies”), younger school-aged children (aged 6-11 years), and adolescents (aged 12-18 years). Only 1 child per family was eligible to be selected. Because of the less stringent Medicaid eligibility requirements for the youngest children, low-income babies are less likely to need NCHC and, thus, represent a small portion of the NCHC population. However, younger children are more likely to use health care services and it was important to the study that this group be adequately represented. They were, therefore, chosen first from each weekly subsample, and then comparable numbers of children were randomly selected from the 2 older age groups.

The baseline survey asked parents to report on use of and barriers to receipt of medical care (well-child care visits and acute care), prescription medicine and eyeglasses, and use of the emergency department. Additional questions pertained to denial of health care and the inability to obtain needed follow-up care. Parents were asked about the child’s insurance history and family demographics. All questions asked were specific to the time frame before receipt of NCHC. The follow-up survey was similar in length and included similar, if not identical, questions regarding the child’s access to and use of various health care services while insured by NCHC.

Almost three quarters (74.6%) of the parents responded to the baseline survey. The 1339 respondents to the baseline survey were mailed the follow-up survey and 73.9% of them responded. The resultant cohort for whom data were available at both baseline and 1 year later consisted of 987 children (348 babies, 325 younger school-aged children, and 314 adolescents). The characteristics of the responders to the second survey did not differ significantly from those who provided only baseline data.

All data were analyzed using STATA 7 statistical software. McNemar’s χ² test was used to compare change in dichotomous categorical data over time. Changes in responses to questions that had multiple, ordered responses were tested for significance using the Wilcoxon signed rank test. When data are presented for all children combined, they have been weighted to the entire population of enrollees to adjust for the age distribution of all NCHC enrollees. Unfortunately, such weighting inflates the sample size so that even small absolute differences become statistically significant, and the statistical software used does not allow for simultaneous control for the matched nature of these data (comparison of the same child in 2 different periods) and the use of proportional weights, which would avoid sample size inflation. Therefore, statistical significance is presented only for comparisons within age cat-

categories and not for comparisons for the weighted total population. Throughout the article, differences in statistics preenrollment and postenrollment are considered significant if $P<.05$. In fact, almost all of the differences are statistically significant at $P<.01$.

Individuals with missing values on any particular question were omitted from the analysis of that specific question. Overall, the percentage of responses that were missing was small, ranging from less than 1% to 3.8% for any given question.

RESULTS

CHARACTERISTICS OF THE SAMPLE

Overall, 52% of the children in the sample are female, 48% are male (characteristics by age group are given in Table 1). There is an almost even split between children who reside in metropolitan counties and those who live in rural areas. The Division of Medical Assistance file classifies almost half of the children as white, but the distribution by race varies by age groups, with the proportion of children who are black increasing with age. Older children were less likely to have been covered by Medicaid at some point in their life. Although data on family income were not collected, income eligibility criteria for the 2 insurance programs suggest that older children in the study sample are also more likely to come from families that are poorer because Medicaid and NCHC eligibility criteria vary by age. Children younger than 1 year qualify for NCHC only if their parents have incomes between 185% and 200% of the FPL, while children aged 1 to 5 years are eligible with family incomes between 133% and 200% of the FPL. Children 6 years and older with family incomes between 100% and 200% of the FPL are eligible for NCHC. Consistent with decreasing family income by age of the child, older children are less likely to come from educated families, to have at least 1 parent who has graduated from college, to have at least 1 parent who is insured through the workplace.

CHANGES IN ACCESS TO AND USE OF HEALTH SERVICES

Change in access to health care services was assessed by comparing reported health service use, site of care, and barriers to care before and after enrollment in NCHC. Since low-income children may use different health care providers for different types of services, parents were asked separate questions about well-child care and acute care visits.

The American Academy of Pediatrics specifies a schedule for preventive care for children up to age 21 years that includes an annual visit from 3 to 6 years, at 8 years, and at 10 through 21 years, and more frequent visits for younger children. Despite NCHC limits of 1 preventive visit every 3 years for older children (age ≥7 years), all children would be covered for a well-child care visit in their first year of enrollment. At baseline, parents were asked to report if their child’s last well-child care visit had been more than 1 year prior, within the last year, or never. At follow-up, parents were asked if their child had made a well-child care visit since enrollment in NCHC. This measure of access to well-child care is admittedly a limited measure of appropriateness of care for the youngest children, who should be seeing a health care provider for well-child care multiple times in a given year.

Overall, there was no change in the percentage of children who had at least 1 well-child care visit in the year prior to enrollment in NCHC (58%) and in the first year in NCHC (58%). There were substantial differences by age group, as would be expected, with the youngest children far more likely than older children to have had a well-child care visit both before and after enrollment (Table 2). Comparing preenrollment with postenrollment, only babies had a statistically significant change in receipt of well-child care visits in the past year and that change was negative. However, for many children who had never received well-child care prior to program enrollment, many did so during their first year in NCHC. In addition, the percentage of children with a provider for well-child care checkups increased for all age groups. For all children combined, 88% had a health care provider for well-child care before enrollment in NCHC, increasing to 97% after enrollment. For both of the older age groups there was a statistically significant improvement in the identification of a provider for well-child care. Virtually all of the parents of babies were able to identify a well-child care provider for their child both before and after enrollment in NCHC.

Table 1. Sample Characteristics at Baseline Survey*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Babies and Preschoolers (n = 348)</th>
<th>Younger School-aged Children (n = 325)</th>
<th>Adolescents (n = 314)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics of Children</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>54</td>
<td>51</td>
</tr>
<tr>
<td>Urban residence</td>
<td>59</td>
<td>51</td>
<td>47</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>60</td>
<td>47</td>
<td>41</td>
</tr>
<tr>
<td>Black</td>
<td>28</td>
<td>43</td>
<td>51</td>
</tr>
<tr>
<td>Hispanic</td>
<td>6</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
<td>6</td>
<td>0.5</td>
</tr>
<tr>
<td>Prior Medicaid coverage</td>
<td>94</td>
<td>91</td>
<td>87</td>
</tr>
</tbody>
</table>

| Characteristics of Parents†   |                                   |                                        |                       |
| At least 1 parent graduated   | 92                                | 91                                     | 86                    |
| from high school              |                                   |                                        |                       |
| At least 1 parent graduated   | 18                                | 12                                     | 13                    |
| from college                  |                                   |                                        |                       |
| At least 1 parent employed    | 96                                | 89                                     | 76                    |
| full time                     |                                   |                                        |                       |
| At least 1 parent insured     | 56                                | 44                                     | 42                    |
| through the workplace         |                                   |                                        |                       |

*Data are given as percentages. Babies and preschoolers were aged 0 to 5 years; younger school-aged children, 6 to 11 years; and adolescents, 12 to 18 years.
†Data about parents are limited to those reported by the respondent, usually the mother, and may not include all of the information about fathers absent from the home.
Reported site of care was classified as either a private setting or a publicly funded institution (such as a public health department or community clinic). For many individuals with low incomes, the ability to access care in the private sector represents broadened choice of health care provider and potential for continuity of care. More children of all ages received well-child care in the private sector after obtaining coverage under NCHC. Overall, 62% of parents identified a private physician or clinic as a source of well-child care for their child prior to enrollment, increasing to 75% after 1 year in NCHC. The increase in use of private physicians was statistically significant for all age groups and also increased with age, with adolescents seeing the biggest gains.

The extent to which lack of well-child care was owing to access barriers vs a lack of perception on the parent's part that such care is necessary was explored. Among children who received no regular checkups, 53% also reported having no regular physician prior to enrollment, while only 7% reported having no physician after enrollment. In addition, less than 1% of parents reported that no physician or clinic would accept NCHC. These findings suggest that to some extent, the children who had not received well-child care after enrollment in NCHC may not have owing to parental assumption that no care was needed. These data do not allow further assessment of parental knowledge of preventive care recommendations.

The use of private physicians for acute care also increased after enrollment in NCHC; 67% of all parents identified a private physician for acute care prior to enrollment, rising to 78% after enrollment in the program. As was seen for well-child care physicians, the increase in use of private providers for acute care was statistically significant for all age groups. There were also significant reductions in the reported length of time it took for a sick child to be seen by acute care providers. For all children combined, the percentage who were seen the same day their parents requested an appointment rose from 63% to 72% and improvement was statistically significant for each age group.

Despite increased use of private physicians for acute care, there was a statistically significant increase in the reported use of the emergency department for the youngest age group. However, there was a significant decrease in both the percentage of each group of older children for whom the emergency department was their only source of acute care, as well as their only contact with the health care system.

The ability to get needed prescriptions and eyeglasses increased significantly for the 2 older age groups after children were enrolled in NCHC (Table 3). For prescriptions and eyeglasses, the overwhelming reasons parents gave for lack of access prior to their child's enrollment were lack of insurance and lack of money.

The survey queried parents about needed care that could not be obtained (Table 3). The percentage of children with reported unmet medical needs dropped substantially after enrollment in NCHC, from 20% to just 2% of all children, and the decrease was statistically significant in all age categories. Prior to enrollment in the program, the most common reasons parents reported their children could not get care were lack of insurance and lack of money. After enrollment, among the few parents who still reported a problem, the most common reason was lack of money.

### Change in Access to Care by Previous Insurance Status

The results presented thus far suggest that for many children access to care improved after enrollment in NCHC, because, in part, there were substantial access problems before enrollment. This finding is particularly worrisome because many of these children were insured through the Medicaid program just prior to NCHC and experienced no break in insurance coverage. To assess the extent to which overall improvement was a result of improved access for previously uninsured children, change in access was calculated for 2 subsamples of children based on insurance status prior to program enrollment. The uninsured subsample consisted of children who were uninsured for at least 6 months prior to enrolling in NCHC (16% of the total sample). The second subsample, hereafter referred to as “Medicaid graduates,” contains children (68% of the total) who moved from Medicaid coverage directly to the NCHC (defined as having ≤31 days between the last day of Medicaid coverage and the first day of NCHC coverage). The remaining children are not included in this analysis, either because information on prior insurance coverage was incomplete (6%) or because their period of uninsurance was less than 6 months (11%).

---

**Table 2. Access to Health Care Services**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Babies and Preschoolers (n = 348) Before NCHC</th>
<th>Babies and Preschoolers (n = 348) After NCHC</th>
<th>Younger School-aged Children (n = 325) Before NCHC</th>
<th>Younger School-aged Children (n = 325) After NCHC</th>
<th>Adolescents (n = 314) Before NCHC</th>
<th>Adolescents (n = 314) After NCHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-child care visit in past year</td>
<td>82</td>
<td>70†</td>
<td>51</td>
<td>56</td>
<td>49</td>
<td>51</td>
</tr>
<tr>
<td>Does not get regular checkups</td>
<td>3</td>
<td>1†</td>
<td>13</td>
<td>8†</td>
<td>19</td>
<td>11†</td>
</tr>
<tr>
<td>Had provider for checkups</td>
<td>97</td>
<td>98</td>
<td>88</td>
<td>97†</td>
<td>82</td>
<td>94†</td>
</tr>
<tr>
<td>Had private physician for checkups</td>
<td>73</td>
<td>81†</td>
<td>64</td>
<td>78†</td>
<td>50</td>
<td>66†</td>
</tr>
<tr>
<td>Had private physician for acute care</td>
<td>76</td>
<td>82†</td>
<td>69</td>
<td>81†</td>
<td>57</td>
<td>71†</td>
</tr>
<tr>
<td>Could get acute care appointment the day parent called</td>
<td>74</td>
<td>81†</td>
<td>63</td>
<td>71†</td>
<td>52</td>
<td>63†</td>
</tr>
<tr>
<td>Used the emergency department sometime in last 6 months</td>
<td>23</td>
<td>29†</td>
<td>25</td>
<td>29</td>
<td>33</td>
<td>36</td>
</tr>
<tr>
<td>Emergency department only source of acute care</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>3†</td>
<td>11</td>
<td>6†</td>
</tr>
<tr>
<td>Emergency department only contact with health care system</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>3</td>
<td>0†</td>
<td>7</td>
<td>7†</td>
</tr>
</tbody>
</table>

*Data are given as percentages. Babies and preschoolers were aged 0 to 5 years; younger school-aged children, 6 to 11 years; and adolescents, 12 to 18 years. NCHC indicates North Carolina Health Choice for Children.

†Change is statistically significant across years at P<.05.
After Enrollment in NCHC Medicaid

Equate power to detect change. There were almost no insured babies in the sample, the study may have inad-
ered by Medicaid although because of the few unin-
less, uninsured babies also have poorer access to care at baseline than babies covered by Medicaid although because of the few uninsured babies in the sample, the study may have inadequate power to detect change. There were almost no significant postenrollment differences between the 2 insurance groups.

The second 4 columns in Table 4 compare the gains from program enrollment within insurance groups. Improvement in access after enrolling in NCHC was statistically significant for both the Medicaid and previously uninsured children across most measures, but the magnitude of gain, particularly for older children, was far greater for those who were previously uninsured. However, although Medicaid-insured children generally saw improved access to health services after enrolling in NCHC, babies were significantly less likely to have a well-child care checkup in the last year after enrolling in NCHC. Data were examined by yearly age increments to determine whether a child’s becoming a year

Table 3. Access to Prescriptions, Eyeglasses, and Reported Unmet Medical Need

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before Enrollment in NCHC</th>
<th>After Enrollment in NCHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babies and Preschoolers (n = 348)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children needing prescriptions</td>
<td>71 (n = 247)</td>
<td>70 (n = 242)</td>
</tr>
<tr>
<td>Nearest prescription who were able to get them</td>
<td>94</td>
<td>98</td>
</tr>
<tr>
<td>Children needing eyeglasses who were able to get them</td>
<td>2 (n = 7)</td>
<td>4 (n = 13)</td>
</tr>
<tr>
<td>Parent reported child could not get needed care</td>
<td>10 (n = 34)</td>
<td>&lt;1† (n = 1)</td>
</tr>
<tr>
<td>Younger School-aged Children (n = 325)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children needing prescriptions</td>
<td>63 (n = 202)</td>
<td>60 (n = 191)</td>
</tr>
<tr>
<td>Nearest prescription who were able to get them</td>
<td>80</td>
<td>98†</td>
</tr>
<tr>
<td>Children needing eyeglasses who were able to get them</td>
<td>18 (n = 58)</td>
<td>19 (n = 61)</td>
</tr>
<tr>
<td>Parent reported child could not get needed care</td>
<td>22 (n = 67)</td>
<td>21† (n = 5)</td>
</tr>
<tr>
<td>Adolescents (n = 314)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children needing prescriptions</td>
<td>59 (n = 180)</td>
<td>65 (n = 197)</td>
</tr>
<tr>
<td>Nearest prescription who were able to get them</td>
<td>73</td>
<td>97†</td>
</tr>
<tr>
<td>Children needing eyeglasses who were able to get them</td>
<td>44 (n = 135)</td>
<td>35 (n = 106)</td>
</tr>
<tr>
<td>Parent reported child could not get needed care</td>
<td>25 (n = 75)</td>
<td>4† (n = 11)</td>
</tr>
</tbody>
</table>

*Data are given as percentages. Babies and preschoolers were aged 0 to 5 years; younger school-aged children, 6 to 11 years; and adolescents, 12 to 18 years. NCHC indicates North Carolina Health Choice for Children.†Change is statistically significant across years at P < .05.

Table 4. Children’s Access to Services: Comparisons Between and Within Insurance Groups

<table>
<thead>
<tr>
<th>Variable</th>
<th>Before Enrollment in NCHC</th>
<th>After Enrollment in NCHC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babies and preschoolers (n = 310)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has provider for checkups</td>
<td>98‡</td>
<td>96</td>
</tr>
<tr>
<td>Receives checkups in the private sector</td>
<td>74</td>
<td>61</td>
</tr>
<tr>
<td>Had a checkup in last year</td>
<td>88‡</td>
<td>73</td>
</tr>
<tr>
<td>Received acute care in the private sector</td>
<td>77</td>
<td>71</td>
</tr>
<tr>
<td>Had unmet medical need</td>
<td>8 †</td>
<td>&lt;1†</td>
</tr>
<tr>
<td>Younger school-aged children (n = 246)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has provider for checkups</td>
<td>94</td>
<td>93</td>
</tr>
<tr>
<td>Receives checkups in the private sector</td>
<td>73</td>
<td>66</td>
</tr>
<tr>
<td>Had a checkup in last year</td>
<td>65†</td>
<td>57</td>
</tr>
<tr>
<td>Received acute care in the private sector</td>
<td>75</td>
<td>55†</td>
</tr>
<tr>
<td>Had unmet medical need</td>
<td>11†</td>
<td>2</td>
</tr>
<tr>
<td>Adolescents (n = 266)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has provider for checkups</td>
<td>89</td>
<td>59†</td>
</tr>
<tr>
<td>Receives checkups in the private sector</td>
<td>53</td>
<td>31†</td>
</tr>
<tr>
<td>Had a checkup in last year</td>
<td>59</td>
<td>25‡</td>
</tr>
<tr>
<td>Received acute care in the private sector</td>
<td>58</td>
<td>47</td>
</tr>
<tr>
<td>Had unmet medical need</td>
<td>15</td>
<td>51†</td>
</tr>
</tbody>
</table>

*Data are given as percentages. Babies and preschoolers were aged 0 to 5 years; younger school-aged children, 6 to 11 years; and adolescents, 12 to 18 years. NCHC indicates North Carolina Health Choice for Children. Medicaid graduates, children who moved from Medicaid coverage directly to the NCHC.†Change is statistically significant across years at P < .05.

Data comparing Medicaid graduates to previously uninsured children are given sequentially by age categories in the first 4 columns of Table 4. Comparison of preenrollment or baseline status of each subsample reveals that the Medicaid graduates of all ages had significantly better access to care for most measures. At baseline, older children who had been uninsured before enrollment in NCHC had significantly poorer access to care and greater unmet need for care on almost all measures than did older children who had come to NCHC from Medicaid. To a lesser extent, uninsured babies also had poorer access to care at baseline than babies covered by Medicaid although because of the few uninsured babies in the sample, the study may have inadequate power to detect change. There were almost no significant postenrollment differences between the 2 insurance groups.
older might account for this difference (eg, younger children have more frequent visits recommended than older children), but Medicaid-assisted babies were still found to be more likely to have had a well-child care checkup in the year prior to enrollment in NCHC than after enrollment.

**COMPARISON GROUP**

When comparing change in access to health care services for children over time, it is possible that observed changes are due to concurrent changes in the health care environment rather than to an intervention such as enrollment in NCHC. A comparison group of parents of 500 children newly enrolled in NCHC 1 year after enrollment of the study sample was surveyed to assess possible temporal effects. If there had been substantial changes in the health care environment over the year, the baseline experience of this second group of new enrollees should differ from the baseline experience of the study sample. It does not appear that meaningful temporal changes in the health care environment occurred during the study period. Only 5.6% of comparison group baseline responses were significantly different from the baseline responses of the study sample. At the assigned significance level of P < .05, one would expect 5% of the comparisons to be significantly different by chance alone. The questions with significantly different responses between the 2 groups appeared to be random, with the exception of prior insurance status. The comparison group seemed to be less likely to have lost prior insurance coverage (and therefore qualified for NCHC) because they no longer qualified for Medicaid.

**COMMENT**

The goal of North Carolina’s SCHIP is to provide uninsured children with quality, affordable health insurance to increase access to health services and, ultimately, improve health status. Evaluation of the NCHC, an SCHIP designed separately from the state’s Medicaid program, shows that, for the most part, NCHC has been successful in improving access to health care for low-income children. Parents reported that the NCHC helped make health services financially accessible to their children and that it enabled them to get the physician’s care, eyeglasses, or prescription drugs that their child needed.

Across both well and acute care, more children seem to be receiving care in the private sector, and the frequency with which previously uninsured children receive well-child care services has increased. However, despite these gains, substantial numbers of children were reported to have not received age-appropriate well-child care, and for enrollees who were Medicaid graduates, the percentage receiving such care actually dropped. One possible explanation for this decrease may be the effect of the Medicaid program’s Health Check coordinators who work in 62 of 100 counties across the state assisting Medicaid families in obtaining medical services for their children, including arranging transportation and scheduling appointments. The coordinators also make home visits or calls to families who have missed screening appointments or visits for high-risk diagnostic referrals. While this service is potentially available to Medicaid children of all ages, Health Check coordinators focus on families of young children. This same coordination and outreach effort is not offered as part of the NCHC program.

The increase seen in emergency department use does not necessarily reflect a decrease in the availability of non-emergent health care providers. In the case of parents whose children were Medicaid graduates, as most of the children were, it may reflect an end to a gatekeeper system of care that limited emergency department use, and may be viewed by parents as an improvement in access to care.

The larger gains in access seen for the older age groups compared with babies is more likely because of the baseline status of the 2 groups rather than a difference in how well NCHC insurance serves different age groups. Babies and preschoolers were more likely to have been previously insured and less likely to have had a break in care caused by disenrollment from insurance. Thus, a relationship with a health care provider begun in infancy is likely to have been reinforced and continued. In addition, the recommended preventive schedule for younger children is more frequent, resulting in more contacts with the health care system. More extensive recommended well-child care for younger children along with immunization requirements for school entry all serve to increase the likelihood of use of the health care system for young children. Older children, however, are likely to have been uninsured for a longer period with resultant discontinuance of contact with the health care system. Finally, because of the eligibility criteria for the program, babies are more likely to come from families with higher incomes, so better access at baseline may be owing to higher socioeconomic status.

Improvement in reported access to care is much more striking for children who were previously uninsured compared with those who came to the NCHC directly from Medicaid. For uninsured children, enrollment in NCHC resulted in new or renewed access to the health care system, while for Medicaid-assisted children, this new insurance program represents continuity of care. For some children whose access to care with Medicaid was limited by a lack of health care providers who accepted children insured by Medicaid, NCHC provided access. Physician willingness to accept patients with NCHC may be related to higher reimbursement for services compared with Medicaid, the fact that NCHC is administered by a well-known insurance carrier with which physicians already have a relationship, and the perception of NCHC-covered patients as more “desirable.”

The possibility that respondents overreport success for a program with which they are satisfied and overreport problems for one that they do not like is always a consideration in a study that relies on self-report without confirmation of actual use of services. Thus, for this study that shows dramatic improvement in many health and health care access indicators, response bias must be considered. There are many reasons to believe that parents are not systematically overreporting the success of the program. First, baseline and follow-up surveys were sent to parents almost a full year apart from each other,
Although the Medicaid program and 2 pre-SCHIP public
child health insurance programs have been shown to
improve access to health care for low-income children,
the effect of SCHIP, enacted by Congress in 1997 and
aimed at near-poor children who do not qualify for Med-
icaid, has yet to be measured. It is important to deter-
mine if SCHIP programs are meeting the original goals
of improving access to services and health status, as fed-
eral funding for the SCHIP program is scheduled to de-
crease by more than $1 billion annually, which could lead
to a loss of health insurance coverage for more than
400,000 children. Evaluating the success of SCHIPs can
inform the congressional debate about the current level
of program funding and whether the program should be
continued when it comes up for reauthorization in 2007.

This study finds that NCHC, North Carolina’s
SCHIP, has been successful in improving access to health
care for low-income children, particularly for children
who were previously uninsured compared with those who
came to the NCHC program directly from Medicaid. Re-
sults suggest that continuation of the program at cur-
rent levels of funding is warranted as projected de-
ferrals in funding will negatively affect access to care
for this vulnerable population.

The study results are consistent with evaluations of pre-
SCHIPs for low-income children in other states—North
Carolina’s SCHIP has been quite successful in improv-
ing access to care for low-income children. Results sug-

gest that continuation of the program at current levels
of funding is warranted, as projected decreases in the
federal budget for SCHIP will negatively affect access
to care for this vulnerable population.

We thank Robert Schwartz, MA, for substantial data
set construction and programming assistance. We also thank
the staff of the North Carolina Division of Medical Assis-
tance: Patsy Slaughter, MA, George Carr, George Johnson,
PhD, and Frances Ochart for the programming and data ma-
nipulation necessary to provide enrollment data, and June
Milby, MBA, MHA, for her input on the survey design and
overall project facilitation.

Corresponding author and reprints: Rebecca T. Slifkin,
PhD, Cecil G. Sheps Center for Health Services Research,
University of North Carolina at Chapel Hill, 725 Airport
Rd, CB 7590, Chapel Hill, NC 27599-7590 (e-mail: becky_slifkin@unc.edu).

REFERENCES

2. Medicaid Eligibility. Centers for Medicare and Medicaid Services (formerly Health
Care Financing Administration). US Dept of Health and Human Services. Avail-
3. US Census Bureau. Table HI-3. Health Insurance Coverage Status and Type of
Coverage—Children under 18 by Age: 1987 to 2000. Available at: http://
4. Holl JL, Szilagyi PG, Rodewald LE, Byrd RS, Weltzmann ML. Profile of uninsured
5. Kogan MD, Alexander GR, Telichebaum MA, et al. The effect of gaps in health in-
surance on continuity of a regular source of care among preschool-aged chil-
6. Newacheck PW, Hughes DC, Stoddard JJ. Children’s access to primary care: dif-
7. Newacheck PW, Stoddard JJ, Hughes DC, Pearl M. Health insurance and access
8. Wood D, Hayward RA, Corey CR, Freeman HE, Shapiro MF. Access to medical care
673.
11. General Accounting Office. Health Insurance: Coverage Leads to Increased Health
14. Health Care Financing Administration. State Child Health Insurance Program Plan
15. Division of Medical Assistance, North Carolina Department of Health and Hu-
man Services. Available at: http://www.dhhs.state.nc.us/dma. Accessed Novem-
Health Plus: access, utilization, quality of health care, and health status. Pedi-
ance program for low-income children: implications for State Child Health In-
health insurance program on newly enrolled children. JAMA. 1998;279:
1820-1825.
19. Keane CR, Lave JR, Ricci EM, LaValle CP. The impact of a children’s health in-
20. Park E, Brookdus M. OMB Estimates indicate 400,000 children will lose health
insurance due to reductions in SCHIP funding. Center on Budget and Policy Pri-
orities. Available at: http://www.cbp.org/11-6-01health.htm. Accessed Novem-
23. Remington RD, Schork MA. Statistics With Applications to the Biological and
25. Final Report of the Task Force on Child Health Insurance to the Secretary of the