

## HEALTH INSURANCE AND ACCESS TO PRIMARY CARE FOR CHILDREN

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**ABSTRACT**

**Background** Numerous studies have demonstrated that insurance status influences the amount of ambulatory care received by children, but few have assessed the role of insurance as a determinant of children's access to primary care. We studied the effect of health insurance on children's access to primary care.

**Methods** We analyzed a sample of 49,367 children under 18 years of age from the 1993–1994 National Health Interview Survey, a nationwide household survey. The overall rate of response was 86.5 percent. The survey included questions on insurance coverage and access to primary care.

**Results** An estimated 13 percent of U.S. children did not have health insurance in 1993–1994. Uninsured children were less likely than insured children to have a usual source of care (75.9 percent vs. 96.2 percent,  $P < 0.001$ ). Among those with a usual source of care, uninsured children were more likely than insured children to have no regular physician (24.3 percent vs. 13.8 percent,  $P < 0.001$ ), to be without access to medical care after normal business hours (11.8 percent vs. 7.0 percent,  $P < 0.001$ ), and to have families that were dissatisfied with at least one aspect of their care (19.6 percent vs. 14.0 percent,  $P = 0.01$ ). Uninsured children were more likely than insured children to have gone without needed medical, dental, or other health care (22.2 percent vs. 6.1 percent,  $P < 0.001$ ). Uninsured children were also less likely than insured children to have had contact with a physician during the previous year (67.4 percent vs. 83.8 percent,  $P < 0.001$ ). All differences remained significant after we controlled for potential confounders using linear and logistic regression.

**Conclusions** Among children, having health insurance is strongly associated with access to primary care. The new children's health insurance program enacted as part of the Balanced Budget Act of 1997 may substantially improve access to and use of primary care by children. (N Engl J Med 1998;338:513-9.)

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THE promise of extending health insurance coverage to all Americans appeared to have faded altogether with the demise of the Clinton health care reform effort in 1994. However, the prospects of expanding health insurance for children improved markedly with the enactment of the Balanced Budget Act of 1997, which includes provisions for spending nearly \$40 billion for this purpose over the next 10 years. It is hoped that this federal and state matching-grant program will substantially reduce the number of uninsured children in the U.S. population.

Authorization of this new program reflects a growing appreciation of the role of health insurance in determining children's access to needed health care. Indeed, numerous studies have demonstrated that children's insurance status is an independent predictor of their use of health care.<sup>1-12</sup> Uninsured children have fewer visits to physicians than their insured counterparts,<sup>1-3</sup> and they are more likely than insured children to go without any contact with a physician in a given year,<sup>2,4-7</sup> to receive inadequate preventive services,<sup>8,9</sup> and to be without a usual source of health care.<sup>2,6,10</sup> They are also less likely than insured children to be seen by physicians when they have symptoms of a variety of illnesses for which office visits are warranted.<sup>11</sup>

Past studies have typically focused on the role of insurance as a determinant of the amount of ambulatory care children receive or on certain qualitative dimensions of care, such as families' level of satisfaction with care. Few studies have attempted to determine the influence of insurance on the use of primary care by children. Primary care is important to children's well-being and is considered by many to be essential. Indeed, unobstructed access to primary care for children is a basic principle underlying the health care systems of most industrialized coun-

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tries.<sup>13</sup> Although primary care has been variously defined, the American Academy of Pediatrics defines primary care as “accessible and affordable, first contact, continuous and comprehensive, and coordinated to meet the health needs of the individual and family being served.”<sup>14</sup>

In this article, we analyze the effects of health insurance coverage on children’s access to primary care on the basis of a current and nationally representative sample of nearly 50,000 children from the 1993–1994 National Health Interview Survey (NHIS). Using data from a special supplemental questionnaire on access to care that was included in the NHIS, we examined patterns of access and receipt of primary care by children as measured by traditional indicators of access and use, as well as by several measures of satisfaction and unmet need.

## METHODS

### Source of Data

The NHIS is a continuing household survey of the civilian, noninstitutionalized population of the United States.<sup>15</sup> The survey is sponsored by the National Center for Health Statistics, and field operations are conducted by trained personnel from the Bureau of the Census. The survey instrument consists of a core questionnaire and supplemental questionnaires on selected topics of interest to the public health community. During the final two quarters of 1993 and all of 1994, supplemental questionnaires on access to health care and health insurance coverage were included in the NHIS. The responses to these questionnaires provided the data for our analysis.

The NHIS conducts field interviews in approximately 50,000 households annually. It surveys a cross-sectional sample, with different households sampled each year. The 1993–1994 NHIS sample used in our analysis included 49,367 children under the age of 18 years. An adult member of the household served as the respondent for children in the survey. The combined response rate for the core and supplemental questionnaires used in our analysis was 86.5 percent. The rate of nonresponse for each of the items used as dependent variables in our analysis was less than 10 percent. Although the NHIS is designed to provide nationally representative estimates, children not living in households, including homeless and institutionalized children, are not included in the survey.

### Insurance Coverage

We used the questionnaire on health insurance to determine children’s insurance status. Children were classified as insured if they were reported to be covered by the Civilian Health and Medical Program of the Uniformed Services, Medicare, Medicaid, the Indian Health Service, other public-assistance programs, or private health insurance during the month before the interview. Children with no coverage from these sources were classified as uninsured. Children whose insurance status was unknown ( $n = 5936$ ) were excluded from the comparisons related to insurance, but they were included in the totals of “all children.”

### Measures of Access and Use of Care

We used the questionnaire on access to health care to obtain information on the presence or absence of a usual source of care, the site of the usual source of care, the characteristics of care provided at the site, and indications of missed or delayed care. Using the core questionnaire, we obtained data on the ambulatory services provided to children by a physician. Two indicators were

used: whether the child had had contact with a physician during the previous year, and the number of such contacts during the previous year. Because of limitations of the data set, the measures of contacts with physicians were not restricted to primary care. However, physicians’ services provided during inpatient hospital episodes were excluded. Because children use relatively little specialty care, these indicators should serve as useful proxies for the receipt of primary care.

### Statistical Analysis

Data analysis was conducted with use of SUDAAN, a statistical-analysis program that incorporates the complex survey design used in the NHIS, including household and intrafamilial clustering of sample observations.<sup>16</sup> Most of our results are presented in the form of simple bivariate comparisons of insured and uninsured children. However, because differences in the measures of access and use of care may be affected by variables other than insurance status, we also conducted multivariate analyses. These analyses use logistic-regression and linear regression techniques to control for the potentially confounding effects of the child’s age, sex, race, family income, family structure, family size, region of residence, the population density of the area of residence, and several measures of health status. Estimates presented in the text and tables are weighted to reflect national population totals. Unless otherwise noted, only differences that were significant at the level of 0.05 (in a two-tailed test) are discussed here. Standard errors and test statistics were calculated on the basis of the unweighted number of observations included in the survey sample.

## RESULTS

### Insurance Coverage and Usual Source of Care

On average, an estimated 13 percent of children who were less than 18 years old in 1993–1994 were uninsured. During the same period, 94 percent of U.S. children were reported to have a usual source of health care from which they obtained routine services and medical advice. Children without health insurance coverage were six times as likely as insured children not to have a usual source of care (24 percent vs. 4 percent) (Table 1). Among children with a usual source of care, 86 percent identified physicians’ offices, private clinics, or health maintenance organizations (HMOs) as the site of that care. Insured children were more likely to receive care in physicians’ offices, private clinics, or HMOs (87 percent, vs. 76 percent for uninsured children), whereas uninsured children were more likely to receive their care in community and other health centers (18 percent, vs. 6 percent for insured children) and in hospital emergency rooms (2 percent vs. 1 percent).

### Aspects of Care at the Usual Site

Because we found substantial differences in the usual sites of care for children with and without insurance, we expected to find significant differences according to insurance status in the qualitative dimensions of the care they received. Large differences were found, as shown in Table 2. First, uninsured children were almost twice as likely as insured children to have no identified regular physician or other medical provider at their usual site of care. Second,

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**TABLE 1. USUAL SOURCE AND SITE OF CARE AMONG U.S. CHILDREN, 1993–1994.\***

GROUP OF CHILDREN	WITH USUAL SOURCE OF CARE (N=43,077)	USUAL SITE OF CARE (N=39,993)				
		PHYSICIAN'S OFFICE, PRIVATE CLINIC, OR HMO	HOSPITAL OUTPATIENT CLINIC	COMMUNITY AND OTHER HEALTH CENTERS	EMERGENCY ROOM	OTHER
percent of group (95 percent confidence interval)						
Uninsured	75.9 (74.0–77.7)	75.8 (73.3–78.3)	2.7 (1.8–3.6)	17.9 (15.4–20.3)	2.5 (1.6–3.4)	1.1 (0.7–1.6)
Insured	96.2 (95.8–96.5)	87.2 (86.1–88.4)	2.6 (2.2–2.9)	6.4 (5.7–7.1)	0.8 (0.6–1.0)	2.9 (2.1–3.7)
All†	93.5 (93.1–94.0)	85.7 (84.5–86.9)	2.6 (2.2–2.9)	7.8 (7.0–8.5)	1.0 (0.8–1.2)	2.9 (2.2–3.6)

\*Data are from the 1993–1994 National Health Interview Survey. Because of rounding, percentages may not total 100. Numbers of children are the numbers for whom responses were available.

†This category includes children whose insurance status was unknown.

**TABLE 2. MEASURES OF CONTINUITY AND ACCESSIBILITY OF CARE AND FAMILIES' SATISFACTION WITH CARE AMONG U.S. CHILDREN, 1993–1994.\***

GROUP OF CHILDREN	NO REGULAR CLINICIAN (N=39,087)†	NO AFTER-HOURS MEDICAL CARE (N=35,011)†	NOT SATISFIED WITH ≥1 ASPECT OF CARE (N=14,056)‡
percent of group (95 percent confidence interval)			
Uninsured	24.3 (21.9–26.8)	11.8 (10.0–13.5)	19.6 (15.4–23.8)
Insured	13.8 (12.8–14.9)	7.0 (6.2–7.7)	14.0 (13.2–14.9)
All§	15.0 (1.40–16.1)	7.5 (6.8–8.2)	14.5 (13.6–15.3)

\*Data are from the 1993–1994 National Health Interview Survey. Numbers of children are the numbers for whom responses were available.

†This question was asked only for children with a usual source of care.

‡This question was asked only for children who had received care from their usual source of care within the previous three months; aspects of care included waiting time for an appointment, waiting time to see a doctor, the way questions were answered, and the overall care received.

§This category includes children whose insurance status was unknown.

**TABLE 3. UNMET HEALTH CARE NEEDS AMONG U.S. CHILDREN, 1993–1994.\***

GROUP OF CHILDREN	UNABLE TO GET NEEDED MEDICAL CARE (N=43,238)	UNABLE TO GET NEEDED DENTAL CARE (N=43,230)	UNABLE TO GET NEEDED MEDICATIONS, EYEGLASSES, OR MENTAL HEALTH CARE (N=43,091)	UNABLE TO GET SOME NEEDED CARE (N=42,919)†
percent of group (95 percent confidence interval)				
Uninsured	6.3 (5.0–7.6)	16.7 (15.2–18.1)	7.0 (6.1–7.9)	22.2 (20.4–24.0)
Insured	1.1 (1.0–1.2)	4.2 (3.8–4.5)	2.0 (1.7–2.2)	6.1 (5.7–6.5)
All‡	1.8 (1.5–2.0)	5.8 (5.4–6.2)	2.6 (2.4–2.8)	8.3 (7.8–8.7)

\*Data are from the 1993–1994 National Health Interview Survey. Numbers of children are the numbers for whom responses were available.

†For some children, more than one type of needed care was unavailable.

‡This category includes children whose insurance status was unknown.

TABLE 4. USE OF AMBULATORY CARE AMONG U.S. CHILDREN, 1993–1994.\*

GROUP OF CHILDREN	PERCENT WITH AT LEAST ONE PHYSICIAN CONTACT IN PAST YEAR (N=43,266)	ANNUAL No. OF PHYSICIAN CONTACTS/100 RESTRICTED-ACTIVITY DAYS (N=43,431)	ANNUAL No. OF PHYSICIAN CONTACTS FOR CHILDREN IN EXCELLENT, VERY GOOD, OR GOOD HEALTH (N=41,755)	ANNUAL No. OF PHYSICIAN CONTACTS FOR CHILDREN IN FAIR OR POOR HEALTH (N=1240)	ANNUAL No. OF PHYSICIAN CONTACTS FOR CHILDREN WITHOUT DISABILITY (N=40,468)	ANNUAL No. OF PHYSICIAN CONTACTS FOR CHILDREN WITH DISABILITY (N=2963)
			mean (95 percent confidence interval)			
Uninsured	67.4 (65.7–69.1)	30.5 (25.8–35.2)	2.3 (2.0–2.6)	4.4 (2.8–6.1)	2.3 (2.0–2.5)	3.7 (2.4–5.0)
Insured	83.8 (83.2–84.5)	52.6 (49.7–55.5)	4.5 (4.3–4.6)	16.5 (13.9–19.0)	4.3 (4.1–4.4)	11.7 (10.5–13.0)
All†	81.4 (80.8–82.0)	49.5 (46.8–52.2)	4.1 (4.0–4.3)	15.0 (12.8–17.2)	4.0 (3.8–4.1)	10.9 (9.8–12.0)

\*The data are from the 1993–1994 National Health Interview Survey. Numbers of children are the numbers for whom responses were available.

†This category includes children whose insurance status was unknown.

uninsured children were 1.7 times as likely as insured children not to have access to care after normal business hours. Third, families of uninsured children were about 40 percent more likely than families of insured children to report some degree of dissatisfaction with waiting times for appointments, the manner in which questions were answered by the practitioner, or the overall care received from their usual source of care.

#### Delayed or Missed Care

Approximately 8 percent of all children did not receive needed medical care, dental care, medications, eyeglasses, or mental health care during the year before the survey (Table 3). In contrast, nearly one in four uninsured children was unable to gain access to a needed service. Uninsured children were more than three times as likely as insured children to report going without at least one needed service (22 percent vs. 6 percent) and six times as likely to go without needed medical care (6 percent vs. 1 percent).

#### Use of Ambulatory Care

Data on entry into the health care system and the volume of services are presented in Table 4. Entry into the health care system is indicated here by whether a child had at least one contact with a physician in the previous year. Overall, 81 percent of children had at least one such contact. However, uninsured children were far less likely than insured children to gain entry into the system (67 percent vs. 84 percent).

Several measures of the amount of care children received from physicians, with adjustment for need, are also included in Table 4. On the whole, children were reported to have about 50 contacts with a doctor for each 100 days of restricted activity due to illness. However, uninsured children received only about three fifths as much ambulatory care as insured children, according to this indicator. The amount of

ambulatory care received also varied according to the respondent's perception of the child's health. Among children reported to be in excellent, very good, or good health, uninsured children had about half as many contacts with a physician as insured children (2.3 vs. 4.5 contacts). Among children in fair or poor health, uninsured children had only 27 percent as many contacts with a physician as insured children (4.4 vs. 16.5 contacts).

Finally, we compared receipt of physicians' services according to disability status. Disability was defined as a long-term limitation in school or play activity due to a chronic condition. As was the case for perceived health status, a substantial gradient was found. Among children without disabilities, those with insurance had almost twice as many contacts with a physician as those without insurance (4.3 vs. 2.3 contacts). Among the disabled children, insured children had roughly three times as many contacts with a physician as uninsured children (11.7 vs. 3.7 contacts).

#### Multivariate Analysis

The differences between insured and uninsured children that are shown in the preceding tables could be attributable to the effects of other variables associated with insurance coverage, such as health status or family income. The results of linear regression and logistic-regression analyses, with control for several confounding variables, are presented in Table 5. Comparison of the unadjusted and adjusted odds ratios for the measures of access to and use of care indicates that although adjustment for age, race, income, health status, and other factors attenuated the effect of insurance coverage on access and use of care, insurance continued to have a substantial and consistent effect.

#### Reasons for the Lack of Insurance Coverage

Given the demonstrated importance of health insurance as an independent determinant of access to care, we examined the reasons for the lack of cover-

**TABLE 5.** UNADJUSTED AND ADJUSTED ODDS RATIOS FOR INDICATORS OF ACCESS TO AND USE OF CARE ACCORDING TO INSURANCE STATUS AMONG U.S. CHILDREN, 1993–1994.\*

INDICATOR VARIABLE	UNADJUSTED	ADJUSTED
	ODDS RATIO (95% CI)	ODDS RATIO (95% CI)
<b>Access</b>		
Has no usual source of care	8.0 (7.0–9.2)	6.1 (5.2–7.1)
Has no regular clinician	2.0 (1.7–2.3)	1.7 (1.4–1.9)
No after-hours medical care	1.8 (1.5–2.1)	1.6 (1.3–2.0)
Not satisfied with care	1.5 (1.1–2.0)	1.4 (1.1–1.9)
Unable to get needed medical care	6.1 (4.8–7.7)	5.8 (4.6–7.5)
Unable to get needed dental care	4.6 (4.0–5.2)	4.3 (3.7–4.9)
Unable to get needed medications, mental health care, or eyeglasses	3.8 (3.1–4.5)	3.4 (2.8–4.1)
Unable to get some needed care	4.4 (3.9–4.9)	4.1 (3.6–4.7)
<b>Use of care</b>		
Has not seen a doctor in past year	3.0 (2.8–3.4)	2.1 (1.9–2.3)
<b>MEAN DIFFERENCE (95% CI)†</b>		
	UNADJUSTED	ADJUSTED
No. of contacts with a physician	2.43 (2.08–2.78)	1.84 (1.49–2.19)

\*The data are from the 1993–1994 National Health Interview Survey. The odds ratios are expressed as the odds of each outcome among children without health insurance as compared with those with health insurance. Adjusted odds ratios have been adjusted for children's age, sex, race, family income, family composition, family size, region, the population density of the area of residence, perceived health status, numbers of restricted-activity days, and presence or absence of disability. CI denotes confidence interval.

†The values show the difference between insured and uninsured children.

**TABLE 6.** REASONS FOR THE ABSENCE OF HEALTH INSURANCE AMONG U.S. CHILDREN, 1993–1994.\*

MAIN REASON CITED BY FAMILY	% (95% CI)
Too expensive or cannot afford insurance	74.6 (72.6–76.6)
Coverage not offered by employer	7.1 (6.0–8.2)
Job layoff or unemployment	3.3 (2.5–4.0)
Healthy or have not needed insurance	3.1 (2.3–3.9)
Other	11.9 (10.4–13.5)

\*The data are from the 1993–1994 National Health Interview Survey. CI denotes confidence interval.

age among uninsured children (Table 6). Although families with uninsured children reported many reasons for their not having health insurance coverage, cost or affordability was cited far more often than other explanations. Nearly three of four families with uninsured children cited the expense of insurance as their main reason for lacking coverage.

## DISCUSSION

In this report, we present data comparing insured and uninsured children with respect to a variety of indicators of access to and use of primary care. The measures were selected to provide a composite picture of the accessibility and use of primary care services.

Several aspects of primary care included within the definition of the American Academy of Pediatrics<sup>14</sup> were incorporated into our analytic design. Questions about a usual source of care served as a measure of “first contact.” Several measures were used to assess accessibility and affordability, including qualitative aspects of care at the usual site, the ability to obtain necessary care, and crude and adjusted measures of the use of care (e.g., the number of contacts with a physician). Identification of a regular physician (or other provider) served as a measure of the continuity of care. Our data base did not contain sufficient detail for us to conduct direct analyses of the process or content of specific health services (e.g., measures of comprehensiveness, coordination, or family-centeredness). However, some of these facets of primary care are presumably measured indirectly by the index of satisfaction.

What can be concluded about the effect of the presence or absence of health insurance on children's access to and use of primary medical care? Simply put, health insurance is a powerful predictor of children's degree of access to and use of primary care, including such aspects as entry into the health care system, identification of a regular clinician, level of satisfaction with care, whether care is delayed or missed, and the amount of physicians' services received. The effect of insurance remained substantial and statistically significant even after we controlled for several potentially confounding variables, such as family income and children's health status.

This analysis suggests that the disparity in access between uninsured and insured children may have worsened since 1987, the last time similar in-depth data on access to care were collected for a national household sample of children. A previous analysis of the data from the 1987 National Medical Expenditure Survey indicated that uninsured children consistently fared worse than insured children on a range of measures of access to and use of primary care.<sup>10</sup> A comparison of adjusted odds ratios for similar indicators between that study and the current study suggests that the absence of health insurance may place children at an even greater disadvantage today. How-

ever, differences between the studies in survey instruments and analytic methods may also account for the increased odds ratios in the current study.

The enactment of the State Children's Health Insurance Program (Title XXI of the Social Security Act) under the Balanced Budget Act of 1997 enables states to provide health insurance to uninsured children in low-income families (those with incomes below 200 percent of the federal poverty level or 50 percent greater than a state's income eligibility limit for Medicaid if that is higher) through expansions of their existing Medicaid programs, a separate children's health insurance plan, or a combination of both. Although states must meet certain standards to obtain federal matching funds under Title XXI, Congress has given states wide latitude in designing and implementing their programs. The extent to which Title XXI translates into improved access to health care for children will depend on the choices states make in several key areas. These areas are as follows:

*Whether states participate at all and, if so, the degree to which they participate.* States that choose to participate can cover all or part of the target population of low-income uninsured children or even go beyond this target population by opening enrollment to additional groups of children. How each state responds is likely to depend on its fiscal and political climate.

*Whether the scope of benefits offered through the program meets the needs of children.* Because of their rapid growth and development and an illness profile that is different from that of adults, children require specially tailored health benefits.<sup>17</sup> States have the option of offering the Medicaid benefit package or a less comprehensive benefit package under a separate children's health insurance plan. The choice made by states will influence whether children can obtain the range of services they need.

*Whether cost sharing by enrollees is required.* Within certain limits, states that choose to offer a separate children's health insurance plan can impose premiums, deductibles, coinsurance, or other copayments on enrollees. The level of cost sharing can influence a family's willingness to participate and, if enrolled, their ability to obtain care for their children.<sup>18,19</sup>

*The effectiveness of outreach and enrollment efforts.* A recent study by the General Accounting Office found that large numbers of uninsured children are eligible for Medicaid but are not enrolled, even though states receive federal matching funds for outreach and enrollment.<sup>20</sup> Federal matching funds are also available for outreach and enrollment under Title XXI. However, states have substantial discretion in using these funds. How aggressively states pursue outreach and enrollment is likely to have an important bearing on the rates of participation in the new program.

The Congressional Budget Office has projected that, in spite of the large infusion of new federal dollars into this initiative, only about 2 million previously uninsured children per year will actually obtain coverage under the new or expanded insurance programs made possible by Title XXI.<sup>21</sup> Moreover, other factors may continue to present obstacles to many underserved children in attaining access to health services, even after insurance coverage is provided to them. For example, studies have demonstrated that children who are members of minority groups and children living in poverty have reduced access to primary care regardless of their insurance status.<sup>10,22</sup> Therefore, the specific steps taken by states in implementing the new programs will need to be vigilantly monitored in order to assess the breadth and depth of the expansion in children's health insurance coverage. More important, beyond raw numbers of children for whom coverage is provided, the effects of the new programs under this initiative will need to be monitored closely. Ideally, such monitoring should include ongoing measurement of indicators of processes and outcomes such as population-based measures of children's access to care and their health status. Only in this way will our nation be able to realize the return on this important new investment.

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