# Poverty, Children's Health, and Health Care Utilization

*Barbara L. Wolfe*

*Socioeconomic status influenced the health of children. Low birthweight and infant mortality rates were higher among the children of less-educated mothers than among children of more-educated mothers. Infants born to mothers who did not finish high school were about 50 percent more likely to be of low birthweight than infants whose mothers finished college.*

*Children in higher income families are less likely than poor children to be without a regular source of health care. However, insurance coverage makes a real difference for poor children in terms of access to health care. Among all poor children under six years of age, 21 percent of those without health insurance had no usual source of care, compared with 4 percent of poor children covered by insurance.*

*–National Center for Health Statistics, 1998*

The issue of the links between poverty, health, and access to medical care is one that has received considerable attention from a variety of perspectives.[1] Health influences most other activities of life, from the ability to engage in learn-

ing to the ability to enjoy life itself. It is therefore not surprising that all societies should be concerned about varying levels of health among their members, especially their youngest members, and about the allocation of the most visible means by which health is thought to be influenced—medical care. This paper explores the ties between poverty and health for children, paying particular attention to the potential ways that society, through health insurance, can affect health status and health care delivery systems.[2]

## LEVELS AND TRENDS IN POVERTY AND HEALTH STATUS

In order to assess empirically the links between poverty, health status, and health care access, we need at least one reliable and valid measure of children's health status.[3] One consistent and available indicator of health status in relation to poverty over time is self-reported health status. This is the primary health indicator used in this paper. It is taken from the National Health Interview Survey (NHIS) for 1984, 1990, and 1995, and is also available for the National Medical Expenditure Survey (NMES) and Medical Expenditure Panel Survey (MEPS), making it particularly useful for our analysis.

The NHIS data on self-reported health status by poverty status indicate that between 1984 and 1990 the percentage of children, both poor and nonpoor, who were

*Barbara L. Wolfe is a professor of economics and of preventive medicine and director of the Institute for Research on Poverty, University of Wisconsin-Madison. The views expressed are those of the author and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System.*

reported to be in very good or excellent health increased (Table 1).[4] Between 1990 and 1995, however, this pattern no longer held for poor children: the proportion under the age of seventeen in very good or excellent health decreased. Among poor children aged zero to four years, the decrease was greater. At the same time, the proportion of nonpoor children in very good or excellent health continued to increase. Chart 1, which shows the proportion of children reported to be in very good or excellent health in 1994, suggests a clear association between income and health. Both Table 1 and Chart 1 suggest that poor children are now in worse general health than nonpoor children, and that this pattern has intensified in recent years.

The ratio of poor to nonpoor children reported to be in poor/fair health in the 1987 NMES and 1996 MEPS corroborates these findings. The ratio was 1.95 for children in 1987, but by 1996 it was 2.7, indicating that the underlying health status of the population is increasingly differentiated according to poverty status.

Another indicator of health—blood-lead levels—also suggests a high correlation between poverty and poor health. The proportion of children aged one to five years

with high levels of lead in the blood is far greater among the poor and near-poor than among children in higher income families. In 1988-91, more than 16 percent of children in families with incomes below 130 percent of the poverty line had blood-lead levels above 10 micrograms per deciliter, compared with slightly more than 5 percent of children living in families with incomes at 130 to 299 percent of the poverty line and 4 percent among children in higher income families (U.S. Department of Health and Human Services 1998).[5]

Such evidence clearly suggests a high correlation between poverty and poor health, a growing gap between the health status of the poor and the nonpoor from 1984 to 1996, and some indication of an increase in the percentage of children in poor health in the last few years. An alternative explanation for the decline in health status among the poor is that the increasing inequality of income causes poor health among those with the lowest income, but recent evidence at the individual level does not support this hypothesis (see, for example, Mellor and Milyo [1999] and the references they cite).

Does the existing evidence point to an intensification of the link between poverty and poor health? This question is difficult to test.[6] However, two links can be examined: (1) the living conditions associated with

*Table 1*
PERCENTAGE OF CHILDREN UNDER AGE EIGHTEEN IN VERY GOOD OR EXCELLENT HEALTH
By Age and Poverty Status, Selected Years

| Age and Poverty Status | 1984 | 1990 | 1995 |
|---|---|---|---|
| Children aged zero to seventeen years | | | |
| Total | 78 | 81 | 81 |
| Poverty status | | | |
| Below poverty | 62 | 66 | 65 |
| At or above poverty | 82 | 84 | 85 |
| Children aged zero to four years | | | |
| Total | 79 | 81 | 81 |
| Poverty status | | | |
| Below poverty | 66 | 69 | 66 |
| At or above poverty | 82 | 84 | 86 |
| Children aged five to seventeen years | | | |
| Total | 77 | 80 | 81 |
| Poverty status | | | |
| Below poverty | 60 | 64 | 64 |
| At or above poverty | 81 | 84 | 85 |

Source: National Health Interview Survey (1984, 1990, 1995).

Note: Poverty status is defined according to the federal poverty line for the year indicated.

*Chart 1*

U.S. Children under Age Eighteen in Very Good or Excellent Health, by Family Income, 1994
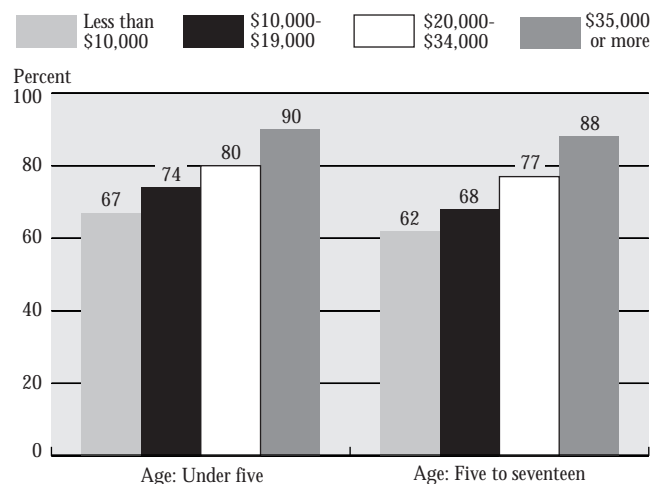


Source: U.S. Department of Health and Human Services (1998).

poverty, which might create risks to a child's health, and (2) the link between poverty and access to health care. These links are discussed below.

A U.S. Bureau of the Census report (Short and Shea 1995) indicates that there are higher levels of conditions that increase the risk of accidents, injury, and illness among the poor than among the nonpoor (Table 2). For example, persons who are poor are about twice as likely as the nonpoor to have a leaking roof, a broken window, or exposed wiring, and are nearly three times as likely to have rats, mice, and/or roaches, as well as plumbing that does not work. They are about twice as likely to report that they are afraid to go out, that they view crime as a problem, and that there are rundown or abandoned structures in their neighborhood. The poor are also nearly eight times as likely to report that they did not have enough food in the past four months. All of these conditions create a higher risk of disease and injury.[7]
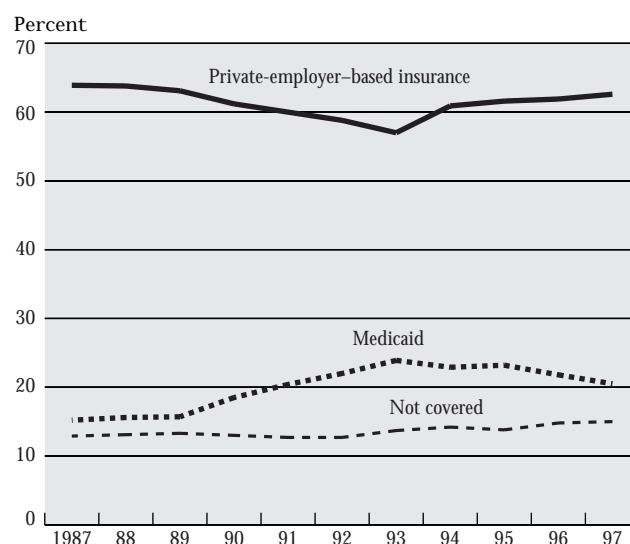
## LEVELS AND TRENDS IN HEALTH CARE COVERAGE

In this section, we explore health care coverage by health status among the poor and nonpoor populations, asking whether there has been a trend in coverage. In the following sections, we explore the role of health insurance in determining equity in the utilization of medical expenditures.

Chart 2 reports the trend in health insurance coverage for all children from 1987 to 1997. It shows three complementary trends: a U-shaped pattern in the proportion of children covered by private-employer–based coverage; a general increase in the proportion of children covered by Medicaid, which peaked in 1993 and subsequently declined; and an overall small increase in the proportion of children without coverage—the proportion being highest in the latest year shown.

Chart 3 illustrates the coverage of poor children by age, compared with all children. Children who live in poor households lag behind in every age group, especially the twelve-to-seventeen-year-olds; overall, poor children are 70 percent less likely than all children to have private

*Table 2*
LIVING CONDITIONS AMONG THE NONPOOR AND POOR, 1992
Percent

| Conditions | Persons in Families Who Are Nonpoor | Standard Error | Persons in Families Who Are Poor | Standard Error |
|---|---|---|---|---|
| Housing conditions | | | | |
| Upkeep problems | | | | |
| Leaking roof or ceiling | 8.5 | (0.17) | 15.8 | (0.58) |
| Toilet, hot water heater, plumbing not working | 4.8 | (0.13) | 12.0 | (0.51) |
| Broken windows | 8.2 | (0.17) | 18.6 | (0.61) |
| Exposed wiring | 1.3 | (0.07) | 4.0 | (0.31) |
| Rats, mice, roaches | 13.9 | (0.21) | 39.4 | (0.77) |
| Holes in floor | 0.8 | (0.05) | 4.8 | (0.34) |
| Cracks or holes in walls or ceiling | 4.1 | (0.12) | 13.5 | (0.54) |
| Neighborhood conditions | | | | |
| Neighborhood safe | 93.0 | (0.16) | 78.1 | (0.66) |
| Home safe from crime | 95.0 | (0.13) | 85.0 | (0.57) |
| Afraid to go out | 8.7 | (0.17) | 19.5 | (0.63) |
| Crime a problem | 16.3 | (0.23) | 30.4 | (0.49) |
| Trash/litter | 10.0 | (0.18) | 22.7 | (0.66) |
| Rundown/abandoned structure | 9.6 | (0.18) | 18.8 | (0.62) |
| Food adequacy | | | | |
| Food adequacy in past four months | | | | |
| Enough food | 98.6 | (0.07) | 89.0 | (0.49) |
| No days without food last month | 94.3 | (0.14) | 85.2 | (0.55) |

Source: Short and Shea (1995).

*Chart 2*

Health Insurance Coverage Status for U.S. Children under Age Eighteen



Sources: Unpublished tabulations provided by the U.S. Census Bureau to the Annie E. Casey Foundation; *Health Insurance Coverage Status and Type of Coverage by State—Children under 18: 1987-1997* (Table HI-5).

Note: Persons are as of March of the following year.

*Chart 3*

All U.S. Children and Poor U.S. Children Covered by Health Insurance, Private Insurance, and Medicaid, 1997



Source: http://www.census.gov/hhes/hlthins/hlthin97/hi97t7.html.
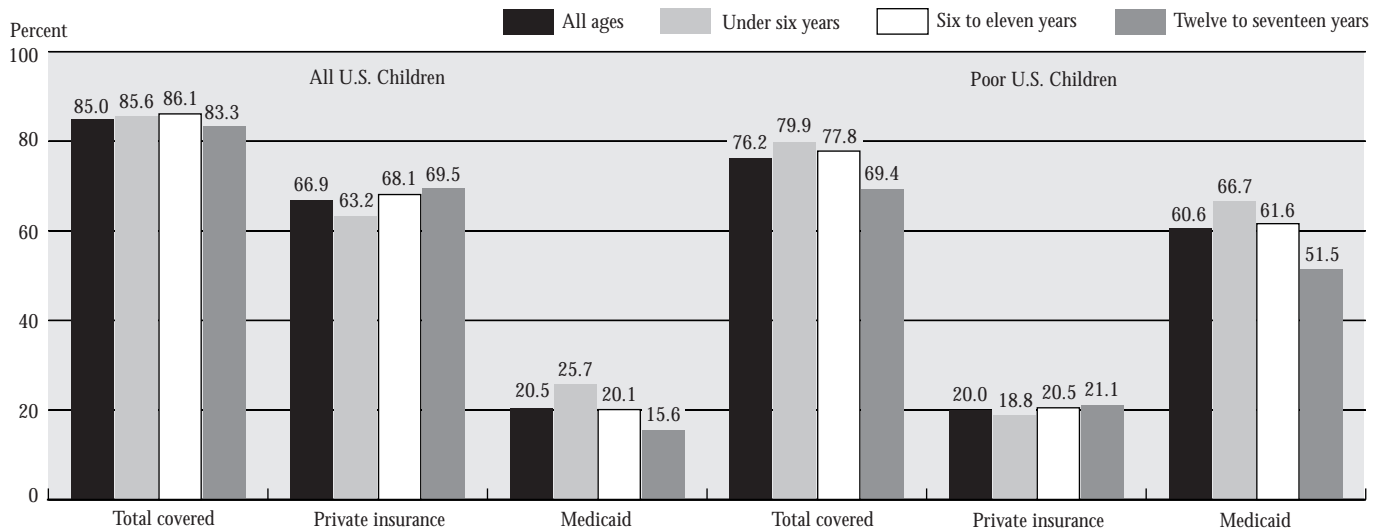
coverage. Children under the age of eleven in poor households are about three times as likely as all children to have Medicaid coverage.

The lack of coverage seen among poor children (23.8 percent in 1997) may at first glance seem surprising: there have been significant expansions of eligibility for Medicaid since 1988, and most children living in families with incomes below the poverty line are now eligible.[8] A recent study of take-up rates among eligible children, using the MEPS data, found that 22 percent were uninsured (Selden, Banthin, and Cohen 1998). Children who were made eligible by recent expansions were uninsured in higher proportions than children made eligible through Aid to Families with Dependent Children (AFDC, or welfare). Ignorance of eligibility, stigma tied to a program associated with welfare, low reimbursement, and limited access to providers may all lie behind these low take-up rates.[9]

Is there evidence that coverage makes a difference? Chart 4 presents the proportion of children who did not have any contact with a physician over the past twelve months, by income and insurance coverage. First, it shows that for every group, regardless of income, there is a very large difference in access to medical care depending on whether or not the child is insured (as measured by one or
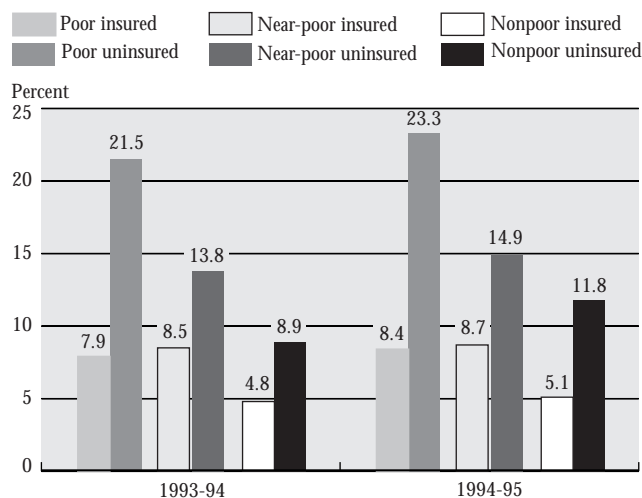
more provider contacts). Second, it indicates that the differential increased over time. Third, it shows that the differential probability of not using any care is far, far greater among the poor than the near-poor or the nonpoor. In 1993-94, 21.5 percent of poor uninsured children did not see a provider over a twelve-month period, compared with 7.9 percent of poor insured children—a ratio of 2.7. Within one year, the ratio had climbed to 2.8; 23.3 percent of poor uninsured children had not seen a provider in twelve months. Even among children with "special health care needs"—defined as those who have or are at increased risk of a chronic condition and require more medical care than children in general—those who are poor and uninsured use much less care than similar but insured children. For example, these uninsured children are four times less likely to have a usual source of care and are nearly three times as likely to report unmet health care needs (Chart 5).

### Estimates of the Role of Insurance in Influencing Health Care Expenditures

A major goal of this paper is to explore the role of insurance as a determinant of inequality in the utilization of medical care.[10] We analyze the importance of insurance

U.S. Children without a Physician Contact within the
Past Twelve Months, by Poverty Status and Health
Insurance Status



Source: U.S. Department of Health and Human Services.

Access to Care for Low-Income U.S. Children
with Special Health Care Needs, 1994



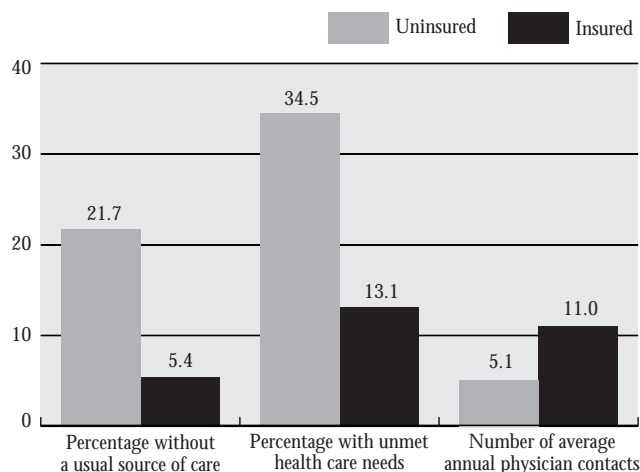Source: Newacheck et al. (1998).

coverage through the use of regressions on the determinants of medical expenditures, employing the most recent data on medical care use available in a nationwide survey. We examine the importance of different types of insurance (public or private) for children in good to excellent health and for children with significant health care needs. Ultimately, we wish to ask two questions: Would shifting from no coverage to public or private coverage equalize medical care utilization? And which form of insurance would lead to greater equalization?

As noted above, data are from the MEPS, which is part of the national survey series on the financing and use of medical care in this country. Its initial sample, drawn from the NHIS, comprises 10,500 households. Five interviews over two-and-a-half years are planned. We use only the first wave of data in this study. The survey, conducted by the U.S. government, contains data on the individual health, health insurance status, health care utilization, and socioeconomic characteristics of the individuals and their immediate family members.

Unfortunately, the MEPS has not yet released medical expenditure data. However, it does report utilization of health care, using many measures identical to those used in the 1987 survey, NMES, which is part of the same series (for example, office visits to a physician and number of hospital admissions). In order to measure utilization, we use NMES data on the relationship between expenditures and utilization. Specifically, we perform an ordinary least squares regression of medical expenditures on the measures of utilization that the NMES and MEPS have in common: office-based and non-office–based doctor visits, outpatient visits, hospital admissions, hospital nights, dentist and orthodontist visits, emergency room visits, and an indicator for prescription drug purchase—with controls to take into account regional differences in costs. We then apply the estimated coefficients to the measures of utilization in both data sets to predict expenditures.[11] These predicted expenditures become our measurement of interest for the study.[12]

In our estimates of the determinants of total medical expenditures (our measure of utilization), the control or conditioning variables, in addition to type of insurance coverage, are age, race, whether living in an urban area, health status, and interaction variables for health status and insurance status.[13] We also separately conduct estimates for subgroups defined by self-reported measures of health status. Our health needs measure has two components: a self-reported, five-item health scale and the presence of at least one limitation. We retain the two lowest categories on

the scale as our measure of poor/fair health (see Vanness and Wolfe [1997] and Wolfe and Vanness [1999] for more on the data set and the approach). We add to poor/fair health the presence of a significant limitation. Insurance is assigned to the individual children on the basis of responses to the questions on coverage asked in the first round of the survey.[14]

INSURANCE COVERAGE

Before moving to our regression estimates of the determinants of medical expenditures, we determine which children have insurance coverage according to the 1996 MEPS data (Table 3). Overall, the table suggests continued disparity in coverage between children who are poor and those who are not poor, a picture that is similar to the one presented in Chart 3, which is based on Current Population Survey data and not linked to utilization data.[15] Specifically, the table shows the following patterns:

- Poor children are less likely to have coverage than nonpoor children; in 1996, the ratio overall was 1.66 to 1.

- The probability that children in poor health have coverage is somewhat greater than that for children in good or excellent health.

- The group of children least likely to have coverage are those in poor families in good to excellent health. More than 22 percent of these children are

uninsured, compared with 13 percent of nonpoor children in good to excellent health.

- The group most likely to have public coverage are poor children with health care needs (children in fair or poor health or with a significant limitation). They are also the group least likely to have private insurance. This may reflect Medicaid expansions, especially those through Supplemental Security Income for severely disabled children, as well as enrollment of children who are hospitalized at the site of care.[16]

- Even children with health care needs have very high probabilities of being uninsured (nearly 19 percent).

EXPENDITURES

The tabulations of expected expenditures by current insurance status are reported in Table 4.[17] Overall, children's expenditures are relatively low; the average expenditure is $607 (see appendix). Differences are considerable, with a standard deviation of nearly $2,400. Expenditures differ by poverty status, they differ dramatically by health status, and they differ by the presence or absence of insurance coverage:

- Regardless of the type of insurance coverage, poor children have lower average expenditures than nonpoor children among children in good health.

- Children without coverage have far lower expenditures, on average, than children with coverage. Within poverty and health subgroups, the absolute average difference in expenditures ranges from nearly $300 to more than $3,000 when we compare the uninsured with one of the insured groups. Nonpoor children with health care needs show the largest difference in average expenditures.

*Table 3*
HEALTH INSURANCE STATUS OF CHILDREN

|  | Children without Need | | Children with Need | | All Children | |
|---|---|---|---|---|---|---|
|  | Nonpoor | Poor | Nonpoor | Poor | Nonpoor | Poor |
| Weighted proportions (percent) | | | | | | |
| Private | 74.48 | 15.99 | 64.84 | 10.70 | 74.02 | 15.44 |
| Public | 12.28 | 61.72 | 22.65 | 70.50 | 12.78 | 62.64 |
| None | 13.24 | 22.29 | 12.51 | 18.80 | 13.21 | 21.92 |
| Frequency counts | | | | | | |
| Private | 2,407 | 145 | 105 | 14 | 2,512 | 159 |
| Public | 543 | 660 | 56 | 95 | 599 | 755 |
| None | 551 | 263 | 28 | 29 | 579 | 292 |
| Total | 3,501 | 1,068 | 189 | 138 | 3,690 | 1,206 |

Source: Medical Expenditure Panel Survey (1996).

*Table 4*
MEAN EXPENDITURES ON CHILDREN'S HEALTH CARE

|  | Children without Need | | Children with Need | | All Children | |
|---|---|---|---|---|---|---|
|  | Nonpoor | Poor | Nonpoor | Poor | Nonpoor | Poor |
| Private | 627.48 | 444.67 | 3,762.99 | 1,395.33 | 757.85 | 514.00 |
| Public | 714.91 | 487.08 | 1,051.51 | 1,343.41 | 743.23 | 588.45 |
| None | 315.54 | 158.22 | 579.19 | 950.44 | 327.39 | 229.68 |

Source: Medical Expenditure Panel Survey (1996).

Notes: Figures are in dollars. Need is defined as being in poor or fair health or having a health limitation.

- Among children with health care needs and with private coverage, there are very large differences in expected expenditures between the poor and nonpoor. In contrast, the expenditures for children who have health care needs and public coverage are much more equal and, indeed, are greater for children in poor families.

## DETERMINANTS OF MEDICAL EXPENDITURES

Table 5 presents the results of three regressions that attempt to isolate the impact of insurance coverage on medical care utilization. This approach allows us to control for other characteristics of the child that might affect utilization, such as age, sex, and race. The models highlight the role of insurance and health care needs.[18] The first model includes dummy variables for public insurance and for no insurance and for health care needs (poor/fair health and/or presence of a limitation). The second includes interaction terms between health care needs and the variables capturing insurance coverage, while the third adds a dummy variable for being in a poor or near-poor family. Included as control variables are race, sex, and age of the child as well as the region of the country in which the child lives; this last variable is viewed as a proxy for availability of medical care.

The results are consistent with the tabulations presented above, but give a somewhat clearer picture of the importance of insurance coverage. Children with public coverage have, on average, medical expenditures that are $150 lower than those for children covered by private insurance. Those without coverage have far lower expenditures—about $450 less, on average, than children with private coverage. The second model, which includes interaction terms, highlights the very large differences in expenditures among children with health care needs. The results suggest that, among such children, those with public coverage have medical expenditures that are about $2,300 less than those with private coverage, whereas those with no insurance have medical expenditures that are about $2,800 less than those with private coverage. The results obtained from this model are consistent with the view that health care coverage plays a major role in influencing medical expenditures—and hence, potentially, in reducing the inequality in utilization among those with "equal" health care needs. The third model shows that poverty also reduces medical expenditures, but that the impact for children with health care needs is dwarfed by the impact of insurance coverage.[19]

*Table 5*
### SIMPLE MODELS OF THE ROLE OF INSURANCE IN INFLUENCING MEDICAL CARE EXPENDITURES

| Independent Variables | Model 1 | Standard Error | Model 2 | Standard Error | Model 3 | Standard Error |
|---|---|---|---|---|---|---|
| Public insurance | -152 | (87)* | 13 | (90) | 70.3 | (94) |
| No insurance | -450 | (99)*** | -329 | (101)*** | -283 | (78)*** |
| Fair or poor health or health limitations | 1706 | (146)*** | 2948 | (211)*** | 2877 | (218)*** |
| Age of child | -2.5 | (6.6) | -1 | (6.6) | -2 | (66) |
| Nonwhite | -184 | (83)** | -182.7 | (83)** | -109 | (81) |
| Male | -42 | (68) | -46 | (68) | -35 | (67) |
| Lives in Midwest | 28 | (106) | 52 | (105) | 47 | (105) |
| Lives in South | -37 | (97) | 1.7 | (97) | -37 | (94) |
| Lives in West | 53 | (106) | 82 | (105) | -20 | (100) |
| Constant | 743.7 | (109)*** | 653 | (109)*** | 655 | (107)*** |
| Interaction terms | | | | | | |
|   Health needy × public insurance | | | -2317 | (317)*** | -2226 | (297)*** |
|   Health needy × no insurance | | | -2460 | (431)*** | -2345 | (386)*** |
| Poor | | | | | -178 | (92)** |

Source: Author's calculations, based on Medical Expenditure Panel Survey data on children.

Note: Number of observations = 4,896.

*Statistically significant at the 10 percent level.

**Statistically significant at the 5 percent level.

***Statistically significant at the 0 percent level.

## WHAT IF THE UNINSURED WERE INSURED?

Using Table 5's estimates of Models 1, 2, and 3, we now calculate (simulate) the expenditures of children without coverage, if they were to be covered.[20] We do so for both private and public coverage. In effect, we are simulating the type of effect hoped for from the new $4.5 billion per year Children's Health Insurance Program initiative, which is just beginning to expand private health insurance coverage to a large minority of the uninsured low-income children in the United States (see Buren and Ullman [1998] and Mann and Guyer [1998]). We carry out our simulations for private and for public coverage, both of which could occur via CHIP.

We hold constant individuals' age, sex, race, region, and health status, and then change insurance status. In essence, we ask what individuals' expenditures are likely to be, given the expenditure pattern of others like them who have the same insurance status. We then ask what those expenditures are likely to be on the basis of observations of others like them who have the insurance coverage being simulated.

Table 6 presents the simulations of what would happen if children without coverage were to have private or public coverage. The results employ two prototype children to show the expected medical expenditure as insurance coverage varies.[21] In Model 2, these calculations suggest that a white female infant with health care needs ("in poor health") would spend more than four times as much if covered by private insurance than if uninsured. The same infant, if covered by public insurance, would have medical expenditures about 1.6 times greater than if she were uninsured. The difference is substantial when we compare infants in poor health who have private and public coverage—the ratio is nearly 2.8 and the dollar difference is more than $2,000. Among healthy children, the differences in medical expenditures between those with private or public coverage are small. However, insured healthy infants have medical expenditures that are more than three times those of uninsured healthy infants. Providing insurance coverage to infants who are in good to excellent health is expected to increase their medical expenditures by more than $300 per infant. The type of insurance does not

*Table 6*
### EXPECTED MEDICAL CARE EXPENDITURES

| Prototype Child | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| White female infant in poor health and with no coverage | 2,000 | 812 | 726[a] |
| If private coverage | 2,450 | 3,601 | 3,354 |
| If public coverage | 2,298 | 1,297 | 1,198 |
| Nonwhite female infant in good health and with no coverage | 110 | 141 | 85[b] |
| If private coverage | 560 | 470 | 368 |
| If public coverage | 408 | 483 | 438 |

Source: Author's calculations, based on models presented in Table 5.

Notes: Figures are in dollars. "Poor health" refers to either poor/fair health or health limitations.

[a]This is the value if the child is poor. If the child is not poor, the expected value is $904 if she is uninsured, $3,532 if she has private coverage, and $1,376 if she has public coverage.

[b]This is the value if the child is poor. If the child is not poor, the expected value is $236 if she is uninsured, $546 if she has private coverage, and $616 if she has public coverage.

appear to matter significantly in determining medical expenditures for healthy children. Model 3 adds whether or not a child is growing up in a poor or near-poor family. The story regarding the impact of insurance on utilization is vertically unchanged from that of Model 2. Being poor reduces utilization by $178 regardless of the type of insurance.

The simulations point to several conclusions:

- Public coverage is associated with far higher expenditures than no insurance. Among children with health problems, however, those with public coverage are expected to have expenditures far below those with private insurance. Hence, substantial inequality is expected to remain among children with health problems, if all children in lower income families have public coverage while children in higher income homes have private coverage.

- For healthy children, providing either private coverage or public coverage is expected to substantially increase the equality of medical expenditures, but the form of coverage makes little difference. Providing lower income children with public coverage while higher income children maintain private coverage would achieve a high level of equality in expenditures.

These results suggest that current public policy as reflected in CHIP may have a good chance of equalizing

utilization of medical care among the majority of children, if take-up rates are sufficiently high. However, the results also suggest that a dual system of coverage will still have substantial levels of inequality in expenditures among those most in need.

We offer an additional word of caution. Without any intervention, there may be an increasing probability that inequality in utilization will increase, especially among the population covered by the successor to AFDC, Temporary Assistance for Needy Families (TANF). Under TANF, the time costs for working mothers rise; work hours cut into potential time for physician visits. And along with declining TANF rolls, there have been declines in Medicaid enrollments, despite the fact that TANF extends Medicaid coverage for twelve months for most parents and indefinitely for children.[22] Recent reports indicate that eligible families are not participating in Medicaid when they exit TANF and are denied TANF benefits by some states (Schott and Mann 1998 and Cancian et al. forthcoming). These changes may well lead to reduced access to, and utilization of, medical care by this low-income population.

CONCLUSION

In this paper, we have assessed the health status of poor children and the trends in their status, their insurance coverage, and their access to care.[23] We have also made a rough simulation of the effects of extending public and private health insurance coverage to all uninsured children.

As expected, we found that poor health status and poverty were closely linked. Our finding that health status among poor children seems to have deteriorated somewhat since 1990 is consistent with the observed decline in insurance coverage. The regressions and simulations indicate that providing public coverage will foster equal access to health care among those who are healthy, although it will not go very far for children with health problems.

As we continue upon the journey from AFDC to TANF and from long-term welfare dependency to work at low wages, the initial observations are that health insurance and health care access are both being disrupted.

The health status of poor children may be at a critical juncture. Welfare reform and a growing lack of health care coverage among the working poor and near-poor both suggest that access to care has declined for these groups. Programs like CHIP were designed explicitly to fill this gap for children. However, these estimates raise questions about their potential for success among children who currently have health problems.

Even if coverage was equalized across all children, utilization might not be equalized. The availability of providers, ability to make copayments, costs of getting to providers, and forgone earnings all may lead to continued lower utilization among children in lower income families.

Even if utilization was equalized in terms of medical expenditures for those with similar health status, systematic differences in health status might be maintained. Many factors, including those associated with poverty and the stresses that accompany it, contribute to poor health. Nevertheless, providing health insurance, whether public or private, to those who are underinsured will surely reduce inequalities in access to care. Providing the same package to all children may have the double advantage of greater equalization and an increase in the take-up rate.

## APPENDIX: VARIABLES USED IN THE 1996 MEDICAL EXPENDITURE PANEL SURVEY

| Variables | Mean | Standard Deviation |
|---|---|---|
| Age | 9.21 | 5.12 |
| Sex (male=1, female=0) | 0.50 | 0.50 |
| Nonwhite (nonwhite=1, white=0) | 0.24 | 0.42 |
| Wage per person (in thousands) | 8.90 | 24.11 |
| Maximum school years | 12.45 | 3.14 |
| Marital status of parent (respondent) | 0.60 | 0.49 |
| Non-MSA (does not live in urban area) | 0.20 | 0.40 |
| Region: Northeast | 0.20 | 0.40 |
| Region: Midwest | 0.20 | 0.40 |
| Region: South | 0.35 | 0.48 |
| Region: West | 0.25 | 0.44 |
| Privately insured | 0.55 | 0.50 |
| Publicly insured | 0.28 | 0.45 |
| Not insured | 0.18 | 0.38 |
| Number of office-based physician visits, 1996 | 2.07 | 3.41 |
| Number of office-based nonphysician visits, 1996 | 0.44 | 2.53 |
| Number of outpatient department physician visits, 1996 | 0.08 | 0.52 |
| Number of outpatient department nonphysician visits, 1996 | 0.06 | 0.59 |
| Number of emergency room visits, 1996 | 0.17 | 0.51 |
| Number of hospital admissions, 1996 | 0.04 | 0.35 |
| Number of nights in hospital, 1996 | 0.20 | 2.74 |
| Number of dental care visits, 1996 | 1.06 | 2.25 |
| Number of orthodontist visits, 1996 | 0.37 | 1.65 |
| Had prescription medicine | 0.54 | 0.50 |
| Need: poor, fair health, or with at least one limitation | 0.07 | 0.25 |
| Predicted expenditure | 607.18 | 2373.65 |

Note: Number of observations = 4,896.

# ENDNOTES

1. There is an extensive literature on the links between poverty and health. Some of the best known of these include the writings of Alan Williams, Alan Maynard, A. Donabedian, A. J. Culyer, and Julian LeGrand. See the references in the volume edited by van Doorslaer, Wagstaff, and Rutten (1993); Wolfe (1994); and the recent *Future of Children* (1998) volume on child health and managed care.

2. One advantage of studying these links among children is that we avoid most of the debate on causality—that is, whether poor health causes poverty, or vice versa.

3. Any measure should be evaluated in terms of the following characteristics: (1) variability: the ability of a measure or indicator to detect changes; (2) validity: the accuracy of the measure in capturing what it is intended to measure; and (3) reliability: the extent to which the measure is free of error. A component of reliability is sensitivity, or the probability that the measure can detect true cases.

4. These are the top two categories in a five-category measure of self-evaluated (or parent-evaluated) health.

5. A recently released report by the General Accounting Office (GAO/HEHS 99-18, January 1999) shows that children served by Medicaid remain at high risk of elevated blood-lead levels and that the majority have not been screened, let alone treated.

6. Recent measures of poverty that account for noncash benefits, such as food stamps and tax benefits like the earned income tax credit, indicate a modest decline in overall poverty since 1996 (Council of Economic Advisers 1998). However, to the extent that those most able and most healthy are leaving the welfare rolls, and that the probability of being uninsured is increasing, the remaining poor are likely to have a higher level of bad health in years to come.

7. See Massey (1996) and Waitzman and Smith (1998) for evidence on increasing concentrations of poor persons in high-poverty, central-city, and rural areas where crime, poor nutrition, and bad living conditions are more likely to be found.

8. All children born after September 30, 1983, whose families are poor are currently eligible for Medicaid, as are all children up to age six whose family income is below 133 percent of the poverty line.

9. The elimination of AFDC may lead to higher rates of uninsured among low-income populations because the AFDC program provided an automatic tie to Medicaid eligibility (and enrollment) in most states. The new Children's Health Insurance Program (CHIP) is designed to provide access to coverage, but the low take-up rate of Medicaid expansions suggests CHIP may have only limited success.

10. This section of the paper was made possible with the assistance of Yongmei Qin, an economics graduate student at the University of Wisconsin-Madison.

Other indicators are used in related research on equality of medical care utilization. See, for example, Zuvekas and Weinick (1999), who use the existence of a usual provider of care as a measure of equality.

11. The equation and coefficients are as follows: PRED_EXP = -104.31 + MIDWEST * 46.94 + SOUTH * 78.99 + WEST * 127.53 + NONMSA * -115.43 + MD visits * 85.995 + other office visits * 43.343 + outpatient MD visits * 473.36 + other outpatient * 171.04 + emergency room visits * 75.297 + hosp. adm. * 1049.74 + hosp. nights * 693.84 + purchased prescription * 92.37 + dental visits * 108.44 + orthodontist visits * 157.87.

12. To the extent that there has been a shift in health technology and pricing for different types of utilization, this measure may not be an accurate gauge of expenditures. However, the goal of this estimation is to study utilization across all categories of medical care. The approach used seems to dominate alternative indices, which would also face problems of changes in equivalences between alternative types of medical care. Nevertheless, it might be better to think of it as an index of medical care use than of true expenditures.

13. Since income has not yet been released for the MEPS data, we predict family income based on the earnings of family members and on demographics such as education, race, and sex. We use 1987 NMES data within a probit model for the underlying estimates and apply the coefficients to the MEPS data. Based on this predicted family income, we rank-order the individuals. These simulated values are used to differentiate who is and is not poor. We use two alternative measures of poverty: the actual proportion of children and adults who were poor in 1996 according to Current Population Survey–based estimates, 14.4 percent, and the lowest 25 percent of the income distribution. In both cases, we start with those in the poorest families and move up the income distribution to the proportion either officially poor or in the bottom 25 percent. These families are in our groups termed poor. We intend to redo the analysis when the income data are released. (A special request for this information has not yet gained us access to these data.)

*Note 13 continued*

We prefer the 25 percent sample because it gives us more robust estimates for "poor" children; hence, these are the estimates reported in this paper. See Selden, Banthin, and Cohen (1998) for a similar approach.

14. See the appendix for simple descriptions, means, and standard deviations of the variables used.

15. The children termed poor are those in families with the lowest 25 percent of income, so Table 3 includes poor and near-poor.

16. There has been considerable speculation that hospitals enroll poor children when they appear for care and that this might explain the far greater enrollment among children who have health problems.

17. Recall that we converted utilization into expenditures for 1996 using the estimated relationships for 1987. The results provide some insight into the pattern of expenditures, but some caution should be used in thinking of them as true expenditures. As noted above, they might instead be viewed as an index that provides relative values.

18. The approach assumes away the endogeneity of insurance coverage. That is, in this model we assume that the role of insurance, by reducing the direct price of medical care, would result in the same pattern of utilization (and the same price structure) among those currently without insurance (or with alternative types of insurance) as those who already are covered by the particular type of insurance. In essence, this allows for moral hazard (the response to a lower direct price of care) but requires the elasticity to be the same within categories specified by the right-hand-side variables. It disallows adverse selection beyond the variables included in the model.

19. In an alternative specification, interactions between poverty and type of coverage (public and no coverage) were not at all statistically significant. Adding a variable to capture the highest education attained by either parent reduces the measured impact of poverty even further. The education variable is positive, has a coefficient of about .25, does not substantially change the reported results, and is not significant at the 5 percent level (Model 3).

20. Our approach ignores any endogeneity with regard to the purchase of insurance.

21. Note the assumptions underlying these simulated expenditures, discussed in endnote 18.

22. Eligibility depends on family income. See Selden, Banthin, and Cohen (1998) on the topic of eligible unenrolled children and Medicaid.

23. The author acknowledges the contribution of Timothy Smeeding to some of the ideas in the conclusion.

# References

Buren, B., and F. Ullman. 1998. "Children's Health Insurance Programs: Where the States Are Headed." NEW FEDERALISM SERIES, A-20. Washington, D.C.: Urban Institute. 1-9.

Cancian, M., et al. Forthcoming. "Work, Earnings, and Well-Being after Welfare: What Do We Know?" Paper presented at the "Welfare Reform and the Macro-Economy" conference in Washington, D.C. November 19-20, 1998.

Council of Economic Advisers. 1998. "Good News for Low Income Families: Expansion in the EITC and the Minimum Wage." Mimeo, Council of Economic Advisers, Washington, D.C. December.

Currie, J. 1998. "Summary." In INVESTING IN OUR CHILDREN: WHAT WE KNOW AND DON'T KNOW ABOUT THE COSTS AND BENEFITS OF EARLY CHILDHOOD INTERVENTIONS. Santa Monica, Calif.: RAND.

Future of Children. Children and Managed Health Care. 1998. Vol. 8, no. 2 (summer-fall). Los Altos, Calif.: The David and Lucille Packard Foundation.

Mann, C., and J. Guyer. 1998. "President's Budget Includes New Initiatives for Reducing the Number of Uninsured Children." Washington, D.C.: Center on Budget and Policy Priorities. April 10. 1-10.

Massey, D. 1996. "The Age of Extremes: Concentrated Affluence and Poverty in the Twenty-First Century." DEMOGRAPHY 33, no. 4 (November): 396-412.

Mellor, J., and J. Milyo. 1999. "Income Inequality and Health Status in the United States: Evidence from the Current Population Survey." Scholars in Health Policy Research Program Working Paper no. HP-8. Princeton, N.J.

Newacheck, Paul W., et al. 1998. "New Estimates of Children with Special Health Care Needs and Implications for the State Children's Health Insurance Program." Maternal and Child Health Policy Research Center Fact Sheet no. 4 (March).

Schott, L., and C. Mann. 1998. "Assuring that Eligible Families Receive Medicaid when TANF Assistance Is Denied." Washington, D.C.: Center on Budget and Policy Priorities. November 5.

Selden, T., J. Banthin, and J. Cohen. 1998. "Medicaid's Problem Children: Eligible but Not Enrolled." HEALTH AFFAIRS 17, no. 3 (May-June): 192-200.

Short, K., and M. Shea. 1995. "Beyond Poverty, Extended Measures of Well-Being: 1992." CURRENT POPULATION REPORTS P70-50RV. Washington, D.C.: U.S. Bureau of the Census. November.

U.S. Department of Health and Human Services. 1998. HEALTH UNITED STATES WITH SOCIOECONOMIC STATUS AND HEALTH CHARTBOOK (Table 78). Hyattsville, M.D.

———. 1998. TRENDS IN THE WELL-BEING OF AMERICA'S CHILDREN AND YOUTH. Washington, D.C.

van Doorslaer, E., A. Wagstaff, and F. Rutten, eds. 1993. EQUITY IN THE FINANCE AND DELIVERY OF HEALTH CARE: AN INTERNATIONAL PERSPECTIVE. Oxford: Oxford Medical Publications.

van Doorslaer, E., et al. 1997. "Income Related Inequalities in Health: Some International Comparisons." JOURNAL OF HEALTH ECONOMICS 16: 93-112.

Vanness, D., and B. Wolfe. 1997. "The Nondiscrimination Law and Health Insurance: For Whom Did It Increase Coverage?" Mimeo, University of Wisconsin-Madison, Institute for Research on Poverty. December 17.

Waitzman, N., and K. Smith. 1998. "Separate but Lethal: The Effects of Economic Segregation on Mortality in Metropolitan Areas." MILBANK QUARTERLY 176, no. 3: 341-58.

Wolfe, B. 1994. "Reform of Health Care for the Nonelderly Poor." In S. Danziger, G. Sandefur, and D. Weinberg, eds., CONFRONTING POVERTY. Cambridge: Harvard University Press.

Wolfe, B., and D. Vanness. 1999. "Inequality in Health Care Access and Utilization and the Potential Role for the Public Sector." In Stein Ringen and Philip de Jong, eds., FIGHTING POVERTY: CARE FOR CHILDREN, PARENTS, THE ELDERLY, AND HEALTH. Aldershot, England: Ashgate Publishing Ltd.

Zuvekas, S., and R. M. Weinick. 1999. "Changes in Access to Care, 1977-1996: The Role of Health Insurance." HEALTH SERVICES RESEARCH (March-April).