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Health Insurance Status and Ambulatory Care for Children

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ABSTRACT

Background Many children in the United States lack health insurance. We tested the hypothesis that these children are less likely than children with insurance to visit a physician when they have specific conditions for which care is considered to be indicated.

Methods We examined the association between whether children were covered by health insurance and whether they received medical attention from a physician for pharyngitis, acute earache, recurrent ear infections, or asthma. Data were obtained on the subsample of 7578 children and adolescents 1 through 17 years of age who were included in the 1987 National Medical Expenditures Survey, a national probability sample of the civilian, noninstitutionalized population.

Results Uninsured children were more likely than children with health insurance to receive no care from a physician for all four conditions (unadjusted odds ratios, 2.38 for pharyngitis; 2.04 for acute earache; 2.84 for recurrent ear infections; and 1.87 for asthma). Multiple logistic-regression analysis was subsequently used to control for age, sex, family size, race or ethnic group, region of the country, place of residence (rural vs. urban), and household income. After adjustment for these factors, uninsured children remained significantly more likely than insured children to go without a visit to a physician for pharyngitis (adjusted odds ratio, 1.72; 95 percent confidence interval, 1.11 to 2.68), acute earache (1.85; 95 percent confidence interval, 1.15 to 2.99), recurrent ear infections (2.12; 95 percent confidence interval, 1.28

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to 3.51), and asthma (1.72; 95 percent confidence interval, 1.05 to 2.83).

Conclusions As compared with children with health insurance, children who lack health insurance are less likely to receive medical care from a physician when it seems reasonably indicated and are therefore at risk for substantial avoidable morbidity.

During the 1960s and 1970s, the United States made progress toward ensuring access to health care services for all children through various public programs affecting the financing and delivery of medical care. More recently, however, these gains in access have eroded. Between 1977 and 1987, the percentage of U.S. children without public or private health insurance increased from 12.7 percent to 17.8 percent¹.

Children with health insurance are more likely than children without health insurance to be seen as outpatients by physicians,^{2,3,4,5} to receive care related to an illness,² and to have more visits to physicians^{3,4,6,7}. These differences persist after adjustment for reported health status^{2,3,4,7}. Most studies, however, have examined the effect of insurance coverage on aggregate rates of visits to physicians, rather than the care received for specific conditions or symptoms.

Cost-sharing provisions of health insurance coverage may reduce children's use of outpatient services for a variety of illnesses^{8,9}. We are not aware of studies that have examined the effect of insurance coverage on whether children receive medical care for specific conditions for which such care is considered to be indicated. Using national survey data, we studied the use of ambulatory care by children with specific common symptoms who were or were not covered by health insurance, while controlling for other variables that may affect access to care. Our purpose was to test the hypothesis that children without health insurance are less likely than insured children to receive medically indicated ambulatory care when they have specific illnesses or symptoms.

Methods

The 1987 National Medical Expenditure Survey was a nationwide survey sponsored by the Agency for Health Care Policy and Research and designed to yield estimates of the use of and expenditures for health care by the U.S. population. The survey used a national probability sample of the civilian, noninstitutionalized population, with oversampling of poor and low-income families, as well as blacks and Hispanics. Data were collected primarily by means of household surveys of adults, in four rounds of in-person and telephone interviews conducted at three-month intervals. A final, short telephone interview constituted the fifth round of data collection. The sampling frame and survey methods have been described in detail elsewhere¹⁰. Our analyses focused on the 7578 children and adolescents 1 through 17 years of age in the sample.

The National Medical Expenditure Survey included questions about a variety of health problems of childhood and the use of health care services for those conditions. In most cases, a questionnaire on the health status of children in the household was administered in the summer of 1987, between the first and second round of interviews. The questionnaire asked, "During the past 30 days, did the child have any of the following health problems? If he or she did,

did he or she see a doctor about it?" A list of seven signs or symptoms of acute illnesses followed. Respondents were also asked, "Within the past 12 months, did this child have any of the following conditions? If he or she did, did he or she see a doctor about it?" A list of 11 conditions, several of which were chronic in nature, followed. For each category of symptom or illness, three responses were possible: the child did not have the problem or condition at all; the child had the problem or condition but did not see a physician; or the child had the problem or condition and did see a physician. No information was elicited about telephone contacts with physicians or office visits with health care providers other than physicians.

In order to select from the survey checklists the conditions that most strongly merited medical attention, we used a clinical-consensus panel of 10 pediatricians. The panel members were asked to judge which conditions should "always or virtually always come to medical attention." For each item on the checklists, the panel members were asked whether a response indicating that the child had the problem or condition but did not see a physician about it represented "an unacceptable course of action given the nature of this condition." Problems or conditions for which at least eight panel members (80 percent) gave affirmative responses were analyzed further. The following conditions were selected: sore throat with high fever or tonsillitis for at least 2 days during the past 30 days (pharyngitis), ear infection or earache for at least 2 of the past 30 days (acute earache), more than two ear infections within the past 12 months (recurrent ear infections), and asthma or wheezing within the past 12 months (asthma). Two additional conditions that met these criteria (anemia and parasites or worms) were not analyzed because of limitations of the sample size. For each of the four selected problems, we assessed how often children were reported to have seen a doctor and whether the presence or absence of health insurance was associated with receiving medical care.

Our primary results are presented in tabular form. These results have been statistically weighted to reflect national population estimates for 1987. Using SAS software (SAS, Cary, N.C.), we performed multiple logistic-regression analyses to examine the independent associations of several predictor variables on the primary outcome variable. The variables incorporated into the logistic-regression models were age, sex, family size, race or ethnic group, census region, population density of the place of residence (i.e., rural vs. urban), household income or poverty status, and health insurance status. These variables together constitute an analytic framework analogous to that used in comparable studies^{5,6}. Children were divided according to insurance status into a group that had public or private health insurance and a group without health insurance (at the time of the second-round interview); health insurance status was defined by whether the child (rather than the parent) was insured. Standard errors for the tabular values and regression results were calculated with variance-estimation formulas that accounted for the complex sample design^{11,12}. For purposes of this analysis, four samples were created, each made up of children who were reported to have one of the four selected conditions, and multiple regression analyses were performed for each group. Results of the logistic-regression analyses are reported as adjusted odds ratios. These odds ratios do not approximate relative risks.

Results

The four conditions we studied (pharyngitis, acute earache, recurrent ear infection, and asthma) are all relatively common. Most children with any of these conditions received medical care. [Table 1](#) shows the numbers of children in our sample who had the reported conditions, as well as weighted population

estimates and estimates of incidence for each of the conditions.

View this table: **Table 1.** Children Who Were Seen or Not Seen by a Physician, According to Insurance Status, Population Estimates, and Incidence [\[in this window\]](#) of Reported Conditions. [\[in a new window\]](#)

For each condition, children with insurance were more likely than children without insurance to see a physician. The unadjusted results ([Table 2](#)) show the weighted percentages of children who did not see a physician and the unadjusted odds ratios of doing without a visit to a physician for uninsured children as compared with insured children. Uninsured children with pharyngitis were more likely not to see a physician (unadjusted odds ratio, 2.38). For children with a recent ear infection or acute earache, the comparable unadjusted odds ratio was 2.04; for children with more than two ear infections over the past year, 2.84; and for children with asthma or wheezing episodes, 1.87.

View this table: **Table 2.** Children with the Four Conditions Who Were Not Seen by a Physician, According to Insurance Status. [\[in this window\]](#) [\[in a new window\]](#)

The unadjusted odds ratios for going without medical care could overestimate the importance of health insurance if insurance was associated with other variables that influenced the use of services, such as the child's age and family income. To address this potential problem, we performed multiple logistic-regression analyses to identify any variables independently associated with not receiving medical care. The only variables significantly associated with a reduced likelihood of seeing a physician for all four conditions were an age of 6 to 17 years and lack of health insurance ([Table 3](#)). Sex, family size, race or ethnic group, and place of residence (urban or rural) were not significantly associated with seeing a physician (some data are not shown). As compared with children covered by health insurance, children who lacked health insurance were more likely to go without a visit to a physician for pharyngitis (adjusted odds ratio, 1.72; 95 percent confidence interval, 1.11 to 2.68), for acute earache (adjusted odds ratio, 1.85; 95 percent confidence interval, 1.15 to 2.99), for recurrent ear infections (adjusted odds ratio, 2.12; 95 percent confidence interval, 1.28 to 3.51), and for asthma (adjusted odds ratio, 1.72; 95 percent confidence interval, 1.05 to 2.83). Thus, even after we controlled for other variables, the effect of health insurance coverage remained significant.

View this table: **Table 3.** Effect of Individual Risk Factors on the Odds of Not Being Seen by a Physician, According to Condition. [\[in this window\]](#) [\[in a new window\]](#)

Discussion

We found that children without health insurance were significantly less likely than children with insurance to have been seen by a physician for common conditions for which medical care is considered necessary. These findings persisted after other factors, including indicators of socioeconomic status, were taken into account. We examined reports of actual episodes of illnesses for which a consensus panel of pediatricians considered medical care to be indicated. Our findings are consistent with the results of a study of the effect of out-of-pocket expenses (cost sharing) in the Rand Health Insurance Experiment⁹. That study concluded that "cost sharing was generally just as likely to lower use when care is thought to be highly effective as when it is thought to be only rarely effective."

For most of the conditions we analyzed, reliable and comparable data on incidence are not available. For recurrent ear infections, however, the 1988 National Health Interview Survey found an incidence of 90 per 1000 children,¹³ which is similar to the incidence of 104 cases per 1000 in our study.

Timely medical care can shorten the duration of symptoms associated with the conditions we studied. Each of the conditions can also cause sequelae if left untreated. Pharyngitis caused by group A streptococci can lead to both suppurative sequelae (such as peritonsillar and retropharyngeal abscess and lymphadenitis) and nonsuppurative sequelae (for example, rheumatic fever and acute glomerulonephritis)^{14,15,16,17}. Untreated middle-ear infections can lead to short-term complications (mastoiditis) and long-term deficits (conductive hearing loss and resultant speech and language deficits)^{18,19,20}. Asthma, when severe, can cause respiratory failure and death. Recent evidence indicates that rates of hospitalization and mortality due to childhood asthma are increasing²¹. There is evidence that asthma may be a condition for which timely and effective outpatient care can help to reduce the risk of hospitalization²².

In the National Medical Expenditure Survey, the presence of illness in a child was defined solely according to the report of the respondent, typically the mother. Pharyngitis or tonsillitis, otitis media, and asthma are arguably all diagnoses that can be established with certainty only by a clinician. Nevertheless, the parent's perception of illness and the care-seeking behavior that results were the focus of our study. It would be difficult, if not impossible, to design a study in which the outcome of interest was the failure to receive medical care and in which the diagnoses were confirmed clinically. Estimates of the correlation between reports of symptoms and clinical confirmation of illness vary with the condition. Parents tend somewhat to overstate episodes of pharyngitis among their children,²³ and limited evidence indicates that up to half of children whose parents report symptoms of asthma have neither asthma nor bronchial hyperresponsiveness²⁴. Parental detection of otitis media is far from reliable²⁵.

We could not determine whether individual reports of episodes of illness warranted medical consultation; nor could we gather information on health outcomes. For each of the conditions we examined, the children's illnesses varied in severity. In many cases, the parents' decisions to forgo medical attention for mild or transient symptoms may have been appropriate. Parents may feel competent to judge the severity of these illnesses and may consult friends, family members, and health professionals (probably by means of telephone calls to physicians).

Nonetheless, our results are consistent for all the conditions we studied. It is unlikely that the parents of uninsured children consistently overestimate the presence or severity of all four conditions in their children. Indeed, our data indicate that for acute earache, recent ear infection, and asthma, the reported incidence was lower among the uninsured children (data not shown). Other national survey data indicate that the parents of children without health insurance report a lower annual incidence of recurrent ear infections and recurrent tonsillitis than the parents of children with insurance¹³.

In this study, we could not determine the reasons why children did not receive medical care. The deterrent effect of the lack of health insurance may relate to the out-of-pocket expense for visits to a physician (analogous to the cost-sharing variable assessed in the Rand experiment). In our analyses, children with any type of coverage were combined in the "insured" category. Differences exist both within and between public and private insurance plans, however. Even with the comparatively large number of children included in the National Medical Expenditure Survey, we could not reliably assess whether the rates of use of services differed among the types of insurance plans (Medicaid, private insurance, and so on) or according to different cost-sharing formulas.

Children's health insurance status was determined in the second-round interview and reflects insurance coverage between the first and second interviews (the same period when the questionnaire on the use of physicians' services for particular symptoms was administered). It is therefore possible that the health insurance status of the children could have been different at the time of recurrent ear infections and episodes of asthma, which could have occurred as much as 12 months earlier. A portion of this reference period (up to nine months) falls outside the survey frame used for ascertaining insurance status. There is no reason, however, to suspect that this time difference would bias the results in any particular direction.

The observed differences in the rates of receiving medical care could represent underuse of services on the part of uninsured children and their families or overuse by those with coverage. Somewhat surprisingly, a large percentage of children did not receive medical care despite having health insurance coverage. Depending on the condition, between 14.9 percent and 42.1 percent of children with health insurance did not seek care ([Table 2](#)). These rates may reflect appropriate decisions by parents that care was unnecessary because of mild symptoms or other factors. Alternatively, other factors that influence access may contribute to higher-than-optimal thresholds for seeking medical care. Such factors may be financial (e.g., copayments or deductibles) or nonfinancial (attitudes toward the health care system,²⁶ beliefs about health,²⁷ cultural or language barriers, the distance to the source of care, the availability of transportation, or the availability of child care for siblings). Although they are difficult to evaluate in a cross-sectional study, these factors may be very important for individual families. Health insurance seems necessary but not sufficient to ensure adequate access to medical care for children.

The Clinton administration's Health Security Act would provide a guarantee of basic health insurance coverage for all Americans, including children²⁸. Our results demonstrate that children who lack health insurance are less likely than children with insurance to receive medical care when it seems reasonably indicated. Lack of health insurance places children at substantial risk of avoidable morbidity.

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Source Information

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