

## Correlates of Use of Specialty Care

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**ABSTRACT.** *Objective.* This study examines patterns of specialist use among children and adolescents by presence of a chronic condition or disability, insurance, and sociodemographic characteristics.

*Design.* Cross-sectional analysis of national survey data, describing rates of specialist use, with logistic regressions to examine associations with having a chronic condition or disability, insurance status, and sociodemographic variables.

*Setting.* The 1999 National Health Interview Survey, a nationally representative household survey.

*Participants.* Children and adolescents 2 to 17 years old.

*Outcome.* Parental/respondent reports of specialist visits based on reports of the child having seen or talked to a medical doctor who specializes in a particular medical disease or problem about the child's health during the last 12 months.

*Results.* Thirteen percent of US children were reported as seeing a specialist in the past year. Specialist-visit rates were twice as high for children with a chronic condition or disability (26% vs 10.2%). The specialist utilization rates for children without insurance were much lower than those for insured children, but among the children who have coverage (private, Medicaid, or other), specialist-utilization rates were similar (no statistically significant difference).

Results of multivariate analyses predicting the use of specialists confirm the above-mentioned findings. Additionally, they show that use of specialist care was lower among children in the middle age group, minorities, children in families between 100% and 200% of the federal poverty level, and lower parental educational levels. We found no difference in specialist-visit rates between rural- and urban-dwelling children, by family status, or by gender. Differences in specialist use by gatekeeping status are found only among subgroups.

*Conclusions.* The results showed that, overall, 13% of children used a specialist in a year. Among the insured, a slightly greater percentage of children used such care (15%). These numbers were slightly lower than the 18% to 28% of pediatric patients referred per year in 5 US health plans, although the sources of data and definitions of specialist use differ. Our results showed that 26% of children with a chronic condition or disability who were

insured by Medicaid use a specialist. Although the data are not directly comparable, this is within the range of previous findings showing annual rates by condition of use between 24% and 59%. These findings are consistent also with greater use of many different types of health care by children with special health care needs.

Medicaid-utilization rates presented here were similar also to the rates found among privately insured children and children with "other" insurance. In our earlier work examining use of specialists by children insured by Medicaid, we speculated that Medicaid-insured children might face particular difficulty with access (eg, due to transportation or language barriers). The findings presented here suggest that children insured by Medicaid had no different use of specialists than other insured children. We do not know, however, whether similar rates are appropriate.

As predicted, sociodemographic differences were pronounced and followed patterns typically found for use of health services. Lower rates of specialist use by non-Hispanic blacks and Hispanics remains even, controlling for chronic condition/disability, status, insurance, and socioeconomic status. This is an important issue that not only needs to be addressed in using specialist care but also in many areas in health care. It is the near poor who seem to have difficulty accessing care (as is evidenced by lower use of specialists). In a study of access to care, similar results were found, with those between 125% and 200% of the federal poverty level being less likely to have a usual source of care. This is roughly the population targeted by the State Children's Health Insurance Programs.

These findings cannot determine whether rates of use are too high or too low. Additional work on outcomes for children who do and do not use specialist care would further inform the work presented here. Extending that work to examine patterns of care including but not limited to specialists and generalists would be even better. *Pediatrics* 2004;113:e249–e255. URL: <http://www.pediatrics.org/cgi/content/full/113/3/e249>; *Medicaid, specialist, insurance, pediatric, child, disability, chronic condition*.

ABBREVIATIONS. HMO, health maintenance organization; NHIS, 1999 National Health Interview Survey; NCHS, National Center for Health Statistics; SCHIP, State Children's Health Insurance Program; MSA, metropolitan statistical area; OR, odds ratio; CI, confidence interval.

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Caring for children with disabilities often includes periodic consultation with a specialist.<sup>1</sup> Specialty care can be valuable in that specialists are likely to be more knowledgeable about conditions in their area of expertise, and some evidence indicates that the care they provide offers clinical

benefits, especially for those with uncommon disorders and critical illnesses.<sup>2,3</sup> In certain circumstances, it also seems that care by a specialist is associated with superior clinical outcomes.<sup>3</sup> Studies show an increasing number of physician referrals to specialists as child health conditions become more complex, more severe, and less common.<sup>4–6</sup> A recent report by Forrest et al<sup>7</sup> shows that rates of child visits to specialists in the United States may be twice as high as child visits to specialists in the United Kingdom. It remains unclear from the literature what the appropriate rates of specialist care are.

Having health insurance greatly improves access to health care. Uninsured children report more unmet health care needs compared with the insured and are less likely to have access to several types of health care.<sup>8–12</sup> Insurance does not guarantee access to specialty care.<sup>8,13</sup> Factors influencing specialty visit rates by children may include inadequate provider reimbursement in Medicaid.<sup>14,15</sup> In addition, administrative mechanisms such as preauthorization (gatekeeping) may decrease specialty visits, although studies indicate that the effects of gatekeeping on specialty visit rates are likely to be small. Some studies show that gatekeeping is associated with greater specialty referral rates,<sup>16,17</sup> whereas others demonstrate lower visit rates.<sup>18–20</sup>

Sociodemographic characteristics also predict use of health care. Identifying and understanding racial/ethnic disparities in health care has been a national priority. Evidence shows that minority race/ethnicity groups may have less health care use.<sup>21–23</sup> Additionally, racial and ethnic minorities report more negative health care experiences than whites.<sup>24</sup> Visits to specialists also may depend on geographic location. Families living in rural areas are less likely to have specialty services available, and those in urban areas are faced with issues such as inadequate transportation when attempting to obtain health care.<sup>13,22</sup>

This study examined the use of specialists by children by using nationally representative survey data. We compared rates of specialist visits for children with and without chronic conditions or disabilities by insurance status. Additionally, we compared specialty use by sociodemographic characteristics. We anticipated that children with chronic conditions or disabilities would use specialist care at higher rates than other children, reflecting the greater need for increased knowledge and management skills that a specialist provides. Following general health care access patterns, we anticipated that those children with health insurance would use specialty care more than those without insurance. Among the insured, we predicted that children with health maintenance organization (HMO) coverage would have lower use than those with non-HMO coverage and children with Medicaid would have lower use than those with private insurance. Additionally, we expected that other characteristics associated with increased rates of use would predict the use of specialists; these include young age, white non-Hispanic race, 2-parent families, and higher socioeconomic status.

## Data Source

The 1999 National Health Interview Survey (NHIS), conducted by the National Center for Health Statistics (NCHS), contains information on the health of the civilian, noninstitutionalized, household population of the United States. We used the weights provided by the NCHS. Responses to the NHIS reflect the age, gender, and race/ethnicity distribution of the United States. This study used 2 components within the basic module of the NHIS: the family core (containing information on all household members) and the sample-child core (containing information gathered from a knowledgeable adult on a randomly selected child from each family). Combining these core components provided data describing household composition, sociodemographic characteristics, insurance status, basic indicators of health status, and utilization of health care service on children.<sup>25</sup>

The 1999 NHIS sample consisted of 37 573 households, yielding 97 059 persons, 12 910 of whom were included in the sample-child core. The total household response rate was 87.6%. From these respondents, 90.8% of the eligible families reported on a selected child in the sample-child core, which yielded a final response rate for the sample-child component of 78.2%. Because of the unavailability of a few key variables for children <2 years old and limited diagnoses of chronic conditions and disabilities for children at very young ages, this study limited the sample of children to those 2 to 17 years old, which resulted in a total sample of 11 338 children.<sup>25</sup>

## Variables

### *Specialist Use*

Utilization of a specialist was determined by whether the family reported that the child had seen or talked to a medical doctor who specializes in a particular medical disease or problem about the child's health during the last 12 months. We excluded visits to obstetrician/gynecologists, psychiatrists, and ophthalmologists because they were excluded from the specialist-visit questions in the NHIS questionnaire.

### *Health Status*

We combined several different health-status characteristics to classify a child as having a chronic condition or disability. A chronic condition was classified as such if a child had been told by a doctor or health professional that they had a chronic condition such as mental retardation, developmental delay, attention-deficit disorder, Down syndrome, cerebral palsy, muscular dystrophy, cystic fibrosis, sickle cell anemia, autism, diabetes, arthritis, congenital heart disease, or seizures. We also included children with asthma who responded that they visited an emergency department or urgent care center, stayed overnight in the hospital, used over-the-counter medications, had their sleep or speech disturbed, or were limited from wheezing or whistling in the last 12 months. We chose these conditions from a limited set of conditions available in the data set. Among the available conditions, these conditions were selected for severity and likelihood of necessitating a specialist visit.

Children with disabilities included those children identified as blind, deaf, or with an impairment requiring the use of special equipment and lasting >12 months. We also included children with a limitation in functioning (eg, playing or school) for >3 months from a specified mental, physical, developmental, emotional, or behavioral condition. We created 1 health-status variable that indicated whether a child had any of the above-mentioned chronic conditions or disability characteristics.

### *Insurance Coverage*

Health coverage information was grouped into 4 main categories. No coverage was coded as such only if respondents specifically said the child was not covered by any plan or program. We classified those children with insurance as having private insurance, Medicaid, and other insurance (Medicare, Medi-gap, State Children's Health Insurance Program [SCHIP], military health care, Indian Health Service, state-sponsored health plans, other government programs, or single-service plans). Children with private and Medicaid insurance were subcategorized further. If the respondent mentioned private insurance, they were asked

whether the plan was an HMO, individual practice association, or other type of plan. Based on these responses, we classified those with private insurance as having HMO care (versus those without an HMO). Medicaid was similarly divided into those who needed administrative approval to see a specialist or approval to go to a different place for special care (excluding the emergency department) and those who did not. For children with both private insurance and Medicaid, we separately classified those who did not know their HMO or referral status.

### Sociodemographic

Race and ethnicity included separate categories for non-Hispanic white, non-Hispanic black, Hispanic, and other. We categorized the number of parents present in the family (including biological, adoptive, step, and foster relationships) into single-parent, dual-parent, and other household categories. The mother's education category included those with no high school diploma; high school diploma or equivalent; some college, associate's degree, or bachelor's degree; master's, professional, or doctoral degree; or other. Age was recoded into 3 age groups (2 to 5 years, 6 to 12 years, and 13 to 17 years), and we examined gender. The percent federal poverty level was calculated by the NCHS, combining information from family income, family size, and number of children, using the 1998 federal poverty level thresholds from the US Census Bureau. The answers then were regrouped as percent of poverty groups: 0% to 99%, 100% to 199%, 200% to 299%, 300% to 499%,  $\geq 500\%$ , and unknown. The metropolitan statistical area (MSA) and region were both determined by the NCHS and regrouped into MSA and non-MSA and Northeast, Midwest, South, and West, respectively.

### Analyses

The NHIS collected the data through a complex, multistage sample design that included oversampling of specific population subgroups. To reflect national population totals, we used SAS-callable SUDAAN for all analyses<sup>26</sup> to adjust for nonresponse and account for the complex sample design and nonresponse in the NHIS.

We presented descriptive information on the relevant characteristics and included total numbers and percentages. To describe the relationships the individual characteristics had with seeing a specialist and to control for confounding variables, we used logistic regressions to conduct both bivariate and multivariate analyses. The dependent variable was a dichotomous indicator for whether the individual saw a specialist. We examined models with 1 characteristic regressed on specialist use and then examined multivariable models with all hypothesized variables included. Additional analyses examined the role of HMOs among the privately insured and the need for administrative approval to see a specialist among Medicaid-insured populations. Because the relevant questions differ in the 2 populations, the analysis was stratified into Medicaid children and privately insured children. These analyses were stratified further by disability status and race/ethnicity. In the analyses stratified by race/ethnicity, we collapsed categories of maternal education and percent of the federal poverty level because of small sample sizes.

## RESULTS

Table 1 describes the characteristics of the sample population. These data are comparable with census data on the US child population. Table 2 shows the percentage of children who saw a specialist by chronic condition/disability status and insurance. The overall proportion of all children reporting the use of specialists during the year 1999 was 13.1%. Children with chronic conditions or disabilities reported using specialists at much higher rates than children without chronic conditions or disabilities (26% vs 10.2%). The specialist-utilization rates for children without insurance were much lower than those for insured children ( $P < .01$ ), but among the children who had coverage (private, Medicaid, or other), specialist-utilization rates were similar (no statistically significant difference).

**TABLE 1.** Weighted Percentage Distributions of Selected Characteristics Children and Adolescents Ages 2 to 17 Years Old in the Child Core Sample (NHIS 1999)

	% of Population
Health status	
Has a chronic condition or disability	18.2
Specialist use	
Used in past year	13.1
Age, y	
2–5	24.1
6–12	45.3
13–17	30.7
Gender	
Females	48.8
Race/ethnicity	
Non-Hispanic white	65.4
Non-Hispanic black	15.2
Hispanic	15.4
Other	4.1
Urban/rural	
MSA	78.6
Region	
Northeast	18.4
Midwest	25.1
South	35.2
West	21.2
Income as percentage of poverty	
0–99%	13.1
100%–199%	16.5
200%–299%	15.2
300%–499%	21.4
$\geq 500\%$	13.3
Unknown	20.3
Education of mother	
No high school diploma	14.9
High school graduate/general equivalency diploma recipient	26.9
Some college, associate's degree, or Bachelor's degree	44.6
Masters, professional, doctoral	5.8
Refused, not applicable, or don't know	7.7
Family status	
Single-parent family	26.9
Dual-parent family	70.3
Other	2.8
Insurance*	
Private	70.7
Medicaid	14.2
Other	9.2
No coverage	11.0

\* Of the insured, some children had  $>1$  type. Sample:  $N = 11\,338$ ; weighted sample:  $N = 64\,166\,803$ .

Table 3 shows the odds ratios (ORs) for the bivariate and multivariate analyses predicting use of a specialist. In the multivariate analyses, use of specialist care was significantly lower among children in the middle age group, minorities (non-Hispanic black and Hispanic), children in families between 100% and 200% of the federal poverty level, lower parental education levels, and children with no health insurance coverage. Contrary to our hypothesis, children with Medicaid did not have significantly different rates of specialist use compared with children with private insurance. Having a chronic condition or disability was associated with approximately a three-fold increase in the use of specialists (OR: 3.02; 95% confidence interval [CI]: 2.59–3.53). We found no difference in specialist-visit rates between rural- and urban-dwelling children, by family status, or by gen-

**TABLE 2.** Percentage Seeing a Specialist According to Chronic Condition/Disability Status and Insurance Type: Children and Adolescents 2 to 17 Years Old in the Child Core Sample (NHIS 1999)

Insurance Type	Children With a Chronic Condition or Disability, %	Children Without a Chronic Condition or Disability, %	Total, %
Private	28.3	11.6	14.4
Medicaid	26.4	8.1	13.3
Other	23.5	12.3	14.7
No insurance	16.9	4.4	6.3
Total	26.0	10.2	13.1

**TABLE 3.** Relationships of Health Status, Insurance, and Socioeconomic Status Variables With Specialist Use: Children in Child Core Sample 2 to 17 Years Old (NHIS 1999)

Health Status	Bivariate Analyses		Multivariate Analyses*	
	OR	95% CI	OR	95% CI
Chronic condition or disability	<b>3.11</b>	<b>(2.69–3.60)</b>	<b>3.02</b>	<b>(2.59–3.53)</b>
Age				
13–17 y	1		1	
6–12 y	<b>0.82</b>	<b>(0.70–0.96)</b>	<b>0.80</b>	(0.67–0.94)
2–5 y	<b>0.81</b>	<b>(0.68–0.97)</b>	0.86	(0.71–1.03)
Gender				
Males	1		1	
Females	0.91	(0.80–1.04)	1.02	(0.89–1.17)
Race/Ethnicity				
Non-Hispanic white	1		1	
Non-Hispanic black	<b>0.59</b>	<b>(0.48–0.72)</b>	<b>0.63</b>	<b>(0.51–0.78)</b>
Hispanic	<b>0.46</b>	<b>(0.38–0.56)</b>	<b>0.74</b>	<b>(0.59–0.93)</b>
Other	<b>0.61</b>	<b>(0.42–0.89)</b>	0.73	(0.50–1.06)
Urban/rural				
Non-MSA	1		1	
MSA	0.88	(0.74–1.05)	0.93	(0.77–1.12)
Income in relation to poverty level†				
=500%	1		1	
300%–499%	0.86	(0.71–1.04)	0.89	(0.72–1.09)
200%–299%	0.89	(0.72–1.11)	1.03	(0.81–1.31)
100%–199%	<b>0.55</b>	<b>(0.44–0.69)</b>	<b>0.69</b>	<b>(0.53–0.89)</b>
0%–99%	<b>0.59</b>	<b>(0.46–0.75)</b>	0.74	(0.53–1.03)
Education of mother†				
Masters, professional, doctoral	1		1	
Some college, AA degree, or Bachelor’s degree	0.84	(0.64–1.11)	0.89	(0.67–1.19)
High school graduate/GED recipient	<b>0.65</b>	<b>(0.49–0.87)</b>	<b>0.72</b>	<b>(0.53–0.97)</b>
No high school diploma	<b>0.34</b>	<b>(0.25–0.48)</b>	<b>0.45</b>	<b>(0.31–0.66)</b>
Family status†				
Dual-parent family	1		1	
Single-parent family	0.80	(0.69–0.92)	0.98	(0.82–1.17)
Insurance†				
Private	1		1	
Medicaid	0.95	(0.79–1.14)	1.19	(0.92–1.54)
No coverage	<b>0.41</b>	<b>(0.30–0.57)</b>	<b>0.60</b>	<b>(0.43–0.85)</b>

Note: the findings in bold type are statistically significant at  $\leq .05$ .

\* Multivariate model contains all the characteristics in the table; the other, don’t know, or unknown categories; and region.

† This characteristic had a category of other, don’t know, or unknown. This category was included in the model, but the results are not reported in this table.

der. Of note, in the bivariate analyses, children living in families in the lowest poverty category (between 0% and 99% of the federal poverty level) had lower rates of use compared with the highest poverty category; however, once other factors were included, there was no difference between children in this group and children in the highest poverty category ( $\geq 500\%$  of the federal poverty level).

Tables 4 and 5 show the effects of “gatekeeping” in Medicaid and privately insured children by chronic condition/disability status and race/ethnicity. There was no difference in specialist use between those children needing and not needing administrative ap-

proval to see a subspecialist among children with Medicaid. This result was consistent for any child regardless of chronic condition/disability status and race/ethnicity. Among the privately insured, HMO insurance was associated with a reduced use of specialists, but this relationship is limited to children without a chronic condition or disability, children who are non-Hispanic black, and children of other race/ethnicity.

## DISCUSSION

The results showed that, overall, 13% of children used a specialist in a year. Among the insured, a

**TABLE 4.** Associations With Managed Care and Specialist Use by Chronic Condition/Disability Status: ORs and 95% CIs From Multivariate Logistic Regression Predicting Specialist Use

Coverage Type	Medicaid-Insured Child			Privately Insured Child		
	All Medicaid-Insured Children	Medicaid-Insured Child With a Chronic Condition or Disability	Medicaid-Insured Child Without a Chronic Condition or Disability	All Privately Insured Children	Privately Insured Child With a Chronic Condition or Disability	Privately Insured Child Without a Chronic Condition or Disability
Odds of seeing a specialist among children with Medicaid insurance						
Needs administrative approval to see a subspecialist	1.20 (0.84–1.72)	(0.57–1.82)	1.29 (0.88–1.89)			
No administrative approval needed	1	1	1			
Odds of seeing a specialist among children with private insurance						
HMO				<b>0.79 (0.66–0.94)</b>	0.94 (0.67–1.32)	<b>0.77 (0.64–0.93)</b>
Non-HMO				1	1	1

Note that the other coverage category is not shown. Findings in bold type are statistically significant at  $\leq .05$ .

**TABLE 5.** Associations With Managed Care and Specialist Use by Race/Ethnicity: ORs and 95% CIs From Multivariate Logistic Regression Predicting Specialist Use

Coverage Type	Medicaid-Insured Child			Privately Insured Child		
	All Medicaid-Insured Children	Non-Hispanic White	Non-Hispanic African American	Hispanic	Non-Hispanic White	Non-Hispanic African American
Odds of seeing a specialist among children with Medicaid insurance						
Needs administrative approval to see a specialist	1.22 (0.84–1.79)	1.11 (0.58–2.13)	2.25 (1.07–4.73)			
No administrative approval needed	1	1	1			
Odds of seeing a specialist among children with private insurance						
HMO				<b>0.79 (0.66–0.95)</b>	0.85 (0.69–1.06)	<b>0.50 (0.30–0.86)</b>
Non-HMO				1	1	1

Note: analyses of Medicaid group include fewer poverty variables; specifically, they include 0% to 99% of the poverty level, 100% to 199% and poverty level unknown. Results for the non-Hispanic other group are not shown because of small numbers. Findings in bold type are statistically significant at  $\leq .05$ .

\* Not estimable due to small numbers.

slightly greater percentage of children used such care (15%). These numbers were slightly lower than the 18% to 28% of pediatric patients referred per year in 5 US health plans, although the sources of data and definitions of specialist use differ.<sup>7</sup> Our results showed that 26.4% of children with a chronic condition or disability, who were insured by Medicaid, use a specialist. Although the data are not directly comparable, this is within the range of previous findings showing annual rates by condition of use between 24% and 59%.<sup>27</sup> These findings are consistent also with greater use of many different types of health care by children with special health care needs.<sup>28</sup>

The literature on referrals to specialists suggests that referrals depend on the frequency, complexity, and severity of the disease, as well as other existing comorbidities, and they are typically made to obtain diagnostic or therapeutic advice or perform a procedure.<sup>4-6</sup> If children with chronic conditions and disabilities have less-common, more-complex, and more-severe conditions, then our results of higher reports of specialist use are consistent with this literature.

Medicaid-utilization rates presented here were similar also to the rates found among privately insured children (28.3%) and children with "other" insurance (23.5%). In our earlier work examining the use of specialists by children insured by Medicaid, we speculated that Medicaid-insured children might face particular difficulty with access (eg, due to transportation or language barriers).<sup>27</sup> The findings presented here suggest that children insured by Medicaid had no different use of specialists than other insured children. We do not know, however, whether similar rates are appropriate, because neither guidelines nor "gold standards" exist for how much specialist care children in general or children with chronic conditions should use. Studies evaluating outcomes of care would be necessary to conclude whether children's needs are being met. Others have noted previously the vital role Medicaid plays in offering a broad range of services and providers to children with special health care needs<sup>9-11,13</sup> and children who might not otherwise have access to them.

In the data presented here, needing administrative approval to access specialist care for those with Medicaid was not related to specialist use by chronic condition/disability or race/ethnicity. This may be due to the ease with which referrals are given out in Medicaid populations or as a result of different rules for referrals and coverage of disabled and nondisabled Medicaid populations. Others have found no difference in specialist use in a point-of-service plan versus HMO plan.<sup>7</sup> Our results show that among the privately insured, children with HMOs reported lower specialist use. This finding may be due to the restrictions placed on use in HMO systems (eg, referrals are needed) but also may reflect a selection bias of sicker children into non-HMO care.<sup>19,20,29</sup> When the results for privately insured children were stratified by chronic condition/disability status, only children without chronic conditions or disabilities had lower use of specialists compared with non-

HMO children. These data cannot help us understand whether this reflects HMOs reducing discretionary use among the privately insured, whether HMOs are reducing needed care among the privately insured, or whether other factors (eg, selection bias) account for this finding. Stratification by race/ethnicity suggests that it is only among the non-Hispanic African Americans and non-Hispanic "other" race/ethnicity that use of specialists is lower in HMOs compared with non-HMO private insurance. Although this could reflect underlying differences in morbidity, this seems unlikely given fairly consistent findings that African American children have worse health status compared with non-Hispanic white children. Other explanations include preference for not using specialist care, bias in the care system, or different ability to access specialty care.

As predicted, sociodemographic differences were pronounced and followed patterns typically found for use of health services. Lower rates of specialist use by non-Hispanic blacks and Hispanics remains even when controlling for chronic condition/disability, status, insurance, and socioeconomic status. This is an important issue that not only needs to be addressed in using specialist care but also many areas in health care (eg, refs 21 and 30-32). A variety of mechanisms including differences in English-language proficiency, the effects of racism, biases in care systems, the ability to follow through on referrals (eg, due to transportation difficulty), different preferences for use of care, and unmeasured socioeconomic differences could help account for some of these differences. Our data do not shed light on the mechanism that accounts for these differences.

Other sociodemographic differences are pronounced. In bivariate regressions, being under 200% of the federal poverty level is associated with reduced use of subspecialists compared with other poverty levels. Controlling for other factors eliminates the statistical significance of the lowest group. It is the near-poor who seem to have difficulty accessing care (as is evidenced by lower use of specialists). In a study of access to care, Weinick and Krauss<sup>31</sup> found similar results, with those between 125% and 200% of the federal poverty level being less likely to have a usual source of care. This is roughly the population targeted by the SCHIPs. Whether the different insurance mechanisms for the near-poor (SCHIP is a different insurance system in some states), relative instability of insurance, difficulty accessing support services such as transportation, or other factors cause this difference is unclear.

This study was limited to noninstitutionalized children, which most likely produced an underestimation of children who used the care of specialists. The results are predicated on the respondent's knowledge and understanding of the type of provider the child saw. We know of no data on the validity of this question about specialist use. Classifying the provider may be difficult for some respondents, especially when a physician or clinic provided both specialist and primary care. In such cases, the responses were likely to be related to the physician's actual practice rather than board certification or

other professional credentials. Whether this resulted in a net over- or underidentification of specialist visits is unclear. In addition, recall bias may have resulted in an underreporting of use. Whether this bias differed for different subgroups of the population (eg, by race/ethnicity) is also not known. Finally, we were limited by the data elements available to us.

As noted above, these findings cannot determine whether rates of use are too high or too low. Additional work on outcomes for children who do and do not use specialist care would further inform the work presented here. Extending that work to examine patterns of care including but not limited to specialists and generalists would be even better.

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#### REFERENCES

- McInerney TK. The general pediatrician as care coordinator for children with chronic illness. *Pediatrician*. 1998;15:102-107
- Barondess JA. Specialization and the physician workforce: drivers and determinants. *JAMA*. 2000;284:1299-1301
- Harrold LR, Field TS, Gurwitz JH. Knowledge, patterns of care, and outcomes of care for generalists and specialists. *J Gen Intern Med*. 1999;14:499-511
- Forrest CB, Reid RJ. Prevalence of health problems and primary care physicians' specialty referral decisions. *J Fam Pract*. 2001;50:427-432
- Forrest CB, Glade GB, Baker AE, Kong M, Starfield B. The pediatric primary-specialty care interface: how pediatricians refer children and adolescents to specialty care. *Arch Pediatr Adolesc Med*. 1999;153:705-714
- Donohoe MT, Kravitz RL, Wheeler DB, Chandra R, Chen A, Humphries N. Reasons for outpatient referrals from generalists to specialists. *J Gen Intern Med*. 1999;14:281-286
- Forrest CB, MA, Weiner JP, Carroll K, Bindman AB. Referral of children to specialists in the United States and United Kingdom. *Arch Pediatr Adolesc Med*. 2003;157:279-285
- Newacheck PW, McManus M, Fox HB, Hung YY, Halfon N. Access to health care for children with special health care needs. *Pediatrics*. 2000;105:760-766
- Newacheck PW, Lieu T, Kalkbrenner AE, et al. A comparison of health care experiences for Medicaid and commercially enrolled children in a large, nonprofit health maintenance organization. *Ambul Pediatr*. 2001;1:28-35
- Shatin D, Levin R, Ireys HT, Haller V. Health care utilization by children with chronic illnesses: a comparison of Medicaid and employer-insured managed care. *Pediatrics*. 1998;102(4). Available at: [www.pediatrics.org/cgi/content/full/102/4/e44](http://www.pediatrics.org/cgi/content/full/102/4/e44)
- Dubay L, Kenney GM. Health care access and use among low-income children: who fares best? *Health Aff*. 2001;20:112-121
- Newacheck PW, Pearl M, Hughs DC, Halfon N. The role of Medicaid in ensuring children's access to care. *JAMA*. 1998;280:1789-1793
- Newacheck PW, Hughes DC, Stoddard JJ, Halfon N. Children with chronic illness and Medicaid managed care [commentary]. *Pediatrics*. 1994;93:497-500
- Perloff JD, Kletke P, Fossett JW. Which physicians limit their Medicaid participation and why. *Health Serv Res*. 1995;30:7-26
- Backus L, Osmund D. Specialists' and primary care physicians participation in Medicaid managed care. *J Gen Intern Med*. 2001;16:815-821
- Forrest LJ, Forrest CB. Passing the baton: HMOs' Influence on referrals to specialty care. *J Health Care Poor Underserved*. 1997;8:437-445
- Forrest CB, Glade GB, Starfield B, Baker AE, Kang M, Reid RT. Gatekeeping and referral of children and adolescents to specialty care. *Pediatrics*. 1999;104:28-34
- Ferris TG, Chang Y, Perrin JM, Blumenthal D, Pearson SD. Effects of removing gatekeeping on specialist utilization by children in a health maintenance organization. *Arch Pediatr Adolesc Med*. 2002;156:574-579
- Ferris TG, Perrin JM, Manganello JA, Chang Y, Causino N, Blumenthal D. Switching to gatekeeping: changes in expenditures and utilization for children. *Pediatrics*. 2001;108:283-290
- Kerr EA, Hays RD, Mitchinson A, Lee M, Siu AL. The influence of gatekeeping and utilization review on patient satisfaction. *J Gen Intern Med*. 1999;14:287-296
- Flores G, Bauchner H, Feinstein AR, Nguyen US. The impact of ethnicity, family income, and parental education on children's health and use of health services. *Am J Public Health*. 1999;89:1066-1071
- Elster A, Jarosik J, VanGeest J, Fleming M. Racial and ethnic disparities in health care for adolescents. *Arch Pediatr Adolesc Med*. 2003;157:867-874
- Mueller KJ, Kashinath P, Boilesen E. The role of uninsurance and race in health care by rural minorities. *Health Serv Res*. 1998;33:597-610
- Weech-Maldonado R, Morales LS, Spritzer K, Elliot M, Hays RD. Racial and ethnic differences in parents' assessments of pediatric care in Medicaid managed care. *Health Serv Res*. 2001;36:575-595
- National Center for Health Statistics. *NHIS Survey Description, National Health Interview Survey, 1999 (Machine Readable Documentation)*. Hyattsville, Maryland: National Center for Health Statistics; 2002
- SUDAAN: Software for the Statistical Analysis of Correlated Data [computer program]. Version 8.00. Research Triangle Park, NC: Research Triangle Institute; 2002
- Kuhlthau K, Ferris TG, Beal AC, Gortmaker SL, Perrin JM. Who cares for Medicaid-enrolled children with chronic conditions? *Pediatrics*. 2001;108:906-912
- Weller WE, Minkovitz CS, Anderson GF. Utilization of medical and health-related services among school-age children and adolescents with special health care needs (1994 National Health Interview Survey on Disability [NHIS-D] Baseline Data). *Pediatrics*. 2003;112:593-603
- Neff JM, Anderson G. Protecting children with chronic illness in a competitive marketplace. *JAMA*. 1995;274:1866-1869
- Hahn BA. Children's health: racial and ethnic differences in the use of prescription medications. *Pediatrics*. 1995;95:727-732
- Weinick RM, Krauss NA. Racial/ethnic differences in children's access to care. *Am J Public Health*. 2000;90:1771-1774
- Gerstman BB, Bosco LA, Tomita DK. Trends in the prevalence of asthma hospitalization in the 5- to 14-year-old Michigan Medicaid population, 1980 to 1986. *J Allergy Clin Immunol*. 1993;91:838-843

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